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The MVS Workbench and Files Organizer Tool Package Reference Guide Version 7.6

Nicholas L. Sun

MVS Programming Consultant
Poughkeepsie, NY. 12603, U.S.A.
nicksun@attglobal.net

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1.0 Introduction

The ISPF Workplace, i.e. the ISPF option 11, is a new option that has been released recently. This ISPF option contains two major functions, which are the Reference List panel function and the Personal Data Set List panel function.

This first function allows the users to open a Reference List panel (i.e. the REFLIST panel) on which it contains maximum up to 30 data set names that are collected from various ISPF panels where the users have been using in the past. The users can select the data set on the REFLIST panel and check it out into the front−end ISPF Workplace panel. By doing so, the users can work on the previously worked data sets repeatedly. The second function allows the users can also create the Personal Data Set List panels on the ISPF Workplace and add their most frequently used data set names for easy access.

This is a Project Work Manager tool package. The short name of this tool package is called the PROJWRK tool package. The method of this PROJWRK tool package not only contains these two very useful functions but also has provided many other extended and advanced ISPF functions.

Traditionally, the concept of the ISPF tools is that whenever the users need to do a work on ISPF, no matter it is for editing, browsing, or viewing a file, or searching for a character string from several files, they must always type in the data set names on various kinds of ISPF utility panels in order to start the process. Therefore, the old ISPF methodology makes the ISPF panels act like the toll booths on the highway and the users constantly need to pay tolls. This concept is totally contradict to the better methodology currently used on PC tools and it is extremely user unfriendly. A lot of MVS programmers and testers in the world who need to constantly work on many MVS files everyday must have already experienced the difficulties from the inefficiency and inflexibility of the current existing ISPF system for many years.

Some of them are smart enough to seek for the solutions by themselves. For example, some people created an MVS data set name list file on VM and use the cut and paste method between VM and MVS systems to reduce the redundant efforts of typing data set names on the ISPF panels. This kind of solution is the easiest but it very awkward and very inefficient.

Some groups of people chose other solution which is to create their own ISPF panel to substitute the ISPF option 3.4 data set list utility panel. On their locally developed ISPF panel they replaced the single data set name input entry field with 10 or 12 data set name entries so that whenever they select a frequently used data set name they don't need to erase the previously entered data. However, due to the size of the data entries on their ISPF panel is very limited, thus this solution is still not the best one.

Nevertheless, the majority of the MVS programmers and testers in the world do not have any alternatives but to suffer the very inefficient methods provided by the current existing ISPF system.

The ISPF Workplace function is only one solution that the designers of the ISPF Development Group has just recently figured out after all these many years. However, due to this new ISPF Workplace function has many design problems especially it has the panel size constraint problem which only allows users to type in maximum up to 30 data entries on each Personal Data Set List panel, therefore this new ISPF option is only a little bit better than the locally developed ISPF tools.

The PROJWRK tool, on the other hand, has completely renovated the old ISPF design concept. It applies the new methodology to create this tool and it simulates the file system that is currently widely used in the PC environment. It allows the users to create their own very large sized database file to contain all the data set names they need for everyday work and make this tool act like their personalized MVS files organizer. In the database, the users may define virtually any amount of data entries that is more than enough for any project or work item they specified. This tool not only can perform the on−line edit, browse, and view functions for the regular PDS, sequential, and GDG files but also can handle the same type of functions plus the on−line load

and unload functions for the VSAM files. The users may also specify various kinds of their frequently used TSO or ISPF commands in the database which makes this tool very flexible and very efficient. Note that under the existing ISPF environment it is very difficult to deal with the uncataloged data sets and there is no way to deal with the VSAM data sets except using the batch jobs. However, this tool does not make the distinctions to rule out such special types of data sets when you execute the valid commands provided by this tool.

On the process panels the users may enter various kinds of simple commands provided by this tool and they may choose to use either the 'a.b' type of selection code where 'a' and 'b' are numerical numbers, such as the selection code '3.2', they may use the 'S' selection code, or use the cursor pointer and press the Enter key to select a single or multiple data set names from the PROJWRK process panels.

This tool can display various kinds of original ISPF utility panels when a simple TSO/ISPF command provided by this tool is processed. Meanwhile, the selected data set name from the PROJWRK process panel has already been captured in the input data set name area on the ISPF utility panel so that the users don't need to bother to type it in manually again.

This PROJWRK tool is customizable and it is a very user friendly tool. When the users choose to use this tool, they may still be able to access the ISPF Workplace and many other original ISPF tool functions through the User−Exit commands. By using this tool, the users become the masters and they are no longer dragged around by the tool any more like they are used to be.

This PROJWRK tool can revolutionize the traditional ways for the MVS programmers and testers in the world to handle the MVS files in a very much easier and efficient fashion. It is long overdue that the MVS users in the world deserve a better MVS tool like this one a long time ago. It is the future trend that the MVS programmers and testers would like to use this PROJWRK tool package to save their tremendous amount of precious time in order to improve their work productivity and performance each day.

1.1 The file structure of this tool package

This tool package contains six primary library files, which are:

- 'USERID.@PROJWRK.CEXEC',
- 'USERID.@PROJWRK.PANELS',
- 'USERID.@PROJWRK.TABLE',
- 'USERID.@PROJWRK.SKELS',
- 'USERID.@PROJWRK.DOCUMENT', and
- 'USERID.@PROJWRK.LOAD'.

where

- the CEXEC library contains the executable process control modules and utility modules, which are the compiled version of the REXX programs;
- the PANELS library contains the process panel source code;
- the TABLE library contains a PF key definition file and the command list files;

- the SKELS library contains the batch job JCL skeleton files;
- the DOCUMENT library contains the tutorial guide of this tool package and the source code of the XRSTOR batch job JCL file; and
- the LOAD library contains several load modules that are used by some commands provided by this tool.

After this tool is invoked at the first time, it will create three library files on your TSO account, which are:

- 'USERID.@PROJWRK.LIST',
- 'USERID.@PROJWRK.XREF', and
- 'USERID.@PROJWRK.DATA'.

where

- the LIST library is a database file that contains the specifications of the projects or work items;
- the XREF library contains various kinds of database files for the Cross Reference function, the Fixlist function, the User−Exit function, and the file transmit function; and
- the DATA library contains the tersed copy of the LIST library for the recovery function, and the TODOLIST or NOTEBOOK tersed file to be used as the database code for the Desktop Monthly Calendar function.

Note: The LIST and XREF files are the primary Project List Group files. You may create the secondary Project List Group files by using a 'NEW' command on the Project Work Director panel, which will be discussed later in this document.

Totally there are nine library files of this tool package − six are the primary tool library files and three are the tool generated library files.

Note: It is highly recommended that once for a while you may save a backup copy of your LIST library. In case that your Project List file, i.e. the 'USERID.@PROJWRK.LIST' file, is deleted or clobbed by mistake, then you may enter a 'RECOVER' command on the PANEL2 panel to restore it back from the DATA library.

Note: If this tool package is not installed on your own TSO account, and if you don't have the "Write Access Authority" to update the CEXEC, SKELS, PANELS, and the LOAD library files of this tool package, then you may create any of the following four User−Exit files on your own TSO account:

- 'USERID.@USREXIT.EXEC',
- 'USERID.@USREXIT.SKELS',
- 'USERID.@USREXIT.PANELS', and
- 'USERID.@USREXIT.LOAD'

During the invocation of this tool, when this tool detects the existence of any of these four User−defined library files, it will automatically concatenate them to the tools library files of this tool package provided that a 'TSO PROJ USEREXIT' command is used, or if the control code of the 'USEREXIT' option in the PROFILE file of the XREF library is changed from 'NO' to 'YES'.

To create the 'USERID.@PROJWRK.XREF(PROFILE)' file, you need to enter a 'PROF' command on the command line of any process panel. The 'PROF' command not only can be used to create the PROFILE file in the XREF library, but also can be used to edit this file.

1.2 How to define your own 'IMACRO' for Edit and View commands

When you edit or view a file, this tool will use the default IMACRO named 'INITMAC' for the Edit Macro command and 'VIEWMAC' for the View command.

If you need to use your own IMACRO files for these two commands, then you may specify them in your 'USERID.@USREXIT.EXEC' library and name the two files 'EDITINIT' and 'VIEWINIT'. You may copy the two sample edit macro files from the DOCUMENT library to your 'USERID.@USREXIT.EXEC' library and modify them to fit your own needs. You are required to enter a 'PROF' command to edit the 'USERID.@PROJWRK.XREF(PROFILE)' file and change the USEREXIT option from 'NO' to 'YES', or specify a code line such as the following:

```
EXEC = USERID.@USREXIT.EXEC
```

in one of the 'EXEC =' code lines in the PROFILE file in order to setup the User−Exit interface with this tool package.

Note: To specify your own IMACRO for the Edit and View commands is optional. These two IMACRO Edit Macros may not fit to your needs. Instead of using them, it is suggested that you may also enter the following HILITE edit command on the edit command line to define the default HILITE option of your edited program files in general cases:

```
HILITE LOGIC AUTO
```

2.0 Getting started

To invoke this Project Work Manager tool, simply type a **'TSO PROJ'** command on the panel command line of any ISPF panel. The following few sections contain the descriptions of the methods of how to use this tool package.

2.1 How to create a new project member file

When the 'TSO PROJ' command is entered at the first time, this tool will create the following two primary library files on your TSO account:

1. 'USERID.@PROJWRK.LIST', and

2. 'USERID.@PROJWRK.XREF'.

where the first one is a Project List file, and the second one is a Cross Reference library file. These two files are called the primary Project List Group. Both are the database files created by this tool package on your TSO account.

This tool will initially create a Project List member named 'PROJECT' which contains the eleven tool library file names of this tool package for your reference. It will also create another Project List member named '@MISC' which contains a 'PANEL(ISR@PRIM)' command statement that can be used to display the ISPF primary menu within the Project Work Manager tool session; it also contains a VIEW command of the 'USERID.LOG.MISC' data set, where 'USERID' is your TSO logon Userid; two VIEW commands of the DSNLIST files of the 'LISTCAT' and 'LISTALC' commands; and two VIEW commands of the 'REXXCHK' and 'REXXREF' commands generated output listings for you to use. More information about thsee two sample Project List member files can be found in the section 3.3 of this document.

After the 'TSO PROJ' command is executed, this tool will start the initial Project Work Manager environment setup procedure, then it will enter the primary Project Work Manager tool session and display the PANEL2 panel, i.e. the 'The Project or Work Item Selection panel' function panel, with the display of a greeting message window panel to instruct you how to initially use a 'Select' command, such as the 'S newproj' command, to display a PANEL1 panel to create a Project List member file of your first new project or work item. This tool package contains five process panels and the PANEL1 and PANEL2 panels are the first two of them. The descriptions of the five process panels will be presented in next section.

The 'Select' command for creating a new project or work item in a Project List member file can only be invoked on the PANEL2 panel but no other panels. Once you have created a Project List member file, you can always copy it to a new member in the 'USERID.@PROJWRK.LIST' library and modify it to create another new project or work item instead of using the 'Select' command on the PANEL2 panel again. This is the so−called 'PDS Member Copy' method. It really does not matter if a data set name is specified in more than one Project List member file because it is quite possible that some data sets can be referenced by several projects or work items. However, it is not recommended.

Note:

1. Other than using the 'S newproj' command on the PANEL2 panel to create a new project or work item, you may use the 'NEW' or 'CREATE' command also. The short forms of these two commands are 'N newproj' and 'CR newproj', respectively.

2. If the tools administrator has added an entry named 'ISPF option 12' on the ISPF primary menu file, i.e. the 'ISR@PRIM' file, then you may enter a '12' code instead of entering a 'TSO PROJ' command, to display this Project Work Manager tool session. The difference of these two methods is that the '12'

can only be entered on the panel command line of the ISPF primary menu and the 'TSO PROJ' command can be entered on the command line of any ISPF panel.

3. This tool contains a lock for preventing it from being redundantly invoked. Thus, if the Project Work Manager is already in process, it is not allowed to issue another 'TSO PROJ' command again within the Project Work Manager tool session. Otherwise, a **'Projwrk locked'** error message will be prompted. However, there is no restriction for you to split the ISPF panel screen and open the second Project Work Manager tool session.

4. There is a very good method provided by this tool package which is to use a 'DIR' command to display a Project Work Director panel to access other person's Project List file. On the Project Work Director panel you may also use a 'NEW' command to create a secondary Project List Group and establish another Project Work Manager tool session. The detail information of this method will be discussed later in this document.

5. It is recommended that once for a while you may save your Project List file to a backup library. To do this, simply display the PANEL3 panel of the 'PROJECT' project and type a 'C' (Copy) command code in front of the 'USERID.@PROJWRK.LIST' file on the panel. Then a 'Copy to a New Partitioned Dataset' window panel will be popped up. On this window panel, you may enter a target PDS name such as 'USERID.@PROJWRK.LIST.BKUP' to save the Project List member files.

6. On the process panel of the Project Work Manager tool session, you may enter a 'FL' (File List) or a 'FF' (Front−end File List) User−Exit command to display the ISPF option 3.4 data set list panel, or press the PF2 key to split the ISPF panel screen and display the original ISPF option 3.4 data set list panel. Thus, by using the tool you may still have the capability to use the original ISPF option 3.4 functions very easily.

7. On the ISPF option 3.4 data set list panel, you may use an 'ADD' command to add the data set names into the Project List member files. The detail information about this 'ADD' command function can be found in the Appendix G section.

2.2 What are the process panels of this tool package

This tool package contains five process panels, which are:

1. The PANEL1 panel − **'The Project or Work Item Creation Panel'**

   This panel can be used to create a Project List member. You may display this panel by using an 'S' (Select), 'N' (New), or 'CR' (Create) command on the PANEL2 panel when you need to create a new Project List member file.

2. The PANEL2 panel − **'The Project or Work Item Selection Panel'**

   This panel allows you to select a project or work item. It is the main process panel of this tool package. The 'S', 'N', or 'CR' command, such as the 'S newproj', 'N newproj', or 'CR newproj' command, for example, can display the PANEL1 panel for creating a new project or work item named 'newproj'. On the PANEL2 panel, you need to enter a project selection code in order to display next level PANEL3 panel. Instead of using a selection code, you may type a '/' or 'S' code next to a project name on the Selection code line, or position the cursor at any column on a project or work item name and press the Enter key to select that project or work item.

3. The PANEL3 panel − **'The Data Set or Command Selection Panel'**

This panel is a data set name list panel. It can be used to select a Partitioned, Sequential, GDG base file, or VSAM file for the edit, browse, or view function. On this panel, you may also specify the TSO/ISPF commands. You need to enter a data set selection code, type a '/' or 'S' code next to the data set name on the panel, or position the cursor at any column on the data set name line and press the Enter key to select the data set which is very similar to the methods applied to the PANEL2 panel.

4. The PANEL4 panel − **'The PDS Member List Panel'**

   This is a PDS member list panel. If a PDS is selected on the PANEL3 panel, then all the PDS members will be displayed on this panel for the edit, browse, or view function. This panel is similar to the PDS Member List panel displayed on ISPF option 3.4 data set list panel by using an 'E' (Edit) command. It is in fact a simulation of the ISPF option 3.4 PDS member list panel. On this panel, you may edit, browse, or view the PDS member files. You may also enter an 'XRF' command to display next level PANEL5 panel, which is a Xref List panel.

   Note that on the simulated PANEL4 panel, you may also use a 'S TEMP' command to create a new PDS member. Other than this command, you may use a 'N TEMP' (New), 'CR TEMP' (CReate) , or 'E TEMP' (Edit) command to create a new PDS member file on the PANEL4 panel also.

   Note: The function of using the 'S TEMP' command to create a new member of the PDS will not work until the ISPF release 4.8.

   This tool package has provided a short form PANEL4 panel on which the 'S TEMP' command can be used to create a new PDS member file. More information about the short form PANEL4 panel can be found in section 3.6.

5. The PANEL5 panel − **'The Xref List and Retrieved Commands Panel'**

   This panel contains a Cross Reference list of all the data sets of the projects or work items that you have defined. It also contains a list of previously executed edited, browsed, or viewed commands on the PANEL4 panel that you can retrieve them for execution repeatedly on the PANEL5 panel.

The above described five process panels establish a Project Work Manager tool session. In addition to these five process panels, this tool package has provided two other very important process panels, which are:

1. The PROJDIR panel, i.e. the **Project Work Director** function panel. This panel can be used for accessing the MVS data sets organized by other person's Project List file in another Project Work Manager tool session. It is a control panel which allows you to access the Project Work Manager tool sessions of different TSO accounts very easily.

2. The RECALL command panel, which can be used to display all the sequential files and PDS member files that were previously edited on the PANEL3 or PANEL4 panel.

2.3 The PF key assignment on the process panels

The assignment of the PF keys on all these five process panels are basically the same, which are defined as follows:

Figure 1. The PF key definitions of the process panels

```
PF1  -  (Help)     Display the tutorial guide of the panels
PF2  -  (Split)    Split the display of the process panel screen
PF3  -  (End)      Exit the process and return to former level panel
```

```
PF4  -  (Recall)   The RECALL command function
PF5  -  (RFnd)     Repeat the previously executed command
PF6  -  (CALC)     The Desktop Rolling Sheet Calculator function
PF7  -  (PgUp)     Move the process panel data entries up
PF8  -  (PgDn)     Move the process panel data entries down
PF9  -  (Swap)     Swap the cursor between the split panel screen
PF10 -  (Cmdlist)  Display the Command List panel
PF11 -  (Xhelp)    Display the tutorial summary of the commands
PF12 -  (Retrieve) Retrieve previously entered commands
```

Note:

1. The PF10 key has been set for the Command List panel display function for PANEL1, PANEL2, PANEL3, short form PANEL4, and PANEL5 panels. However, on the regular form PANEL4 panel the PF10 key has already been assigned to the 'Action Bar Choice' function.

2. The PF11 key has been set for displaying the summary of the commands of the panels which is extracted from the tutorial guide obtained by pressing the PF1 key. It is the shorter and concise version of the panel tutorial guide. You may position the cursor either at the panel command line area or at the line command area of several major process panels to view the on−line tutorial of this tool package when you press the PF11 key.

3. If you want to modify the PF key definitions, then on the command line of any of these process panels you may enter a 'KEYS' command. The 'KEYLIST' command can be used to display a panel on which it contains a list of all the PF key definition files that are used by this tool package.

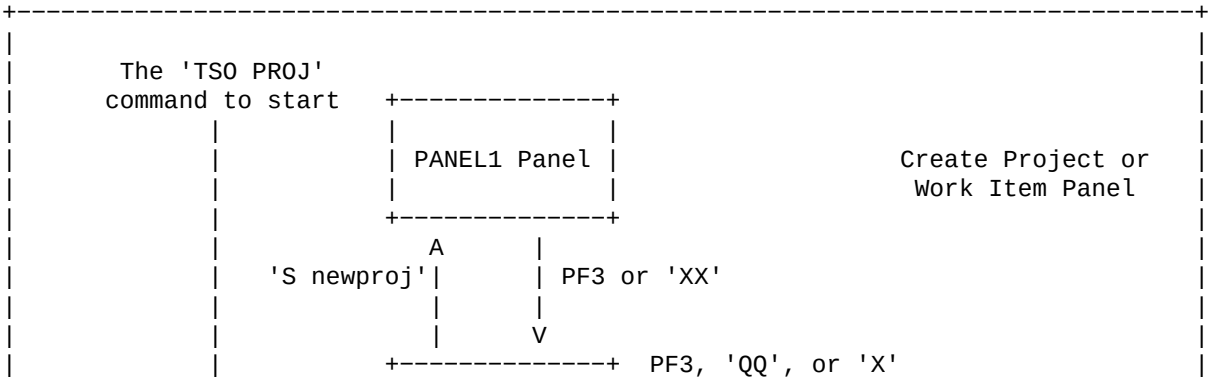
4. On the process panels of PANEL2, PANEL3, PANEL4, and PANEL5, you may enter a '?' command to retrieve the previously executed commands.

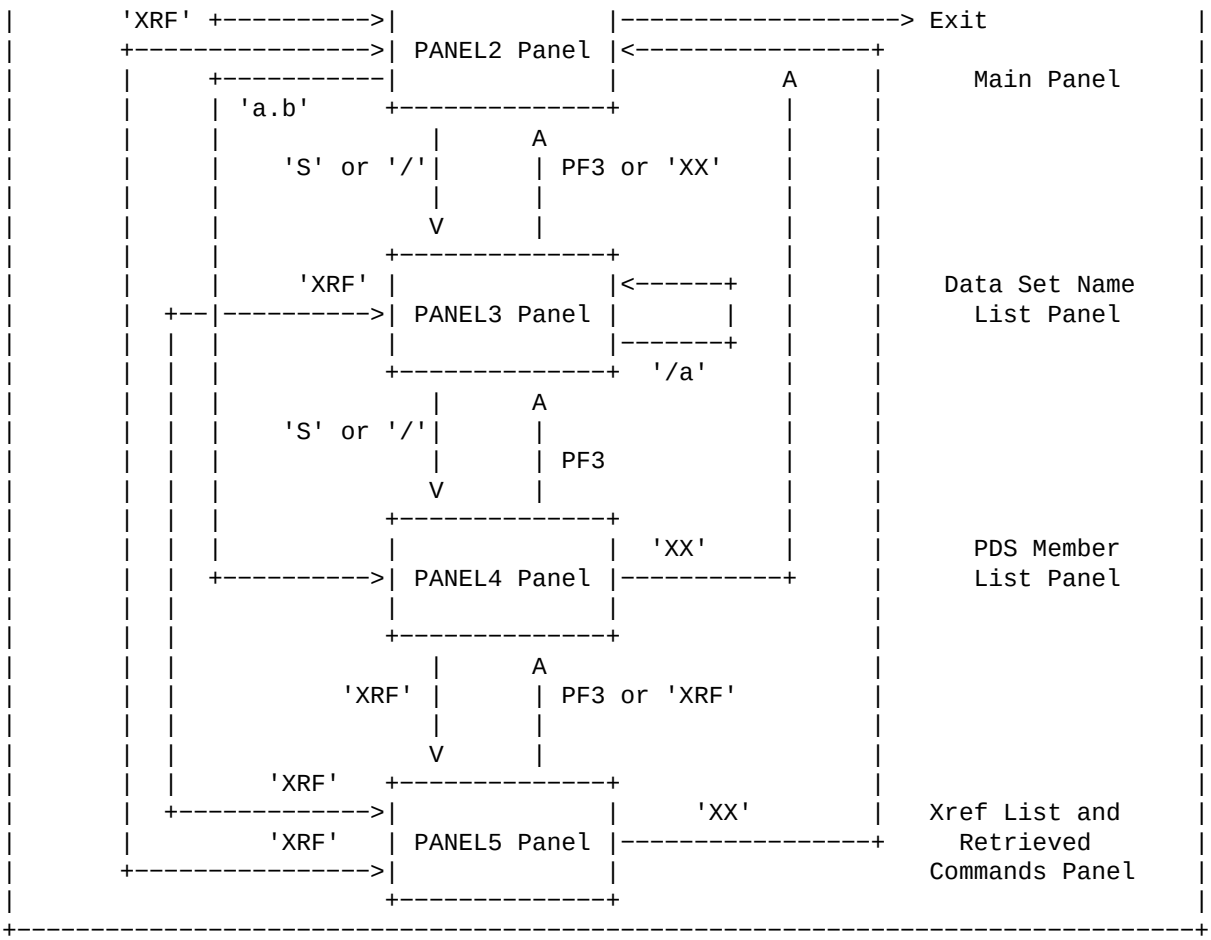
   The PF5 key function is very similar to the '?' command function. The difference of the PF5 key function and the '?' command is that the recalled command invoked by '?' will be shown on the panel command line and it requires the user to press the Enter key to execute. It can recall all previously executed commands one by one rotatively in a loop. The PF5 key function, on the other hand, can only repeat the most recently executed command. Note that the '=' command can also be used to repeat the most recently executed command on the process panels.

2.4 The graphic representation of the process panels structure

The following is the graphic representation of the relationship among these five process panels in a single Project Work Manager tool session:

Figure 2. The relationship between the Project Work Manager tool panels

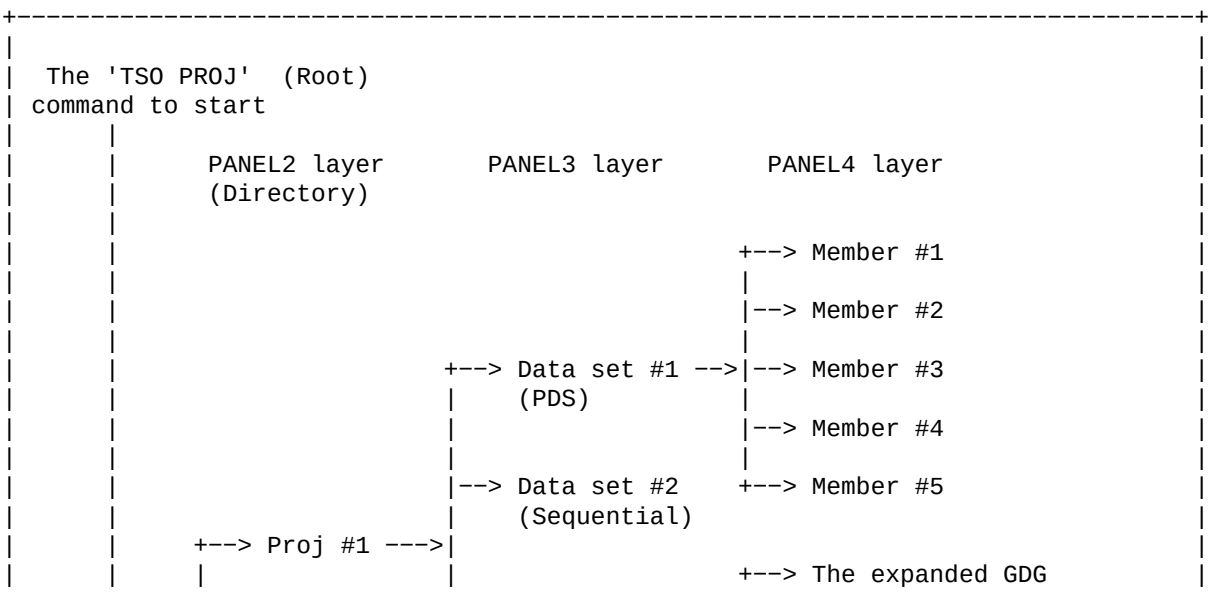


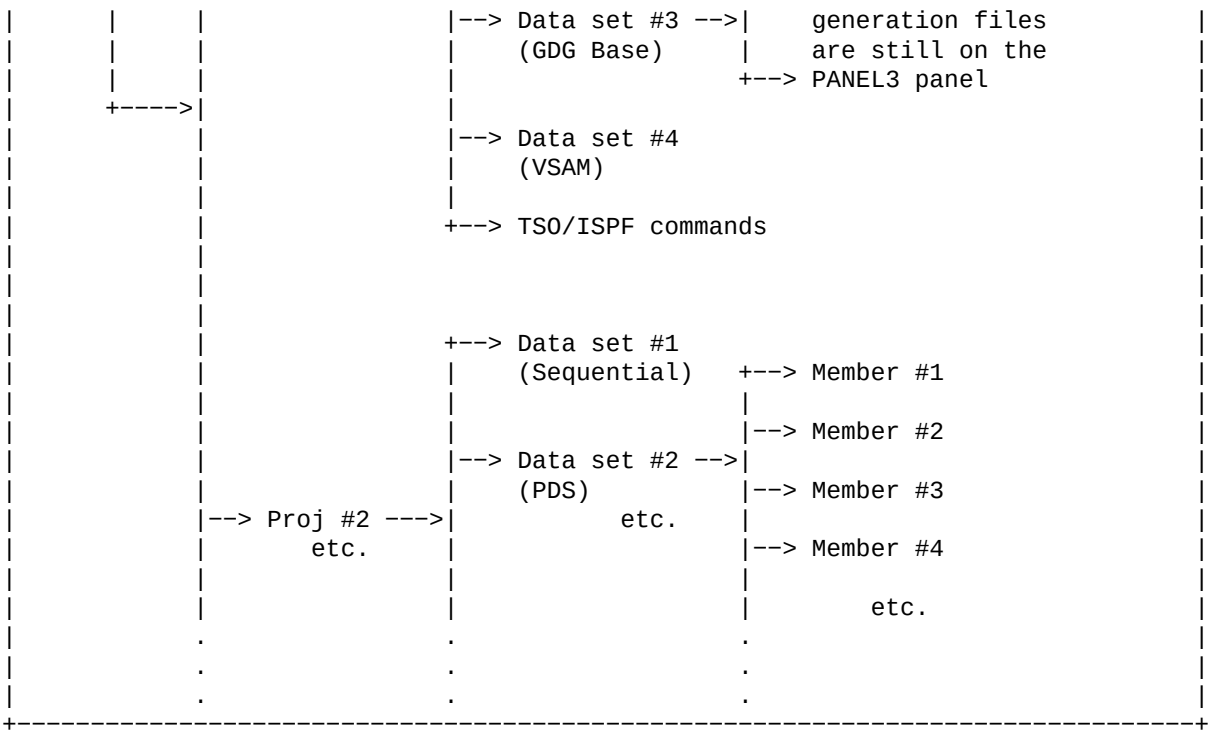


2.5 The graphic representation of the file access structure

The MVS file access methodology provided by this tool is a simulation of the file systems that are currently very widely used on the PC environments. The following is the graphic representation of a sample of the file system provided by this tool:

Figure 3. The file system provided by the MVS Project Work Manager tool





2.6 How to switch from one process panel to another

This tool package has provided many easy ways to switch from one process panel to another. The following is the descriptions of the commands and the PF key functions to be used for this purpose according to the diagram in previous page:

1. **From PANEL2 to PANEL1 panel** − Enter an 'S newproj', 'N newproj', or 'CR newproj' command to display the PANEL1 panel and create a new project or work item.

2. **From PANEL1 to PANEL2 panel** − Press the Enter key, the PF3 key or enter an 'XX' command to return from the PANEL1 panel to the PANEL2 panel. You may press the Enter key if the entered data set or TSO/ISPF commands are all valid, press the PF3 key to abort, or enter an 'XX' command to skip the validity checking.

3. **From PANEL2 to PANEL3 panel** − Enter a project or work item selection code. There are at least five methods to select a project or work item on the PANEL2 panel, which have been mentioned before and will be described in details later again.

4. **From PANEL2 to PANEL4 panel directly** − Enter an '/a.b' or 'a.b' type of selection code command, such as the selection code '/3.2' or '3.2' to display a PANEL4 panel of a PDS member list, which is the second PDS of the third project, and skip the display of the PANEL3 panel.

   Note: After it is branched to the new target project panel by using the '/a.b' or 'a.b' selection code, you may enter a '//' command to branch back to the original project panel.

   Other than using the '//' command, you may also use a '??' command on the target 'a.b' panel to display the selection code of the original project panel on which the '/a.b' command was entered. You may also use a 'BACK' or 'BK' command to branch back to the original project panel immediately without display its selection code. Thus, the '/a.b' and 'BK' command pair allows you to branch back and forth between two projects very easily.

5. **From PANEL2 to PANEL5 panel** − Enter an 'XRF' command to display the PANEL5 panel.

6. **From PANEL3 to PANEL2 panel** − Enter an 'XX' command or press the PF3 key to return back to the PANEL2 main panel.

7. **From PANEL3 to another PANEL3 panel** − Enter a '/a' type of selection code, such as the '/2' or '/3' selection code, to branch to another PANEL3 panel, which is the second or third project panel, from the current PANEL3 panel.

   Note: After the tool is branched to the new project panel by using the '/a' selection code, you may also enter a '//' command to branch back to the original project panel.

   Note: In fact, if you remember the name of the project or work item, such as 'MYPROJ1' or 'MYPROJ2', you may just enter that name to switch to a specific PANEL3 panel. Thus, it is not a bad idea to always keep your project or work item name short and easy to remember.

8. **From PANEL3 to PANEL4 panel** − Enter a data set selection code to display the PANEL4 panel. There are at least five methods to select a data set on the PANEL3 panel, which have been mentioned before and will be described in details later again.

9. **From PANEL3 to PANEL5 panel** − Enter an 'XRF' command to display the PANEL5 panel.

10. **From PANEL4 to PANEL2 panel** − Enter an 'XX' command to jump back directly to the PANEL2 main panel.

11. **From PANEL4 to PANEL3 panel** − Press the PF3 key to return back to the PANEL3 panel.

12. **From PANEL4 to another PANEL4 panel** − Enter a '/a.b' or 'a.b' type of command, such as '/3.2' or '3.2' command, to branch to another PANEL4 panel, which is a member list panel of the second PDS of the third project, from the current PANEL4 panel. However, if you are already on the PANEL4 panel of the third project, say you are on '3.1' PANEL4 panel, then simply enter a 'b' type of command code, such as the '5' code instead of the '3.5' code on the PANEL4 panel command line and it will bring you to the '3.5' PANEL4 panel.

    Note: After it is branched to the new PANEL4 panel by using the '/a.b', 'a.b', or 'b' type of command code, you may enter a '//' command to branch back to the original project panel.

13. **Swap between regular form and short form PANEL4 panel** − Use a 'SW' (Swap) command can swap between the regular long form PANEL4 panel and the short form PANEL4 panel.

14. **From PANEL4 to PANEL5 panel** − Enter an 'XRF' command to display the PANEL5 panel.

15. **From PANEL5 to PANEL2 panel** − Enter an 'XX' command to jump back directly to the PANEL2 panel from the PANEL5 panel. If the PANEL5 panel is invoked from the PANEL2 panel by using an 'XRF' command, then enter an 'XRF' command or press the PF3 key on the PANEL5 panel can return back to the PANEL2 panel directly.

16. **From PANEL5 to PANEL3 panel** − Enter an 'XRF' command or press the PF3 key to return back to the PANEL3 panel if the PANEL5 panel is invoked from the PANEL3 panel by using an 'XRF' command. You may also use a '/a' type of command code to switch to the PANEL3 panel.

17. **From PANEL5 to PANEL4 panel** − Enter an 'XRF' command or press the PF3 key to return to the PANEL4 panel if the PANEL5 panel is invoked from the PANEL4 panel by using an 'XRF' command. You may also use a '/a.b' type of command code to switch to the PANEL4 panel.

18. From any panel command line, any project name line on the PANEL2 panel, any data set name selection code line on the PANEL3 panel, any member name command line on the PANEL4 panel, or any selection code line on the PANEL5 panel, you may enter an '/a.b' or 'a.b' type of command code to switch from one process panel to another PANEL4 panel.

19. On the command line of any of the PANEL2, PANEL3, PANEL4, and PANEL5 panels, if you enter a project name or enter a '/a' type of command, where code 'a' is the selection code of a project, then you may also branch to the PANEL3 panel of that project. You may also enter the '/a.b' type of command code on any command line area of the five process panels to switch to a PANEL4 panel. Instead of using the '/a.b' command you may always use an 'a.b' command. Note however that the '/a' command cannot be replaced with an 'a' command because these two types of command are not interchangeable.

20. You may enter an 'XX' command on the command line of any panel, including the PANEL2 itself, or enter an 'XX' command on an edited file command line, to return back to the PANEL2 main panel.

21. **Exit the process** − From any process panel enter a 'QQ' or 'X' command can exit the Project Work Manager tool session entirely. On the PANEL2 panel key you may also press the PF3 key to exit the Project Work Manager tool session also.

From the above descriptions, it has been mentioned that there are at least five methods that can be used to switch from the PANEL2 panel to the PANEL3 panel, and from the PANEL3 panel to the PANEL4 panel, which are:

1. Enter a selection code of the project or the data set at the panel command line area on the panel.

2. Type a selection code at the line command area on the panel, i.e. the selection code can be typed at the project selection code line on the PANEL2 panel, or the data set name selection code line on the PANEL3 panel.

3. Type a '/' command code on the selection code command line. The '/' code can be substituted by an 'S' code (or an 'X' code) also.

4. Place the cursor at any column next to a project or data set and press the Enter key.

5. If a project is flagged with a 'last used' project marker '−', or a data set is flagged with a 'last used' data set marker '−', which are the project or data set you want to select, then simply press the Enter key twice.

The following is the summary of few frequently used commands and PF key functions that can be applied to these process panels:

1. The PF3 key can always be used to return from one process panel back to its former level panel except the PF3 key is pressed on the PANEL2 panel. In which case, it will terminate the Project Work Manager tool session.

2. The 'XRF' command can be applicable to all of the PANEL2, PANEL3, and PANEL4 panels to switch to the PANEL5 panel. You may use the 'XRF' command again on the PANEL5 panel to switch back.

3. From all the PANEL1, PANEL3, PANEL4, and PANEL5 panels, you may always enter an 'XX' command to return back to the PANEL2 panel.

Note that the 'XX' command can also be entered on an edited file command line to save the updated file first and then return back to the PANEL2 panel.

4. Enter a 'QQ' or 'X' command on any panel command line is the easiest way to terminate this tool session.

There are few other methods, such as the '//' command and the PANEL5 Xref List panel, provided by this tool that can be used to switch from one process panel to another, which will be discussed in more detail later in this document. Note that both of the 'XX' and the '//' commands can be entered on any command line area of the five process panels.

On the PANEL3 or PANEL4 panel, you may use the combination of the '/a.b' or '/a' type of command code and the '//' command code to swap between two projects very easily. For example, if you are on the second project and want to switch to work on the fifth project, then simply enter a '/5' command. After it is switched to the fifth project panel, then enter a '//' command instead of a '/2' command on the fifth project panel to branch back to the second project.

Note: The 'DIR' command can be used on the command line of any of the five process panels to allow you to switch from one Project Work Manager tool session to another Project Work Manager tool session. The detail information about the 'DIR' command will be described later in this document.

2.7 How to modify the Project List member files

The Project List member file is a database file which contains the data set names and the TSO/ISPF command names that you have defined for a project or work item. This file resides in the 'USERID.@PROJWRK.LIST' library on your TSO account.

There are at least four methods that can be used for updating the Project List member files, which are:

1. Enter a 'E' command on the PANEL2 panel, or

2. Enter a 'E num' command on the PANEL2 panel, or

3. Type a 'E' code next to a project or work item name on the PANEL2 panel, or

4. Enter a 'E' command on the PANEL3 panel.

For example, on the PANEL2 panel you may enter a 'E 4' command to edit the fourth Project List member file and modify its contents.

The first method by using a single 'E' (Edit) command on the PANEL2 panel will cause the 'last used' project markers, the 'last used' data set markers, and all the bookmarks in the Auto Bookmark Buffer to be removed, which may not be what you want. A warning message window panel will be prompted to ask you to confirm the action. You may either ignore the warning and press the Enter key to continue or press the PF3 key to cancel the update of the Project List member file with a single 'E' command on the PANEL2 panel.

The last three methods are identical. The third method is to use an 'E' line command on the PANEL2 panel, which is an alternative command form of the 'E num' command on the PANEL2 panel command line. These three commands will only cause the bookmarks of the selected project in the Auto Bookmark Buffer to be reset to empty.

As a matter of fact, you may use any file editor, such as the ISPF option 2 function or use an 'E' command function on the ISPF option 3.4 data set list panel, to create or delete the members in the Project List file as

many times as you want. However, after you update the Project List library by using those methods, you will need to enter a 'RESET' or '/R' command to refresh the PANEL2 panel. After the PANEL2 panel is refreshed, the new project or work item names will be shown on the panel. However, the 'RESET' or '/R' command will cause all the 'last used' project markers and the 'last used' data set markers to be reset to empty.

Other than editing a Project List member file and type in the new data set names manually, there is a better method, which is to use an 'ADD' command on the ISPF option 3.4 data set list panel, to add data set names into the Project List member files very easily. As mentioned in the Introduction Section before, the 'FL' and 'FF' User−Exit commands can be used to display the ISPF option 3.4 data set list panel within the Project Work Manager tool session. On that panel you may use an 'ADD' command. An example of this function can be found in the Appendix G section. After you add the data set names in the Project List member file by using this method, you will need to use the 'RESET' or '/R' command to refresh the PANEL3 panel of the selected project just like the same situation when you add the data set names in the Project List member file manually in edit.

In the edited Project List member file, you may add any comment code lines as you wish. The comment line contains the '/*' or '−−' code on the leftmost column. You may use these two types of code to comment out the data set names that will no longer be used. These two types of comment delimiter code can also be inserted in the middle of the code line to be used as the remark comment.

Note: You may use the PF4 key, i.e. the 'ED' command function key, to toggle between the '/*' code to be inserted into and dropped from the leftmost column of the code line in the Project List member file.

You may use a 'SORT' command to sort the data set names in a Project List member file while you editing it. Only the data between column 1 and column 72 in the Project List member file will be used.

Note: If you insert a '/*' or '−−' comment code at the leftmost column position to comment out a data set name, then after sorting the code lines with the comment code will be moved to the top of the file and the data set name sequence will be changed. If you want to keep all data set names including the commented out data set names in a certain sequence, then you may insert a '//' code after the data set name code instead of inserting the '/*' or '−−' code at the leftmost column in the code lines.

Thus, inserting a '//' code at the tail end of the data set name is equivalent to inserting a '/*' or '−−' code at the first column of the data set name code line.

In each Project List member file, the '/* @FUNCTION:' code line that contains the functional description of the project or work item must be on the top of the Project List member file.

Following the functional description code line is the 'HIDE' indicator. This code line is in the '/* @HIDE' format. If the 'HIDE' indicator code line is un−commented out, then it means that the Project List member file is temporarily in hidden mode and it will become inactive.

Note:

1. The 'HIDE' function can greatly improve the speed of the performance of this tool package. To deactivate a project, you may either use a 'H' (Hide) command code on the PANEL2 panel or manually remove the '/*' code from the 'Hide' indicator code line in edit.

2. You may use an 'U' (Unhide) command code on the PANEL2 panel or insert a comment code '/*' at column 1 in edit to comment out the 'HIDE' indicator line and then use a 'RESET' or '/R' command on the PANEL2 panel to make the Project List member file to become active again.

Following the 'HIDE' indicator line are the code lines of the data set names of the projects or work items you choose. The data set can be either Partitioned, Sequential, GDG base file, or VSAM file. Other than the data

set names, you may also specify the TSO or ISPF commands in this file.

Note: If the FILEAID option is set to 'YES' in the PROFILE and if the File−AID facility is available on your MVS system, then the VSAM data sets you specified in this file will become valid. Otherwise, they will be the invalid data sets.

After the initial process of the 'TSO PROJ' command, a member file named 'XREF1' will be created in the Cross Reference List library 'USERID.@PROJWRK.XREF'. At the second time when you invoke the 'TSO PROJ' command again, this 'XREF1' file, which contains a Xref List of all the data set names in each Project List member, will be used even if you have already inserted or deleted a data set name or comment out 'HIDE' indicator in one of the Project List members. If you want to see the most recent Xref List, you need to refresh either the PANEL2 panel or the PANEL3 panel by using a 'RESET' or '/R' command.

Please see the Appendix A for more information about the examples of the source code format of various kinds of Project List member files.

3.0 The descriptions of the usages of the process panels

The following few sections contain the descriptions of the five primary process panels for the Project Work Manager function and an additional process panel for the Project Work Director function provided by this tool package.

The material of these few sections were basically extracted from the on−line tutorial guide. Some parts of the descriptions of the tutorial have already been illustrated in the previous introduction section, however these tutorial sections contain much more detail information.

You will find that the descriptions of the LISTALC, LISTCAT, and several other commands have been repeatedly shown in several process panel tutorial sections. It is because that these commands can be invoked at the command line on all those process panels. When you invoke these commands, you will need to press the PF1 key to access more information of the usages of each command because the on−line tutorial guides of these commands are not included in this document.

The PRTPDS command function is performed in batch mode. The JCL skeleton files of these few commands can be found in the 'USERID.@PROJWRK.SKELS' library. Note that you may create your own 'USERID.@USREXIT.SKELS' library to override the JCL skeleton files provided by this tool package if the sample JCL files do not fit your need.

Note: To create your own 'USERID.@USREXIT.SKELS' library file, the easiest way is to type a 'C' (Copy) command next to the 'USERID.@PROJWRK.SKELS' library on the PANEL3 panel of the 'PROJECT' project. Then a window panel will be popped up. On that panel, you may fill in the 'USERID.@USREXIT.SKELS' library name at the target data set name field and press the Enter key. After the new library file is created, you may add its data set name in the 'PROJECT' project and modify each member on the PANEL4 panel to satisfy your own needs. More detail information about how to create a backup file will be discussed later in this document.

If an user−defined 'USERID.@USREXIT.SKELS' library file is found, then this tool will concatenate it with the tools SKELS library during the Project Work Manager environment initial setup provided that the USEREXIT option is set to YES in the PROFILE file. Please see the Appendix L section for the source code of these two sample JCL skeleton files for more information.

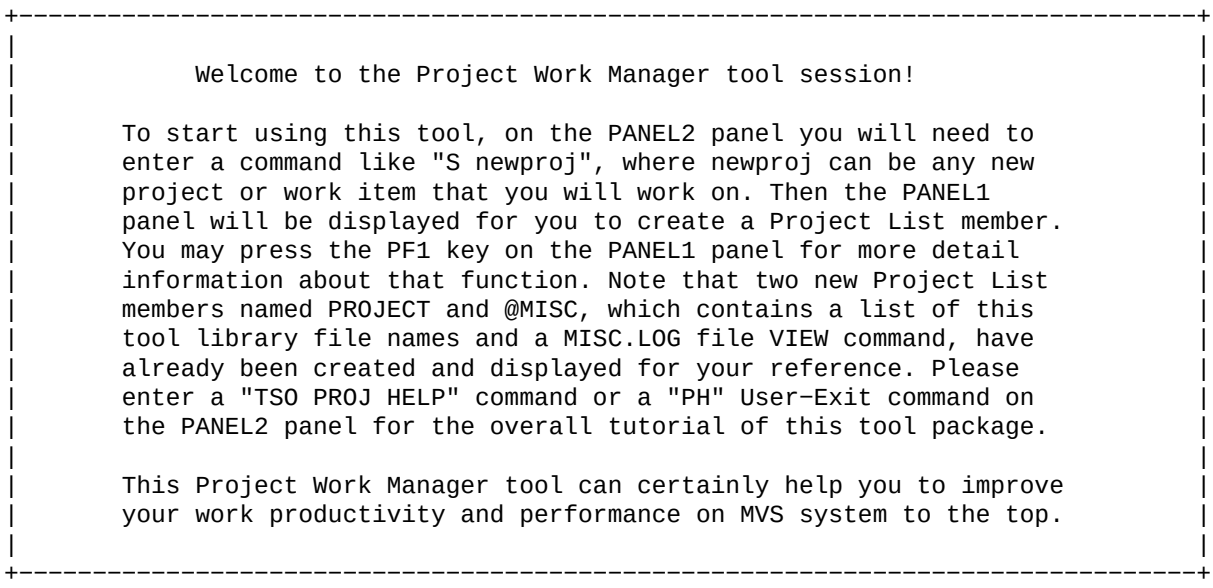
If the PANEL2 panel of the Project Work Manager tool session has already been displayed, then on that screen you may not invoke the 'TSO PROJ' command again to bring up another Project Work Manager tool session. However, you are allowed to press the PF2 key to split the ISPF panel screen and use the 'TSO PROJ' command again to open the second Project Work Manager tool session at the bottom half of the screen. The two Project Work Manager tool sessions of this tool are processed independently. The original 'last used' project marker, the 'last used' data set marker, and the original screen page of the PANEL3 and PANEL4 panels on the second Project Work Manager tool session will be memorized by this tool separately from the top session.

The Xref List file for the second Project Work Manager tool session at the bottom screen is the file named 'USERID.@PROJWRK.XREF(XREF2)'. The contents of both 'XREF1' and 'XREF2' files should be identical and they should match the data in the current Project List member files. If they are different, then you will need to enter a 'RESET' or '/R' command on the PANEL2 panel of either of the two tool sessions to make them to be synchronized.

3.1 The tutorial of the PANEL1 panel

When this tool package is initially invoked by using a 'TSO PROJ' command, the PANEL2 panel will be displayed. On top of the PANEL2 panel the following greetings screen will be shown:

Figure 4. The first greetings screen

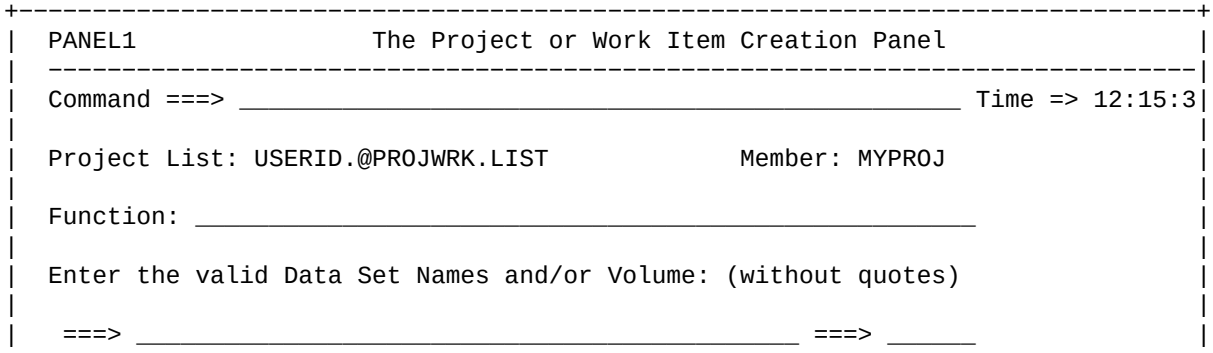


You may press the Enter key to suppress this initial greetings screen. Then the PANEL2 panel screen will be displayed, on which two new Project List members, i.e. 'PROJECT' and '@MISC', will be shown. The 'PROJECT' member file contains a list of the library file names of this tool package. The '@MISC' member file contains a 'PANEL(ISR@PRIM)' command for displaying the ISPF main menu, a VIEW command of the 'USERID.MISC.LOG' file, two VIEW commands of the DSNLIST files which are created by using the 'DSN' command on the LISTALC and LISTCAT command panels, and two VIEW commands of the 'REXXCHK' and 'REXXREF' commands generated output listings.

Note: The initial greeting screen should be shown only once. After the Project Work Manager tool session is established on your TSO session, this screen will never be displayed again.

From the instruction on the initial greetings panel, it indicates that you may use a 'S' (Select) command to create your first project or work item. After you type a 'S MYPROJ' command on the PANEL2 panel, for example, the following PANEL1 panel will be displayed:

Figure 5. The sample PANEL1 panel for creating new Project member file



```
|   ===> _____________________________________________ ===> _______               |
|   ===> _____________________________________________ ===> _______               |
|   ===> _____________________________________________ ===> _______               |
|   ===> _____________________________________________ ===> _______               |
|                                                                                  |
|  Enter the valid TSO/ISPF commands: (optional)                                   |
|                                                                                  |
|   ===> ____________________________________________________________             |
|   ===> ____________________________________________________________             |
|   ===> ____________________________________________________________             |
|                                                                                  |
|                                                                                  |
|                                                                                  |
+----------------------------------------------------------------------------------+
```

On this PANEL1 panel, you will need to enter a short functional description of the usage of the new created project or work item 'MYPROJ' that you just selected. Other than this 'Function:' field, you must specify **at least one** of either of the data set name or the TSO/ISPF command on the panel. The data set names to be entered on the panel must be fully qualified but they need not be enclosed in single quotes. The new 'MYPROJ' file will be created as a Project List member file in the 'USERID.@PROJWRK.LIST' library, where 'USERID' is your own TSO logon Userid.

You may modify the new created 'MYPROJ' file in the Project List file 'USERID.@PROJWRK.LIST' and add more data set names or more TSO/ISPF commands by using any file editor at a later time.

Please note that the panel command line position of all the sample panels described in this document are on the top of the panel screen. Initially the default ISPF command line position is on the bottom of the panel screen. You may use the ISPF option 0 function, i.e. the ISPF Settings, to changer the panel command line position from the bottom to top. If you insist to keep the default ISPF panel command line position to the bottom of the screen, then you will find that it is very awkward to use this tool package and many other ISPF functions. Thus, setting the panel command line position to the bottom of the screen is not recommended.

Note: In case that the underscore code is missing at the 'Command' field on the PANEL1 panel or the underscore code is missing at the 'Select' field on the PANEL2 panel, which will be described in next section, then you may enter a 'CUAATTR' command on any ISPF panel command line to display a 'CUA Attribute Change Utility' panel and change the 'Highlight' field of the two entries of CEF (Choice Entry Field) and NEF (Normal Entry Field) in this utility panel from NONE to USCORE.

If you press the PF1 key on the PANEL1 panel, then the following introduction tutorial panel will be shown:

Figure 6. The introduction tutorial guide of the PANEL1 panel

```
+----------------------------------------------------------------------------------+
|                                                                                  |
|                                Introduction                                      |
|                                                                                  |
|       The PANEL1 panel can be used to create your very first project or          |
|       work item, which contains a data set name list. The name of the            |
|       Project List file is 'USERID.@PROJWRK.LIST' which is created by            |
|       this tool on your TSO session. The project or work item that you           |
|       defined will be created as a member in the Project List file.              |
|                                                                                  |
|       To create a project or work item, you may enter a command such as          |
|       'S newproj', where newproj can be any new project name you defined,        |
|       on the PANEL2 panel. This S (Select) command is valid only on the         |
|       PANEL2 panel but no other panels. The member name of the Project           |
|       List library will be referred to as the project or work item name          |
|                                                                                  |
```

```
|       You don't need to always use the PANEL1 panel to create a project       |
|       or work item. The alternative way is to copy any existing member in      |
|       the Project List file to a new member and modify its contents.           |
|       Note that you may use a 'TSO PROJ HELP' command or a 'PH' User-Exit      |
|       command to display the overall general introduction on-line.             |
|                                                                                |
+--------------------------------------------------------------------------------+
```

If you press the Enter key or the PF8 key, then the following tutorial guide of the descriptions of the usages of each data field and various valid commands on the PANEL1 process panel will be displayed:

CMDLIST Panel	Enter a 'CMD' command or press the PF10 key can display a Command List panel for you to select a command function if you cannot remember the command name of that function.
New Project Name	The new member name of the Project List file is the member name in the 'S newproj' command entered on the PANEL2 panel. Instead of using the 'S newproj' command, you may use the 'NEW newproj' or 'CREATE newproj' command. The short forms of these two commands are 'N newproj' and 'CR newproj', respectively. The member name 'newproj' in the command will be used as an identifier of a project or work item for you to choose. It must be a valid PDS member name with maximum of eight characters. It is a required field on the panel.
Project Function	Enter a short description of the function of the new member that will be created. The description can be any Mixed-case characters. This is also a required field.
Data set Names	Enter the valid PDS, Sequential, GDG base file, or VSAM file names without specifying the bounded single quotes. All valid data set names must be fully qualified. For the GDG files, it is sufficient to specify only the GDG base file name because the GDG generation files can be expanded on the PANEL3 or PANEL5 panel automatically when the GDG base file is selected. You may modify any new created Project List member file by using an 'E num' command on the PANEL2 panel or an 'E' command on the PANEL3 panel to add more data set names at a later time.
Note:	In the Data set Names field, you may enter a data set name such as USERID.*, where USERID is your TSO Userid, and then see what would happen.
Note:	In the middle of any data set name if you type a '/' or '*' code and press the Enter key, then the code string to the left of the '/' or '*' code will be used as the data set name search pattern for you to display an Expanded Data Set Name List panel, on which you may type a 'S' code to select a data set name to be filled in the Data set Names field on this PANEL1 panel.
Note:	In the first Data set Names field, if you type a question mark '?' and press the Enter key, then an empty Project List member file will be created.
Note:	If the first character of any data set name is a dot '.', then this tool will automatically pad your TSO userid in the front of the dot. Thus, you may always omit your TSO userid code when you type in a data set name of your own on this PANEL1 panel.

Note: The Data set Names that contains the '*' can be dynamically expandable. This tool will keep it in the Project List file and will attach a '//O=DynExp' flag with it. Whenever you enter a 'RESET' or '/R' command on the PANEL3 panel, these type of Data set Names will be dynamically expanded again and the PANEL3 panel will be refreshed.

Volume Serial On the data set name entry, you may specify a volume for the data set. The volume serial number is usually six characters long. You may add the volume serial number to a data set when you modify the Project List member file. The data set with a volume serial number must be in the format of 'dsname /V=volume', such as the 'MXG.SAS.CNTL /V=DSSPK0' format. It is not proper to specify a volume serial number for a data set that has already been cataloged.

Enter Commands On the command line field, you may enter the valid TSO/ISPF command that starts with the 'TSO', 'EX', 'EXEC', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BRWOSE', or 'VIEW' code. The following is the valid sample TSO/ISPF commands that can be used in this tool:

```
TSO PRTPDS 'USERID.@PROJWRK.EXEC'
TSO SUBMIT 'USERID.@TEST.JCL(TESTJOB)'
EXEC 'USERID.TOOLS.EXEC(TEST1)'
CMD(MYCMD)
PANEL(ISR@PRIM)
PGM(ISRBRO) PARM(ISRBRO01)
BROWSE 'TOOLKIT.@PROJWRK.CEXEC(ALIASES)'
```

Note: The 'TSO SUBMIT' command can be abbreviated to the 'SUBMIT' or 'SUB' command format, i.e. the 'TSO' keyword for the 'SUBMIT' command can be omitted. The bounded quotes can also be omitted if the high level qualifier of the data set name matches the TSO logon Userid. Thus, the second line in the above example can be rewritten as follows:

```
SUB @TEST.JCL(TESTJOB)
```

Note that except for the 'SUBMIT' type of command, the 'TSO' keyword for all other type of commands, such as the PRTPDS command, cannot be omitted.

Similarly, the third line in the above example can also be rewritten as follows:

```
EX TOOLS.EXEC(TEST1)
```

Note: The 'TSO SUBMIT' and 'SUBMIT' command lines specified in the PANEL1 panel will be protected by a confirmation panel when it is invoked on the PANEL3 or PANEL5 panel. To skip the display of the confirmation panel, you may specify a confirmation shield code '/' at the last position on the command code line on the PANEL1 panel, such as:

```
TSO SUBMIT @TEST.JCL(TESTJOB) /
```

or

```
SUB @TEST.JCL(TESTJOB) /
```

Note: If an 'E', 'B', or 'V' command is entered at the 'SUBMIT', 'EXEC', 'EDIT', 'BROWSE', or 'VIEW' types of command code lines on the PANEL3 panel, then instead of executing the command, the data set specified on the command code line

```
                    will be either edited, browsed, or viewed. Note that the 'E'
                    'B' or 'V' command works only for these five types of
                    commands on the PANEL3 panel.

Cancel process      Before pressing the Enter key to create a new project from
                    this panel, you may press the PF3 key to cancel the process.

------------------ End of the PANEL1 on-line tutorial -------------------------
```

The following is the additional explanations of some essential points in the preceding on−line tutorial guide.

On the PANEL1 panel you may add any valid data set names, including the PDS, Sequential, and GDG base file. If your MVS system has installed the File−AID facility, then you may specified the VSAM data set names on this panel. You may also add the TSO/ISPF commands that starts with the 'TSO', 'EX', 'EXEC', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BROWSE', or 'VIEW' command code, such as the following command:

```
TSO SUBMIT @TEST.JCL(TESTJOB)
```

The validity checking of the data sets will be performed for each data set you entered on the PANEL1 panel. After the process of the PANEL1 panel is completed, the PANEL2 panel will be refreshed.

However, since this tool would slow down quite a lot if it checks the validity of every data set that you add into the Project List member file manually in edit each time, thus the validity checking will not be performed after you closed the edited Project List member file. The validity checking will be postponed until the data set is selected on the PANEL3 panel. Thus, it is your responsibility to enter the valid data set names in the Project List member files. If a data set is no longer cataloged on the MVS system, you will also need to remove it from the Project List member file by yourself manually in edit.

You may add as many new project or new data set names in the Project List library at any time as you like. However, the new added project names or new data set names will not be shown on the PANEL2 and PANEL3 panels unless you issue a 'RESET' or '/R' command to refresh the panels.

Note: Instead of removing or comment out the obsoleted data set names manually in edit, on the PANEL3 panel you may enter a 'CHECK' command to remove all data sets in the Project List file that are no longer cataloged. The 'CHECK' command function will be described again in the PANEL3 tutorial section.

If the data set name entered on the PANEL1 panel contain '*', then it will be treated as Dsname Level code and it will be automatically expanded. A flag '//O=DynExp' will be appended to such type of data set name code in the Project List member file for the future dynamic expansion. The Dsname Level code dynamic expansion can be performed if a 'RESET' or '/R' command is entered on the PANEL3 panel.

On the PANEL1 panel, if you specify a 'TSO SUB' or a 'SUBMIT' command code line, then these types of commands will be displayed on the PANEL3 or PANEL5 panel which allows you to submit the batch JCL files very easily. Since it is so easy to submit the JCL in this way, sometimes you may submit a batch job by mistake. Thus, this tool has provided a confirmation panel method to prevent such error from happening. Whenever you choose such type of commands to submit a JCL file on the PANEL3 or PANEL5 panel, a confirmation panel will be prompted to ask you to make sure that you really want to submit a batch job. If you wish to skip the display of the confirmation panel on such type of 'SUBMIT' function, you may add a confirmation shield code '/' at the last position on the command code line in edit.

There are only a few input entries available for you to type in the data set names and the TSO/ISPF commands on the PANEL1 panel, thus you must add other data set names or command codes in the new created Project List member file by using a file editor at a later time if necessary. There are at least four methods available to be used for this purpose. More detail information about how to edit the Project List member files by using an 'E' (Edit) command will be discussed in the PANEL2 and PANEL3 tutorial sections later.

If a volume field on the PANEL1 panel has been filled out with a volume serial number, then the data set name field on the same line must also be filled out with a valid data. Suppose that you just want to display all the uncataloged data set names on a specific volume, say the volume of 'TSOPAK', then by specifying an '*' (asterisk) in the data set name field with the code of 'TSOPAK' in the volume field on the PANEL1 panel will NOT work. You must use the 'FFL L' (or 'FFF') User−Exit command to display a 'DSLISTF' panel for such function instead. Please see the Appendix G for more information about the 'FFL' User−Exit command.

The method of using an 'ADD' command on an ISPF option 3.4 data set list panel to add new data set names in the Project List member file will also be discussed later in the Appendix G section.

This tool package cannot help you to completely get rid of the effort of typing the data set names because you will still have to type in some data set names into the Project List member files to start the project when you initially use this tool. However, that is only one time work. Once the data set names are typed into the Project List member files, as long as they are all valid you don't need to type them on the ISPF panels any more. The 'ADD' User−Exit command provided by this tool package can at least help you to reduce some efforts on typing the long data set names into the Project List member file if you can find the data set name that you want to work with when you display an ISPF option 3.4 data set list panel using the 'FF' or 'FL' command.

Note: Suppose that when you create a new project or work item the MVS system issue an error message indicating that there is not enough directory space in the 'USERID.@PROJWRK.LIST' file, then you may do the following things to enlarge your LIST library file:

1. Rename the 'USERID.@PROJWRK.LIST' file to a backup data set name.

2. Use the ISPF option 3.2 to allocate the 'USERID.@PROJWRK.LIST' data set with more space.

3. Use the ISPF option 3.3 to copy all the members from the backup data set to the newly created data set.

Note: Instead of using the ISPF option 3.2 and option 3.3, the alternative method is to use a 'C' (Copy) command, which is described as follows:

1. Next to the 'USERID.@PROJWRK.LIST' file on the PANEL3 panel type a 'C' (Copy) command.

2. On the displayed window panel enter a 'USERID.@PROJWRK.LIST.BKUP' as the target data set name.

3. On the second displayed window panel type a larger primary space value and larger directory space value to create a new bigger BKUP library file.

4. As soon as the new BKUP library file is created, all members in the 'USERID.@PROJWRK.LIST' library will be copied to the new BKUP library nearly at the same time.

5. Now delete the 'USERID.@PROJWRK.LIST' file and rename the BKUP file to the original Project List member file name.

On the PANEL1 panel you may enter some commands, such as the LISTA, LISTC, CALC, CALENDAR, and USEREXIT commands, etc. provided by this tool package. You may also enter a 'CMD' command or press the PF10 key to display a Command List panel and then select a command to be executed on this PANEL1 panel. For more detail information about how to use the Command List panel, please press PF1 key on that panel to display a on−line tutorial guide.

3.2 The tutorial of the PANEL2 panel

The following sample PANEL2 panel screen will be displayed when the 'TSO PROJ' command is invoked:

Figure 7. The sample PANEL2 panel for selecting a project or a work item

```
+-------------------------------------------------------------------------------+
|  PANEL2       The Project or Work Item Selection Panel          Row 1 to 4 of 4|
|  ---------------------------------------------------------------------------- |
|  Project List ===> USERID.@PROJWRK.LIST                        Time => 12:35:55|
|  Command ===> ____________________________________________     Scroll ===> CSR |
|                                                                               |
|   Select  Code   Name      The Project or Work Item functional descriptions   |
|  -------- ---- ---------- ------------------------------------------------- |
|  ________   1   @MISC      The Transactions Log file and miscellaneous files  |
|  ________   2   MYPROJ1    This is my first project                           |
|  ________   3   MYPROJ2    This is my second project                          |
|  ________   4 - PROJECT    The MVS Project Work Manager (Enter a 'PH' for help)|
|  ****************************** Bottom of data ******************************|
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

Four projects or work items have already been defined on the above sample PANEL2 panel. Among them the '@MISC' and 'PROJECT' are the two projects which were initially created by this tool package as examples for your reference, and the other two are the user−defined projects. Please see the source code listings of these four sample Project List member files in the Appendix A section for more information.

Note that the fourth project name row is flagged with a 'last used' project marker '−'. This marker means that the fourth project has been most recently selected. If you want to repeatedly select the same project, instead of doing all kinds of selection methods or manipulating the cursor, all you need to do is to press the Enter key while the cursor is still at the panel command line area.

When the PANEL2 panel is initially displayed, a message such as 'Project #4 last chosen' will be displayed on the panel. You may enter a '/' (slash) command on the PANEL2 panel command line at any time to re−display this message again.

Note that if the cursor is on the first project selection code line area when the Enter key is pressed, then the first project instead of the fourth project will be selected, and the 'last used' project marker '−' on the fourth project name row will be ignored in this case.

On the first project selection code line area, however, you may enter a selection code '4' and press the Enter key to select the fourth project. Therefore, the selection code can be entered either on the PANEL2 panel command line or typed in at any project selection code line area.

Note: By selecting another project, the 'last used' project marker will be automatically switched to the newly selected one. If you want to delete the 'last used' project marker on the PANEL2 panel, simply enter a 'RESET' command. In fact, enter any of the 'HIDE', 'UNHIDE', 'ALL', 'DELETE', and 'RENAME' commands on the PANEL2 panel can also remove the 'last used' project marker.

The 'last used' project marker can be carried over across the ISPF sessions, i.e. if the ISPF session is

terminated and brought up again, the 'last used' project marker will be automatically shown on the PANEL2 panel. This 'last used' project marker function allows you to repeatedly work on the same project without hesitation. It is one of the most user−friendly features provided by this tool package.

Note: Suppose a data set name, such as 'USERID.LOGON.CLIST(INIT)', is not defined in any of your projects or work items and you already knew that, then you may enter an "E USERID.LOGON.CLIST" command on the PANEL2 panel command line to edit this file. Note that the bounded quotes of the data set name is optional. However, the spcified data set name in the 'E' command must always be fully qualified.

In this case, the PANEL2 panel is treated as a temporary substitution of the ISPF option 3.4 data set list utility panel. The difference of the ISPF option 3.4 data set list utility panel and the PANEL2 panel command line in this case is that after editing the data set the data set name you entered on the PANEL2 panel command line will not be remained.

Instead of using the "E" command, you may also enter a "B" or "V" command on the PANEL2 panel command line to browse or view the data set that is not defined. This function is also applicable to the command line area of the PANEL3 panel and PANEL4 panel. It is only a temporary solution for you to edit, browse, or view a file that is not defined in your Project List member file. If the data set you edit on the PANEL2 panel command line is a frequently used file, then it is highly recommended that you should add the data set name into one of your Project List member files.

If you press the PF1 key on the PANEL2 panel, then the following introduction tutorial panel will be shown:

Figure 8. The introduction tutorial guide of the PANEL2 panel

```
+------------------------------------------------------------------------------+
|                                                                              |
|                              Introduction                                    |
|                                                                              |
|       The PANEL2 panel is the main driver engine of this Personalized        |
|       MVS Project Work Manager Tool Package. It contains a list of the       |
|       projects or work items that you have defined. To define a new          |
|       project or work item for this tool, you need to use an 'S newproj'     |
|       command. After creating a new project or work item, you may enter      |
|       a selection code or type a '/' code to select. Note that wherever      |
|       you can type a '/' code to select a project or work item, you can      |
|       always position the cursor on that row and press the Enter key to      |
|       select it also. After entering a command on a panel, you can always    |
|       enter a '?' command or press the PF5 key to recall it.                 |
|                                                                              |
|       On this PANEL2 panel, you may edit the Project List member file        |
|       and modify it, XMIT the project member file to someone else, show      |
|       the PANEL5 Xref List panel and select a data set from there, add       |
|       or delete project, hide or unhide the selected project, etc.           |
|       Note that you may use a 'TSO PROJ HELP' command or a 'PH' User−Exit    |
|       command to display the overall general introduction on−line.           |
|                                                                              |
+------------------------------------------------------------------------------+
```

Note: The '/' command for re−displaying the message of the 'last used' project on the PANEL2 panel and the '/' line command for selecting a project or work item on the PANEL2 panel are two different types of command. The former is a PANEL2 panel command line command, and the latter is a project selection code line command.

If you press the Enter key or the PF8 key, then the following tutorial guide of the descriptions of the usages of each data field and various valid commands on the PANEL2 process panel will be displayed:

CMDLIST Panel	Enter a 'CMD' command or press the PF10 key can display a Command List panel for you to select a command function if you cannot remember the command name of that function.
Create Project	Enter an 'S member' command with a new member name can create a new project. The 'S MYPROJ' command, for example, can display the PANEL1 panel to create a new Project List member named 'MYPROJ'. The 'NEW MYPROJ' and 'CREATE MYPROJ' are the other forms of the 'S MYPROJ' command. The short forms of these two commands are 'N MYPROJ' and 'CR MYPROJ', respectively. The new project member will be created in the Project List file named 'USERID.@PROJWRK.LIST'.
Fixlist Mode	The PANEL2 panel is default in the 'Fixlist Mode On' status. In this case, whenever a new project or work item is created it will be added to the bottom of the PANEL2 panel list. If you enter a 'FIX OFF' command, then the Fixlist Mode can be reset and the project or work item list displayed on the PANEL2 panel will be sorted alphabetically. In this case, whenever a new project or work item is created, it might be inserted in the middle of the PANEL2 panel list and the original selection code scheme will be rearranged, which may not be very desirable. Thus to use the 'FIX OFF' command is not recommended. The Fixlist sequence is stored in the 'USERID..@PROJWRK.XREF(FIXLIST)' database file. You may ente a 'FIX E' command to edit this file and change the fixlist order. You may enter a 'FIX ?' command to check the current Fixlist Mode status.
Select Project	Enter a project or work item selection code, type a '/' code or position the cursor on a row and press the Enter key can select a project or work item. The selection code can be either a '3' or a '3.2' type. The '3.2' type selection code, for example, can display a PANEL4 panel of the second data set directly without displaying the PANEL3 panel of the third project.
Note:	The 'S' or 'X' code instead of the '/' code can be typed next to a project or work item code line on the panel to select a project or work item.
Note:	The selection code can be typed on the line command area to select a project or work item. Thus, if the cursor position is not on the PANEL2 panel command line, you still can select a project or work item by using the selection code, which is very handy.
Note:	Please don't try to memorize the '3.2' type of selection code with its associated data set name because the selection code assigned to a data set name can be changed whenever you add or delete a project or work item in the Project List file file unless the Fixlist Mode is turned On.
Retrieve Project	The last selected project will be flagged with a '−' marker. To retrieve it, instead of typing any selection code or manipulating the cursor, you may simply press the Enter key. With this function, you may repeatedly working on the same project or work item very easily.
Locate Project	If the project name list on the PANEL2 panel is very large, and if the '−' marker is not shown on the screen, you may enter a '/' command on the panel command line to locate it and re−display the message of the 'Last Used' project or

work item.

Edit Project — Enter an 'E member' or 'E num' command can edit a Project List member file. For example, the 'E 3' command can edit the third project member. You may also type a 'E' code on a row to edit the selected member file. This tool will not verify the validity of the data set you add to the Project List member due to the performance reason. To delete a data set it is recommended to comment it out instead of deleting it in case you still need to use it in the future.

Note: — If you want to display a Data Set List panel of all the data sets on your TSO account, then you may enter a command of 'E USERID.*' on the PANEL2 panel command line. If you enter an 'E USERID' command instead, then this tool will search fo command line, then the project member named USERID will be searched in the Project List file 'USERID.@PROJWRK.LIST'.

Note: — In the edited Project List member file, if you can use the asterisk '*' to expand the data set names, then you don't need to type in each individual data set name in the file. For example, you may enter 'SYS1.*.EXEC' (quotes not needed) in the Project List member file to obtain a data set name list of the EXEC files whose data set prefix is 'SYS1'.

Update Project — Enter an 'Edit' command can display a PANEL4 panel of the Project List file for you to update any project member. This command will cause the project markers, the data set markers and the Auto Bookmarks to be all reset to empty. A window panel with a warning message will be popped up to ask you to confirm if you want to update the Project List file by using a single 'E' command.

Browse Project — Enter a 'B member' or 'B num' command can browse a Project List member. For example, the 'B 3' command can browse the third project or work item. You may type a 'B' code on a row next to a project or work item to browse that member file.

View Project — Enter a 'V member' or 'V num' command can view a Project List member. For example, the 'V 3' command can view the third project or work item. You may type a 'V' code on a row next to a project or work item to view that member file.

Delete Project — Type a 'D' or 'DEL' command code on the line command area can delete the selected project or work item. Only one 'D' or 'DEL' command can be typed at each time to delete a project or work item. When the 'D' command code is typed in, a message window will be popped to ask you to confirm the delete operation.

Attention: — Please use the 'DEL' command or 'D' code with caution.

Rename Project — Enter a 'REN member newmbr' command on the panel command line or type a 'R' or 'REN' code next to a project or work item can rename the Project List member. The 'member' must be an existing member and the 'newmbr' must be a new member name in the Project List file.

Hide Project — Enter a 'HIDE member' or 'HIDE num' command can hide the member of a project or work item. The 'H 3' command, for example, can hide the third project from showing on the PANEL2 panel. You may type a 'H' code on the project name row to hide it. More than one 'H' code on multiple rows is allowed. After a project or work item entry is hidden, an 'ALL' command can make it reappear. The hidden projects will

be highlighted with an asterisk '*'. You may use a 'RESET' or '/R' command to refresh the panel and suppress the hidden projects again.

Unhide Project — Enter an 'UNHIDE member' or 'UNHIDE num' command can unhide the hidden projects. After an 'ALL' command is entered, you may enter an 'U 3' command, for example, to make the third project, which has an '*' attached to the project, to be active again. More than one 'U' code on multiple rows is allowed. The advantage of using the 'H' and 'U' commands is that you may concentrate on working only few active projects or work items each time.

Refresh the Panel — Whenever an 'E', 'E member', or 'E num' command is entered to modify the Project List member file, the PANEL2 panel will be refreshed automatically. However, if a Project List member file is modified manually using any file editor, then you need to use a 'RESET' or '/R' command to refresh the PANEL2 panel.

Search Project — Enter a 'LOCATE data' or a 'L data' command, where data is a character string to be searched, can find the project or work item that contains the searched string in the member name field or description field. The 'FIND data' or the 'F data' command is another format of this function. This is a very useful function if the project name list on the PANEL2 panel is very large. You may use the PF5 key to repeat the search for the project on the panel.

Note: — If the PANEL2 panel list is very large, and if you remember the selection code of a project or work item, then you may enter a 'L num' command, such as the 'L 53' command, on the panel command line, or type a 'L num' code, such as the 'L 53' command code, on any line command area to search for the project or work item.

Archive Project — Enter a 'C' or 'M' command code next to a project or work item can archive the selected project. A selection panel of the PROJDIR panel entries will be displayed, on which you may select one and only one target Project List file to copy or move the selected Project List member file. Several 'C' or 'M' command codes can be specified on multiple rows at the same time. The 'C' and 'M' codes cannot be mixed used.

Note: — Instead of using a 'M' command to archive a selected project or work item to the secondary Project List library, you may use an 'A' command to perform the same archive function. The 'C' command will keep a copy of the project or work item member file in both of the original and target Project List libraries, which might cause some confusions, and it is not recommended to use.

XMIT Proj Files — Enter a 'SF num' command or type a 'SF' code can send the Project List member file to a target destination. More than one project selection number can be specified. For example, the 'SF 3 5 6' command can be used to send three Project List member files. You may type a 'SF' code and use '=' code on several rows of the project names to send several Project List member files at the same time. You may also enter a 'SF ALL' command to send all the members of the Project List file. The target Node/Userid of the 'SF' command can be obtained from a window panel.

PP, SP, or SFX Command — Other than the 'SF' command, you may also use the 'PP', 'SP', and 'SFX' command to print a PDS, send a PDS, or

duplicate a library file at another MVS system.

Compress Data set — Enter a 'COMP' or 'Z' command can compress the Project List file, i.e. the 'USERID.@PROJWRK.LIST' file.

Display Xref — Enter an 'XRF' command can display a PANEL5 Xref List panel for easy accessing the member list panel of another data set.

Print a PDS — Enter a 'PRTPDS' or 'PP' command can send the members in the Project List file 'USERID.@PROJWRK.LIST' to a printer. If the Printer Node and Uid on a popped up window panel is a TSO or VM Node and Userid, then the Project List members will be sent to the TSO or VM account instead. The target destination Node/Uid data entered in the window panel is saved in the 'USERID.@PROJWRK.XREF(XMTDEST)' file. You may edit this file and modify its contents. The PDS member files will be merged into a single sequential file before it is sent to a printer or a TSO or VM account. You may apply the 'PRTPDS' command on the PANEL2, PANEL3, PANEL4, and PANEL5 panels, and the LISTA and LISTC panels.

LISTA Command — Enter a 'LISTA' command can display all allocated data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set name to edit, browse, or view it. More than one 'E', 'B', or 'V' code to select multiple data sets is allowed.

LISTC Command — Enter a 'LISTC' command can display all cataloged data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set to edit, browse, or view it. Select more than one data set is allowed. You may enter a 'LISTC lvl−code' to display all the cataloged data set with the level of the lvl−code. If the lvl−code is omitted, then the default is your TSO logon Userid.

Note: — The 'E' command code on the LISTA and LISTC panels can be always replaced with an 'ED' command code.

LISTD Command — Enter a 'LISTD' or 'ST' command can display the Project List file information. You may specify any valid data set name (without using the bounded quotes) in the 'LISTD' command on the panel.

USEREXIT Command — Enter an 'USER' or 'U' command can edit the User−Exit file. You may define your own command in this file. The User−Exit file name is 'USERID.@PROJWRK.XREF(USREXIT)'. In this file, if you define a command code line such as the following:

REC: TSO RECEIVE

Then on the PANEL2, PANEL3, PANEL4, or PANEL5 panel you may just enter a 'REC' command to replace the 'TSO RECEIVE' command. The User−Exit commands are not case sensitive. This feature is very useful if the TSO or ISPF command that you want to replace is a very long command.

JOBCARD Command — Enter a 'JOB' command to display a panel for entering the batch job Account information. On the displayed panel, you may press the PF1 key for more information. This command applies to the PANEL2, PANEL3, PANEL4, and PANEL5 panels.

RECALL Command — The 'RECALL' command can be used to display a panel of all the files that were previously edited. The RECALL panel is a very useful tool for repeatedly working on the same files.

The 'RECALL' command can be entered on any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. It can also be entered in the edit command line. The short command form of the 'RECALL' command is 'RC'.

Note: The 'RC' command works on any selection code command line area of the PANEL2 panel also.

Note: The 'PF4' key has been defined as the 'RECALL' function. Instead of entering a 'RC' command, you may press the PF4 key to display the 'RECALLL' command panel.

Repeat Function The 'PF5' key has been defined as the 'Repeat' function, which can be used to repeat any command that you have just entered on the PANEL2 panel. This command is similar to the '?' command except that the '?' command will bring up the previously executed commands on the command line, and the PF5 function will repeat the last executed command without prompting the command code on the panel command line.

CALC Command Enter a 'CALC' command can display a Desktop Rolling Sheet Calculator. This calculator contains five calculation modes which cover the Decimal, Hexadecimal, Binary, Date, and Time calculation functions. It is an extremely useful tool.

Note: The 'PF6' key has been defined as the 'Calc' function. Instead of entering a 'CALC' command, you may press the PF6 key to display the Desktop Rolling Sheet Calculator.

CALENDAR Command Enter a 'CALENDAR' command can display a Desktop Monthly Calendar. This calendar contains a Things-To-Do function and a Notebook function which can be used to setup the project work schedules and to be used as the weekly or monthly reminders. It is a very useful tool on the MVS system. The short command form of the 'CALENDAR' command is 'CAL'.

Switch Project Enter a '//' or a '//num' command can display a project selection window panel. On the panel you may press the PF7 or PF8 key to view all project names and then press the Enter key to make a choice to switch to a PANEL3 panel of the selected project. This command applies to any of the panel command lines of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The '//' command remembers the name of the original member list panel, which allows you to switch between two projects or work items back and forth easily.

BACK Command Other than using '//' command to switch between two projects you may also use a 'BACK' command to select the two projects back and forth. The short form of the 'BACK' command is the 'BK' command.

LISTVAR Command Enter a 'LISTVAR' or 'LV' command can display a name list of the data sets in which you have fetched the screen text data in edit by using the 'GETVAR' edit command.

DIR Command Enter a 'DIR' command can display a panel of the MVS Project Work Director, which contains a list of the primary and/or the secondary Project List Group names for you to select the MVS files specified in the primary or the secondary Project List files that belong to either yourself or your teammates.

FASETUP Command Enter a 'FASETUP' command can create a File-AID tool package Interface Profile in 'USERID.@PROJWRK.XREF(FILEAID)'.
Once the setup is completed, when you enter the Project Work Manager tool session next time you may use the File-AID tool

```
                    to edit or browse the VSAM files on the PANEL3 panel.

Exit Process        Enter a 'QQ' or 'X' command or press the PF3 key can exit
                    the process entirely and enter an 'END' command can exit the
                    process entirely if in the Project Work Director session.

Note:               The 'X' code typing on the line command area to select a
                    project or work item is entirely different from the 'X'
                    command code entering on the PANEL2 panel command line to
                    exit the Project Work Manager tool session.

------------------ End of the PANEL2 on-line tutorial -------------------------
```

The following is the additional explanations of some essential points in the preceding on−line tutorial guide.

If the Fixlist Mode is turned Off, then whenever a new project or work item is created by using a 'S' (Select), 'N' (New) or 'CR' (CReate) command, it is quite possible that the new project or work item will be inserted in the middle of the PANEL2 panel list because all the project names on the PANEL2 panel will be sorted in alphabetical order when they are displayed. In this case, the original selection codes of the projects or work items below the new project or work item will be changed, which may not be very desirable. Therefore, the "Fixlist Mode On" option has been set as default by this tool package.

In the Fixlist Mode On case, whenever a new project or work item is created, the selection code scheme will not be altered because the new project or work item will always be added to the bottom of the PANEL2 panel list. Nevertheless, when you delete a project or work item from the middle of the PANEL2 panel, even in the Fixlist Mode On case the selection code scheme below the deleted one will still be affected. The work around is to fill in this selection code position in the 'USERID.@PROJWRK.XREF(FIXLIST)' database file with the member name of an existing project or work item from the bottom of the list or fill in the member name of a new project or work item that is added to the bottom of the list while you issue a 'FIX E' command to edit this database file.

It is recommended that you may put the frequently used projects or work items on the top, and put the similar kinds of projects or work items together in the FIXLIST database file. Please don't be afraid of changing the selection code scheme on the PANEL2 panel when Fixlist Mode is On because it is not very difficult to get used to the new selection code scheme that you have updated.

The 'XRF' command entered on the PANEL2 panel can display a PANEL5 Xref List panel. The Xref Command Buffer contains the edit, browse, or view commands that were previously executed on the PANEL4 panel. These commands will be displayed and can be retrieved on the PANEL5 Xref List panel only. Therefore, this buffer is called the Xref Command Buffer. The Xref Command Buffer is to be used for the current ISPF session only. If the ISPF session is terminated, then the Xref Command Buffer will be automatically reset to empty. More detail descriptions about the Xref Command Buffer will be presented in the tutorial sections of the PANEL4 and PANEL5 panels later in this document.

Whenever a data set name is added to the Project List member from the PANEL1 panel, or if a data set name is added in the Project List member using an 'E num' command on the PANEL2 panel or an 'E' command on the PANEL3 panel, the Cross Reference (Xref) List file will be updated automatically. This Xref file will take a long time to be updated if too many projects or work items are defined in the Project List file.

This tool will check the validity of the data set only if the data set name is added in the Project List member file on the PANEL1 panel. If the data set is added to the Project List member file on the PANEL2 or PANEL3 panel in edit, then due to the performance reason the validity checking of the data sets will not be performed. Thus, it is your responsibility to always provide the valid data set names in the Project List member file.

You may use a 'DEL num' command, such as 'DEL 1' command, or use a 'DD' command code to remove the sample 'PROJECT' project that was created by this tool. If you need to see this sample project file again, then

simply type an 'CR PROJECT' command on PANEL2 panel to bring it back. However, for any other Project List member files you have created, once it is deleted it will no longer exist in the Project List file any more.

Note that the 'D' code is an invalid line command code on the PANEL2 panel. Only the 'DD' and 'DEL' commands are the valid line commands for the project delete function. There is no window panel popped up to ask for the confirmation of the deletion of a project. Therefore, you should use the 'DD' or 'DEL' command very carefully. It is highly recommended that you should use the 'H' command to deactivate a project instead of using the 'DD' command code to delete it. It is also recommended that once for a while you should save your Project List file in a backup file.

The advantage of using the 'H' and 'U' commands is that it can speed up the performance of this tool because it only deals with few active projects or work items. However, the disadvantage is that since the 'H' and 'U' commands can rearrange the assignment of the selection codes to the data set names, i.e. the selection code scheme will be updated. Thus once you are already familiar with the usages of certain selection codes, the changes of the selection codes might cause some confusion and you might need to spend additional time to get used to the new selection codes. Therefore, it is not recommended to frequently use the 'H' and 'U' commands on the PANEL2 panel if you have not defined many projects or work items.

The Xref Command Buffer contains the retrieved edit, browse, or view commands and each command has an association with the selection code of the data set that is being edited, browsed, or viewed. Since the 'Delete', 'Rename', 'Hide', and 'Unhide' command functions will update the Xref List and alter the sequence of the selection codes, thus the Xref Command Buffer will be reset to empty by these few commands to accommodate the selection code changes.

In the User−Exit file, you may specify both of the TSO and the ISPF commands. The detail information of the User−Exit file can be found in the Appendix E section.

Note: The 'USEREXIT' or 'U' command not only can be entered on the command line of the PANEL2, PANEL3, PANEL4, and PANEL5 panels, but also can be entered on the command line of an edited file and on the LISTA and LISTC panels.

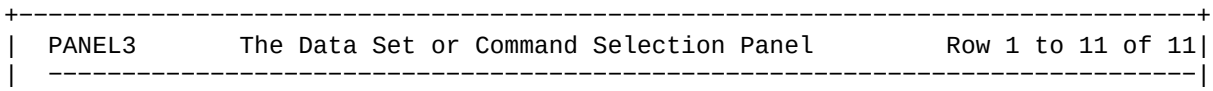
The 'JOB' command can be used to setup the batch job account statement in the Jobcard. This jobcard is applicable to the PRTPDS function.

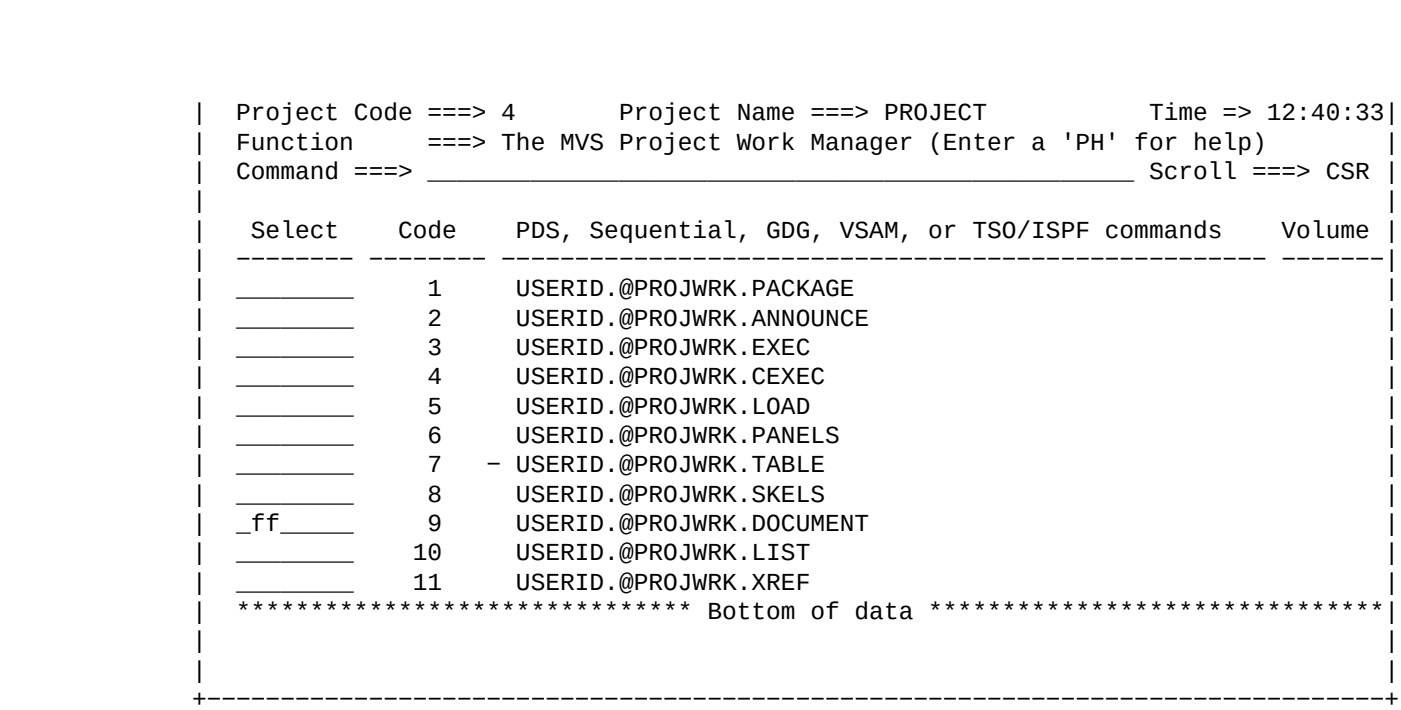
In the Project List member file, there are three types of comment code lines. The first type contains the '/*' comment code, the second type contains the '//' comment code, and the third type contains the '−−' comment code. You may enter the third type comment code lines in any Project List member file as the note lines, and you may enter the '−', '−−' or '−−−' command on the panel command line or the selection code line of PANEL2, PANEL3, or PANEL4 panel to display the note lines in a VIEW listing. If the note line contains a data set name, on the VIEW listing you may place the cursor on that data set name and press the PF4 key to display that data set name on an ISPF option 3.4 panel. Note that there are slightly differences of the '−', '−−', and '−−−' commands in the VIEW listings generated by these commands.

3.3 The tutorial of the PANEL3 panel

The following is a sample PANEL3 panel screen when a selection code '4' or a 'PROJECT' command is entered on the previous level PANEL2 panel:

Figure 9. The sample PANEL3 panel with eleven PROJECT library file names





On this sample panel, the eleven tool library names of this tool package plus the PACKAGE, ANNOUNCE, and EXEC library file names are displayed.

Note: The third data set in the list is the 'USERID.@PROJWRK.EXEC' library file. This library file contains the proprietary REXX source code of this tool package and it will not be released together with this tool package.

On this panel, you may either type a selection number, type a '/', 'S', 'E', 'B', or 'V' code next to a data set name, or position the cursor at any column on a data set name line and press the Enter key to select a data set for edit, browse, or view just like the same procedure on the PANEL2 panel. The methods of using a '/', 'S', 'E' code and to select a data set by the cursor can all be used to edit a file. To browse a file, you need to type a 'B' code next to a data set name. You may type a 'V' code next to a data set name to view the selected file.

On this panel the seventh data set has been flagged with a '−' marker. It means that this data set is the most recently edited, browsed, or viewed file. If you want to repeatedly edit, browse, or view the same data set, instead of doing all kinds of selection methods or manipulating the cursor, all you need to do is to press the Enter key while the cursor is still at the panel command line area.

When the PANEL3 panel is initially displayed, a message such as 'Data set #6 last chosen' will be displayed on the panel. You may enter a '/' command on the PANEL3 panel command line at any time to re−display this message again.

Note that if the cursor is on any data set name row other than the sixth row when the Enter key is pressed, then that data set instead of the sixth data set will be selected, and the 'last used' data set marker '−' will be ignored in this case. On any of the data set name row, you may enter a selection code '6' and press the Enter key to select the sixth data set also. Thus, the selection code can be entered either on the PANEL3 panel command line or on any data set selection code line.

Note: The '−' marker does not apply to the GDG generation files which are expanded from the GDG base on the PANEL3 panel. To repeatedly edit the same GDG generation file, you may press the Repeat Function key, i.e. the PF5 key, instead of the Enter key.

This tool not only can remember which data set was edited, browsed, or viewed most recently, but also can remember which screen of the PANEL3 panel it was last displayed before you switch to another panel or exit this tool session. When you enter the PANEL3 panel again, it will automatically re−display the same screen. These special functions on the PANEL3 panel are the a very User−friendly features if you have a very large

PANEL3 panel list.

Note: On the re−displayed PANEL3 panel screen, please don't feel panic if you cannot find the data set name you have seen before. It is because that you may not be able to remember exactly which PANEL3 panel screen it was displayed before you exit the Project Work Manager tool session, and sometimes you will need to press the PF7 or PF8 key to scroll the screen up or down in order to find a data set name you are looking for. Therefore, if the data set name list in the Project List member file is very large, it is highly recommended that you should sort it so that the data set name list will always be displayed on the PANEL3 panel in the alphabetical order.

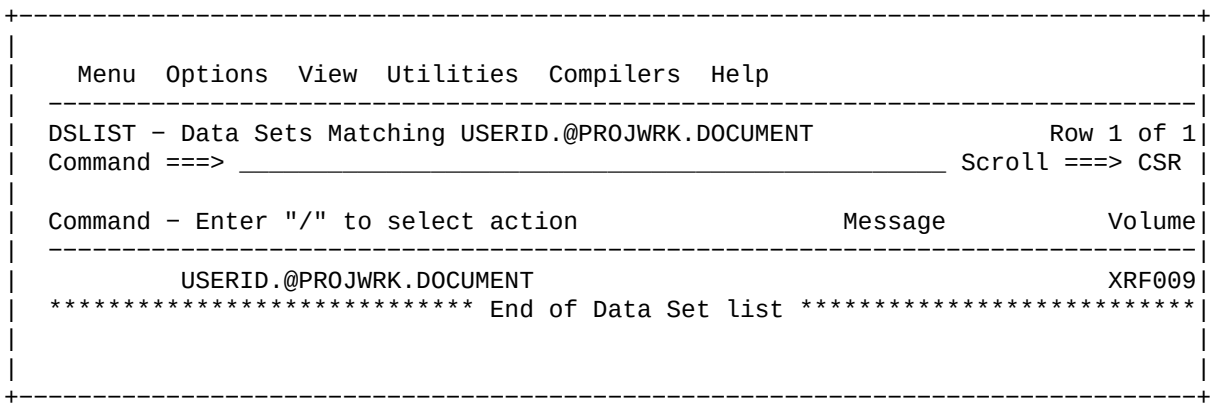
The 'last used' data set marker '−' can be carried over from one ISPF session to another. It is a very user−friendly feature if your data set name list on the PANEL3 panel is very large.

Note: By selecting another data set on the PANEL3 panel, the 'last used' data set marker will automatically be switched to the newly selected one. If you want to remove the 'last used' data set marker on the PANEL3 panel, simply enter a 'RESET' or '/R' command. In fact, if you enter any of the 'HIDE', 'UNHIDE', 'ALL', 'DELETE', and 'RENAME' commands on the PANEL2 panel, or enter an 'E num' command on the PANEL2 panel where 'num' is the selection code of the PANEL3 panel, or enter an 'E' command on the PANEL3 panel and modify the Project List member file contents can all changed the data set selection code sequence, and as a result all of these commands can remove the 'last used' data set marker on the PANEL3 panel.

The 'FF' User−Exit command entered on the PANEL3 panel command line can display an ISPF option 3.4 Front−end Interface panel, i.e. the 'DSLISTF' panel. However, if the 'FF' command is typed next to a data set name or next to a 'SUBMIT', 'EXEC', 'EDIT', or 'BROWSE' command code line on the PANEL3 panel, such as the 'FF' command code that is typed next to the DOCUMENT library file in the sample diagram as shown on previous page, or if a 'FF num' command, such as the 'FF 8' command, is entered on the PANEL3 panel command line, then the ISPF option 3.4 data set list panel of the selected data set name will be displayed directly. In this case, the 'DSLISTF' panel will not be displayed. This is a special feature of the 'FF' User−Exit command on the PANEL3 panel. This special feature also applies to the PANEL4 panel.

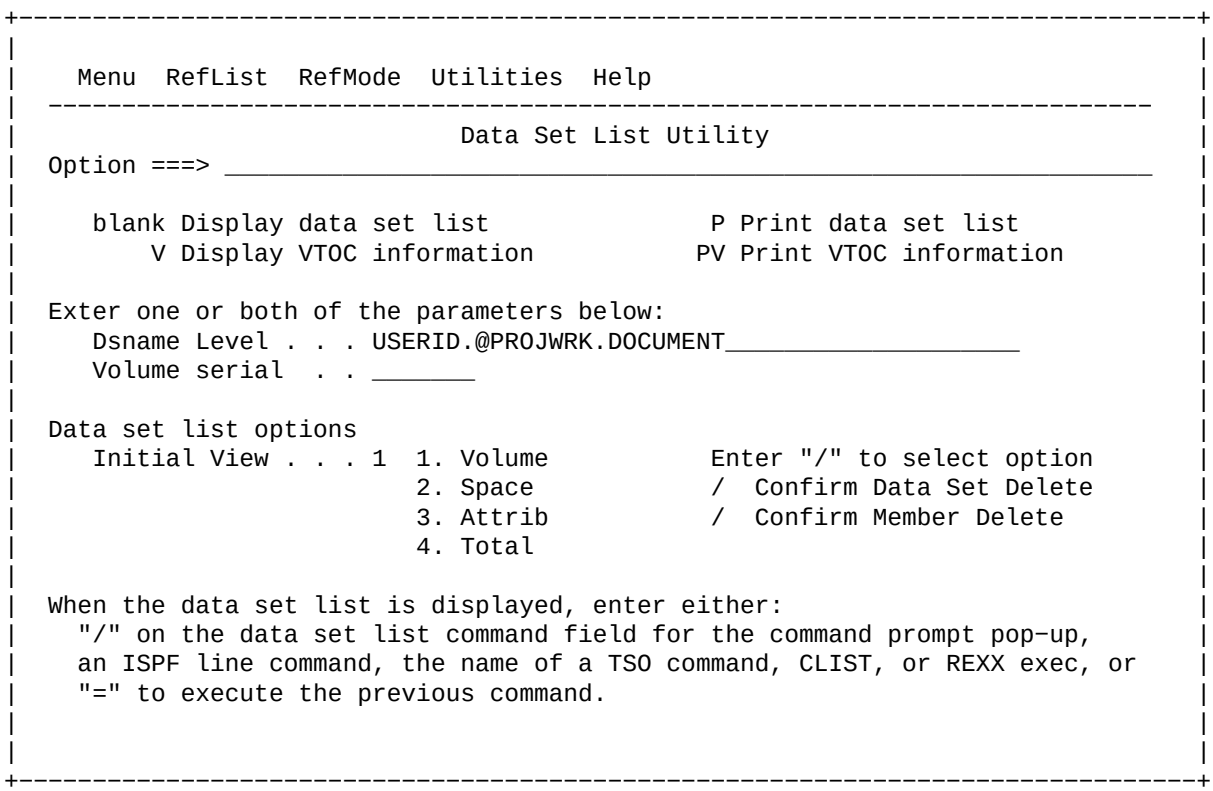
The following is the diagram of the ISPF option 3.4 data set list panel displayed by using the 'FF' command code, on which only one data set name will be displayed on the panel:

Figure 10. The sample DSLIST panel with one data set name in the list



If you type a 'FL' command code instead of typing a 'FF' command code next to a data set name on the PANEL3 panel, then it will display a ISPF option 3.4 data set list utility panel with the selected data set name captured in the input Dsname Level field on the panel. The following diagram is an example of such a utility panel:

Figure 11. The sample DSLIST utility panel with selected data set name

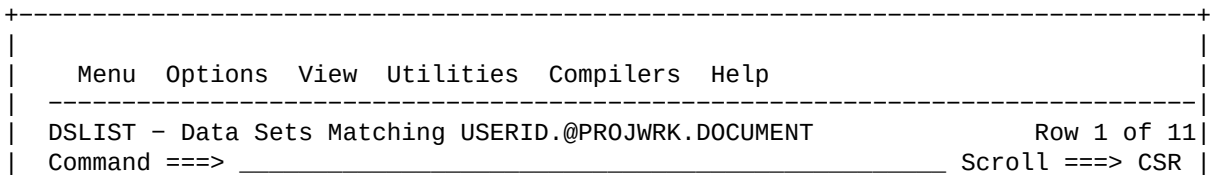


The advantage of using the 'FF' or 'FFL' command for each data set on the PANEL3 panel or the PDS displayed on the PANEL4 panel is that you may choose to use either the ISPF option 3.4 data set list panel or the PANEL4 panel to edit, browse, or view your files. For the 'FF' command displayed 'DSLIST' panel method you may delete a data set on the MVS system. For the PANEL4 panel method you cannot perform the delete data set function but you can do the 'String Search' and the 'Massive Change' functions, which cannot be performed on the ISPF 3.4 data set list panel. Therefore, sometimes it is necessary for you to apply both methods on the PANEL3 panel.

Note that on the 'FF' command displayed 'DSLIST' panel, you may type an 'ED' command next to a file to display the PANEL4 panel. Thus, the PANEL4 panel method is applicable to the 'FF' command in this sense. Please see Appendix G section for more information about the 'FF' User−Exit command and the 'DSLISTF' panel.

In some cases, you may want to type the 'FL' command code instead of the 'FF' command code to display an ISPF option 3.4 data set list utility panel so that you can modify the input Dsname Level field on that panel to display more than one data set name in the 'DSLIST' panel listing. For example, on the above sample ISPF option 3.4 data set list utility panel if you alter the input Dsname Level code to a new code 'USERID.@PROJWRK.*', then the following ISPF option 3.4 data set list panel, i.e. a new 'DSLIST' panel, will be displayed:

Figure 12. The sample DSLIST panel with more than one data set name



```
|                                                                              |
|  Command - Enter "/" to select action                 Message          Volume|
|  ----------------------------------------------------------------------------|
|           USERID.@PROJWRK.PACKAGE                                            |
|           USERID.@PROJWRK.ANNOUNCE                                           |
|           USERID.@PROJWRK.EXEC                                               |
|           USERID.@PROJWRK.CEXEC                                              |
|           USERID.@PROJWRK.LOAD                                               |
|           USERID.@PROJWRK.PANELS                                             |
|           USERID.@PROJWRK.SKELS                                              |
|           USERID.@PROJWRK.TABLE                                              |
|           USERID.@PROJWRK.DOCUMENT                                           |
|           USERID.@PROJWRK.LIST                                               |
|           USERID.@PROJWRK.XREF                                               |
|  ***************************** End of Data Set list ***************************|
+------------------------------------------------------------------------------+
```

The following is another sample PANEL3 panel screen when a selection code '1' or an '@MISC' command is entered on the previous level PANEL2 panel:

Figure 13. The sample PANEL3 panel showing the valid TSO/ISPF commands

```
+------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel         Row 1 to 19 of 19|
|  ----------------------------------------------------------------------------|
|  Project Code ===> 1       Project Name ===> @MISC             Time => 12:46:32|
|  Function     ===> The Transactions Log file and miscellaneous files         |
|  Command ===> ____________________________________________  Scroll ===> CSR |
|                                                                              |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------|
|  _________ .   1     PANEL(ISR@PRIM)                                         |
|  _________ .   2     VIEW 'USERID.LOG.MISC'                                  |
|  _________ .   3     VIEW 'USERID.LISTCAT.DSNLIST'                           |
|  _________ .   4     VIEW 'USERID.LISTALC.DSNLIST'                           |
|  _________ .   5     VIEW 'USERID.REXXCHK.OUTLIST'                           |
|  _________ .   6     VIEW 'USERID.REXXREF.OUTLIST'                           |
|  _________     7     SYS1.ISP.ISPMENU                                        |
|  _________     8     SYS1.ISP.ISPPENU                                        |
|  _________     9     SYS1.ISP.ISPSLIB                                        |
|  _________    10     SYS1.ISP.ISPTENU                                        |
|  _________ .  11     PGM(ISRUDL) PARM(ISRUDLP) SCRNAME(DSLIST)               |
|  _________ .  12     TSO PRTPDS 'USERID.@PROJWRK.DOCUMENT'                   |
|  _________ .  13     CMD(PRTPDS)                                             |
|  _________ .  14     TSO PROEDIT                                             |
|  _________ .  15     PGM(ISRBRO) PARM(ISRBRO01)                              |
|  _________ .  16     PGM(ISREDIT) PARM(P,ISREDM01)                           |
|  _________    17     USERID.LOGON.CLIST                                      |
|  _________    18     USERID.LOGON.EXEC                                       |
|  _________    19     USERID.LOGON.PANEL                                      |
|  ****************************** Bottom of data ******************************|
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

On this sample panel, several TSO and ISPF commands are put together and displayed. In fact, not only the valid data set names such as the PDS, Sequential, GDG base file, and VSAM file names can be specified, the valid TSO/ISPF commands can also be specified and intermixed in the Project List member files together.

Note:

1. Each TSO/ISPF command has been flagged with a dot (.) in order to tell apart from the regular data set names on the panel. If you don't like these dot indicators then you can turned it off by using a 'DOT OFF' command.

2. The 'USERID.LOG.MISC' file contains all the records of your XMIT and RECEIVE command processes. This file will be created by the TSO system automatically whenever you initially use these two commands. On the viewed 'USERID.LOG.MISC' listing, you may position the cursor on a RECEIVE or TRANSMIT data set name and press the PF4 key to display the data set on an ISPF option 3.4 data set list panel.

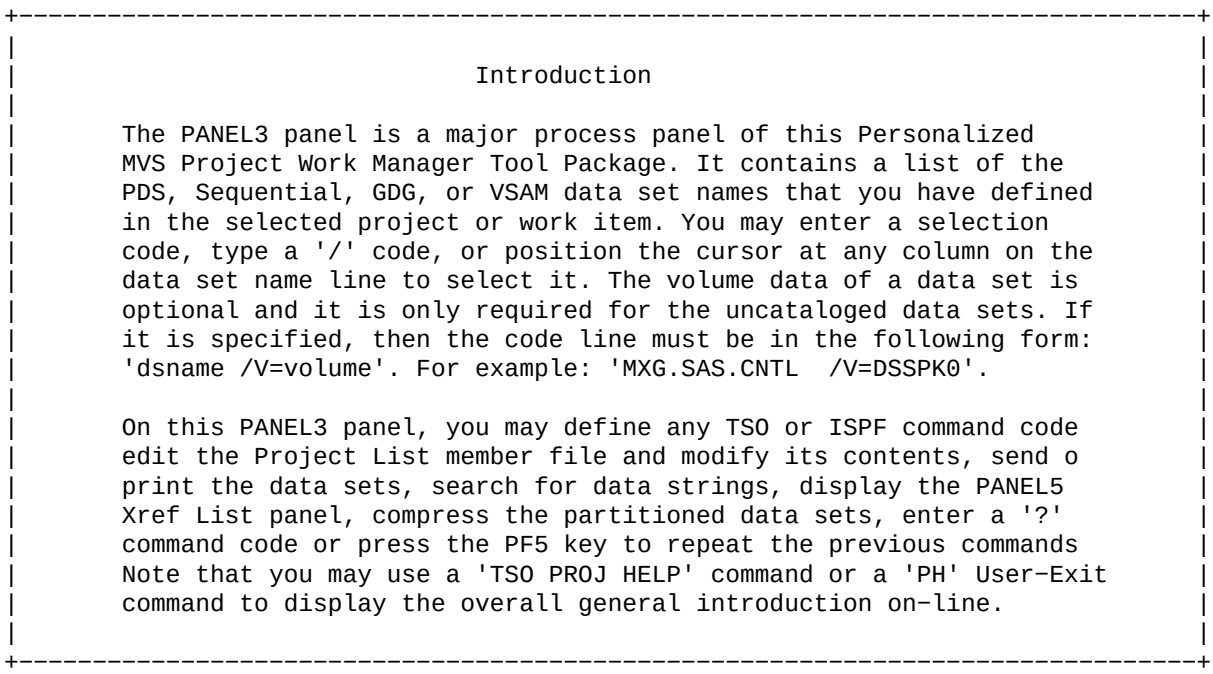
3. The two DSNLIST files displayed on this sample panel originally do not exist on your TSO account. You need to enter a 'LISTC' or 'LISTA' command on any of the PANEL2, PANEL3, or PANEL4 panel command line to display a 'LISTCAT' or 'LISTALC' command panel, and then enter a 'DSN' command on each panel to create these two files. The contents of these two files will contain a snapshot of all the cataloged or allocated data sets of your TSO account.

4. The two OUTLIST files displayed on this sample panel originally do not exist on your TSO account either. You need to execute a 'REXXCHK' and 'REXXREF' commands next to a REXX program on the PANEL4 panel to generate these two files. These two files contains the error messages of the REXX compiling or syntax checking functions. You may position the cursor on the error code line numbers on the listing and press the PF4 key to edit the REXX program and correct the errors.

5. The last three data set names were expanded from the Dsname Level code 'USERID.LOGON.*' which contains an asterisk (*). When you add such type of code entries in the Project List member file, this tool will expand it automatically. A "//O=DynExp" flag will be attached to the code entry in the Project List member file for the future dynamic expansion function. The dynamic expansion will be performed whenever you enter a 'RESET' or '/R' command on the PANEL3 panel of this '@MISC' project. Please see the source code of this project in the Appendix A section for more information about the "//O=DynExp" flag.

If you press the PF1 key on the PANEL3 panel, then the following introduction tutorial panel will be shown:

Figure 14. The introduction tutorial guide of the PANEL3 panel



Note: On this PANEL3 panel, the data set migration status will be checked only if the%'The maximum PANEL3 Migrate entries'#field on the%'PWOPT'# selection panel contains a value other than 0. The migrated data set on the PANEL3 panel will be flagged either a 'MIGRAT1' or 'MIRRAT2' code on the Volume field, where 'MIGRAT1' flag means that the data set has been migrated to a DASD, and 'MIGRAT2' flag means that the data set has been migrated to a Tape. If the data set does not exist, then a '−−' flag will be indicated on the Volume field. To check the data set migration status will significantly slow down the PANEL3 panel displaying process. Thus, on the 'PWOPT' command panel the default of 'The maximum PANEL3 Migrate entries' field contains a value 0, which means the migration status of the data set on the PANEL3 panel will not be checked.

Note: On this PANEL3 panel if you place the cursor in the middle of any data set name field and press the Enter key, then this tool will use the code to the left of the cursor on the panel screen as the data set name search pattern and display a selection panel in which it contains all the data set names that match the pattern. With this feature, you may cut the data set names list on this PANEL3 panel very short because you don't need to specify all the like−named data set names in a Project List member file.

If you press the Enter key or the PF8 key, then the following tutorial guide of the descriptions of the usages of each data field and various valid commands on the PANEL3 process panel will be displayed:

CMDLIST Panel	Enter a 'CMD' command or press the PF10 key can display a Command List panel for you to select a command function if you cannot remember the command name of that function.
Select Data set	Enter a selection code can select a PDS or sequential file. The '3' command, for example, can display the PANEL4 panel of the third file if it is a PDS. If the selected file is a sequential file, then the file will be edited. If the selected file is a GDG base, then all generation files will be displayed on the PANEL3 panel. You may type an 'E', 'B', 'V', or a 'DD' code to edit, browse, view or delete a GDG generation file. If the selected file is a VSAM file, then the File−AID tool package will be automatically invoked to perform the VSAM file edit function. If the selected code entry is a TSO/ISPF command with a valid 'TSO', 'EXEC', 'EX', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BROWSE', or 'VIEW' command code, then the selected command will be executed.
Delete File or Suppress File	If the 'D' code is typed in next to a GDG generation file, then a message window will be popped to ask you to confirm the delete operation. Note that if the 'D' code is typed in next to a non−GDG generation file, such as a PDS or sequential file, then the file name will be suppressed from the PANEL3 panel but the file itself will not be deleted from MVS system. To delete the non−GDG generation files, you may type a 'FF' command next to the file name on the PANEL3 panel to display an ISPF option 3.4 DSLIST panel and delete the file from there. Only one 'D' code can be typed in each time. You may enter an 'E' command on the PANEL3 panel to edit the Project List member file of the selected project and press the PF4 key on each file names that you want to suppress from the PANEL3 panel. The PF4 key can comment out the file name that is positioned by the cursor.
Note:	To edit or browse the VSAM data sets on the PANEL3 panel, you need to establish the File−AID interface. You may enter a 'FASETUP' command and a 'PROF' command for the setup of such a interface.

Note:	If the selected data set has been migrated, then this tool will issue a 'HRECALL' command and an informational message will be prompted to indicate that the migrated data set has been 'Hrecalled' from the system which suggests that you should edit, browse, or view that file at a later time.
Note:	The selection code can be typed on the line command area to select a data set. Thus, if the cursor is not on the PANEL3 panel command line area you still can select a data set by typing a selection code which is different from the one that is on the line command area where the cursor is positioned.
Retrieve Data set	The last selected data set of a project will be flagged with a '−' marker. To choose the same data set, instead of typing any selection code or manipulating the cursor, you may just press the Enter key. With this function, you may work on the same data set repeatedly without needing to spend too much time to search for it.
Locate Data Set	If the data set name list on the PANEL3 panel is very large, and if the '−' marker is not shown on the screen, you may enter a '/' command on the panel command line to locate it and re−display the message of the 'Last Used' data set.
Switch Project	Enter a '/4' command, for example, can switch from current project or work item to the other project, which is the fourth project. This command will skip the display of the PANEL2 panel and it will display another PANEL3 panel directly. You may also enter a '/4.1' command to display a PANEL4 panel of the first PDS of the fourth project or work item. This command will bypass the display of both of the PANEL2 and the PANEL3 panels.
Note:	The '/a.b' type of command code can also be typed on a data set name line instead of entering on the panel command line and it can also be rewritten in the 'a.b' command format.
Note:	After it is branched to the new project by using the '/a.b' or 'a.b' type of command, you may use a '//' command on the new project panel to switch back to the original project panel.
Note:	Enter a '//' or a '//num' command can display a project selection window panel. On the panel you may press the PF7 or PF8 key to view all project names and then press the Enter key to make a choice to switch to a PANEL3 panel of the selected project. This command applies to any of the panel command lines of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The '//' command remembers the name of the original member list panel, which allows you to switch between two projects or work items back and forth easily.
BACK Command	Other than using '//' command to switch between two projects you may also use a 'BACK' command to select the two projects back and forth. The short form of the 'BACK' command is the 'BK' command.
Edit Project List member	Enter an 'EDIT' or 'E' command on the panel command line can edit the selected project or work item file, and you may modify its contents in edit. This command is the same as the 'E num' command on the PANEL2 main panel.
Note:	This 'E' command typed on the PANEL3 panel command line is different from the 'E' code typed on a data set name row. The former is to be used to edit a Project List member file

and the latter is to be used to edit a data set.

Note: In the edited Project List member file, if you entered the first character of any data set name as a dot '.', then this toll will automatically pad your TSO userid in the front of the dot after the edited file is saved. Thus, you may always omit your TSO userid code when you update the data set names in the Project member file.

Note: In the edited Project List member file, if you will use the asterisk '*' to expand the data set names, then you don't need to type in each individual data set name in the file. For example, you may enter 'SYS1.*.EXEC' (bounded quotes are optional) in the Project List member file to obtain a data set name list of all the EXEC files whose highest qualifier is 'SYS1'. By specifying the expandable data set name in the Project List member file, you may save a lot of time.

GET Command In the edited Project List member file, if you use a 'P' edit line command, then it will paste the previously cut data set name lines from other Project List member file. You may use a 'G' (Get) command on the PANEL3 or PANEL5 panel to fetch a data set name line from the panel screen instead of using the 'G' edit line command in the Project List member file to cut the data set name line.

Data set name marker While editing a Project List member file, after the data set name you may add a marker such as '/a' or '/b'. For example: 'dsname /a', 'dsname /b', etc. By using the markers, you can provide the subgroup of the data set name list on the PANEL3 panel for each subtask of the project or work item. Note that the '*' marker must be in the '/ *' format instead of the '/*' format because '/*' is a remark comment header. The data set name marker can be located by using a 'LL' or 'FF' command. If you use a data set marker on an expandable data set name, then all the expanded data set names will contain the same marker.

Section Separator While editing a Project List member file, you may insert the code lines with three dots "..." to generate the dot−line on the PANEL3 panel. By doing this, you may group the data set names of each subtask into different sections on the PANEL3 panel. You may also add a short description of the subtask on the Section Separator code line. e.g.%"... Work files".# Note that a single space between the three dots "..." and the short description is always required. The length of the short description must not exceed 40 characters if it is specified. Else, it will be truncated when it is diplayed on the PANEL3 panel.

Note: You may enter a 'LONG' command on PANEL3 panel to display the Section Separator (i.e. three dots) in a long dot line format, and enter a 'SHORT' command to convert it back to the short three dots format. The 'SW' (SWap) command can be used to toggle these two formats of the Section Separator on the PANEL3 panel.

Refresh the Panel Whenever you modify the Project List member file by using an 'E' command on the PANEL3 panel, the PANEL3 panel will be refreshed automatically. However, if you modify the Project List file by using any file editor or by using the 'ADD' command, then you will need to use a 'RESET' or '/R' command to refresh the PANEL3 panel.

Note: The Data set Names that contains the '*' can be dynamically

expandable. This tool will keep it in the Project List file and will attach a '//O=DynExp' flag with it. Whenever the 'RESET' or '/R' command is entered on the PANEL3 panel, these types of Data set Names will be dynamically expanded

Hide and Unhide Data set

If the '//O=DynExp' type of Dsname generates too many data set names in the Project List member file, then when you edit the Project List member file using the 'E' command, instead of deleting the unwanted data set names, you may position the cursor on the data set name entry and press the PF4 key, i.e. the 'ED' command function key, to insert a comment head '/*' to hide the data set. If the PF4 key is pressed on the hidden data set, then the comment head '/*' will be dropped from column 1 and the data set will become unhidden.

DOT Command

The valid TSO/ISPF command will be displayed on this panel with a '.' (dot) as a default in order to tell itself apart from the data set names in the panel listing. To turn off this option, you may enter a 'DOT OFF' command. To reset this option back to default and display the dot again, you may enter a 'DOT ON' command.

MBR Command

If a member name is specified with a very long PDS name, then it is quite possible that the member name will be truncated on the PANEL3 panel. You may type a 'MBR' command next to this long PDS name to display the member name in the message field.

Edit Data set

Enter an 'E num' command or type an 'E' code next to a data set name can edit the file on the panel. This is the same as the '/' or 'S' code of the 'Select data set' function. You may enter an 'E num1 num2 ...' command or type an 'E' with few '=' codes next to multiple data set names to edit several files on the panel at the same time. If an 'X' code is typed next to a data entry which has a PDS name with member, instead of editing the PDS member file the PANEL4 panel of the selected PDS will be displayed. More details about this 'X' code will be described later.

Note:

If you are not authorized to update the edited file, then the edit command function will be automatically changed to view command function unless an 'EDX' command code is used.

Note:

If the FILEAID facility is installed, then this tool will automatically switch to use it to perform the VSAM file edit function when the 'E' command is typed. If the FILEAID facility is not available, then this tool still can handle the VSAM file on−line edit function. This tool can handle the VSAM file on−line browse and view functions too.

Browse Data set

Enter a 'B num' command or type a 'B' code next to a data set name can browse the file on the panel. You may enter a 'B num1 num2 ...' command or type a 'B' with few '=' codes next to multiple data set names to browse several files on the panel at the same time.

View Data set

Enter a 'V num' command or type a 'V' code next to a data set name can view the file on the panel. You may enter a 'V num1 num2 ...' command or type a 'V' with few '=' codes next to multiple data set names to view several files on the panel at the same time.

Rename Data set

Enter a 'R num' command or type a 'R' command in front of a data set can rename the file on the panel to another file.

A window panel will be popped up to ask for the target data set name information. The target data set must be a new one. If the target is an existing data set, then an error message will be issued.

Note: The 'R' command will not only rename the data set name that you have specified in the Project List member file, but also will rename the real MVS data set name. Thus, if you only want to change the data set name in the Project List member to an another data set name, then you must edit the Project List member file using the 'E' command and then rename it in the edited Project List member file.

Copy Data set Enter a 'C num' command or type a 'C' code in front of a data set can copy the file on the panel to another file. A window panel will be popped up to ask for the target data set information. The target data set can be a new one. If the target is an existing data set, then the ISPF option 3.3 Move/Copy Utility panel will be displayed.

Note: If you enter a 'C num1 num2' command or type a 'C' code in front of a data set and type an 'S' code in front of another data set, then the ISPF option 3.3 Utility panel will be displayed immediately without popping up a window panel.

Note: If you type a 'C' code next to a VSAM file, then this tool will display a window panel to allow you to enter a new sequential file name. After pressing the Enter key this tool will copy the VSAM file to the sequential file, which is the so−called VSAM file unload function. Similarly, you may type a 'C' code next to a sequential file and enter a VSAM file name on the displayed window panel to copy the sequential file to the VSAM file, which is the so−called VSAM file load function. If both of the VSAM and sequential files are displayed on the PANEL3 panel, then you may type a 'C' code next to one file and type a 'S' code to the other file to perform the VSAM load and unload functions.

Note: Instead of using the 'C' command you may use a 'CPYFROM' or or 'CPYF' command to copy the input file to a new created file in a batch job or a foreground process if the input file is a very large non−VSAM file. You may enter a 'CPYF /' command on any process panel to display the 'CPYF' command generated output sequential file.

Move Data set Enter a 'M num' command or type a 'M' code in front of a data set can move the file on the panel to another file. A window panel will be popped up to ask for the target data set information. The target data set can be a new one. If the target is an existing data set, then the ISPF option 3.3 Move/Copy Utility panel will be displayed.

Note: If you enter a 'M num1 num2' command or type a 'M' code in front of a data set and type an 'S' code in front of another data set, then the ISPF option 3.3 Utility panel will be displayed immediately without popping up a window panel.

Note: The 'C' and 'M' commands can display a window panel to allow you to fill in the target data set name. The 'MC' command, on the other hand, will display the ISPF option 3.3 panel directly without displaying a window panel.

Note: There is no 'Delete' command available for removing a data set name from the PANEL3 panel. The name of the new 'copied' data set will not be added to the PANEL3 panel either. You

may enter an 'E' command on the PANEL3 panel command line to edit the Project List member and then add or delete the data set names in the edited Project List member file.

Copy or Move to Sequential file

The 'CS' and 'MS' command can be used to copy or move the the source file to a sequential file. When the 'CS' or 'MS' command is typed next to a PDS with member or a sequential file a window panel will be popped up to ask you for the target sequential data set name. You may either enter a new data set name or enter an existing sequential data set name. If the data set already exists, then the original contents in the target sequential file will be replaced with the contents of the source PDS member file or source sequential file.

Select a PDS

If a PDS with a member name is displayed on the panel, you may type an 'E', 'B', or 'V' code next to a data set name to edit, browse, or view the member file. If an 'X' code or an 'X num' command, where 'num' is the data set selection code of the PDS with a member name, is used, then the PANEL4 panel of the member list of the PDS will be displayed.

Note:

The function of using an 'X' code to select a PDS from the member file, such as the 'USERID.@PROJWRK.DOCUMENT(@README)' file, only applies to the PANEL3 panel. This function is not applicable to the same type of member files on the PANEL5 panel.

Note:

The 'XRF' code for selecting the PDS is a completely different command function from the 'XRF' command for the displaying of the PANEL5 Xref List panel function.

Search Data sets

Enter a 'LOCATE data' or a 'L data' command, where 'data' is a character string to be searched, can find the data set name that contains the searched string. The 'FIND data' or the 'F data' command is another format of this function.

Note:

If the PANEL3 panel list is very large, and if you remember the neighborhood of the selection code of a data set, then you may enter a 'L num' command, such as 'L 1058' command, on the panel command line, or type a 'L num' code, such as the 'L 1058' code, on any data set name line command area to search for the data set.

Search Markers

Enter a 'LL marker' or a 'FF marker' command can find a specific data set name marker. This command allows you find all the data sets that belong to the same subtask group very easily.

Note:

The 'L' and 'LL' commands are very useful functions if the data set name list on the PANEL3 panel is very large. You may use the PF5 key to repeat the search for the data set names or the data set name markers on the panel.

Expand Data set

If the data set name you want to search is not shown on the PANEL3 panel, but it is very close to a data set name that has already been defined on the PANEL3 panel, then you may type an 'EXP' command next to that data set name to display a MENUBOX and modify it to expand all data set names that match the data set name search pattern.

Note:

Intead of using the 'EXP' command, if the cursor is placed on the top of a data set name field on the PANEL3 panel when the Enter key is pressed, then the code to the left of the cursor on that panel will be used as the search pattern and

all the data set names that match the search pattern will be displayed on an expanded data set name list selection panel. Note that on the expanded data set name list panel you may manipulate the cursor and the Enter key using exactly the same method to expand another data set name again from the displayed data set name list selection panel.

Browse Project — Enter a 'BROWSE' or 'B' command on the panel command line can browse the selected project or work item file. This command is the same as the 'B num' command on the PANEL2 main panel.

Note: — This 'B' command is different from the 'B' code typed next to a data set name to browse a data set listed on the panel.

View Project — Enter a 'VIEW' or 'V' command on the panel command line can view the selected project or work item file. This command is the same as the 'V num' command on the PANEL2 main panel.

Note: — This 'V' command is different from the 'V' code typed next to a data set name to view a data set listed on the panel.

ISPF Interfaces — There are several User−Exit command codes can be applied to the PANEL3 panel with the interface of various ISPF utility functions.

(a) Type a 'LIB' User−Exit command code in front of a data set name can display an ISPF option 3.1 panel for the Library Utility functions.

(b) Type a 'DS' User−Exit command code in front of a data set name can display an ISPF option 3.2 panel for the Data Set Utility functions.

(c) Type a 'MC' User−Exit command code in front of a data set name can display an ISPF option 3.3 Move/Copy utility panel to perform the data set move and copy functions. See the 'C' (Copy) and 'M' (Move) line command below for more details.

(d) Type a 'FF' or 'FFL' User−Exit command code in front of a data set name or on a row of a 'SUB', 'EXEC', 'EDIT', 'BROWSE' or 'VIEW' command line can display an ISPF option 3.4 data set list panel of the selected data set. If a 'FF' or 'FFL' command is entered on the PANEL3 panel command line or a 'FFF' command code is typed on any data set name row, then an Front−end Interface panel of the ISPF option 3.4 panel, i.e. the 'DSLISTF' panel, will be displayed. If a 'FL' command code is typed in front of a data set name, then the ISPF option 3.4 data set list utility panel instead of the ISPF option 3.4 data set list panel will be displayed.

Check Data sets — Enter a 'CHECK' or 'CK' command on the panel command line can comment out all the obsoleted data set names from the selected project or work item file. This command can only be invoked on the PANEL3 panel but no other panels. If the data set name list on the PANEL3 panel is very large, then this command will take a long time to perform.

Check Volume — If you enter a 'CKVOL' command on the PANEL3 panel, then the status of the migrated data sets will be shown on the panel. However, if the data set name list on the PANEL3 panel is is very large, then this command will take very long time to finish the checking of the data set migrate status.

Note — If you only need to know whether a data set listed on the

PANEL3 panel has been migrated or not, then simply type a 'FL' command code next to the file to display an ISPF option 3.4 DSLIST panel to check it out.

MSTAT Command — If you prefer to show the migrated stats on the PANEL3 panel each time, then you may enter a 'TSO PROJ MSTAT n', where 'n' can be any number between '0' and '999'. Instead of using this command, you may also enter a 'PWOPT' command to display the Miscellaneous Option Selection panel and change the code in the 'The maximum PANEL3 Migrate entries' option field from '0' to any other valid number, such as '50'.

Note: To set a very large 'n' number in the MSTAT command can slow down the time to display the PANEL3 panel significantly.

HR Command — After you issue a 'CKVOL' command and display the status of all the migrated data sets on the PANEL3 panel, you may type a 'HR' (HRECALL) command code and use the '=' code at the data set name line command area to perform the HSM Recall function on those migrated data sets.

Display Xref — Enter an 'XRF' command can display a PANEL5 Xref List panel for easy accessing the member list panel of other data sets.

Xmit Data Sets — Enter a 'SF num' command can send the selected PDS or sequential file to a target destination. More than one selection numbers can be specified in the command. You may type a 'SF' command code and use the '=' code on several rows of the data sets to send several files simultaneously. A window panel will be popped up to ask for the target destination information. Enter a 'SF' command on the PANEL3 panel command line can send all files listed on the PANEL3 panel to the target destination.

Note: It is very easy to send this 'PROJWRK' tool package to your friends simply by entering a 'SF' command at the 'PROJECT' data set listing on the PANEL3 panel. When a window panel is popped up, enter your friend's TSO Node/Userid data on the panel. Please do send this tool package to your friends and help them to increase their work productivity.

GS Command — Type a 'GS' (Getsize) command next to a data set name on the PANEL3 panel can display a panel to provide the information of the size of the selected file. The selected file should be either a sequential or a PDS member file. If it is a PDS, then a warning message will be prompted indicating that it will take long time to measure the size of the entire PDS.

WHO Command — Type a 'WHO' command next to a data set name on the PANEL3 panel can display a panel, which is named 'WHOGOTS' panel, of all the TSO userid names who are currently accessing the selected data set.

Note: On the ISPF option 3.4 data set list utility panel displayed by using the 'FFF' command, you need to use a 'WHOGOTS' or 'WHOGOT' command instead of the 'WHO' command next to a data set on the ISPF panel to display the 'WHOGOTS' panel.

Compress a PDS — Enter a 'Z num' or 'COMPRESS num' command to compress the selected PDS. More than one PDS selection number can be specified in the command. You may type a 'Z' code and use the '=' code next to sevearal data set names on the PANEL3 panel to compress multiple PDS files at the same time.

Note:	The sequential files cannot be compressed. If a PDS is in use by other users, then it cannot be compressed either.
Note:	You may type a 'WHO' command next to the PDS to find out who is using it so that you may either inform him to get off that data set or you may compress that PDS in future time.
Print PDS File	Enter a 'PRTPDS num' or a 'PP num' command can print the members of the selected PDS. More than one selection code can be specified in the command. If the selection code is omitted, then all the PDS files listed on the PANEL3 panel will be selected. You may type a 'PP' code on the data set name row to print it or send it to another user. The selected PDS members will be merged into a flat file. The received flat file on the other MVS system can be restored back to PDS by using a 'GETPDS' command on the ISPF option 3.4 data set list panel.
Send PDS Members	Enter a 'SENDPDS num' or a 'SP num' command can send the members of the selected PDS in a fixed block 80−byte sequential file format. More than one selection code can be specified in the command. If the selection code is omitted, then all the PDS files listed on the PANEL3 panel will be selected. You may type a 'SP' code on a data set name row to send it to another user. The received sequential file on the other MVS system can be restored back to PDS by using a 'RECEIVE INDA(/)' command on the ISPF option 3.4 data set list panel.
Send Sequential Data set	Enter a 'SENDSEQ num' or a 'SFS num' command can send the sequential file to the target destination with the 'Line Splitter' code added to the end of each code line.
Note:	To restore the sequential file generated by the 'SENDSEQ' command back to its original sequential file format, you may use a 'GETSEQ' command. The sequential file with the 'Line Splitter' code can be downloaded to workstation and uploaded back without losing the attributes of its original sequential file format.
REXXCHK Command	Type a 'REXXCHK' command next to a REXX program can invoke the REXX compiler to do a quick compilation of the selected program and display the result listing on a panel. If you need to see the same result listing again later, you may simply enter a 'REXXCHK /' command on the PANEL3 panel.
REXXREF Command	Type a 'REXXREF' command next to a REXX program can generate the REXX source code cross reference of the selected program and display the result listing on a panel. If you need to see the same result listing again later, then simply enter a 'REXXREF /' command on the PANEL3 panel.
JOBCARD Command	Enter a 'JOB' command can display a panel for entering the batch job Account information. On the displayed panel, you may press the PF1 key for more information. This command applies to the PANEL2, PANEL3, PANEL4, and PANEL5 panels.
Submit JCL	Type a 'SUB' code on the data set name row or enter a 'SUB num' command, where 'num' is data set selection code, on the panel command line can submit a batch job. If the data set is not a JCL file, an error message will be prompted. Instead of typing a 'SUB' code, you may use a 'J' User−Exit command code to submit a batch job file also.

Note: If the data entry on the PANEL3 panel is in the format of 'TSO SUBMIT JCL.LIB(TEST1)' or 'SUB JCL.LIB(TEST1)', then you may enter a 'num' code, where 'num' is the selection code of the data entry on the PANEL3 panel, to submit the batch job 'TEST1'. You may also position the cursor at any column of that data entry line and press the Enter key to submit the batch job. If an 'E', 'B', or 'V' code is typed on the data entry command line, then the JCL.LIB(TEST1) file will be edited, browsed, or viewed instead of being submitted.

Note: Because it is so easy to submit a JCL on the PANEL3 panel with the 'TSO SUBMIT' and 'SUB' code lines, to prevent the error from occurring, these commands will be protected by a confirmation panel. If you want to bypass the display of the confirmation panel, you may enter a confirmation shield code '/' at the last position on the command code line in the Project List member file, such as:

'TSO SUBMIT JCL.LIB(TEST1) /' or 'SUB JCL.LIB(TEST1) /'

Edit GDG files When the GDG base file is selected on the PANEL3 panel, all the GDG generation files of the GDG base will be displayed with a selection code of 'G1', 'G2', or 'G3', etc. You may enter the selection code of the GDG generation file to edit the file. If a 'G' command code is entered, then all GDG generation files will be edited one by one rotatively in a loop like an 'Edit Ring'.

DIFF Command Type a 'DIFF' code in front of a data set name can display an ISPF option 3.13 (SuperCE) panel to compare two files. On the panel, you are responsible to fill out the target data set name for comparison. This command applies to the PANEL3, PANEL4, and PANEL5 panels. If the data set is uncataloged, then the volume serial number of the data set specified on the panel will be captured in the SuperCE Concatenation Foreground Entry, which can be displayed when the Enter key is pressed on the SuperCE Utility panel.

Note: If you enter a 'DIFF num1 num2' command or type a 'DIFF' code in front of a data set and type an 'S' code in front of another data set, then the second selected data set name will be filled in as the target data set name on the SuperCE Utility panel automatically.

Note: To repeatedly view the 'DIFF' command result output listing files, i.e. the SUPERC.LIST, SUPERC.LIST2, or SUPERC.LIST3 files, you may enter a 'DIFF /' or 'DIFF //' command on any process panel.

HEXT Command Enter a 'HEXT' command next to a data set can generate an output listing file which contains the converted hexadecimal code of the input file. You may enter a 'HEXT /' command to display the previously generated HEXT file.

Note: Instead of using the 'HEXT' command you may use a 'HEXTFROM' or 'HEXTF' command to generate the output file in the hexadecimal code of the in a batch job or a foreground process if the input file is very large. You may enter a 'HEXTF /' command on any process panel to display the 'HEXTF' command generated output listing file.

UPDPDS Command Type a 'UPDPDS' command next to a PDS on the PANEL3 panel can display a panel to select a Target PDS and perform the two PDS comparing function. After the comparison is done,

the members in the Source PDS of the delta file will be included in a new created Incremental Diff PDS file. If the target PDS can be found in the same PANEL3 panel screen, then you may type the 'S' code next to it. Else you may either type in the target PDS data set name or press the PF11 key on the displayed panel.

LISTA Command — Enter a 'LISTA' command can display all allocated data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set name to edit, browse, or view it. More than one 'E', 'B', or 'V' code to select multiple data sets is allowed.

LISTC Command — Enter a 'LISTC' command can display all cataloged data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set to edit, browse, or view it. Select more than one data set is allowed. You may enter a 'LISTC lvl−code' to display all the cataloged data set with the level of the lvl−code. If the lvl−code is omitted, then the default is your TSO logon Userid.

Note: — The 'E' command code on the LISTA and LISTC panels can be always replaced with an 'ED' command code.

LISTD Command — Type a 'LISTD' or 'ST' code in front of a data set name can display the status information of the selected data set. You may specify any valid data set name (without using the bounded quotes) in the 'LISTD' command on the panel command line area.

USEREXIT Command — Enter an 'USER' or 'U' command can edit the User−Exit file. You may define your own command in this file. The User−Exit file name is 'USERID.@PROJWRK.XREF(USREXIT)'. In this file, if you define a command code line such as the following:

REC: TSO RECEIVE

Then on the PANEL2, PANEL3, PANEL4, or PANEL5 panel you may just enter a 'REC' command to replace the 'TSO RECEIVE' command. The User−Exit commands are not case sensitive. This feature is very useful if the TSO or ISPF command that you want to replace is a very long command.

RECALL Command — The 'RECALL' command can be used to display a panel of all the files that were previously edited. The RECALL panel is a very useful tool for repeatedly working on the same files. The 'RECALL' command can be entered on any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. It can also be entered in the edit command line. The short command form of the 'RECALL' command is 'RC'.

Note: — The 'RC' command works on any data set name command line area of the PANEL3 panel also.

Note: — The PF4 key has been defined as the 'RECALL' function. Instead of entering a 'RC' command, you may press the PF4 key to display the RECALL command panel.

Repeat Function — The 'PF5' key has been defined as the 'Repeat' function, which can be used to repeat any command that you have just entered on the PANEL3 panel. This command is similar to the '?' command except that the '?' command will bring up the previously executed commands on the command line, and the PF5 function will repeat the last executed command without prompting the command code on the panel command line.

CALC Command	Enter a 'CALC' command can display a Desktop Rolling Sheet Calculator. This calculator contains five calculation modes which cover the Decimal, Hexadecimal, Binary, Date, and Time calculation functions. It is an extremely useful tool.
Note:	The 'PF6' key has been defined as the 'Calc' function. Instead of entering a 'CALC' command, you may press the PF6 key to display the Desktop Rolling Sheet Calculator.
CALENDAR Command	Enter a 'CALENDAR' command can display a Desktop Monthly Calendar. This calendar contains a Things−To−Do function and a Notebook function which can be used to setup the project work schedules and to be used as the weekly or monthly reminders. It is a very useful tool on the MVS system. The short command form of the 'CALENDAR' command is 'CAL'.
String Search and Massive Change	Type a 'SRCH' User−Exit command in front of a PDS data set name can display a panel for you to enter a data string which will be searched from all the members of the PDS. It can search for data string from a sequential file also. After the searched result listing file is displayed, you may enter an 'ED' command on the command line of the viewed listing and position the cursor on a member in the listing and press the Enter key to edit the member file, or you may position the cursor at the member name on the viewed listing and press the PF4 key to edit the member file. In the edited member file, you may press the PF5 key, i.e. the 'RFind' function key, to repeatedly search for the data string. If you enter an 'ED' command or press the PF4 key while the cursor is still at the command line of the viewed listing, then all of the members listed below the top screen line will be edited one by one which allows you to perform a Massive Change function of the data strings in all edited member files. You may use a 'CHANGE' edit command in the first edited file to change the data string, and then press the PF6 key, i.e. the 'RChange' function key, to repeatedly change the data string in the subsequently edited files.
Note	To repeatedly display the same viewed listing, you may just enter a 'SRCH /' command on the PANEL3 panel or on any other panels.
Extended String Search	Enter a 'XSEARCH string' command, where 'string' is a data string to be searched, can find all data sets that contain the searched data string in all files listed on the panel. The data string will be displayed on a viewed listing. The data string on the command can be omitted. The short form of the 'XSEARCH' command is 'XS' or 'XSRCH'. A process panel will be displayed when the 'XS' command is entered, which allows you to enter more data strings to be searched. On the PANEL3 panel, you may type the 'S' code to select several data sets before pressing the Enter key. The string search qualifiers, i.e. WORD, PREFIX, SUFFIX, and C, are still the same as being used on the 'SRCH' command. You may also type a pair of 'SS' code to select a group of data sets for the extended data strings search.
Note	On the PANEL3 panel if you enter a 'XS' command withut using the 'S' or a pair of 'SS' code to select the data sets, then it might take quite long time to search all the data sets on the PANEL3 panel if the PANEL3 panel contains too many data set names. You may enter the 'XS FILES' command instead of the 'XS' command to select the input data set names from the XSFILES library. The short form of the 'XS FILES' command is

the 'XSF' command.

Note — To repeatedly display the same viewed listing, you may just enter a 'XS /' command on the PANEL3 panel or on any other panels.

Note — You may enter a 'SRCH //' or 'XS //' command on the PANEL3 panel to display all previously SRCH or XS command generated view listing files in the 'USERID.SRCHFOR.LIST*' pattern on on a panel for selection.

Search Member — Enter a 'FINDMEM member' command, where 'member' is a member name to be searched, can find all members that contain the searched member string in all PDS listed on the panel. The list of the PDS will be displayed on a viewed listing. The member name on the command can be omitted. The short form of the 'FINDMEM' command is 'FM'. A process panel will be displayed when the 'FM' command is entered, which allows you to enter more member names to be searched. On the PANEL3 panel, you may type the 'S' code to select several PDS to be searched before pressing the Enter key. You may also type a pair of 'SS' code to select a group of data sets for the PDS members search.

Note — To repeatedly display the same viewed listing, you may just enter a 'FM /' command on the PANEL3 panel or on any other panels. There are a lot of similarities between the two commands of 'XSEARCH' and 'FINDMEM'.

Note — You may enter a 'FM //' command on the PANEL3 panel to display all previously FM command generated view listing files in the 'USERID.FINDMEM.LIST*' pattern on a panel for selection.

Note — The difference of the 'SRCH' command and the 'XSRCH' command is that the 'SRCH' command can search for data strings from only one PDS or sequential file whereas the 'XSRCH' command can search for data strings from several PDS mixed with many sequential files. The Massive Change function can be applied on the viewed output listing produced by both 'SRCH' and 'XSRCH' commands.

LISTVAR Command — Enter a 'LISTVAR' or 'LV' command can display a name list of the data sets in which you have fetched the screen text data in edit by using the 'GETVAR' edit command.

PROOF Command — Type a 'PROOF' command next to a PDS member file can perform the SCRIPT file Words Proofreading function. You may also use a 'WORDPRF' or 'WORD' command for the same function.

DIR Command — Enter a 'DIR' command can display a panel of the MVS Project Work Director, which contains a list of the primary and/or the secondary Project List Group names for you to select the MVS files specified in the primary or the secondary Project List files that belong to either yourself or your teammates.

FASETUP Command — Enter a 'FASETUP' command can create a File−AID tool package Interface Profile in 'USERID.@PROJWRK.XREF(FILEAID)' file. Once the setup is completed, when you enter the Project Work Manager tool session next time you may use the File−AID tool to edit or browse your VSAM files.

Note: — You don't need to use a 'FASETUP' command to setup the File−AID interface profile if the '@FASETUP' file in the 'TOOLKIT.@PROJWRK.CEXEC' library has already been properly

```
                    setup.

Return Panels       Enter an 'XX' command or press the PF3 key can return back
                    to the former level 'Select a Project or Work Item' panel,
                    i.e. the PANEL2 main panel.

Exit Process        Enter a 'QQ' or 'X' command can exit the process entirely
                    and enter an 'END' command can exit the process entirely if
                    if in the Project Director Work Session.


Note:               The 'X' code typing on the line command area to display the
                    PANEL4 panel of a PDS is entirely different from the 'X'
                    command code entering on the PANEL3 panel command line to
                    exit the Project Work Manager tool session.

------------------ End of the PANEL3 on-line tutorial -------------------------
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The following is the additional explanations of some essential points in the preceding on−line tutorial guide.

On the PANEL3 panel command line you may enter an 'E' command to edit the Project List member file and modify its contents. If the data set name entered in the edited Project List member file contains an '*', then it will be treated as Dsname Level code and it will be automatically expanded. A flag '//O=DynExp' will be appended to such type of data set name code in the Project List member file for the future dynamic expansion. The Dsname Level code dynamic expansion can be performed if a 'RESET' or '/R' command is entered on the PANEL3 panel.

For example, if you add a 'USERID.LOGON.JCL' file and delete the 'USERID.LOGON.EXEC' file from your TSO account manually, then after you enter a '/R' command, the sample PANEL3 panel as described in previous page will be automatically refreshed to reflect such changes due to the '//O=DynExp' flag attached on the 'USERID.LOGON.*' code.

Other than using the '/4' or '/4.1' type of command to switch from one project or work item to another, you may also use the method such as typing the project name, entering a '//' command to display a project selection panel, entering an 'XRF' command to display the PANEL5 Xref List panel and select a project from there, or entering an 'XX' command to branch back to the PANEL2 panel and select a project from there, etc. It is up to you to choose whatever the easiest method to use.

When a GDG base file is selected on the PANEL3 or PANEL5 panel, all generation files of the GDG base will be automatically expanded on the panel screen. If another GDG base file is selected, the new generation files will replace the previously displayed GDG generation files on the screen. Thus, only one group of GDG base file expanded GDG generation files will be displayed on the panel each time.

You may type an 'E', 'B' or 'V' code next to a data set name to edit, browse, or view a data set, including the VSAM data set, on the PANEL3 panel. However, there is no command codes available for you to delete a data set directly on the PANEL3 panel. To delete a data set on the PANEL3 panel, you need to enter an 'E' command on the PANEL3 panel command line to edit the Project List member file and either remove that data set name code line or comment out the data set name. To delete a data set from the MVS system, however, you need to type a 'FF' or 'FFL' User−Exit command next to a data set name on the PANEL3 panel to display the ISPF option 3.4 data set list panel and delete the data set from there.

On the PANEL3 panel you not only can use an 'E', 'B', or 'V' code to edit, browse, or view a VSAM file on−line, but also can use a 'C' code next to a sequential file or a VSAM file to perform the VSAM file on−line load and unload functions. More details about these functions can be found in the Appendix K section.

Note: To comment out a data set name in the edited Project List member file, you may position the cursor on that data set name code line and press the PF4 key. The PF4 key can toggle between the '/*' code to be

inserted into and dropped from the leftmost column of the code line.

Note: If you set the data set authorize check option on the 'PWOPT' command panel, then whenever you type an 'E' command next to a data set that you are not authorized to update, then the edit command function will be automatically changed to view command function to prevent you from updating the file by mistake and get burned by a very a very irritating RACF warning message.

You may rename a data set name directly on the PANEL3 panel by using a 'R' (Rename) command. After the data set name is renamed on the PANEL3 panel, it will not only rename it from the Project List member file but also rename it on the MVS system.

A project or work item may contain many different data set names and several tasks. The data set markers can help you to easily identify various tasks by dividing the data set name list into subgroups. You may use either the 'F' or the 'FF' command to search for the data set names and the data set markers on the PANEL3 panel.

The function of the 'L' (Locate) and 'F' (Find) commands for searching the data set names on the PANEL3 panel is a very useful feature if the data set name list on the PANEL3 panel is very large. The 'LL' (LLocate) and 'FF' (FFind) command for searching the User−defined data set markers is another very powerful feature. For example, suppose you have more than 100 data set names displayed on the PANEL3 panel for a project, and these data sets were subdivided into more than 10 tasks. You have chosen the markers '9' for all data sets that belong to the ninth task. When you search through these files, you may enter a 'FF 9' command and then press the PF5 key to repeatedly locate each of the data sets that belong to the task #9 on the panel. The examples of the usages of the data set markers can be found in the Appendix E section.

On the PANEL3 panel you may type a 'UPDPDS' command next to a library file, then a window panel for comparing the source and target PDS to create a Delta PDS function will be prompt. On that panel you may enter the target PDS name. After the Delta PDS file is created, you may use a 'CP' command to copy all the members in this Delta PDS to the target PDS and complete the PDS library update process. A sample procedure of how to use the 'UPDPDS' command to update the PDS library has been presented in the User's Guide.

Note:

1. If you need to use the asterisk '*' as a data set marker, then one space must be specified in between the '/' and '*', such as '/ *' because the '/*' code is a data set remark comment header in the Project List member file.

2. The data set marker and the data set volume serial number can be specified together in the format of '/marker V=volume'. The 'marker' should be placed between the slash code '/' and the 'V=' code, such as '/a V=DSSPK0' where 'a' is the data set marker and 'DSSPK0' is the volume serial number. Note that the data set marker is case sensitive. Thus the '/A' and '/a' will display two different types of data set markers. However, it makes no difference when you search for the data set markers on the PANEL3 panel by using either the 'FF a' or 'FF A' command because the 'FF' command (i.e. the 'FFIND' command) is not case sensitive.

3. The data set marker and the data set volume serial number do not apply to the GDG base file, the VSAM file, and the TSO/ISPF command data entries in the Project List member files. It can be used on the PDS and the sequential file only.

4. If a project or work item contains too many subtasks and each subtask contains many data set names, then instead of using the data set markers it is highly recommended that you may break down the project or work item and create additional projects or work items to replace the original one.

The 'SF' command entered on the PANEL3 panel command line with no selection code will issue a message to ask you to select one or more data set to the target destination. You may type the 'C' code, a pair of 'CC' code, or an 'ALL' option code to select one data set, several data sets, or all data sets on the PANEL3 panel. If you want to cancel the 'SF' command, simply press the PF3 key.

The 'PRTPDS' command is only applicable to the partitioned data sets. After the 'PRTPDS' batch job is submitted, all the selected members in the PDS will be converted to sequential file and merged into one single file before it is sent to a printer or a target destination.

The short form of the 'SENDSEQ' command is the 'SFS' command. This command is different from the 'SENDFILE' command. It is only applicable to the sequential data sets. When this command is executed, it will modify the input sequential file by adding a 4−byte 'Line Splitter' code at the end of each code line and create a new sequential file first, then it will send the new file to the target destination. The received target file, which contains the 'Line Splitter' code in each line, can be downloaded to the workstation and uploaded back to host, and then you may use a 'GETSEQ' command to restore the file back to its original sequential file format.

An example of using an 'X' command code on the PANEL3 panel to extract the PDS library file name from a file name, which is displayed in the format of a PDS with a member name as shown in the following example, will be described in more detail later in the Appendix B section.

```
USERID.@PROJWRK.EXEC(PROJWRK)
USERID.@PROJWRK.EXEC(PROJMEM)
```

In this example, the 'X' command can display the PANEL4 panel of the 'USERID.@PROJWRK.EXEC' file. The same type of 'X' command function applies to the RECALL command panel also, which also will be described in detail later in the Appendix D section.

Instead of using a 'SUB' code or a 'SUB num' command, you may also use a 'J' code or 'J num' command to submit the batch jobs. The 'J' command without specifying a selection code 'num' can also be used to display all batch job output status listing. The 'J' command code is defined as an User−Exit function. More information about the User−Exit function can be found in the Appendix E section.

Note: If the edited file is a JCL file, then the 'J' command can also be invoked in edit to submit the batch job. In edit, you may also enter an 'U J' (i.e. 'USEREXIT J') command to display the batch jobs output status listing.

When the ISPF option 3.13 SuperCE panel is displayed by using a 'DIFF' command, both the 'Old DS Name' and the 'New DS Name' fields will contain the selected data set name on the panel. Thus, all you need to do is to change one of the DS Names field on the SuperCE panel to compare the two files. This feature is very handy. Please see the example of the usages of this command in the Appendix G section for details.

Note: The 'DIFF' command is also applicable to the PDS member file on the PANEL4 panel and on the ISPF option 3.4 data set list panel. Please see the tutorial section of the PANEL4 panel for details.

A sample User−Exit command, i.e. the '\3.13' command, has been provided in the User−Exit file which can display an ISPF option 3.13 panel to perform the SuperCE function. This is the original ISPF option 3.13 function. However, the '\3.13' command function cannot fill out the DS Name field with the selected data set names on the panel like the 'DIFF' command does. It is very tedious to fill in the long data set names on the SuperCE panel to compare the files frequently, especially comparing those GDG generation files, which in

most cases are very long data set names. On the PANEL3 panel, you may type a 'DIFF' command next to one file and type a 'S' command to select another file to compare two files if both files can be found on the PANEL3 panel. Therefore, the 'DIFF' command is a very handy tool to compare two files and it is a much better method than the '\3.13' command.

Note that the 'DIFF' command can be used to display a 'DIFFPNL' Utility panel, i.e. the SuperCE Utility Front−end panel. On that panel you may press the PF11 key to display a 'SELPROJ' panel and then you may select your Target New DS name form there or type the Target New DS name partially ended with a '/' or '*' code and press the Enter key. When you type the 'DIFF' command next to a data set name on the PANEL3 panel, you may also use the 'S' (Select) command code next to another data set name to select the Target New DS Name if both the Source and Target data set names can be found on the PANEL3 panel.

The '//num' command, such as '//1', '//2', etc. can be used to switch to a project from any process panel. When the '//' or '//num' command is invoked, a project selection window panel will be popped up on the screen. If you press the PF7 or PF8 key on the project selection panel, then all the project names will be displayed on the panel one by one rotatively in a loop. You can make a decision and press the Enter key to select a project that you want to switch to.

Note that the 'num' code in the '//num' command does not need to be matched up with the project number on the PANEL2 panel that you choose, i.e. the 'num' in the '//num' command and the project selection code on the PANEL2 panel are irrelevant. However, the 'num' in the '//num' command has an upper limit, which is equal to the total projects you have defined. Thus, the '//5' is an invalid command if there are only four projects or work item listed on the PANEL2 panel.

The project selected by using the '//num' command method will not be flagged with a '−' marker on the PANEL2 panel. Thus, once you made a choice on the project selection panel displayed by using a '//' command, then don't change it because this method allows you to switch to a specific PANEL3 panel from any of the PANEL2, PANEL3, PANEL4, and PANEL5 process panels at any time, and meanwhile it allows you to maintain the same 'last used' project marker on the PANEL2 panel.

This '//num' command function is a very useful if you need to work on several projects at the same time and cannot remember the names of the projects that you want to switch to. The '//' command function can remember the original member list panel. If you are only working on two projects at the same time, usually using one '//' command is sufficient. If you need to switch the projects among three or more projects at the same time, then you may consider to use the '//1', '//2', or '//3' command.

The 'FINDMEM member' command can be used to search for the members from all the PDS listed on the PANEL3 panel that match the searched member name character string. Note that this command is also applicable to the 'LISTA' command panel, the 'LISTC' command panel, and the ISPF option 3.4 data set list panel displayed by using the 'FF' command. Please see the Appendix J for more detail information about how to use the 'FINDMEM member' command.

In order to tell apart between the regular data set names and the valid TSO/ISPF commands, a dot "." will be flagged on each of the TSO/ISPF command line on the PANEL3 panel as default. To remove this dot from the panel, you may enter a 'DOT OFF' command. To reset this option back to default and display the dot marker again, you may enter a 'DOT ON' command.

The 'HEXT' command on the PANEL3 panel can be used to display a HEXTYPE file, in which it contains the hexadecimal characters, generated from the selected input file. The 'HEXT' command can also be used on the PANEL4 panel and in edit file. If the input file contains non−readable character such as the binary address code, then this tool is very handy for debugging purpose.

The name of the HEXTYPE file generated by the 'HEXT' command is always named 'USERID.@HEXTYPE.DATA'. On any process panel command line, you may enter a 'HEXT /' command to

display such HEXTYPE file on the ISPF option 3.4 data set list panel. On that panel you may rename the HEXTYPE file to the file names of 'USERID.@HEXTYPE.DATA1', 'USERID.@HEXTYPE.DATA2', etc. so that you may save the HEXTYPE files for the future reference.

The 'GS' is the short form of the 'GETSIZE' command. After the 'GS' command is executed, the result will be recorded as a data entry in the log file named 'USERID.GETSIZE.LOG'. You may enter a 'GS /' command to display this log file in a viewed listing.

3.4 The tutorial of the original form PANEL4 panel

There are two types of the PANEL4 panels. One is the original form and the other is the short form. The following is a sample regular form PANEL4 panel screen if a selection code '1' is entered in the previous level PANEL3 panel. This panel will also be displayed if a '4.1' selection code is entered on the PANEL2 panel. In this case, the display of the sample PANEL3 panel of the fourth project will be bypassed.

Figure 15. The sample regular PANEL4 panel for displaying the PDS member list

```
+-------------------------------------------------------------------------------+
|  PANEL4       The PDS Member List Panel        Menu  Functions  Utilities  Help|
|  ---------------------------------------------------------------------------- |
|  Selection Code ===> 4.1      Project Name ===> PROJECT      Row 00001 of 00004|
|  Data Set Name  ===> USERID.@PROJWRK.EXEC                      Time => 12:47:40|
|  Command ===> _____________________________________________ Scroll ===> CSR  |
|             Name     Prompt       Size   Created          Changed          ID  |
|  _________ @PROJWRK               1409  1997/08/26  1999/09/15 09:55:55  USERID|
|  __3.2____ PROJ                    148  1997/08/26  1999/09/17 12:51:17  USERID|
|  _________ PROJWRK               16156  1997/08/26  1999/10/22 11:51:24  USERID|
|  _________ PROJMEM  -            11494  1997/08/26  1999/10/22 10:51:31  USERID|
|            **End**                                                            |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

If you want to display the PANEL4 panel in a short form, then on the panel command line you may enter a 'SW' (Swap) command to switch to display the short form PANEL4 panel. Once the PANEL4 panel is switched to the short form, it will stay in that form until you enter another 'SW' command to switch back to the original long PANEL4 panel form.

To select a member file for the edit, browse, or view function, you may either type a 'E mbrname', 'B mbrname', or 'V mbrname', or type a 'E', 'B', or 'V' code next to the member name. You may type a '/' or 'S' code on a member name command line to edit a file. The 'E', '/', and 'S' are identical command codes. If you position the cursor on a member name command line without typing any code and press the Enter key, then it will edit the selected member file also.

This tool can remember which member name is on the top of the screen when the PANEL4 panel was last displayed before you switched to another panel or exit this tool session. When you enter the PANEL4 panel again, it will automatically re−display the same screen.

The function of re−displaying the same screen of the PDS member list panel can be carried over from one ISPF session to another. It is an extremely user−friendly feature if your PDS member list on the PANEL4

panel is very large.

When the PANEL4 panel is initially displayed, a message such as 'PROJMEM last edited' will be displayed on the panel. You may enter a '/' command on the PANEL4 panel command line at any time to re−display this message again.

On the above sample panel the member 'PROJMEM' has been flagged with a '−' marker. It means that this member file has been the most recently edited, browsed, or viewed. If you want to repeatedly edit, browse, or view the same member file, instead of moving the cursor next to this member to select it, all you need to do is to enter a single 'E', 'B' or 'V' command and then press the Enter key while the cursor is still at the panel command line area. This feature is very handy if the 'last used' member flag '−' is near the bottom of the PANEL4 panel screen.

This tool can remember the top code line position of an edited file screen page. The edited file can be either a PDS member or a sequential file defined in a Project List member file. This tool can set a bookmark at that line before the edit session is terminated. When you re−edit the same file that code line will automatically displayed at the top again. This is the so−called Auto Bookmark function, i.e. the 'Same Page Auto Re−display' function.

This function is very useful because it allows you to get on and off an edited file as frequently as you can and you may still be able to resume the work very easily even after several days without working on it. However, if you don't like the 'Same Page Auto Re−display' feature, then you may reset it simply by entering a 'TSO PROJ TOP ON' command on any process panel command line.

Note: Initially this tool has set the 'TSO PROJ TOP OFF' as the default because the 'Same Page Auto Re−display' is one of the best user−friendly functions provided by this tool package. Thus, to set 'TSO PROJ TOP ON' to override the default setting is not recommended.

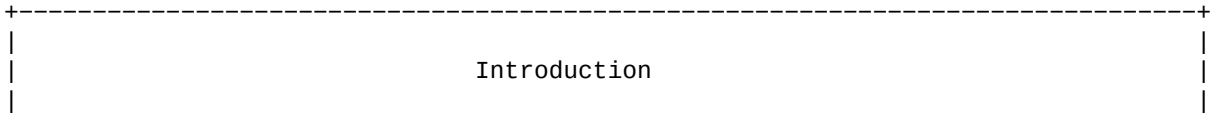
On the sample PANEL4 panel presented in previous page, a selection code '3.2' has already been specified at the line command area of the 'PROJ' member file as an example. When the Enter key is pressed, this selection code allows you to switch to the PANEL4 panel of the second data set of the third project immediately. To switch back to this PANEL4 panel from the data set '3.2' PANEL4 panel, you may simply enter a '//' command to display a '4.1' selection code on that panel and then press the Enter key. Note that such kind of 'a.b' type of selection codes can be entered on either the panel command line area or the line command area on any of the PANEL2, PANEL3, and PANEL4 panels.

On this sample PANEL4 panel, since you are already in the fourth project, thus if you want to switch to the data set '4.3' PANEL4 panels, then all you need to do is enter a '3' instead of a '4.3' selection code on the command line area. To switch back from the data set '4.3' PANEL4 panel back to the data set '4.1' PANEL4 panel, you may either enter a '1' code or just use the '//' command and press the Enter key.

Assume that you are working on two PDS files, one is on the '4.1' PANEL4 panel and the other is on the '4.3' PANEL4 panel, and you want to switch between these two panels very frequently, then by using the '//' command will not be as easy as the method of just typing a '1' code on the '4.3' PANEL4 panel and typing a '3' code on the '4.1' PANEL4 panel.

If you press the PF1 key on the PANEL4 panel, then the following introduction tutorial panel will be shown:

Figure 16. The introduction tutorial guide of the PANEL4 panel



```
|       The PANEL4 panel is a PDS Member List panel of this Personalized MVS     |
|       Project Work Manager Tool Package. It is a simulation of the 'E'         |
|       (Edit) command on the ISPF option 3.4 data set list panel. Basically     |
|       you may use all of the original edit, browse, and view commands as       |
|       you used to use on the ISPF option 3.4 Member List panel. In addition    |
|       to those commands, this panel has provided many additional functions,    |
|       such as the Edit Ring function, the PDS Member Backtrace function, the   |
|       User-Exit command function, and the extended PDS Member String Search    |
|       function, etc. which are all extremely useful.                           |
|                                                                                |
|       In the edit file, this tool has provided many Edit Macro functions       |
|       which include the Cut and Paste command function, the extended Split     |
|       and Join function, the Automatic Balance Code Insertion function, the    |
|       Comment Box creation function, the extended Column Shift function, the   |
|       extended Column Utility function, and the extended Sort Function. etc.   |
|       Note that you may use a 'TSO PROJ HELP' command or a 'PH' User-Exit      |
|       command to display the overall general introduction on-line.             |
|                                                                                |
+--------------------------------------------------------------------------------+
```

If you press the Enter key or the PF8 key, then the following tutorial, in which it contains the descriptions of various valid command line commands and the member line commands on the PANEL4 panel will be displayed.

SWAP Panels	Enter a 'SWAP' or 'SW' command can switch to the short form PDS Member List panel. You may also enter a 'SHORT' command instead of the 'SW' command to switch to the short version PDS Member List panel. It is highly recommended to use the short form PANEL4 panel if you frequently need to deal with the very large PDS in your everyday work.
CMDLIST Panel	Enter a 'CMD' command can display a Command List panel for you to select a command function if you cannot remember the command name of that function. A 'CMD' command code can also be typed next to a member to display the Command List panel.
Display Tutorial	Instead of using the 'CMD' command, if you are not familiar with a specific TSO command or Edit Macro function provided in the 'TOOLKIT.@PROJWRK.CEXEC' library, then you may type a '?' or '??' code next to that command file on the PANEL4 panel to display an on-line tutorial guide of that command.
Edit Member	Enter an 'E member' command or type an 'E', 'S', or '/' code next to a member can edit the member file. More than one member name can be specified in the command. You may use the '=' code next to several members to edit multiple files at the same time.
Note:	Instead of typing 'E', 'S', '/', or type nothing to select a PDS member file for edit, you may type an 'X' code to edit the selected PDS member also.
Note:	If you have set the data set authorize check option on the 'PWOPT' command panel and try to edit a file without the authorization check, the you may use an 'EDX' command.
Note:	If you place the cursor next to a member and press the Enter key, then a '/' will be automatically added to allow you to edit the selected member. Thus, if you want to edit a member where the cursor is located, simply press the Enter key without needing to type a '/' or a 'S' code.

Create New Member	Enter a 'S Newmbr' command, where 'Newmbr' is a new member file of the PDS, can create a new file named 'Newmbr'. You may also use a 'NEW TEMP', 'CREATE TEMP', or 'EDIT TEMP' command to create a new member. The short forms of these three commands are 'N TEMP', 'CR TEMP'. and 'E TEMP'.
Browse Member	Enter a 'B member' command or type a 'B' command code can browse a member file. More than one member name can be specified and the '=' code can be used just like the Edit command.
View Member	Enter a 'V member' command or type a 'V' command code can view a member file. More than one member name can be specified and the '=' code can be used just like the Edit command.
Note:	The Edit, Browse, and View commands can be saved in a Xref Command Buffer and can be retrieved by a 'R' command, or by using the 'E', 'B', and 'V' commands respectively.
Retrieve Member	The last edited, browsed, or viewed member will be flagged with a '−' marker with a short message whenever the PANEL4 panel is initially displayed. To repeatedly edit, browse, or view this member that was last used, you may enter a single 'E', 'B', or 'V' command and then press the Enter key. If the Enter key is pressed without any single command, then this tool will automatically redo the edit, browse, or view on the 'last used' member as what you have done previously.
ADD Member	Type an 'ADD' command next to a member can display a Project Selection panel which allows you to insert the selected PDS member into the selected Project List member file.
Locate Member	If the member list on the PANEL4 panel is very large and if the 'Last Used' member name or the short message is not shown on the screen, then you may enter a '/' command to locate the member file and re−display the 'Last Used' member message.
Note:	The 'E', 'B', and 'V' command can allow you to retrieve the most recently edited, browsed, or viewed file. To retrieve all of the previously edit, browsed, or viewed member files, the following function, i.e. the 'XRF' command function, to display the PANEL5 panel is an alternative method.
Expand Data set	If the data set name you want to search is not defined in any Project List member file, but it is very close to the data set that you are editing on the PANEL4 panel, then you may enter an 'EXP' command on the PANEL4 panel command line to display a MENUBOX and modify it to expand all data set names that match the data set name search pattern.
Display Xref	Enter an 'XRF' command can display a PANEL5 Xref List panel for easy accessing the member list panel of other data sets. All the previously executed Edit or Browse commands will be listed under the selected PDS data set name in a Xref List. You may enter a 'R' or 'Rn' command, where 'n' is a sequence number of the retrieved Edit or Browse commands, to execute it. If you type an 'XRF' code next to a member on the PANEL4 panel, then an 'Edit' command of that member will be saved in the Xref Command Buffer. If an 'XRF/' command is entered instead, then all the members will be saved in the Xref Command Buffer. You may use an 'XRF mem' command to save these members start with 'mem' character string.

Retrieve Command — Enter a 'R' command can retrieve the saved Edit or Browse commands within an ISPF session. You may type an 'XRF' command to display next level PANEL5 Xref List panel and use a '/' command to retrieve the saved Edit or Browse commands.

Backtrace Member — If several members have been edited, then you may enter a '\' command code either on the PANEL4 panel command line or on any member name line to backtrace each member from a member name tracking buffer so that you may re-edit each member file just like the Edit Ring. The Edit Ring will be described in details later. To reset the buffer to empty, enter a '\R' or a '\\\' command. You may also enter a '\\' command on the PANEL4 panel command line or member command line to display a window panel of 'last used' 12 member files and type a selection code to perform the PDS members backtrace function.

Note: — The '\', '\\' and '\\\' commands can be entered in the edit command line of the edited member file to perform the PDS members backtrace function also.

JOBCARD Command — Enter a 'JOB' command can display a panel for entering the batch job Account information. On the displayed panel, you may press the PF1 key for more information. This command applies to the PANEL2, PANEL3, PANEL4, and PANEL5 panels.

RECALL command — Instead of using the 'XRF' command to display the PANEL5 Xref List panel, there is a 'RECALL' command that can be used to display a panel of all the files that were previously edited. The RECALL panel is a very good tool for repeatedly working on the same files. The 'RECALL' command can be entered on any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. It can also be entered in the edit command line. The 'RC' command is a short form of the 'RECALL' command.

Note: — The PF4 key has been defined as the 'RECALL' function. Instead of entering a 'RC' command, you may press the PF4 key to display the RECALL command panel.

Note: — The 'RC' command works on both the PDS member command line and in the edit command line also. In edit, however, the PF4 key is NOT defined as the 'RECALL' command function.

Edit Ring function — This tool package has provided a very special feature which allows you to edit several PDS members, that are listed on the PANEL4 panel, simultaneously. It is a simulation of the VM XEDIT Edit Ring function. To use this function, simply enter a 'RING' command on the panel command line. On the PANEL4 panel you may type the 'S' code to select the member file before pressing the Enter key. If you need to select several members that are not on the same screen, then simply enter a 'RING' command and press the Enter key. Then you may type the 'S' code to select the members on another PDS member selection panel. After finish editing a member file, you may press the END key to save it and edit the next member file. Whenever the END key or CANCEL key is pressed, the next selected member will be edited. All the selected members will be edited rotatively like a ring. The only way to leave out of the ring is to enter a 'QQUIT' or a 'QQ' command. When you edit each file, you may very easily use the 'XCUT' and 'XPASTE' edit commands to manipulate the data in each file. The short forms of these two commands are the G (Get) and the 'P' (Put) commands, respectively.

Note:	You may use the 'RING' command on the RECALL command panel also. On the RECALL command panel, you need to type the selection code 'S' with the 'RING' command at the same time. However, on this panel you may either type few 'S' codes on the PANEL4 panel or wait for another PDS member selection panel is displayed and then type the 'S' code on any screen to select the PDS members.
Note:	Instead of using the 'CANCEL' command to move the Ring member file in the forward direction without saving the currently edited member file, you may use a 'NEXT' or 'N' command. Similarly, you may use a 'BACK' or 'BA' command to move Ring member file in the backward direction without saving the currently edited member file. Note that you may press the PF3 or PF12 key instead of entering the 'END' or 'CANCEL' command on the command line of the edited members. By pressing the PF4 key, i.e. the 'ED' command key, you may save the currently edited member file and move the Ring in the backward direction.
Note:	A 'RING ALL' command can be used to edit all members listed on the PANEL4 panel in a ring. The short command form of the 'RING ALL' command is the 'RINGALL', 'EDITALL', or 'ERALL' command. Instead of using these commands, you may also use a 'RING PROJ*' command, for example, to edit all members whose first four characters match a character string 'PROJ'.
Note:	Similarly, you may view or browse the PDS member files on the PANEL4 panel in a ring by using the 'VIEWRING', 'VWR', 'VRALL', 'BRRING' , 'BRR', 'BRRING ALL', or 'BRALL' command.
Search Member	Both the 'FIND str' and 'LOCATE str' commands can be used to search for a member name whose first few characters match the character string 'str'. The 'F str' and 'L str' are the short command forms of these two commands, respectively.
Note:	The 'FFIND str' and 'LLOCATE str' commands are the extended commands of the 'F str' and 'L str' commands, which can be used to search for member names that contain the characters match the string 'str' at any character position, including the leftmost character position. The 'FF str' and 'LL str' are the short command forms of these two commands.
Note:	After using an 'FF str' or 'LL str' command, you may press the PF5 key to repeatedly search for the members if the 'FF' or 'LL' command is entered on the PANEL4 panel command line.
Note:	The 'FF str' and 'LL str' command can be typed on the member command line area and you may use the PF5 key to repeatedly search for the members also. You may also enter a 'FF *str' command with the PF5 key to repeatedly search all members whose right few characters match the string 'str'. The short command form of the 'FF *str' command is 'F *str' command.
ISPF option 3.4 panel	Enter an 'FF' or 'FFL' User−Exit command on the PANEL4 panel command line or on a member name row can display an ISPF option 3.4 data set list panel of the selected PDS. On the PANEL4 panel, if an 'FFL L' or 'FFF' command instead of the 'FF' or 'FFL' command is entered, then the 'DSLISTF' Front−end Interface panel instead of the ISPF option 3.4 data set list panel will be displayed. Note that the 'FF' is the short form of the 'FFL' command and the 'FFF' is the short form of the 'FFL L' command.
Note:	The 'FF' command for displaying the ISPF option 3.4 data set

list panel and the 'FF str' command for searching the PDS member names are two different commands.

Switch Member List — Enter an 'a.b' type of commands, such as the '4.1' command, can switch from the current panel to the first PDS member list of the fourth project. If you are already on a '4.5' or '4.3' member list panel, then simply enter a '1' command to switch to the '4.1' member list panel. After you switch to the '4.1' member list panel, you may enter a '4.5' or '4.3' command to switch back to the original member list panel. This method would allow you to very easily work on several projects or work items at the same time. The '//' command can recall the 'a.b' selection code of the original member list panel.

Note: — On the PANEL4 panel, the '/4.1' and the '4.1' are the same commands. However, if you need to switch to the first project, then you must enter an '/1' instead of '1' command. The 'a.b' command can be typed on the member name command line also.

A (Above) Command — If you are on the '4.4' PANEL4 panel and you want to switch to '4.3' PANEL4 panel, instead of using a '4.3' or a '3' command, you may enter an 'A' (Above) command. If you want to switch to '4.2' PANEL4 panel, then you may enter an 'AA' command. Similarly, enter an 'AAA' command will switch to '4.1' PANEL4 panel. The 'AAAA' and 'AAAAA' are also valid commands in some cases. In this case, the 'AAAA' is invalid because there is no '4.0' PANEL4 panel. To switch back, you may enter a 'BK' command. Thus, the 'A..' and 'BK' command pairs allow you to work on two PDS files of the same project or work item back and forth very easily.

N (Next) Command — If you are on the '4.1' PANEL4 panel and you want to switch to '4.2' PANEL4 panel, instead of using a '4.2' or a '2' command, you may enter an 'N' (Next) command. If you want to switch to '4.3' PANEL4 panel, then you may enter an 'NN' command. Similarly, enter an 'NNN' command will switch to '4.4' PANEL4 panel. The 'NNNN' and 'NNNNN' are also valid commands in some cases. If there is no '4.5' PANEL4 panel, then 'NNNN' and 'NNNNN' are invild commands. To switch back, you may enter a 'BK' command. Thus, the 'N..' and 'BK' command pairs allow you to work on two PDS files of the same project or work item back and forth very easily.

Switch Project — Enter a '//' or a '//num' command can display a project selection window panel. On the panel you may press the PF7 or PF8 key to view all project names and then press the Enter key to make a choice to switch to a PANEL3 panel of the selected project. This command applies to any of the panel command lines of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The '//' command remembers the name of the original member list panel, which allows you to switch between two projects or work items back and forth easily.

Note: — After it is branched to the new project by using the '/a.b' or 'a.b' type of command, you may use a '//' command on the new project panel to switch back to the original project panel.

BACK Command — Other than using '//' command to switch between two projects you may also use a 'BACK' command to select the two projects back and forth. The short form of the 'BACK' command is the 'BK' command.

Delete Members	Enter a 'DELETE member' command or type a 'D' code on a row of the member can delete the member file. More than one member name can be specified in the command. You may use a '=' code on several rows of members to delete several files at the same time. A message window will be popped up to ask you to confirm the delete operation.
Note:	You may type a pair of 'DD' code to delete several member files bounded by the 'DD' codes at the same time. There will be NO message window popped up to ask for your confirmation of the deletion of a group of PDS members.
Note:	You may also type a 'Dn' or 'D n' command, where n is a positive integer, to delete n members down from the cursor at the same time. If you want to delete all members down from the rest of the member cursor line, then you may type a 'D999' command at the cursor line. NO warning message window will be popped up to ask for your confirmation of the deletion of a group of PDS members either.
Attention:	Please use the 'DEL' command, 'D' code, a pair of 'DD' code, or the 'D999' code with caution.
Refresh the Panel	In addition to the ISPF 'RESET' Member List command, this PANEL4 panel has provided a '/R' command that can be used to refresh all messages on the panel. You may type a '/R' code on any member command line to refresh the PANEL4 panel also.
XMIT Members	Enter a 'SF member' command or type a 'SF' code on the row of a member can send that member to a target destination. More than one member name can be specified in the command. You may type several '=' codes on multiple rows of members to send many member files to the target destination at the same time. A message window will be popped up to ask for the target destination information. Each time when the Node and Userid data is typed in the window panel, that information will be automatically saved in a database file. You may press the PF7 or PF8 keys on the window panel to retrieve the target destination code data, or press the PF10 key to display all destination Node/Userid data and select one.
Submit JCL	Type a 'SUBMIT' or 'SUB' command code on a member command line can submit a batch job. If the member is not a JCL file then an error message will be issued. You may use a 'J' User−Exit command to substitute the 'SUB' command.
Compress a PDS e	Enter a 'COMP' or 'Z' command can compress the PDS that is displayed with the member list on the PANEL4 panel.
Copy Member	Type a 'COPY' or 'C' command at a row of a member and type a new member name at the user data area on the same row can copy the selected member to a new member. If the user data area is empty, then a window panel will be popped up to ask you for the target PDS name and member name. You may copy the member to a new PDS. In this case, the new member name field can be a blank unless it will be renamed. You may also copy the member to a new member in the source PDS. In this case, you may either type the new member name in the user area and press the Enter key, or leave the user area empty to pop up a window panel and type the new member name on that panel without changing the target PDS file name.
Move Member	Type a 'MOVE' or 'M' command at a row of a member and type a new member name at the user data area on the same row can

move the selected member to a new member. If the user data area is empty, then a window panel will be popped up to ask you for the target PDS file name and member name. You may move the member to a new PDS. In this case, the new member name field can be a blank unless it will be renamed.

Note: If the record format of the source and target PDS files of the member copy or move function is the undefined format, such as the LOAD library files, then the ISPF option 3.3 Move/Copy Utility program will be invoked to perform the member move and copy functions. Otherwise, then member move and copy functions will be performed by the utility program provided by this tool. You may use a '\3.3' command on the PANEL4 panel to display the ISPF option 3.3 panel directly and execute the LOAD library member move or copy function.

Copy or Move Over or Append: If a 'C' or 'M' command is typed at a row of a member and a 'S' (Select) code is typed at another row of an existing member of the same PDS, then you may either copy/move over or copy/move append the source member file to the selected target member file.

Copy or Move to Sequential file: The 'CS' and 'MS' command can be used to copy or move the PDS member to a sequential file. When the 'CS' or 'MS' command is typed in a member command line a window panel will be popped up to ask you for the target sequential data set name. You may either enter a new data set name or an existing data set name. If the data set already exists, then the original contents in the target sequential file will be replaced with the contents in the source PDS member file.

Rename Member: Type a 'RENAME' or 'R' command in a member command line and type a new member name at the user data area on the same line can rename the selected member to a new member name.

Print a PDS: Enter a 'PRTPDS' or a 'PP' command can send the PDS members to a printer or a VM or TSO account. The selected member will be sent as a single sequential file. The received sequential file on the other MVS system can be restored back to PDS by using a 'GETPDS' command on the ISPF option 3.4 data set list panel.

Send PDS Members: Enter a 'SENDPDS' or a 'SP' command can send the PDS members member of the selected PDS in sequential file format. The received sequential file on the other MVS system can be restored back to PDS by using a 'RECEIVE INDA(/)' command on the ISPF option 3.4 data set list panel.

REXXCHK Command: Type a 'REXXCHK' command next to a REXX program can invoke the REXX compiler to do a quick compilation of the selected program and display the result listing on a panel. If you need to see the same result listing again later, you may simply enter a 'REXXCHK /' command on the PANEL4 panel.

REXXREF Command: Type a 'REXXREF' command next to a REXX program can generate the REXX source code cross reference of the selected program and display the result listing on a panel. If you need to see the same result listing again later, then simply enter a 'REXXREF /' command on the PANEL4 panel.

LISTA Command: Enter a 'LISTA' command can display all allocated data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set name to edit, browse, or view it. More than one 'E', 'B', or 'V' code to select multiple data sets is allowed.

LISTC Command	Enter a 'LISTC' command can display all cataloged data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set to edit, browse, or view it. Select more than one data set is allowed. You may enter a 'LISTC lvl−code' to display all the cataloged data set with the level of the lvl−code. If the lvl−code is omitted, then the default is your TSO logon Userid.
Note:	The 'E' command on the LISTA and LISTC panels can always be replaced with an 'ED' command.
LISTD Command	Enter a 'LISTD' or 'ST' command can display the selected PDS status information. You may specify any valid data set name (without using the bounded quotes) in the 'LISTD' command on the panel command line.
DIFF Command code	Type a 'DIFF' command next to a member name can display the ISPF option 3.13 (SuperCE) panel to compare two files. On the panel, you are responsible to fill out the target data set name for comparison. This command applies to the PANEL3, PANEL4, and PANEL5 panels. If the data set is uncataloged, then the volume serial number of the data set specified on the panel will be captured in the SuperCE Concatenation Foreground Entry, which can be displayed when the Enter key is pressed on the SuperCE Utility panel. After the 'DIFF' command is entered, a SuperCE Utility front−end panel will be displayed, on which you may press the PF11 key to display a 'SELPROJ' panel and you may select the target New DS name from that panel.
Note:	If the source and target member names are on the same PANEL4 panel screen, then you type a 'DIFF' command next to the source member and type an 'S' (Select) command next to target member on the panel to compare the two member files.
OLD/NEW Command	On any process panel if you enter a 'DIFF //' command then all the SUPERC.LIST files generated by the DIFF command will be displayed on a Selection Panel. Next to any LIST file you may type a 'V' (View) command to view that file. On the view listing you may enter a 'FM' or 'FM OLD' command to display a PANEL4 panel of all the PDS members of either the NEW or OLD PDS listed in the SUPERC.LIST file. On the PANEL4 panel you may enter a 'NEW' or 'OLD' command to switch the display of the PANEL4 panel of the NEW and OLD PDS files.
HEXT Command	Enter a 'HEXT' command next to a data set can generate an output listing file which contains the converted hexadecimal code of the input file. You may enter a 'HEXT /' command to display the previously generated HEXT file.
UPDPDS Command	Enter a 'UPDPDS' command on the PANEL4 panel command line can display a panel to select a Target PDS and perform the two PDS comparing function. After the comparison is done, the members in the Source PDS of the delta file will be included in a new created Incremental Diff PDS file.
CPYFROM Command	Type a 'CPYFROM' command next to a PDS member on the PANEL4 panel can display a panel for you to select the 'FROM' and 'FOR' options, which can be used to copy the selected PDS member file partially to a new target sequential file. This function is very useful if the input file is very large. The short form of this command is the 'CPYF' command. If this command is typed in the edit or view command line, then it will perform the same function as the 'CPY' edit command.

HEXTFROM Command — Type a 'HEXTFROM' command next to a PDS member on the PANEL4 panel can display a panel for you to select the 'FROM' and 'FOR' options, which can be used to generate the hexadecimal code of the selected PDS member file partially to a new created sequential file. This function is very useful if the input file is very large. The short form of this command is the 'HEXTF' command. If this command is typed in the edit or view command line, then it will perform the same function as the 'HEXT' edit command.

Note: — The 'CPYF' and 'HEXTF' commands are also applicable to the data sets displayed on the PANEL3 panel and the ISPF option 3.4 data set listing panel, which is displayed by using the 'FFF' User−Exit command. You may use a 'CPYF /' or 'HEXTF /' command on any process panel to display the 'CPYF' or 'HEXTF' command generated output listing file.

GS Command — Type a 'GS' (Getsize) command next to a PDS member on the PANEL4 panel can display a panel to provide the information of the size of the selected file. If the 'GS' command is entered on the PANEL4 panel command line, then a warning message will be prompted indicating that it will take long time to measure the size of the entire PDS.

LSCAN Command code — Type a 'LSCAN' command code in front of a member can find out which code lines containing the lower case characters. If a program contains a lower case in a code line, the ISPF editor will automatically change the profile to Mixed−Mode. With this command, you can detect it very easily so that you can change the code back to uppercase without being bothered by the automatic setting to Mixed−Mode from the ISPF editor.

Repeat Function — The 'PF5' key has been defined as the 'Repeat' function, which can be used to repeat any command that you have just entered on the PANEL4 panel. This command is similar to the '?' command except that the '?' command will bring up the previously executed commands on the command line, and the PF5 function will repeat the last executed command without prompting the command code on the panel command line.

CALC Command — Enter a 'CALC' command can display a Desktop Rolling Sheet Calculator. This calculator contains five calculation modes which cover the Decimal, Hexadecimal, Binary, Date, and Time calculation functions. It is an extremely useful tool.

Note: — The 'PF6' key has been defined as the 'Calc' function. Instead of entering a 'CALC' command, you may press the PF6 key to display the Desktop Rolling Sheet Calculator.

Note: — The 'CALC' command works in edit command line also. In edit, however, the PF6 key is NOT defined as the 'Calc' function.

CALENDAR Command — Enter a 'CALENDAR' command can display a Desktop Monthly Calendar. This calendar contains a Things−To−Do function and a Notebook function which can be used to setup the project work schedules and to be used as the weekly or monthly reminders. It is a very useful tool on the MVS system. The short command form of the 'CALENDAR' command is 'CAL'.

USEREXIT Command — Enter an 'USER' or 'U' command can edit the User−Exit file. You may define your own command in this file. The User−Exit file name is 'USERID.@PROJWRK.XREF(USREXIT)'. In this file, if you define a command code line such as the following:

REC: TSO RECEIVE

Then on the PANEL2, PANEL3, PANEL4, or PANEL5 panel you may just enter a 'REC' command to replace the 'TSO RECEIVE' command. The User−Exit commands are not case sensitive. This feature is very useful if the TSO or ISPF command that you want to replace is a very long command.

String Search and Massive Change

Enter a 'SRCH' User−Exit command on the PANEL4 panel command line can display a panel for you to enter a data string which will be searched from all the members of the PDS. After the search result listing file is displayed, you may enter an 'ED' command on the command line of the viewed listing and position the cursor on a member in the listing and press the Enter key to edit the member file, or you may position the cursor at the member name on the viewed listing and press the PF4 key to edit the member file. In the edited member file, you may press the PF5 key, i.e. the 'RFind' function key, to repeatedly search for the data string. If you enter an 'ED' command or press the PF4 key while the cursor is still at the command line of the viewed listing, then all of the members listed below the top screen line will be edited one by one which allows you to perform a Massive Change function of the data strings in all edited member files. You may use a 'CHANGE' edit command in the first edited file to change the data string, and then press the PF6 key, i.e. the 'RChange' function key, to repeatedly change the data string in the subsequently edited files.

Note

To repeatedly display the same viewed listing, you may just enter a 'SRCH /' command on the PANEL3 panel or on any other panels.

Note:

You may enter a 'SRCH string' command, where the 'string' is the search character string, on the PANEL4 command line or enter the search character string on the Search−For Utility panel when you issue the 'SRCH' command. If you change the 'SRCH' command to the 'XS' or 'XSRCH' command, then it will display the Extended Search−For Utility panel to perform the string search function for a single PDS.

LISTVAR Command

Enter a 'LISTVAR' or 'LV' command can display a name list of the data sets in which you have fetched the screen text data in edit by using the 'GETVAR' edit command.

PROOF Command

Type a 'PROOF' command next to a PDS member file can perform the SCRIPT file Words Proofreading function. You may also use a 'WORDPRF' or 'WORD' command for the same function.

DIR Command

Enter a 'DIR' command can display a panel of the MVS Project Work Director, which contains a list of the primary and/or the secondary Project List Group names for you to select the MVS files specified in the primary or the secondary Project List files that belong to either yourself or your teammates.

FASETUP Command

Enter a 'FASETUP' command can create a File−AID tool package Interface Profile on 'USERID.@PROJWRK.XREF(FILEAID)' file. Once the setup is completed, when you enter the Project Work Manager tool session next time, you may use the FILEAID tool to edit or browse your VSAM files on the PANEL3 panel.

TSO/WS Command

The PANEL4 panel does not support the 'TSO' or 'WS' command. You may display the ISPF Option 3.4 panel of the selected PDS by typing a 'FF' command on the PANEL4 panel, and type an 'E' command to display the PDS Member List, and then next

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                    to the selected PDS member file type a 'T' or 'W' command
                    to perform the TSO or Workstation command function.

Return Panels       Enter an 'XX' command can return back to the 'Select a
                    Project or a Work Item' panel, i.e. the PANEL2 main panel.

Exit Process        Enter a 'QQ' or 'X' command can exit the process entirely
                    and enter an 'END' command can exit the process entirely if
                    in the Project Work Director Session.

Note:               The 'X' code typing on the line command area to edit a PDS
                    member file is entirely different from the 'X' command code
                    entering on the PANEL4 panel command line to exit Project
                    Work Manager tool session.

------------------ End of the PANEL4 on-line tutorial -------------------------
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The following is the additional explanations of some essential points in the preceding on−line tutorial guide.

The above is a diagram of the sample PANEL4 panel in original regular form. The short form PANEL4 panel is displayed in a matrix format which reduces a lot panel screens. It can save you a lot of time and energy spent on scrolling the screens. You may enter a 'SW' (Swap) command to toggle between the displays of the original form and the short form PANEL4 panels. More detail descriptions about the short form PANEL4 panel will be presented later next to the Edit Macro tutorial section.

The examples of the method of using the 'XRF', 'XRF/', or 'XRF mem' command to display the PANEL5 Xref List panel from the PANEL4 panel has been described in the Appendix B section later in this document.

If you position the cursor at a member command line on the PANEL4 panel and press the Enter key, then the ISPF editor will automatically place a '/' code for you. In this case, the selected member will be edited and you don't need to type any code. Thus, unless you want to browse a member file, in which case you need to type a 'B' code, or you want to view a member, in which case you need to type a 'V' code, otherwise typing an 'E', 'S', or '/' code to edit a member file is really unnecessary. However, if you already have a bad habit to type the 'E', 'S', or '/' code on a member command line to edit a member file, then you are still allowed to do so.

When the PANEL4 panel is initially displayed, a message of the member which was most recently edited, browsed, or viewed, if there is any, will be displayed on the panel. You may enter a '/' command on the PANEL4 panel command line at any time to re−display this message.

If you use a single 'E', 'B', or 'V' command on the PANEL4 panel command line and press the Enter key without specifying any member name, then the most recently edited, browsed, or viewed member file, which is as indicated in the message, will be edited, browsed, or viewed again automatically. This is a very user−friendly feature because when you need to work on a specific PDS member for a long period of time this function allows you to get on and off the PANEL4 panel and leave the Project Work Manager tool session as frequently as you like.

The edit, browse, or view commands, which are used for editing, browsing, or viewing the PDS members, will all be automatically saved in the Xref Command Buffer. You may see these save commands on the PANEL5 Xref List panel and retrieve them by using the 'R1', 'R2', 'R', 'E', 'B', or 'V' command very easily. If the cursor is placed on the top of the PANEL5 panel command line area, instead of entering a 'R' command, you may simply press the Enter key to repeatedly recall the commands from the Xref Command Buffer. The detail information of these retrieve commands will be discussed later in the PANEL5 tutorial section.

After several members are edited, browsed, or viewed on the PANEL4 panel, other than using the 'R1', 'R2', or 'R' command on the PANEL5 panel or use a 'RC' command to display a RECALL command panel to retrieve these commands.

You may also use a '\' or '\\' command on the PANEL4 panel to backtrace these members. The '\\' command can display a window panel of 'last used' 12 member file names for you to select. The '\' and '\\' commands are very useful functions for you to work on several members on the PANEL4 panel at the same time. The '\' and '\\' commands retrieve the PDS member names from a buffer. If you want to reset the buffer to empty when you need to restart the PDS Member Backtrace function, you may enter a '\R' or '\\\' command.

The member files edited on the PANEL4 panel will be captured on the RECALL command panel. You may use the 'RC' command to display the RECALL command panel and edit the most recently worked PDS member files in the past many days.

More descriptions about the PF key usages of the Target Destination Node/Uid window panel for the 'SF' command will be presented in the Appendix F section.

In the Appendix F section, you will find that the 'SF' command can be entered on the edit command line to either send the entire edited file, or just send a code segment of the edited file by using a pair of 'CC' prefix line command.

Other than editing, browsing, or viewing the member files on the simulated PANEL4 panel, the alternative is that you may enter an 'FF' User−Exit command either on the PANEL4 panel command line or next to any member name to display an ISPF option 3.4 data set list panel of the selected PDS. On the ISPF option 3.4 data set list panel you may type an 'E' (or 'ED'), 'B', or 'V' command to edit, browse, or view a file.

Assuming that the PDS displayed on the PANEL4 panel is 'USERID.LOGON.CLIST', then next to this data set name on the ISPF option 3.4 data set list panel displayed by using the 'FF' command you may enter an 'ED' command instead of an 'E' command to display the PANEL4 panel of this PDS again.

Note: The name of the member file edited on the PANEL4 panel displayed by using the 'ED' command will not be shown on the RECALL command panel because the data set name on the ISPF option 3.4 data set list panel has no associated selection code provided by this tool package.

On the the ISPF option 3.4 data set list panel of this PDS, you may enter the following command to create a new member file named 'TEMP':

```
ED  USERID.LOGON.CLIST(TEMP)
```

The 'GS' is the short form of the 'GETSIZE' command. After the 'GS' command is executed, the result will be recorded as a data entry in the log file named 'USERID.GETSIZE.LOG'. You may enter a 'GS /' command to display this log file in a viewed listing. Note that the 'GS' command can be applicable in edit as an edit command or line command.

The 'LSCAN' command can be used to detect the lower case character string in a file. It can save your time in some cases. As we all know that the PL/I program executable code must be in upper−case. If you unfortnately inherit a very large PL/I program from someone else who foolishly wrote many mixed−case comments in the code, then whenever you edit that program the ISPF editor will automatically converts its profile to the Mixed−Mode no matter you like it or not. Sometimes those mixed−case code strings are very hard to find. If you feel it is too tedious and time consuming to find them, then you may consider using this 'LSCAN' command to help you to solve the problem.

3.5 The tutorial of the Edit Macro commands

The Edit Macro function is a very important part of the ISPF system. If you are familiar with this function and write your own Edit Macros, you will find the life of working on MVS can be a lot easier.

After you edit a PDS member file on the PANEL4 process panel and press the PF1 key, then the following tutorial, in which it contains the descriptions of the Edit Macro commands that can be applied on the edited command line, will be displayed.

Note: Some of the short command forms of the following edit commands are defined in the 'TOOLKIT.@PROJWRK.CEXEC(ALIASES)' file. If any of the short command forms conflict with your own User−defined edit commands and you want to change them, then simply copy this ALIASES file to your 'USERID.@USREXIT.EXEC' file and modify them.

XCUT Command	Enter a 'XCUT' command on the edit command line, place the cursor in the prefix line area and type a 'C' or a pair of 'CC' line command, or a 'M' or a pair of 'MM' line command, can save the code lines in a buffer in order to copy or move the saved code lines to the other location of the same or other file by using a 'XPASTE' command. Between two 'CC' or 'MM' line commands you may use a 'X' or a pair of 'XX' command to exclude some code lines that you don't want to copy or move. The short form of the 'XCUT' command is 'GET' or 'G'. You may enter a 'XCUT ?' command to get more detail information.
Note:	You may type a 'G' or a pair of 'GG' line command to replace the 'XCUT', 'GET',or 'G' edit command with a pair of 'CC' line command. You may type a 'GM' or a pair of 'GMM' line command to replace the 'XCUT', 'GET', or 'G' edit command with a pair of 'MM' line command.
Note:	You may use a 'G /' or 'G //' command to copy the source code of other file to the edit file. Please see the on−line tutorial guide of the 'XCUT' command for more information.
XPASTE Command	After entering a 'XCUT' command, you may enter a "XPASTE' command on the edit command line, and type an 'A' or a 'B' line command in the prefix line area to copy or move the saved code line above or below the command code line. The short form of the 'XPASTE' command is 'PUT' or 'P'. If you want to paste the same code line to several locations in edit, then you will need to use a 'KEEP' parameter in the 'XPASTE' command, such as the 'P K' command. The short form of the 'P K' or 'XPASTE KEEP' command is the 'PK' command. You may enter a 'XPASTE ?' command for detail information.
Note:	You may type a 'P' line command to replace the 'PUT' or 'P' edit command with an 'A' or 'B' line command, and type a 'PK' line command to replace the 'PUT KEEP' edit command with an 'A' or 'B' line command.
GETVAR Command	Enter a 'GETVAR' command on the edit command line, position the cursor at a non−blank edit screen text data in the edit file area and press the Enter key can fetch the text data. The short form of the 'GETVAR' command is the 'GV' command. You may also place the cursor at a non−blank area in the edit file area press the PF9 key, i.e. the 'XSWAP' command key, to fetch the screen data in edit. For more information about this function, please enter a 'GETVAR ?' command.
PUTVAR Command	Enter a 'PUTVAR' command on the edit command line, position the cursor at any blank line in the edit file area and then press the Enter key can paste the previously fetched screen data back to the edit screen. If more than one text data has been fetched previously, then a selection panel will be

displayed for you to select. The short form of the "PUTVAR' command is the 'PV' command. You may also place the cursor at any blank area in edit and press the PF9 key, i.e. the 'XSWAP' command key, to paste the screen data back to the edit file. For more information about this function, please enter a 'PUTVAR ?' command.

LISTVAR Command — Enter a 'LISTVAR' or 'LV' command can display a name list of the data sets in which you have fetched the screen text data in edit by using the 'GETVAR' edit command.

XSPLIT Command — The short form of the 'XSPLIT' command is 'SJ'. It is an extended Split/Join edit command function. This command has been assigned to the PF2 key in edit. If the cursor is at the Edit panel command line area or prefix line command area when the PF2 key is pressed, then the ISPF screen will be split. If the ISPF screen is not in the split mode, and if the cursor is placed at the Edit file area when the PF2 key is pressed, then the code line in the file area will be either split into two lines or joined with next code line which depends upon the cursor position. If the cursor is in between the code text, then it will be split. Else it will be joined with next line. Please enter a 'SJ ?' command for detail information about 'SJ' command. In addition, if the cursor is placed on a comment line in a comment box when the PF2 key is pressed, then the 'BX' Edit Macro command will be invoked to split or join the comment line in comment box. Please enter a 'BX ?' command for detail information about this function.

Note: — For the program library file which has RECFM FB and LRECL 80 size, it is highly recommended to set the right boundary to column 72 by uisng a 'BNDS * 72' command in order to allow the 'XSPLIT' command to work properly.

Note: — To reset the PF2 key to the original ISPF 'SPLIT' function, simply enter a 'KEYS' command and change the PF2 key from 'XSPLIT' to 'SPLIT' on the displayed Keylist Utility panel. In this case, you may keep the PF14 key as the 'XSPLIT' command function. To use PF14 key to split or join the code line, simply press the Shift key and PF2 key at the same time when the cursor is positioned on a code line in the file area.

XSWAP Command — The 'XSWAP' command can be used as the original ISPF SWAP command in edit if the cursor remains on the edit command line area or on the prefix line command area when this edit command is entered. If the ISPF screen is not in the split mode, and if the cursor is placed at the file area, then this command will perform the 'GETVAR' or 'PUTVAR' function based on whether the cursor is placed at a non−blank or a blank area. This command has already been assigned to the PF9 key in edit. If the cursor is placed at a non−blank area when the PF9 key is pressed, then the 'GETVAR' function to fetch the edit screen data will be performed. If the cursor is placed at a blank area when the PF9 key is pressed, then the 'PUTVAR' function to paste the fetched data back to the edit file will be performed.

Note: — To reset the PF9 key to the original ISPF 'SWAP' function, simply enter a 'KEYS' command and change the PF9 key from 'XSWAP' to 'SWAP' on the displayed Keylist Utility panel. In this case, you may keep the PF21 key as the 'XSWAP' command function. To use PF21 key to cut and paste the edit screen data, simply press the Shift key and PF9 key at the

same time when the cursor is positioned on a code line in the file area.

EXPAND Command — The short form of the 'EXPAND' command is 'EXP'. It can be used to expand the partially specified data set name in the edit file to a full data set name list displaying on a selection panel. On that panel, you may type a 'S' code or a pair of 'SS' code to select the file names and put them in a buffer. Then you may use a 'P' line command to paste the selected file names in the edit file. When you expand the data set name, you must place the cursor at the position such that the code to the left of the cursor in the edit file is the selected input data set name pattern.

Note: — Instead of using a 'EXP' edit command or a 'EXP' line command, in the Project List member file you may also use the PF4 key, i.e. the 'EDT' command key, to expand the data set name.

COLSHFT Command — The short form of the 'COLSHFT' command is 'CS'. It is an extended Column Shift command function. This command can be used to shift the single or a block of code lines to either left or right based on the cursor position and the leftmost non−blank character position of the code lines. When you enter a 'CS' command you need to place the cursor in the file area in edit to determine how the data columns on the selected cursor line will be shifted. To shift a block of code lines, you need to type a pair of 'CC' line commands. The comment code in the code line will not be shifted. Please enter a 'CS ?' command for more information about the 'COLSHFT' command.

Note: — Instead of using 'CS' with a pair of 'CC' line command, you may also type a '/' line command or a pair of '//' line command and place the cursor in the file area to shift the code lines to the left or right.

MBR Command — If the data set name is too long, then it is quite possible that the attached member name will be truncated on the top message line of Edit panel. You may type a 'MBR' command on the edit command line to display the member name in the message field.

BOOKMRK Command — The short form of the 'BOOKMRK' command is 'BM'. Enter a 'BM' command on the edit command line can save a bookmark of the cursor line. The cursor can be positioned on the edit command line area, prefix line area, or file area. This is refer to as the User Bookmark function.

This Project Work Manager Tool Package has provided an Auto Bookmark Function. That function can be turned off and turned back on by using a 'TSO PROJ AUTO' command.

GETBMRK Command — The short form of the 'GETBMRK' command is 'GM'. Enter a 'GM' command on the edit command line can fetch all of the bookmarks previously set by the 'BM' command. The 'GM' command can also fetch the Auto Bookmark. You may use a 'command to fetch all the bookmarks one by one in a loop.

Note: — The 'BM ON' or 'BM OFF' command can be used to switch the User Bookmark function on and off. The 'BM Q' command can display a panel of all Auto and User Bookmarks. The short form of the 'BM Q' command is the 'BMQ' or 'GMQ'. You may type a 'BM ?' or 'GM ?' command for more detail information.

Note: If you need to use the 'RECALL' command function, then it is recommended that you should not use the 'BM OFF' command to turn off the Auto Bookmark function.

AUTOINS Command The short form of the 'AUTOINS' command is 'I'. Enter an 'I' command on the edit command line, position the cursor at the prefix line area and type an 'A' or a 'B' line command can insert a new empty code line. The line commands 'A' and 'B' can be omitted. If they are not specified, the line command 'A' is assumed. The 'I' command can also be used for the Balance Code Automatic Insertion function. You may type an 'I ?' command for detail information about the 'I' command. To cancel the 'AUTOINS' command, simply alter the command into the 'AUTOINS END' command form.

Note: Instead of using the 'AI' edit command, you may also type an 'AI' line command to perform the Automatic Code Line Insertion function.

Note: You may also place the cursor at any column of a code line and press the PF4 key, i.e. the 'ED' command key, instead of using the 'I' command to perform the AUTOINS function. When you press PF4 in an edited file and enter a 'DO' code, for example, an 'END' balance code will automatically inserted by the AUTOINS command. If you place the cursor on a code line in the JCL file, and if that code line does not contain a 'DSN=' keyword, then a blank JCL code line will be added next to the cursor line automatically. If the cursor JCL line contains a 'DSN=' keyword, then the data set followed by the 'DSN=' keyword will be edited.

CMTBOX Command The short form of the 'CMTBOX' command is 'BX'. Enter a 'BX' command on the edit command line, position the cursor at the prefix line area and type an 'A' or a 'B' line command can create an empty comment box. The line commands 'A' and 'B' can be omitted. If they are not specified, the line command 'A' is assumed. You may also use a 'BX' command to split or join the code lines in a command box. Please type a 'BX ?' command for more detail information about the 'BX' command. The 'XSPLIT' command, or the PF2 key, can be used to invoke the 'BX' command to split or join the comment line in the comment box also. Please see the tutorial of the 'XSPLIT' command for details. To cancel the 'CMTBOX' command, simply alter the command into the 'CMTBOX END' command form.

Note: Instead of using the 'BX' edit command, you may also type a 'BX' line command to perform the comment box creation function.

CMTLINE Command The short form of the 'CMTLINE' command is 'CL'. Enter a 'CL' command on the edit command line, position the cursor at the prefix line area and type an 'A' or 'B' line command can create a remark comment on the code line. The line command 'A' and 'B' can be omitted. A 'CL D' line command can remove the remark comment line. You may enter a 'CL ?' command for more information. To cancel the 'CMTLINE' command, simply alter the command into the 'CMTLINE END' command form.

Note: Instead of using the 'CL' edit command, you may also type a 'CL' line command to perform the remark comment line creation function.

Note: The 'BX' and 'CL' command can be invoked from an edit PF key

by using a 'CMTUTIL' command. You may enter a 'KEYS' command in edit to display a KEYLIST panel, and replace any key, say PF4 key, with the 'CMTUTIL' command function. You may enter a 'CMTUTIL ?' command for more detail information.

COLUTIL Command — The short form of the 'COLUTIL' command is 'COL'. Enter a 'COL' command on the edit command line, position the cursor at the prefix line area and type a 'C' or a pair of 'CC' line command can perform various kinds of ISPF Editor Column Utility functions. You may enter a 'COL ?' command for more detail information. To cancel the 'COLUTIL' command, simply alter the command into the 'COLUTIL END' command form or enter a '/R' code at the first column on the horizontal command bar.

Note: — Instead of using a 'COL' with a pair of 'CC' line command, you may also type a pair of 'CXX' line command to perform various kinds of ISPF Edit Column Utility functions.

SORTUTL Command — The short form of the 'SORTUTL' command is 'SRT'. Enter a 'SRT' command on the edit command line, position the cursor at the prefix line area and type a pair of 'CC' line command can perform the SORT edit command function. You may enter a 'SRT ?' command for more detail information. To cancel the 'SORTUTL' command process, simply alter the command into the 'SORTUTL END' command form, or enter a '/R' code at the first column on the horizontal command bar.

NODUP Command — Enter a 'NODUP' command on the edit command line, position the cursor at the prefix line area and type a pair of 'CC' line command can delete all the duplicated code lines. You may enter a 'NODUP ?' command for more detail information. To cancel the 'NODUP' command, simply alter the command into the 'NODUP END' command form, or enter a '/R' code at the first column on the horizontal command bar.

LABELS Command — Enter a 'LABELS' command can display a bookmark panel of all the labels of the edited file. A label is the first word on a code line immediately followed by a colon. If a 'NN' command is entered, then the next label code line below the current line will be located. If a 'PP' command is entered, then the previous label code line above the current line will be located.

Note: — The 'LABELS' command can detect all the labels in your REXX program that are longer than 27 characters. When you process the CODEPRTX utility to format your REXX program, the long REXX labels will cause an error message to be prompted. Thus if you need to use the CODEPRTX utility to format your REXX programs sometimes, it is recommended to make all the labels in your REXX programs less than or equal to 27 characters.

CALL Command — Enter a 'CALL' command on the edit command line and position the cursor at a CALL statement can locate the code line of the Subroutine of the CALL statement. If the cursor is kept at the edit command line area when the Enter key is pressed, then the first CALL statement on the top of the screen will be used. The CALL command will build a stack of all the CALL statement code lines. You may type a 'CALL ?' command for detail information about the 'CALL' command. The 'CA' is a short command form of the 'CALL' command.

Note: — The CALL command works for the SIGNAL statement in the REXX routines also.

Note:	In COBOL, instead of using the 'CA' command you may also use the 'PERFORM' or 'PERF' command to branch to the subroutine.
RETCALL Command	The short form of the 'RETCALL' command is 'RET'. Enter a 'RET' command can retrieve the CALL line. By repeatedly entering the 'RET' command, you may return to each of the CALL statement one by one until the CALL stack is empty.
Note:	The CALL command also set up the User Bookmarks for both the CALL statement and the Subroutine code lines. Thus, instead of using the 'RET' command, you may use the 'GM' command to retrieve both the CALL statement and Subroutine code lines. You may enter a 'RET ?' command for more detail information.
Note:	In COBOL, you may also use the 'RET' command to return to PERFORM statement from the subroutine after you using the 'PERF' or 'CA' command.
TTOP Command	The short form of the 'TTOP' command is 'T'. Enter a 'T' command can set a User Bookmark of the top line of the currently displayed screen before branching to the top of the file.
BBOTTOM Command	The short form of the 'BBOTTOM' command is 'B'. Enter a 'B' command can set a User Bookmark of the top line of the currently displayed screen before branching to the bottom of the file.
FFIND Command	The short form of the 'FFIND' command is 'FF'. Enter a 'FF' command and position the cursor on a non−blank code line in the file area can setup the target data string. You may use the PF5 key to repeatedly find all the target data string, which was picked up from the file area with the 'FF' command Please enter the 'FF ?' command for more detail information.
ALL Command	Other than using the 'FF' command, you may use either the 'ALL' or the 'FSTR' (or 'FS') command. The methods of both the 'ALL' and 'FSTR' commands are similar. You may either enter the searched data string as the parameter of the 'ALL' or 'FSTR' command or position the cursor on a non−blnank code line in the file area to pick up the searched data text The 'ALL' command will exclude all the code lines that do not contain the searched data string. The 'FSTR' command will display all the code lines that contain the searched data string with several of their surrounding code lines. The 'ALL' command can also be used to perform the nested search function. You may repeatedly use several 'ALL' commands and pick the searched strings from the file area to narrow down to the code line that you want to search for. Please enter a 'ALL ?' or a 'FSTR ?' command for more detail more information.
NALL Command	Similar to the 'ALL' command, you may use a 'NALL' command to display all the code lines that do not contain the searched data string and exclude all the code lines that contain the searched data string, which can be either the parameter of the 'NALL' command, or the data text picked up from the file area by using the cursor. The 'NALL' comman performs the function which is just opposite to the 'ALL' command function.
SRCH Command and XS Command	The 'SRCH' and 'XS' edit commands are similar to the 'SRCH' and 'XS' commands on the PANEL3 and PANEL4 panels. Both edit commands can be used to search for the data strings from

all members in the PDS of the edited file. When these two edit commands are used, you may either type in the data string on the displayed Search-For Utility panel, or place the cursor under a non-blank data string to fetch it from the edit screen. The 'SRCH' command will convert the fetched data string into uppercase, and the 'XS' command will leave the fetched data string as is on the Search-For Utility panel. The 'SRCH' and 'XS' edit commands works for the PDS member files only. In the edited sequential file the 'SRCH' and the 'XS' commands will be changed to the 'FFIND' edit command.

CHGCODE Command — The short form of the 'CHGCODE' command is 'CH'. Enter a 'CH' command and place the cursor under a non-blank code string in the file area can issue a 'CHANGE' command of the extracted code string on the edit command line. You may modify the change data in the command line area and press the Enter key to change the code. To cancel the 'CH' command simply press the Enter key without modifying the change data in the command. You may enter a 'CH ?' command for more detail information.

SV Command — The 'SV' edit command is the short form of the 'SAVE' edit command.

ST Command — The 'ST' edit command can be used to display the statistics of the PDS member that is currently in edit. This command is very useful when you edit the PDS members in a Edit Ring or when you view the PDS members in a View Ring.

RECALL Command — The 'RECALL' command can be applied in edit also. It can be used to display a RECALL command panel to retrieve all previously edited files. The 'RC' is the short form of the 'RECALL' command.

EDX Command — If the edited file is a member of a PDS, then the 'EDX' edit command can be used to display the PANEL4 panel of the same PDS of the edited member file. The edited member will be displayed on the top of the PDS member listing panel. On the PANEL4 panel you may edit any other member file, enter a 'Z' command to compress the PDS, enter a 'RC' command to display the RECALL command panel, or enter a 'REXCMP' command to compile the REXX program. You may enter many other commands to do any thing that you can imagine on the PANEL4 panel.

CALC Command — The 'CALC' command can be applied on the edit command line. It can be used to display a Desktop Rolling Sheet Scientific calculator.

CALENDAR Command — The 'CALENDAR' command can be used on the edit command line to display a Desktop Monthly Calendar. The 'CAL' is the short form of the 'CALENDAR' command.

SF Command — The 'SF' command can be applied in edit to send the edited file to target destination. You may either send the entire edited file or send just a code segment to the target destination. To send a code segment, you need to use a pair of the "CC" line command. If the second "CC" line command will be placed at the bottom of the edited file, then you may use a single "C999" line command instead. Between two "CC" line commands you may use a "X" or a pair of "XX" line command to exclude the code lines that you don't want to send. This edit command allows you to grab only a part of the source file if it is very large.

CPY Command	Similar to the 'SF' edit command, if the source file is extremely large, you may enter a 'V' command next to the file on the PANEL3 or PANEL4 panel, or enter a 'VW' command next to the file on the ISPF option 3.4 panel, which was displayed via the DSLISTF panel by using a 'FFF' command, to display the file in a VIEW command listing. On the VIEW listing panel you may enter a 'CPY' command with a pair of 'CC' line command to copy the selected code segment to a new created sequential file, or you may enter a command such as the 'CPY FROM 5 FOR 10'#command to copy the code segment from line 5 to line 14 for 10 lines to a new created file.
HEXT Command	Enter a 'HEXT' command on the edit command line, position the cursor at the prefix line area and type a 'C' or a pair of 'CC' line command can generate an output listing file in which it contains the generated hexadecimal code of the input file. On the edit command line you may also enter a command such as the 'HEXT FROM 5 FOR 10' command to generate an output file in which it contains the hexadecimal code of the code segment from line 5 to line 14 for 10 lines. You may enter a 'HEXT /' command to display the previously HEXT generated output file.
FMT Command	Enter a 'FMT' command on the edit command line, position the cursor at the prefix line area and type a 'C' or a pair of 'CC' line command can format the selected source REXX program code in the edited file.
USEREXIT Command	Any of the commands defined in the User−Exit file can be applied in edit also. For example, the 'FFL' and 'FL' are the User−Exit commands that can be used to display the ISPF option 3.4 data set list utility panel. In edit, you may also enter a 'FFL' or 'FL' command for the same function. However, for the 'REC' User−Exit command, which is the TSO RECEIVE command, you will need to enter an 'U REC' command instead of 'REC' command on the edit command line. You may enter an 'U' or 'USER' command on the PANEL4 panel to see all the pre−defined User−Exit sample commands.
Note:	On the ISPF option 3.4 displayed panel, if you want to use the Edit Macro commands of this tool, instead of using an 'E' command, you may use the 'ED' command to edit the data set. The 'ED' command can display the PANEL4 panel if the selected file is a PDS.
Backtrace Member	If several members have been edited, then you may enter a '\' or '\\' command on the edit command line to perform the PDS members backtrace function just like the '\' and the '\\' commands entered on the PANEL4 panel command line or PANEL4 member command line.
REXXCHK Command	Enter a 'REXXCHK' command on the edit command line can invoke the REXX compiler to do a quick compilation of the edited REXX program and display the result listing on a panel. If you need to see the same result listing again later, then simply enter a 'REXXCHK /' command on the edit command line.
REXXREF Command	Enter a 'REXXREF' command on the edit command line can generate the REXX source code cross reference of the edited REXX program and display the result listing on a panel. If you need to see the same result listing again later, then simply enter a 'REXXREF /' command on the edit command line.
GS Command	Enter a 'GS' (Getsize) command on the edit command line can

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                    display a panel to provide the information of the size of
                    the edited file. If the 'GS' command is typed in the prefix
                    line command area, then the information of the line number
                    of the cursor will also be provided.

BIGCHAR Command     The 'BIGCHAR' or 'BIGC' command can be used to insert a big
                    character string into the edited file. You may enter a
                    'BIGC ?' command for more detail information.

RULER Command       The 'RULER' command can be used to insert a column scale
                    line into the edited file. You may enter a 'RULER ?' command
                    for more detail information.

Exit Edit           Enter a 'QQ' or 'X' command or press the PF12 key can
                    exit the edited session. Enter a 'CAN' command can also exit
                    the edited session without saving the changed code.

Note:               It is highly recommended to use the KEYS command in edit to
                    display a keylist utility panel and change the PF12 key
                    from the 'CANCEL' function to the 'CRETRIEV' function for
                    your convenience. To cancel an edited session, simply enter
                    a 'CAN' command instead of pressing the PF12 key.

Return Panels       Enter an 'XX' command on the edit command line can return
                    back to the 'Select a Project or a Work Item' panel, i.e.
                    the PANEL2 main panel.

------------------ End of the Edit Macro on-line tutorial ----------------------
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The following is the additional explanations of some essential points in the preceding on−line tutorial guide.

Most of these Edit Macros contains the built−in tutorial guide which can be displayed when you issue the command on an edited file command line with an option code '?'. Thus, the explanations of those macros are omitted in this document. However, the 'AUTOINS', 'CMTBOX', 'CMTLINE', 'COLUTIL', 'SORTUTL', and 'NODUP' are several very important Edit Macro commands provided by this tool package. More detail information about the usages of these Edit Macro commands will be presented later in the Appendix sections in the User's Guide.

The 'XSPLIT' Edit Macro command is an extended code text Split/Join command function, which is a very useful function provided by this tool. The short form of the 'XSPLIT' command is the 'SJ' command. This command has been pre−defined as the PF2 key function in edit. Traditionally when you split a code text you need type a 'TS' (Text Split) prefix line command and position the cursor on the code line and then press the Enter key. There is no easy way for you to join the two code lines except using the very clumsy 'Copy−Override' line commands. Now, all you need to do is place the cursor on the code line and press the PF2 key. If the cursor is at the end of the code line when the PF2 key is pressed, then the code text in the next code line will be joined with the current line automatically. If the next code line is too large to fit into the current line, some code data will be left behind and spill out automatically. Please enter a 'SJ ?' command for more detail information about this command function in edit. More information about the usages of the 'XSPLIT' command can be found in the User's Guide.

The 'COLSHFT' Edit Macro command is an extended Column Shift command function, which is also a very useful function provided by this tool. The short form of the 'COLSHFT' command is the 'CS' command. Traditionally when you shift the code to the left or right, you need to use one of the '(', '((', ')', '))', '<','<<', '>', and '>>' commands with a number to determine how many columns the code will be shifted. It is very tedious to count how many columns to be shifted. By using the 'CS' command you may place the cursor in the file area to determine whether you want the code to be shifted to the left or right and this tool will automatically calculate how many columns you want the code to be shifted. Please enter a 'CS ?' command for more detail information about this command function in edit. More information about the usages of the 'COLSHFT' command can be found in the User's Guide.

The 'FFIND' and 'CHGCODE' can be used to extract the data string in the file area of an edited file for the edit 'FIND' and 'CHANGE' command. These are two very useful edit commands if you need to perform the 'FIND' and 'CHANGE' functions of a very long data string in the edit file.

The 'EDX' and 'RC' commands are very too useful commands. They are very much like the external communicator to allow you to get across the boundary and enter into the outside of the edit session.

The 'EDX' Edit Macro has a very special feature in the viewed file. If the 'EDX' command is entered on a sequential viewed file, such as the viewed 'String Search−For' listing file, then it will enter the the edit session of the viewed sequential file which allows you to change that file.

The default setting of the PF12 key in the edit file is the 'CANCEL' command. However, you may enter a 'CAN' or 'QQ' command on the edit command line and press the Enter key to cancel an edited file instead of pressing the PF12 key. Therefore, it is highly recommended that you should change the setting of the PF12 key to another function. For example, you may enter a 'KEYS' command on the edit command line to display a PF keys definition panel and replace the PF12 definition with the 'RETRIEVE' or 'CRETRIEV' command function.

3.6 The tutorial of the short form PANEL4 panel

The following is a sample diagram of the short form PANEL4 panel:

Figure 17. The sample short PANEL4 panel for displaying the PDS member list

```
+-------------------------------------------------------------------------------+
|  PANEL4       The PDS Member List Panel                        Page 10 of 25|
|  -----------------------------------------------------------------------------|
|  Selection Code ===> 1.8      Project Name ===> @MISC          Time => 22:45:52|
|  Data Set Name  ===> SYS1.ISP.SISPPENU             Members 1297 to 1440 of 3535|
|  Command ===> _____________________________________________________________   |
|  Member    Member    Member    Member    Member    Member    Member    Member  |
|  ISP9P168  ISP90240  ISP92020  ISP94000  ISRDCNP   ISRDENSP  ISRECFMR  ISREDM02|
|  ISP9P174  ISP90242  ISP92030  ISP99TD1  ISRDCSF   ISRDIIS   ISRECFMV  ISREDM03|
|  ISP9P175  ISP90244  ISP92040  ISP99TD2  ISRDCSFF  ISRDINFO  ISRECFM2  ISREDRTD|
|  ISP9P920  ISP90245  ISP92050  ISR@PRIM  ISRDCSPD  ISRDINFX  ISRECFR2  ISREDRT1|
|  ISP9V028  ISP90246  ISP92060  ISR@PRIX  ISRDCSPE  ISRDLCP   ISRECFR3  ISREDRT2|
|  ISP90100  ISP90247  ISP92070  ISR@390   ISRDCSP1  ISRDLSET  ISRECFV2  ISREFR01|
|  ISP90110  ISP90248  ISP92080  ISR@390S  ISRDCSP2  ISRDNCNG  ISRECFV3  ISREFR02|
|  ISP90111  ISP91000  ISP92090  ISR@390U  ISRDDCS   ISRDNOCN  ISRECPYM  ISREFR03|
|  ISP90112  ISP91010  ISP92100  ISRBROB   ISRDDLPA  ISRDSDFF  ISRECPY1  ISREFR04|
|  ISP90113  ISP91020  ISP92110  ISRBROBA  ISRDDLWA  ISRDSDF1  ISRECPY2  ISREIRTD|
|  ISP90114  ISP91030  ISP92120  ISRBROBF  ISRDDNP   ISRDSDF2  ISRECRA1  ISREMARC|
|  ISP90120  ISP91040  ISP92130  ISRBROBN  ISRDDNPI  ISRDSNL   ISRECRA2  ISREMASG|
|  ISP90200  ISP91050  ISP93003  ISRBROM   ISRDDNPT  ISRDWSP   ISREDDE   ISREMBL0|
|  ISP90201  ISP91060  ISP93005  ISRBRO01  ISRDDNPW  ISRD0000  ISREDDE2  ISREMBMB|
|  ISP90202  ISP91070  ISP93010  ISRBRO03  ISRDENQG  ISRD0010  ISREDDE3  ISREMBME|
|  ISP90210  ISP91080  ISP93020  ISRBRX01  ISRDENQP  ISREAUTH  ISREDDE4  ISREMBTB|
|  ISP90220  ISP92000  ISP93030  ISRCMLEP  ISRDENQT  ISRECFM   ISREDDE5  ISREMCLS|
|  ISP90230  ISP92010  ISP93040  ISRDCNG   ISRDENSG  ISRECFMM  ISREDM01  ISREMCMD|
|                                                                               |
+-------------------------------------------------------------------------------+
```

The short form PANEL4 panel can be displayed if a 'SW' (SWap) command is entered on the regular form PANAL4 panel command line. To switch back to display the original regular form PANEL4 panel, simply enter a 'SW' command on this panel command line.

The member names on the short form PANEL4 panel is displayed in a matrix format. As you can see that the entire PDS members of the very large ISPF panel library file, i.e. the 'SYS1.ISP.ISPPENU' file, only contains 25 panel pages. On this sample short form PANEL4 panel the member named 'ISR@PRIM' contains the source code of the ISPF primary menu, which is a panel file we are very interested in. Note that if this library file is displayed on the regular form PANEL4 panel, it would contain as many as approximately 200 pages, which is a lot of screen pages.

Since there is no member line command area on this short form panel, therefore whenever you need to execute a command you must position the cursor to a member name to select a member. This is the major difference between the original form PANEL4 panel and the short form PANEL4 panel. The advantages of using the short form PANEL4 panel is that this panel can save you a lot of time searching for the PDS member names if the size of the PDS is very large.

On the short form PANEL4 panel, usually when the Enter key is pressed with no command code, the 'last used' member file will be selected. The PF11 key is originally set to be the 'XHELP' command function, which is redundant with the PF1 'HELP' key. Therefore, if you prefer no response on the Enter key, then you may replace the Enter key function with the PF11 key function.

To replace the Enter key function with the PF11 key function, simply enter a 'PF11' command. You may enter a 'PF11 ON', a 'PF11 OFF', or simply a 'PF11' command to toggle between the PF11 replacement function and the reservation of the original Enter key function. You may also enter a 'PF11 ?' command to find out the current status of the PF11 key Mode.

If you cannot remember some of the command names provided by this tool package, on the regular form PANEL4 panel you may enter a 'CMD' command on either the panel command line or the member selection line to display a Command List panel. However, on the short form PANEL4 panel you may also press the PF10 key to display the Command List panel other than entering a 'CMD' command. Please press the PF1 key on the Command List panel for more information of that function.

If you press the PF2 key to split the member list screen, then you will need to press the PF7 or PF8 key on this panel to scroll the screen up or down in order to allow the member list to be able to measure the size of the visible screen and adjust itself to fit into each screen page automatically.

Note: You cannot take the full advantage of using the short form PANEL4 panel if you work on the split member list screen. Thus, using the PF2 key to split the short form PANEL4 screen is not recommended.

Due to the physical constraint of this short form PANEL4 panel, there will be no statistics information of each PDS member displayed on the screen. However, when you edit each member file you may enter a 'ST' command on the edit command line and you will still be able to see the statistics information of that member on a small window panel.

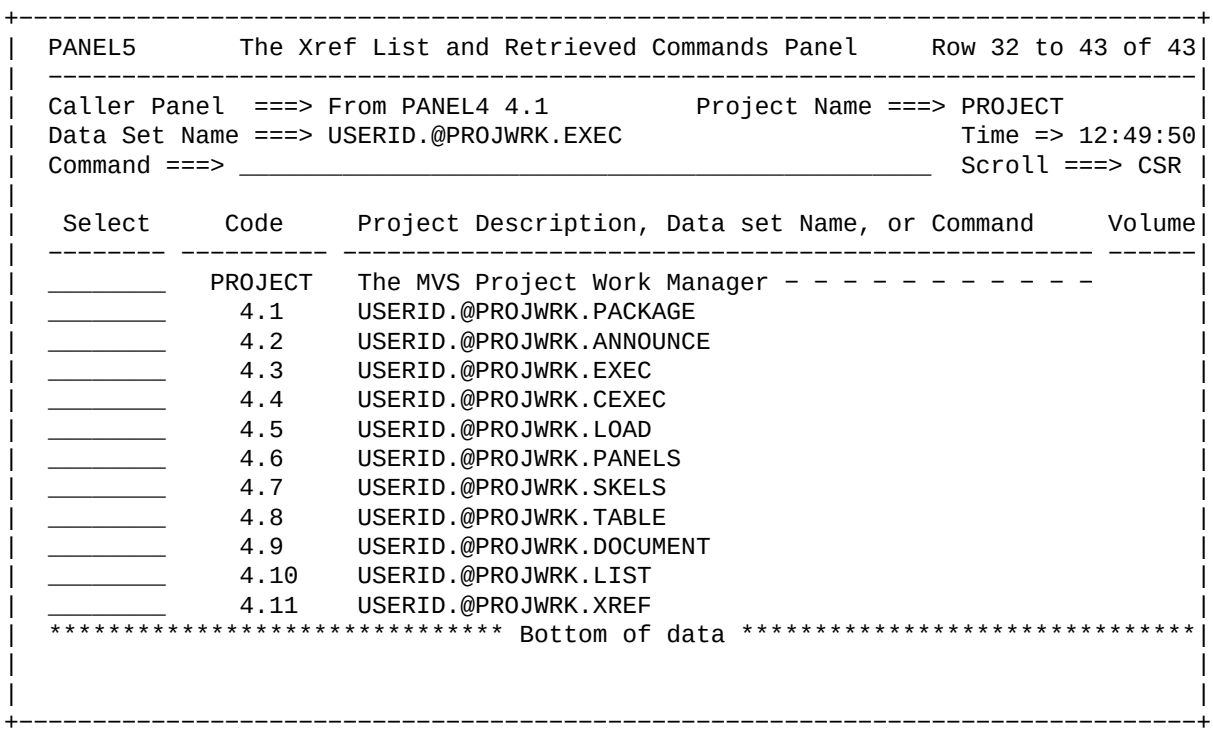
The short form PANEL4 panel is not a frequently used panel because it is not as easy as the regular form PANEL4 panel to use. However, if the size of the PDS you have to deal with is very large, then you may consider to use the short form PANEL4 panel to save your time on search the PDS members.

If you press the PF1 key on this short form PANEL4 panel, then a tutorial panel will be shown. Since it contains most of the information that has already been introduced in the regular form PANEL4 panel, thus the descriptions of the short form PANEL4 panel tutorial is omitted in this document.

3.7 The tutorial of the PANEL5 panel

The following is the sample PANEL5 panel screen if an 'XRF' command is entered in the previous level PANEL4 panel:

Figure 18. The sample PANEL5 panel for displaying the Xref List files

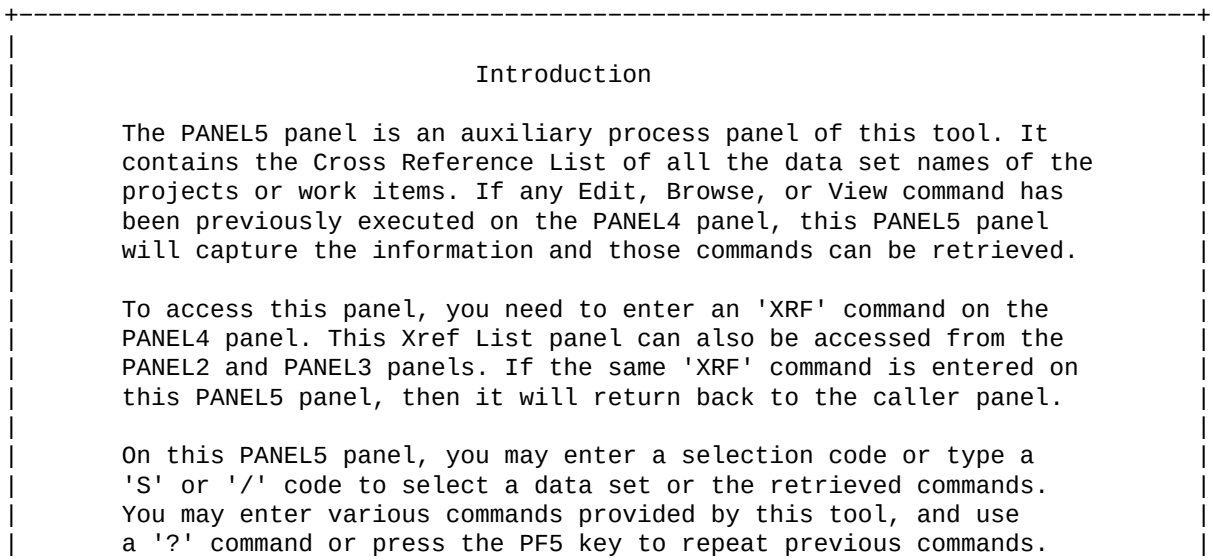


The PANEL5 Xref List panel will also be displayed if an 'XRF' command is entered on the PANEL2 or the PANEL3 panel.

In the above sample diagram only part of a single project screen portion of the entire PANEL5 Xref List has been shown on the panel. When you press the PF7 or PF8 keys, the PANEL5 panel screen will be scrolled up or down and you will be able to see the rest parts of the PANEL5 Xref List. On the other parts of the list, you can position the cursor at any column of a selection code row and press the Enter key to switch to a PANEL4 panel of the other project or work item very easily.

If you press the PF1 key on the PANEL5 panel, then the following introduction tutorial panel will be shown:

Figure 19. The introduction tutorial guide of the PANEL5 panel



```
|       Note that you may use a 'TSO PROJ HELP' command or a 'PH' User-Exit      |
|       command to display the overall general introduction on-line.             |
|                                                                                |
+--------------------------------------------------------------------------------+
```

The PANEL5 panel is not a frequently used panel. However, it is a quite useful panel in case you need to search for a data set name but cannot remember which project or work item it belongs to. By displaying the PANEL5 panel you may use a 'F' command to find the data set name and find out which project or work item contains the data set very easily and you may save a lot of time.

If you press the Enter key or the PF8 key, then the following tutorial guide of the descriptions of the usages of each data field and various valid commands on the PANEL5 process panel will be displayed:

CMDLIST Panel	Enter a 'CMD' command or press the PF10 key can display a Command List panel for you to select a command function if you cannot remember the command name of that function.
Show Xref Panel	The PANEL5 panel contains a list of the descriptions of each project that you have defined, and a list of data set names associated with the 'a.b' selection codes. To display this Xref List panel, you need to enter an 'XRF' command on the panel command line of the PANEL2, PANEL3, or PANEL4 panel.
Select data set	You may enter a '4.5' type of selection code, type a '/' or 'S' code on the line command area of the '4.5' data set entry and press the Enter key to switch to a data set '4.5' PANEL4 panel. On the PANEL5 panel, you may also position the cursor on a selection code and press the Enter key to select a data set. If an 'XRF' command is entered on the PANEL5 panel then it will return back to the PANEL4 panel. You may specify a member name with the 'XRF' command or position the cursor at a retrieved command row with the 'XRF' command and the selected member will be displayed at the top of the PANEL4 panel.
Retrieve Command	The previously executed Edit, Browse, or View commands are saved in a command buffer for the future use. On the PANEL5 Xref List panel, the saved commands are listed under the current selected data set name with the selection code 'R1', and 'R2', etc. You may either enter a 'R' or a 'Rn' command to retrieve the commands. The 'R2' command, for example, can retrieve the second command in the list on the PANEL5 panel. You may also use a 'B2' command to browse the second file. If a 'R' command is entered repeatedly, then all previously executed commands will be retrieved one by one in a loop. You may enter a '?' command to recall 'R' and 'Rn' commands, or type a '/' code, or position the cursor on the retrieved command and press the Enter key to execute it. Enter a 'D' code on a retrieved command line can delete it from the buffer. Enter a '/R' command on the command line can remove all the retrieved commands of the specific PDS and reset a part of the Xref Command Buffer to empty. Note that the Xref Command Buffer of all PDS will be reset to empty automatically when the ISPF session is terminated.
Edit GDG files	When the GDG base file is selected on the PANEL5 panel, all the GDG generation files of the GDG base will be displayed with a selection code of 'G1', 'G2', or 'G3', etc. You may enter the selection code of the GDG generation file to edit the file. If a 'G' command is entered, then the GDG files

will be edited one by one rotatively in a loop.

Instead of entering a 'G1', 'G2', or a 'G' command to edit the GDG files, you may position the cursor on the row of the GDG file and press the Enter key, or type a 'E', 'B' or 'V' code on the file name row to edit, browse, or view the file.

If the GDG files are scrolled up or down to another screen, then you may enter a '/' or '\' command to scroll the top row of the GDG files back to the current screen of the PANEL5 Xref List panel. The '/' and '\' command functions for the Retrieved Commands are different, which will be described in next command item.

Scroll Top Row

When the Xref List is initially displayed, the top row will contain the selected project or work item member name and its function. You may press the PF7 key or PF8 key to scroll the rows up or down, which will move the top row out of its original position. To scroll back, you may type a '/' command. If there is any retrieved command lines displayed for the selected PDS, then you may use a '\' command to scroll the first retrieved command to the top of the screen.

Note that on this Xref List panel you may type a '/' code to select a data set of the project or work item, or select the old Edit, Browse, or View command. When the '/' code is typed on the row of a project or work item name, the PANEL3 panel instead of the PANEL4 panel will be displayed. Only one '/' code can be used at a time. If the selected entry is a TSO or ISPF command, then it will be executed.

XMIT PDS Members

Type a 'SF' code and use '=' code on several rows of the data sets can send several PDS files at the same time. A window panel will be displayed for you to fill in the target destination information.

Print a PDS

Type a 'PP' code on several rows of the data sets can send the members of the selected PDS to a printer. A window panel will be popped up to ask for the send target destination information. The selected members will be merged into a flat file before sending to the target. The received flat file on the other MVS system can be restored back to PDS by using a 'GETPDS' command on the ISPF option 3.4 data set list panel.

Send PDS Members

Type a 'SP' code on several rows of the data sets can send the members of the selected PDS to a target. A window panel will be popped up to ask for the send target destination information. The selected members will be sent as a flat file. The received flat file on the other MVS system can be restored back to PDS by using a 'RECEIVE INDA(/)' command on the ISPF option 3.4 data set list panel.

Submit JCL

Type a 'SUB' code on the row of a retrieved command, which happen to be an Edit or a Browse command of a JCL file, can submit a batch job of that JCL file. If the selection code of the retrieved command is 'R1', instead of typing a 'SUB' code, you may enter a 'SUB 1' or 'SUB R1' command to submit the batch job also.

Search Data set or Marker

Enter a 'LOCATE data' or a 'L data' command, where data is a character string to be searched, can find the data set name that contains the searched string. The 'FIND data' or the 'F data' command is another format of this function. Enter a 'LL marker' or a 'FF marker' command can find a

specific marker code. This is a very useful function if the data set name list on the PANEL5 panel is very large. You may use the PF5 key to repeat the search for the data set on the panel.

LISTA Command — Enter a 'LISTA' command can display all allocated data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set name to edit, browse, or view it. More than one 'E', 'B', or 'V' code to select multiple data sets is allowed.

LISTC Command — Enter a 'LISTC' command can display all cataloged data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set to edit, browse, or view it. Select more than one data set is allowed. You may enter a 'LISTC lvl−code' to display all the cataloged data set with the level of the lvl−code. If the lvl−code is omitted, then the default is your TSO logon Userid.

Note: — The 'E' command on the LISTA and LISTC panels can always be replaced with an 'ED' command.

LISTD Command — You may specify any valid data set name (without using the bounded quotes) in the 'LISTD' command to display the data set information. If the 'LISTD' command code is typed on a data set name row or retrieved command row on the PANEL5 panel, then the information of the selected data set will be displayed.

DIFF Command code — Type a 'DIFF' command code in front of a data set name can display an ISPF option 3.13 (SuperCE) panel to compare two files. On the panel, you are responsible to fill out the target data set name for comparison. If the selected data set is uncataloged, then the volume serial number of the data set will be captured on the panel.

Copy data set — Type a 'COPY' or 'C' code on the row of a data set can copy it to a new data set. A message window will be popped up to ask for the new data set name. If the data set is a PDS, then it will perform the partitioned data set copy function. If the data set is a PDS with a member, then it will perform the PDS member copy function. If the data set is sequential file, then the sequential file copy function will be performed.

JOBCARD Command — Enter a 'JOB' command can display a panel for entering the batch job Account information. On the displayed panel, you may press the PF1 key for more information. This command applies to the PANEL2, PANEL3, PANEL4, and PANEL5 panels.

RECALL Command — The 'RECALL' command can be used to display a panel of all the files that were previously edited. The RECALL panel is a very useful tool for repeatedly working on the same files. The 'RECALL' command can be entered on any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. It can also be entered in the edit command line. The short command form of the 'RECALL' command is 'RC'. You may also press the PF4 key for the 'RECALL' function.

CALC Command — Enter a 'CALC' command can display a Desktop Rolling Sheet Calculator. This calculator contains five calculation modes which cover the Decimal, Hexadecimal, Binary, Date, and Time calculation functions. It is an extremely useful tool.

Note: — The 'PF6' key has been defined as the 'Calc' function.

	Instead of entering a 'CALC' command, you may press the PF6 key to display the Desktop Rolling Sheet Calculator.
CALENDAR Command	Enter a 'CALENDAR' command can display a Desktop Monthly Calendar. This calendar contains a Things−To−Do function and a Notebook function which can be used to setup the project work schedules and to be used as the weekly or monthly reminders. It is a very useful tool on the MVS system. The short command form of the 'CALENDAR' command is 'CAL'.
Switch Project	Enter a '//' or a '//num' command can display a project selection window panel. On the panel you may press the PF7 or PF8 key to view all project names and then press the Enter key to make a choice to switch to a PANEL3 panel of the selected project. This command applies to any of the panel command lines of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The '//' command remembers the name of the original member list panel, which allows you to switch between two projects or work items back and forth easily.
String Search and Massive Change	Enter a 'SRCH' User−Exit command in front of a PDS data set name can display a panel for you to enter a data string which will be searched from all the members of the PDS. After the search result listing file is displayed, you may enter an 'ED' command on the command line of the viewed listing and position the cursor on a member in the listing and press the Enter key to edit the member file, or you may position the cursor at the member name on the viewed listing and press the PF4 key to edit the member file. In the edited member file, you may press the PF5 key, i.e. the 'RFind' function key, to repeatedly search for the data string. If you enter an 'ED' command or press the PF4 key while the cursor is still at the command line of the viewed listing, then all of the members listed below the top screen line will be edited one by one which allows you to perform a Massive Change function of the data strings in all edited member files. You may use a 'CHANGE' edit command in the first edited file to change the data string, and then press the PF6 key, i.e. the 'RChange' function key, to repeatedly change the data string in the subsequently edited files.
Note	To repeatedly display the same viewed listing, you may just enter a 'SRCH /' command on the PANEL3 panel or on any other panels.
DIR Command	Enter a 'DIR' command can display a panel of the MVS Project Work Director, which contains a list of the primary and/or the secondary Project List Group names for you to select the MVS files specified in the primary or the secondary Project List files that belong to either yourself or your teammates.
FASETUP Command	Enter a 'FASETUP' command can create a File−AID tool package Interface Profile on 'USERID.@PROJWRK.XREF(FILEAID)' file. Once the setup is completed, when you enter the Project Work Manager tool session next time, you may use the FILEAID tool to edit or browse your VSAM files on the PANEL3 panel.
Return Panels	Enter an 'XX' command or press the PF3 key can return back to the 'Select a Project or Work Item' panel, i.e. the PANEL2 main panel.
Exit Process	Enter a 'QQ' or 'X' command can exit the process entirely and enter an 'END' command can exit the process entirely if in the Project Work Director Session.

```
------------------ End of the PANEL5 on-line tutorial -------------------------
```

The following is the explanation of some essential points in the preceding on−line tutorial guide.

As described on the tutorial screen, the first type of '/' is the command that can be entered on the PANEL5 panel command line to retrieve the original position of the PANEL5 screen, the second type of '/' is the command code that can be typed next to a selection code select the project or work item. Thus, these are two different types of '/' commands.

The backslash command '\' is very useful if the data set name list of the selected project is very large and the retrieved edit, browse, or view commands are in the deep bottom of the list. By using the '\' command you don't need to press the PF8 key to scroll the screen down many times to locate those commands on the PANEL5 panel.

If you use the PANEL5 panel only for the purpose of retrieving the previously edited files on the PANEL4 panel, then there is a better way for this function, which is the 'RECALL' command function. More detail information about the 'RECALL' command can be found in the Appendix D section.

Instead of using the PANEL5 panel and the RECALL command panel to edit the most recently edited file, you may enter an 'EDLAST' or 'EDL' User−Exit command on the command line of any of the PANEL2, PANEL3, or PANEL4 panel to repeatedly edit the most recently edited file.

There are three methods can be used to edit the most recently edited file, which are:

1. When you are on the PANEL2 panel you may press the Enter key twice to display the PANEL4 panel and then enter an 'E' command to edit the most recently edited file.

2. When you are on any panel you may enter a 'RC' command to display the RECALL command panel and press the Enter key to edit the most recently edited file.

3. When you are on the PANEL4 panel and just finished editing a file, then you may either an 'E' or 'R' command to re−edit the same file, or enter an 'XRF' command to display the PANEL5 panel and press the Enter key to retrieve the edit command of the most recently edited file.

None of the above described methods is simpler than the 'EDL' command. Therefore, the 'EDL' command function is the most user−friendly function. The 'EDL' command can be entered on any command line of the PANEL2, PANEL3, PANEL4, and PANEL5 panels.

The drawback of the 'EDL' command is that sometimes you may not be able to always remember which data set was last edited. Thus, the 'EDL' command might bring up a data set on the edit screen which is not what you want to work with. Thus, in my opinion using the 'RECALL' command is still the best method for repeatedly editing the most recently edited files.

After you edit several PDS member files on the PANEL4 panel, other than using the '\' or '\\' command to edit the previously edited member files of the same PDS, you may also use a 'EDL n' command, such as 'EDL', 'EDL 2', or 'EDL 3', etc. command to edit the previously edited files also, where the code '1' can be omitted and the code 'n' means the n−th last edited file. Note that the 'EDL n' command can edit the previously edited member that may not belong to the same PDS as the currently edited member file. The 'EDL n' command and the 'RECALL' command are closely related. To find out which file will be edited by the 'EDL n' command, you may check out from the n−th entry on the RECALL command panel. If the RECALL command panel is empty, then the 'EDL n' command will not work.

3.8 The tutorial of the PROJDIR panel

The PROJDIR panel is the Project Work Director function panel provided by this tool package. This panel will be displayed if a 'DIR' command is entered on the panel command line of the PANEL2, PANEL3, PANEL4, PANEL5, or the RECALL command panel.

On this panel, you may enter a selection code to select a Project List Group and display a PANEL2 panel of either your own primary or secondary Project Work Manager tool session, or the PANEL2 panel of your team member's Project Work Manager tool session.

When the 'DIR' command is entered on the panel in the Project Work Manager tool session, the following sample PROJDIR panel screen will be displayed and the Project Work Director session will be entered:

Figure 20. The sample Project Work Director Selection panel

```
+-------------------------------------------------------------------------------+
|  PROJDIR      The Project Work Director Selection Panel         Row 1 to 5 of 5|
|  ---------------------------------------------------------------------------- |
|  Project List Director ===> USERID.@PROJWRK.XREF(PROJDIR)      Time => 12:55:43|
|  Command ===> _____________________________________________ Scroll ===> CSR  |
|                                                                        Volume|
|   Select  Code    Name     The Project List Group functional descriptions     |
|  -------- ---- ---------- ------------------------------------------------- |
|  ________   1   PRIMARY  - The primary Project List Group for USERID         |
|  ________   2   GROUP1     The secondary Project List Group1 for USERID      |
|  ________   3   JOHN       The primary Project List Group for JOHN           |
|  ________   4   MARY       The primary Project List Group for MARY           |
|  ________   5   JOSEPH     The primary Project List Group for JOSEPH         |
|  ****************************** Bottom of data ******************************|
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

Initially when this PROJDIR panel is displayed, the PRIMARY Project List Group has already been created in the PROJDIR database file. This Group entry uses the following two files, which are the original two primary Project List Group files that you have been using, in the first Project Work Manager tool session:

- 'USERID.@PROJWRK.LIST', and
- 'USERID.@PROJWRK.XREF'.

Note: The PROJDIR database file resides in the 'USERID.@PROJWRK.XREF' library, which is created at the first time when you invoke the 'DIR' command. The PRIMARY Project List Group entry contains three code lines, which is created in the database at the same time.

If you enter an 'E' (Edit) command on the PROJDIR panel, then the PROJDIR data base file will be displayed in edit mode. You may modify this file and very easily create the new entries instead of using the 'NEW' or 'CREATE' command.

Figure 21. The sample Project Work Director database file

```
+-------------------------------------------------------------------------------+
|  /*---------------------------------------------------------------        |
|  /* PROJDIR: THIS IS THE PROJECT LIST GROUP NAMES CONTROL FILE          |
|  /*---------------------------------------------------------------        |
```

```
|  PRIMARY : @FUNCTION - The primary Project List Group for USERID                |
|  PRIMARY : LIST - USERID.@PROJWRK.LIST                                          |
|  PRIMARY : XREF - USERID.@PROJWRK.XREF                                          |
|  /*-------------------------------------------------------------------         |
|  GROUP1 : @FUNCTION - The secondary Project List Group for USERID               |
|  GROUP1 : LIST - USERID.@PROJWRK.LIST1                                          |
|  GROUP1 : XREF - USERID.@PROJWRK.XREF1                                          |
|  /*-------------------------------------------------------------------         |
|  JOHN : @FUNCTION - The primary Project List Group for JOHN                     |
|  JOHN : LIST - JOHN.@PROJWRK.LIST1                                              |
|  JOHN : XREF - JOHN.@PROJWRK.XREF1                                              |
|  /*-------------------------------------------------------------------         |
|  MARY : @FUNCTION - The primary Project List Group for MARY                     |
|  MARY : LIST - MARY.@PROJWRK.LIST1                                              |
|  MARY : XREF - MARY.@PROJWRK.XREF1                                              |
|  /*-------------------------------------------------------------------         |
|  JOSEPH : @FUNCTION - The primary Project List Group for JOSEPH                 |
|  JOSEPH : LIST - JOSEPH.@PROJWRK.LIST1                                          |
|  JOSEPH : XREF - JOSEPH.@PROJWRK.XREF1                                          |
|  /*-------------------------------------------------------------------         |
+---------------------------------------------------------------------------------+
```

When a 'NEW' or 'CREATE' command is entered on the PROJDIR panel, a 'PRJDNEW' window panel will be popped up. The following is the sample 'PRJDNEW' window panel screen:

Figure 22. The PRJDNEW panel for creating a Project List Group entry

```
+---------------------------------------------------------------------------------+
|                                                                                 |
|                Create Project List Group Entry                                  |
|                                                                                 |
|      Enter other person's TSO account Userid, or                                |
|      create your secondary Project List Group:                                  |
|                                                                                 |
|      TSO account Userid  . . . :  USERID                                        |
|                                                                                 |
|      LIST/XREF file index  . . :  ___    (Optional)                             |
|                                                                                 |
|                                                                                 |
|      Press ENTER to confirm Create function.                                    |
|      Press END or CANCEL to cancel Create.                                      |
|                                                                                 |
|                                                                                 |
+---------------------------------------------------------------------------------+
```

Initially on this panel your TSO Userid will be displayed at the TSO account Userid field as default. You may either

1. change it to a TSO Userid of your teammate and press the Enter key to create a Project List Group entry in the PROJDIR database so that you can select that entry to access the MVS files defined in the Project List file organized by your teammate, or

2. keep it as your own Userid and leave the LIST/XREF file index field a blank when you press the Enter key so that a secondary Project List Group name entry will be created in the database file.

Note: The LIST/XREF file index field must be either a blank or a positive integer.

For example, if you fill in the TSO Userid field with a name 'JOHN' and leave the LIST/XREF file index field a blank, then the primary Project List Group entry of 'JOHN' will be created, which will use the following two files in the Project Work Manager tool session:

- 'JOHN.@PROJWRK.LIST', and
- 'JOHN.@PROJWRK.XREF'.

The GROUP1 is the secondary Project List Group entry which can be created by this PRJDNEW function when you keep the TSO Userid field as your own TSO Userid and leave the LIST/XREF file index field a blank. This Group entry will use the following two files in the Project Work Manager tool session:

- 'USERID.@PROJWRK.LIST1', and
- 'USERID.@PROJWRK.XREF1'.

If you press the PF1 key on the PROJDIR panel, then the following introduction tutorial panel will be shown:

Figure 23. The introduction tutorial guide of the PROJDIR panel

```
+-------------------------------------------------------------------------------+
|                                                                               |
|                              Introduction                                     |
|                                                                               |
|       The PROJDIR panel can be used to perform the Project Work Director      |
|       function. It is one level higher than the Project Work Manager          |
|       function. You may enter a 'DIR' command in the Project Work Manager     |
|       session to enter into the Project Work Director session. The 'DIR'      |
|       command can be entered in any command line of the PANEL2, PANEL3,       |
|       PANEL4, PANEL5, and RECALL command panels.                              |
|                                                                               |
|       This tool can create many Project List Group entries and it allows      |
|       you to access your own primary and secondary Project List files.        |
|                                                                               |
|       If the members of your Software Development Division are all using      |
|       this tool and if they have granted you the W/R authority of their       |
|       TSO accounts, then you may use this Project Work Director function      |
|       to access their MVS data sets organized by them very efficiently.       |
|       Note that you may use a 'TSO PROJ HELP' command or a 'PH' User-Exit     |
|       command to display the overall general introduction on-line.            |
|                                                                               |
+-------------------------------------------------------------------------------+
```

If you press the Enter key or the PF8 key, then the following tutorial guide of the descriptions of the usages of each data field on the PROJDIR process panel will be displayed:

```
--------------------------------------------------------------------------------

Create New Entry   Enter an 'S' (Select), 'N' (New), or 'CR' (CReate) command
                   can display a window panel, which allows you to create a
                   new Project List Group name entry in the PROJDIR database
                   file. The PROJDIR database file resides in the XREF library
                   and initially contains an entry of your primary Project
                   List which contains two file names: 'USERID.@PROJWRK.LIST'
                   and 'USERID.@PROJWRK.XREF'. Each Project List Group entry
                   contains three code lines in the PROJDIR database file.

Note:              On the window panel, initially your TSO Userid is shown. If
                   you change it to a TSO Userid of your teammate, then the
                   new entry containing your teammate's primary Project List
                   Group file names will be created. If you keep the TSO Userid
                   unchanged and leave the LIST/XREF file index field blank,
                   then a secondary Project List Group file name of your own
                   which contains two file names of 'USERID.@PROJWRK.LIST1' and
```

'USERID.@PROJWRK.XREF1' will be created. The LIST/XREF file index field must be either a blank or a positive integer.

Note: Instead of fill in the new TSO userid of the new Project List Group on a window panel, you may directly specify it in the 'NEW' command. For example, if the new TSO userid 'JOHN' is the TSO account that you want to create a new entry on the PROJDIR panel, then you may enter a 'N JOHN' command to create a new entry named 'JOHN' and combine the original two−step process into one.

Select an Entry Enter an entry selection code, type a '/' code in front of an entry name, or position the cursor on a data entry and press the Enter key can select a Project List Group.

Note: If the selection code you entered is '2', then on any of the process panels in the Project Work Manager session you may enter a 'DIR 2' command to select a Project List Group and bypass the display of the Project Work Director panel. Note that the 'DIR 2' command can be simplified as the '0.2' command. Similarly, instead of using the 'DIR' command in the Project Work Manager session, you may use a '0' command.

Retrieve an Entry The last selected entry will be flagged with a '−' marker. To retrieve it, instead of typing any selection code or manipulating the cursor, you may simply press the Enter key.

Locate an Entry If the Project List Group name list on the PROJDIR panel is very large and if the '−' marker is not shown on the screen, then you may enter a '/' command on the panel command line to locate it and re−display the message of the 'Last Chosen' Project List Group.

Edit Database Enter an 'E' command can edit the PROJDIR database file in the XREF library. In edit, you may add or delete the Project List Group entries and modify its contents. The 'E' command can be typed on any entry line command area also.

Browse Database Enter a 'B' command can browse the PROJDIR database file. The 'B' command can be typed on any entry line command area also.

Rename an Entry Type a 'R' command code in front of a Project List Group entry can display a window panel for you to rename it to a new name. You may use an 'E' command to edit the database file and modify three code lines to perform the same Rename function also.

Note: Only one 'R' command code can be specified at a time.

Delete an Entry Type a 'D' command code in front of a Project List Group Entry can delete it from PROJDIR database file. You may also enter an 'E' command to edit the database file and remove the three code lines of the selected Project List Group Entry to perform the same Delete function. When the 'D' code is typed in, a message window will be popped to ask you to confirm the delete operation.

Search an Entry Enter a 'LOCATE data' or a 'L data' command, where data is a character string to be searched, can find the Project List Group entry that contains the searched string in the name field or the description field. The 'FIND data' or the 'F data' command is another format of this function.

Refresh the Panel Enter a 'RESET' or '/R' command on the panel command line

```
                    or type a '/R' command code on any line command area can
                    refresh the PROJDIR panel.

Compress Data set   Enter a 'COMP' or 'Z' command can compress the Project List
                    file, i.e. the 'USERID.@PROJWRK.LIST' file.

USEREXIT Command    Enter an 'USER' or 'U' command can edit the User-Exit file.
                    You may define your own command in this file. The User-Exit
                    file name is 'USERID.@PROJWRK.XREF(USREXIT)'.

Repeat Function     The 'PF5' key has been defined as the 'Repeat' function,
                    which can be used to repeat any command that you have just
                    entered on the PROJDIR panel. This command is similar to the
                    '?' command except that the '?' command will bring up the
                    previously executed commands on the command line, and the
                    PF5 function will repeat the last executed command without
                    prompting the command code on the panel command line.

Exit Process        Enter a 'QQ', 'END', or 'X' command can exit the process
                    entirely. Note that when you press the PF3 key on the
                    PROJDIR panel, instead of terminating the process entirely,
                    it will return to the caller panel on the Primary Project
                    Work tool session where the 'DIR' command was initally
                    invoked.

------------------ End of the PROJDIR on-line tutorial ------------------------
```

The following is the explanation of some essential points in the preceding on−line tutorial guide.

If the members of your Software Development organization are all using this tool and if they have already granted you the W/R access authority of their TSO accounts, then you may use this tool function to access the MVS data sets organized by them very easily and very efficiently.

The Project Work Director function is one level higher than the Project Work Manager function. By using this tool, the MVS Data Management group can also manage the MVS data sets and collect the Data Set information of the entire Software Development Division very easily.

The 'DIR' command on the process panel can be simplified as the '0' command, which means that the Project Work Director is the highest process level. By using a command such as '0.1', '0.2', or '0.3', etc. you may swap among several different Project Work Manager tool sessions without needing to display the Project Work Director panel. This command is very easy to use and it is highly recommended.

Note: Once you have established the Project Work Manager and Project Work Director relationship, you can always start to use the '0.1' and '0.2' commands without needing to use the 'DIR' command first in a Project Work Manager tool session. However, there is no command like the 'TSO PROJ' command to initially display the PROJDIR panel first because the PROJDIR panel can be displayed only after the primary Project Work Manager tool session is established.

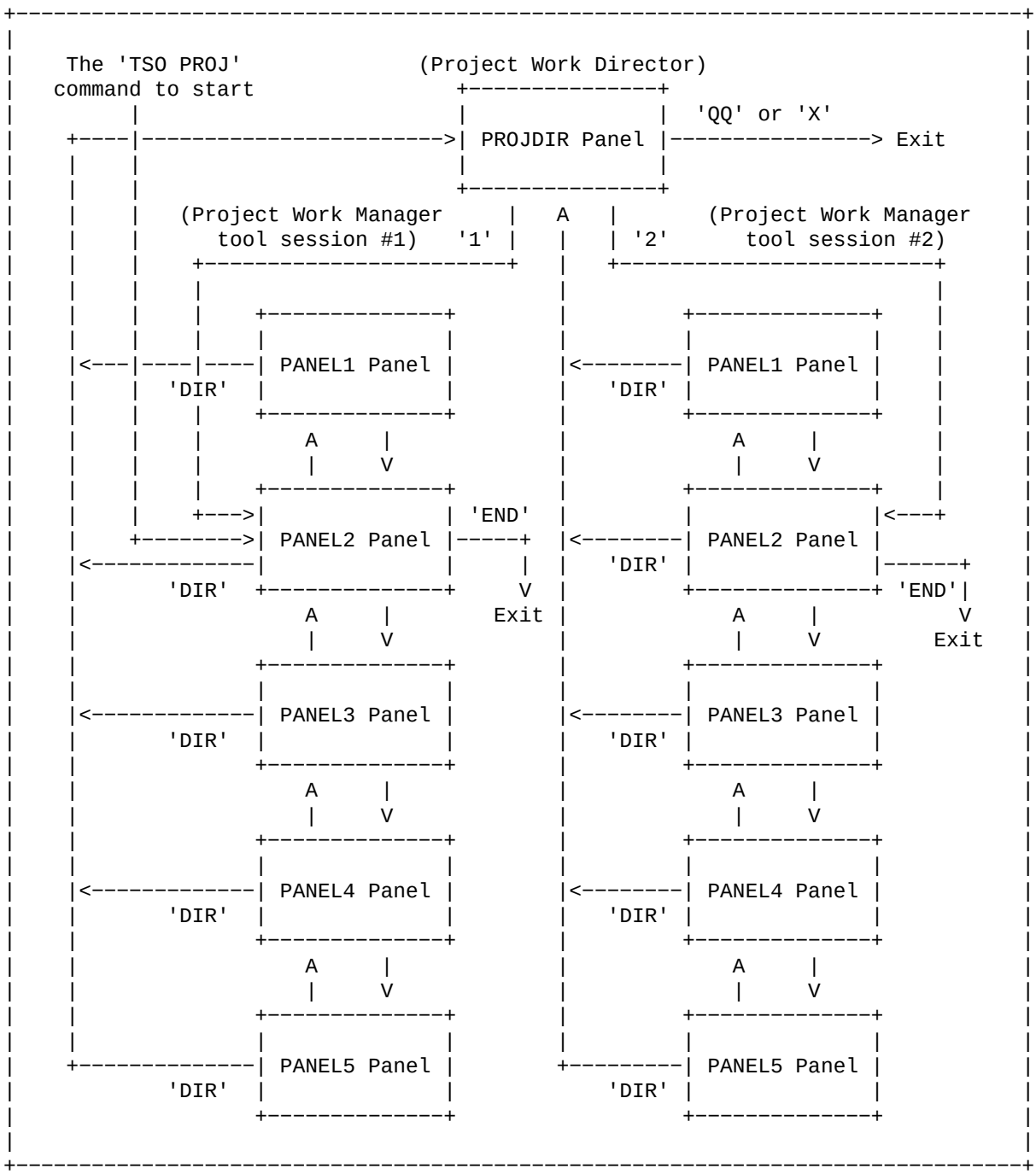
In the Project Work Director session, whenever you enter a 'QQ' command on the PANEL2, PANEL3, PANEL4, PANEL5, or the RECALL command panel, the Project Work Manager tool session will be terminated and the PROJDIR panel will be re−displayed. To exit the process entirely in the Project Work Director session without re−displaying the PROJDIR panel, you need to enter an 'END' command instead. The panelid field on each process panel can help you to determine when you should use a 'QQ' command and when you should use an 'END' command to exit the process entirely. In the regular Project Work Manager tool session, the panelid code of the second process panel, for example, will be just the code 'PANEL2'. However, in the Project Work Director session the panelid code of the second process panel will look like the code 'PANEL2 _1', 'PANEL2 _2', etc. where the numbers '1' and '2' are the PROJDIR selection codes, which represent the sequence numbers of the Project Work Manager tool sessions.

To better understand the relationship of the Project Work Manager and the Project Work Director, the graphic representation between these two functions has been presented in next page.

3.9 The graphic representation of the Project Work Director system

The following is the graphic representation of the relationship between the Project Work Director session and the Project Work Manager tool sessions:

Figure 24. The relationship between the Project Work Manager and Director



Note:

The following is the descriptions of this diagram:

1. The logic paths among the process panels within each Project Work Manager tool session has been simplified because the detail information has already been presented in the graphs described in the 'Getting Started' section.

2. The 'END' command can be entered on all the process panels but not just on the PANEL2 panel, to exit the process entirely. Instead of using the 'END' command, you may use the 'X' command to exit the Project Director session entirely also.

3. The logic paths of the '0.1' and '0.2' commands have been omitted. Note that the '0.1' command can be entered on any process panel of the second Project Work Manager tool session, and the '0.2' command can be entered on any process panel of the first Project Work Manager tool session. Therefore, to draw so many logic path lines to interpret these two simple commands is really not necessary.

4. Only two Project Work Manager tool sessions have been shown in this graphic representation. In fact, this diagram can actually be expanded to as many Project Work Manager tool sessions as you like.

5. You may enter a 'QUIT', 'QQ', 'END', or 'X' command to exit the PROJDIR panel. Note that when you press the PF3 key on the PROJDIR panel, it will return back to the caller panel of the Primary Project Work Manager tool session where the 'DIR' command was initially issued.

6. All the markers will be reset to empty when the PANEL2 panel of a new Project Work Manager tool session is displayed except the PANEL2 panel of the primary Project Work Manager.

4.0 The REXX Source code formatter function

4.1 The example of the REXX format process

This tool package has provided a REXX source code formatter which can be used for formatting the REXX program code into the standard format. To execute this function, simply type a 'FMT' command code on a member name line of a REXX library on the PANEL4 panel, or enter a 'FMT' command at the command line of an edited REXX program.

Assume the following short REXX program 'USERID.@PROJWRK.EXEC(TEST)' was written in a very fast speed and it is in random coding style with no indentation and no capitalization:

Figure 25. A short REXX program in the random coding style

```
+-------------------------------------------------------------------------------+
|    File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help                 |
|  -----------------------------------------------------------------------------|
|  EDIT       USERID.@PROJWRK.EXEC(TEST)                    Columns 00001 00012|
|  Command ===> fmt                                         Scroll ===> CSR    |
|  ****** ***************************** Top of Data ****************************|
|  000001  /* REXX */                                                          |
|  000002  if test_flag then do                                                 |
|  000003  rc = 0                                                               |
|  000004  select                                                               |
|  000005  when found_flag then call process_data_routine                       |
|  000006  when scan_flag then call scan_data_routine                           |
|  000007  otherwise nop                                                        |
|  000008  end                                                                  |
|  000009  if rc ^= 0 then                                                      |
|  000010  signal error_exit_routine                                            |
|  000011  else call post_process_routine                                       |
|  000012  end                                                                  |
|  ****** *************************** Bottom of Data ************************  |
+-------------------------------------------------------------------------------+
```

The 'readability' of such type of code is very poor. Unless you are a very experienced REXX programmer, to read such kind of REXX code is very difficult. You may format this random style code by using this REXX source code formatting tool.

After you enter a 'FMT' command in the edit command line, which is shown in the above diagram, or enter a 'FMT' command with a pair of 'CC' prefix command at the top and bottom lines of the edited file, then the above code segment will be formatted into the following form:

Figure 26. The result of the "FMT" command function

```
+-------------------------------------------------------------------------------+
|    File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help                 |
|  -----------------------------------------------------------------------------|
|  EDIT       USERID.@PROJWRK.EXEC(TEST)                    Columns 00001 00017|
|  Command ===>                                                Scroll ===> CSR  |
|  ****** ***************************** Top of Data ****************************|
|  000001  /* REXX */                                                          |
|  000002  If test_flag then                                                    |
|  000003     Do                                                                |
|  000004        rc = 0                                                         |
|  000005        Select                                                         |
```

```
|  000006           When found_flag then                                        |
|  000007              Call process_data_routine                                |
|  000008           When scan_flag then                                         |
|  000009              Call scan_data_routine                                   |
|  000010           Otherwise                                                   |
|  000011              Nop                                                      |
|  000012        End                                                            |
|  000013        If rc ^= 0 then                                                |
|  000014           Signal error_exit_routine                                   |
|  000015        Else                                                           |
|  000016           Call post_process_routine                                   |
|  000017     End                                                               |
|  ****** *************************** Bottom of Data ************************  |
+-------------------------------------------------------------------------------+
```

Note that the leading REXX reserved keywords of each code line in the above short program, such as "if", "select", "when", "otherwise", "nop", "signal", "else", "call", and "end", etc. have all been capitalized after the 'FMT' command is executed. However, the keyword 'then' in the middle of each code line has not been changed.

There are three pairs of the 'FMT' options provided by this tool package which can change the default lowercase 'then' to Mixed−case 'Then', change 'to' to 'To', and change 'by' to 'By', simply by choosing the keyword style you like. The 'FMT' options are:

- 'FMT then' and 'FMT Then',
- 'FMT to' and 'FMT To',
- 'FMT by' and 'FMT By'.

Thus, in the second line of the formatted result if you prefer to have the code looks like the **'If test_flag Then'** format rather than the **'If test_flag then'** format, then simply enter a 'FMT Then' command on the edit command line.

Note: This tool package has provided an AUTOINS Edit Macro command function which can be used to automatically insert a Balance Code whenever a keyword code is entered in the edit file. For example, it can insert a Balance Code 'End' whenever the 'Do', 'Begin', or 'Select' keyword code is entered in the edit files. Thus, if you use this Edit Macro command to write your programs then you don't even need to use the FMT command to format your programs. The AUTOINS command is a very useful and very reliable Edit Macro command. Please see the Appendix section in the User's Guide for more detail information about the AUTOINS command.

4.2 The REXX source code formatter options

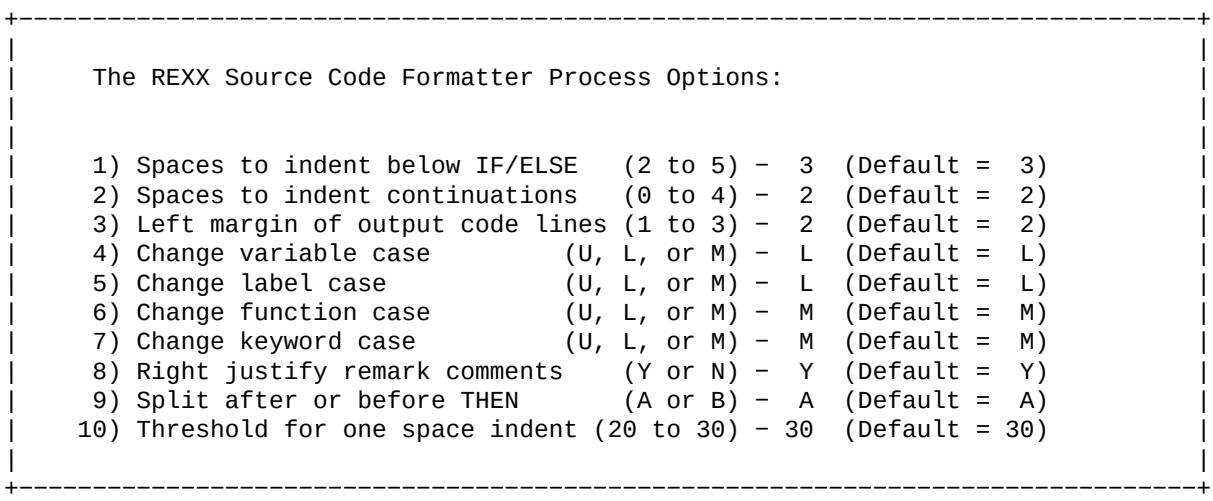
For the Mixed−case keyword format mode, i.e. if a code 'M' is specified in the 'Change keyword case' option field on the REXX format option selection panel which is shown below, then each keyword code in the REXX program will be capitalized except these three keywords after the program code is formatted. By using the 'FMT Then' option, it will cause the FMT process slow down a little bit. Thus, to choose the 'FMT Then', 'FMT To', or 'FMT By' option is not recommended.

The REXX is one of the few languages that run faster when your program is written in Mixed−Case rather than in strictly Upper−Case. The reason is that it can be internally optimized to handle Mixed−Case variables. Thus, to capitalize all the REXX reserved keywords has its significant benefit. If you are not going to use REXX compiler to convert your REXX programs into the executable module file, then to raise a habit to always write the REXX reserved keywords in your REXX programs in the Mixed−Case format is highly recommended.

In the edited REXX program command line, you may use a pair of "CC" line command to select a code segment to be formatted. The "CC" line command can be omitted if the entire REXX program will be formatted.

If a 'FMT OPT' command is entered on any command line of the PANEL2, PANEL3, PANEL4, or PANEL5 panel, or at the command line of an edited REXX program file, then the REXX source code formatter option selection panel will be displayed. The following is the diagram of such a sample panel:

Figure 27. The sample REXX source code formatter option selection panel

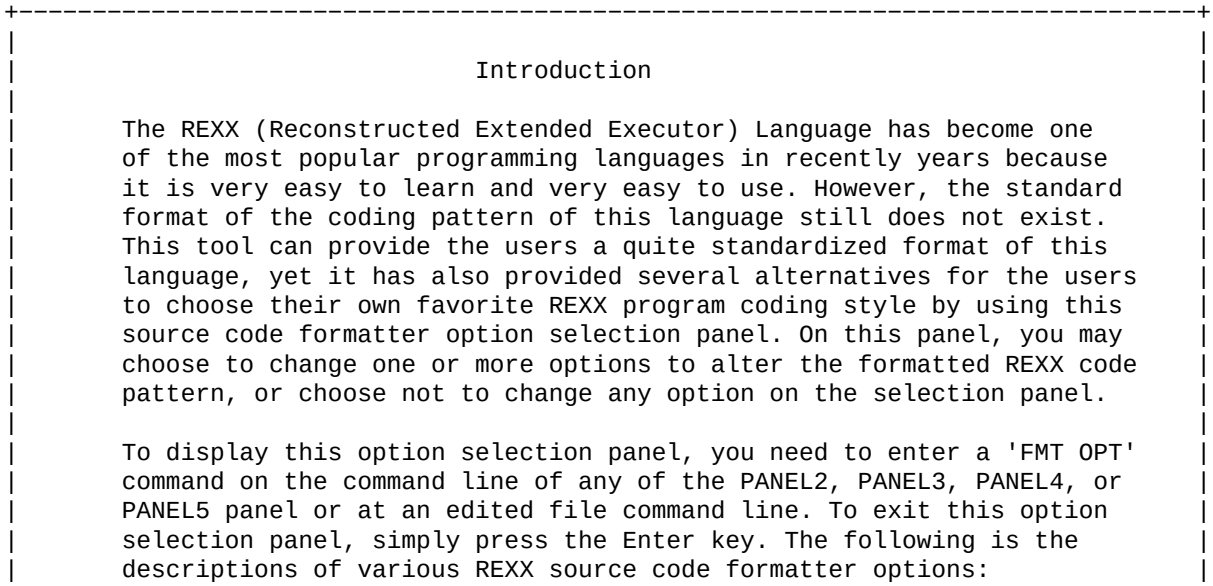


On this option selection panel, you may change the value of some options in order to customize the formatted REXX source code to a new pattern that you like.

4.3 The REXX source code formatter on−line tutorial

If you press the PF1 key on the REXX Source Code Format option selection panel, then the following tutorial screen will be displayed.

Figure 28. The introduction tutorial guide of the REXXFMT panel



```
|                                                                              |
+------------------------------------------------------------------------------+
```

If you press the Enter key or the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

Indentation	The number of spaces to indent new lines of code that is below the IF or ELSE statement, or other type of statements. The options are the numbers from 2 to 5. The default value is 3, which means that the next line, such as the THEN statement, is aligned with the offset of 3 columns to the IF statement.
Continue Indent	The number of spaces to indent new lines of code which is the continuation of last line that is ended with a comma. The options are the numbers from 0 to 4. The default value is 2. This number must be less than or equal to the number of the spaces that indent to the IF/ELSE statements.
Left Margin	The left margin for starting indentation. The options are the numbers from 1 to 3. The default value is 2, which means that all formatted output new code lines will start from column 2. You may change this option to a new value.
Variable Case	The case for all variables. The options are 'U', 'L', and 'M', which stands for UPPERCASE, lowercase, and Mixed-case, respectively. The default code is 'L'. You may change the variable case by selecting other option code.
Label Case	The case for all labels. The options are 'U', 'L', and 'M', which stands for UPPERCASE, lowercase, and Mixed-case, respectively. The default code is 'L'. You may change the label case by selecting other option code.
Function Case	The case for all REXX functions. The options are 'U', 'L', and 'M', which stands for UPPERCASE, lowercase, and Mixed-case, respectively. The default code is 'M'. You may change the REXX function case by selecting other option code.
Keyword Case	The case for all REXX keywords. The options are 'U', 'L', and 'M', which stands for UPPERCASE, lowercase, and Mixed-case, respectively. The default code is 'M'. You may change the REXX keyword case by selecting other option code.
Note:	For the Mixed-case, the keywords 'Then', 'To', and 'By' are the exceptions. Instead of showing the 'Then', 'To', or 'By' output format, the 'then', 'to', and 'by' format will be shown in the formatted output. You may enter a 'FMT Then', 'FMT To', or 'FMT By' command in the edit command line to enforce the formatted file to contain the 'Then', 'To', or 'By' keyword instead of the default 'then', 'to', or 'by' formatted keyword.
Right Justify	Right justify the remark comments to the right margin. The valid options are 'Y' and 'N'. The default is 'Y' (Yes). The right margin is the column of the logical record length of the source file or column 72, whichever is smaller.
Split THEN lines	Split the IF statement after or before the THEN statement. The options are 'A' and 'B', which stands for 'After' and 'Before'. The default code is 'A', which means the split will be after the keyword of THEN or ELSE so that the clause

```
                    following a THEN or ELSE statement will be formatted to a
                    new line. If the option 'B' is specified, then all the THEN
                    statements will be indented to begin on a new line.

Indent Threshold    A number indicating a column, after which the Indentations
                    of the code lines that are below the IF/ELSE or below the
                    continuation comma will automatically revert to 1 space.
                    The purpose of this option is to allow the heavily nested
                    code a better chance of remaining on a single page. The
                    options are the numbers from 20 to 30. The default value is
                    30.

Note:               The validity checking will be performed when you alter the
                    values or codes on the option selection panel. To reset an
                    option to its default value, simply enter a blank in the
                    selection space and press the Enter key.

Note:               The most commonly selected alternative that the users might
                    think about changing the options is the following example,
                    which can also produce a very neat and standard format of
                    the formatted REXX source code:

              1) Spaces to indent below IF/ELSE   (2 to 5) -  2  (Default =  3)
              2) Spaces to indent continuations   (0 to 4) -  0  (Default =  2)
              3) Left margin of output code lines (1 to 3) -  1  (Default =  2)
```

4.4 The methods of how to invoke the 'FMT' command

On this tutorial section, the description of how to invoke the 'FMT' command is also attached, which is shown as follows:

```
                          How to invoke the FMT command

      The following is the tutorial of how to use the REXX program source
      code formatter function. There are several methods can be used to
      invoke the REXX formatter program to format the REXX programs on
      the MVS system:

      The first method is to type a 'FMT' command next to a member name
      of a REXX program library on PANEL4 panel, or type a 'FMT' command
      on the data set name selection line of a sequential REXX program
      on the PANEL3 panel. This method will format the entire source code
      of the selected REXX program.

      The second method is to enter a 'FMT' command on the edit command
      line to format the entire edited REXX program.

      The third method is to enter a 'FMT' command on the command line of
      an edited REXX program, and type a pair of the 'CC' line command to
      format a REXX code segment.

      The fourth method is to enter a 'FMT n' command on the command line
      of an edited REXX program, where 'n' is the number of lines counting
      from the top line of the current screen, to format the 'n' lines code
      segment of the source code.

      While formatting the source code, a message window panel will be
      popped up on the screen to indicate which process step is currently
      being processed.
```

```
Note that the third method is highly recommended because it has less
chance to cause undetected errors left in your REXX code as each time
you only deal with a small formatted code segment.

Although this REXX source code formatter program has been tested very
thoroughly, yet the unexpected error still might occur. In case that
you do find any error in your formatted code, you may use a 'FMT UNDO'
or 'FMT BKUP' command to backup the original REXX source code. These
two commands for recovering the original REXX program only works in
the edit command line. The backup code is only valid for the program
that was previously used for the same REXX source code formatting. If
you are not sure whether the backup file is applicable to backup the
current source code that you are editing, then you may enter a
'FMT BKUP ?" command to display the REXX format backup file status.

Instead of pressing the PF3 key to save the misformatted output or
use the backup command and take the risk of backing up some invalid
code, you may press the PF12 key or enter a 'CANCEL' command in the
edit session to recover the original source code, in case any obvious
error is found.

If the source code to be formatted contains syntax errors, sometimes
the 'FMT' function can find out the bug and issue an error message to
interrupt the format process. However, sometimes the format process
might be failed and the erroneous code might be introduced to the
formatted output file. Therefore, this REXX source code formatter is
not an ideal tool for detecting the REXX source code syntax errors.
It is suggested that you should apply the following two things:

(1) Clean up all the bugs in the REXX code before invoking the 'FMT'
    command to format the entire source code. It is highly recommended
    that you should use the REXX compiler to detect all the syntax
    errors in the REXX code. There is a 'REXXCHK' utility function
    that can be used for a quick REXX programs syntax checking. Please
    enter a 'REXXCHK ?' command on the PANEL3 or the PANEL4 panel for
    more information about the usages of the 'REXXCHK' function.

(2) Edit the REXX program and use the 'FMT' command with a pair of
    the "CC" line command to format only a small code segment each
    time.
```

As a matter of fact, this REXX source code formatter tool is a quite reliable function and it has been tested on various REXX sample programs hundreds of times. However, if you do find some problems in your formatted code which was caused by this tool, please inform the author to correct the problem.

Since this tool package has provided an AUTOINS Edit Macro command which is very reliable function, thus it is highly recommended that you should use the AUTOINS command with the "Automatic Balance Code Insertion" feature to assist you to write very neat REXX programs instead of using the FMT command to format your REXX programs.

4.5 The method of how to invoke the 'REXXCHK' command

The REXXCHK command can be used to invoke the REXX compiler to check the syntax errors of a selected REXX program on the PANEL3, PANEL4, or RECALL panel. To invoke this command, simply type a 'REXXCHK' command next to the REXX program on the panel. The following is a sample REXX program that was copied from other library into the 'USERID.@USREXIT.EXEC(MATCH)' library:

Figure 29. The sample REXX Edit Macro source listing of 'MATCH' program

```
+-------------------------------------------------------------------------------+
| 00001  /* REXX */                                                             |
| 00002  Address ISREDIT                                                        |
| 00003  'MACRO'                                                                |
| 00004  Call matchlists 'ul'                                                   |
| 00005  Call matchlists 'ol'                                                   |
| 00006  Call matchlists 'sl'                                                   |
| 00007  Exit 1                                                                 |
| 00008  matchlists: Parse Arg list                                             |
| 00009  btag = ':'list'.'                                                      |
| 00010  etag = ':e'list'.'                                                     |
| 00011  'CHANGE ":'list' "' btag 'ALL NX'                                      |
| 00012  listno = 1; 'CURSOR = 1 1'; 'SEEK' etag 'NX 1'                         |
| 00013  Do While (rc = 0)                                                      |
| 00014     'SEEK' btag 'PREV NX 1'                                             |
| 00015     If rc = 0 then Do                                                   |
| 00016        'CHANGE' btag ':'list||listno'.'                                 |
| 00017        'CHANGE' etag ':e'list||listno'.'                                |
| 00018        listno = listno + 1                                              |
| 00019        'SEEK' etag 'NX 1'                                               |
| 00020     End                                                                 |
| 00021     Else Do                                                             |
| 00022        zedsmsg = btag 'missing. Press HELP'                             |
| 00023        zedlmsg = ,                                                      |
| 00024          'No matching' btag 'tag was found for the first of' etag'.'    |
| 00025        Address ISPEXEC 'SETMSG MSG(ISRZ001)'                            |
| 00026        rc = 8                                                           |
| 00027     End                                                                 |
| 00028  End                                                                    |
| 00029  If rc = 4 then Do                                                      |
| 00030     'SEEK' btag 'PREV NX 1'                                             |
| 00031     If rc = 0 then Do                                                   |
| 00032        zedsmsg = etag 'missing. Press HELP'                             |
| 00033        zedlmsg = 'No matching' etag 'tag was found for the first of' bta |
| 00034        Address ISPEXEC 'SETMSG MSG(ISRZ001)'                            |
| 00035     End                                                                 |
| 00036  End                                                                    |
| 00037  Return                                                                 |
+-------------------------------------------------------------------------------+
```

This REXX program is an Edit Macro which can be used to check the validity of all the list tags in the MVS Script files and match them up. It will prompt the error messages if any mismatches of the list tags are found.

After the REXXCHK command is executed, the following sample REXX compilation result listing will be generated and displayed in a panel format:

Figure 30. The sample output listing of the REXXCHK command

```
+-------------------------------------------------------------------------------+
|  ===> Compilation Statistics               USERID.@USREXIT.EXEC(MATCH)        |
|  IBM Compiler REXX/370 3.0 PTF UN79736     Time: 11:28:06     Date: 1999-06-02 |
|                                                                               |
|                                                                               |
|  REXX Lines  37                                                               |
|                                                                               |
|  Size of compiled program in bytes  7464                                      |
|                                                                               |
|  Total messages   Informational   Warning   Error   Severe   Terminating      |
|               0               0         0       0        0             0      |
```

```
|                                                                              |
|  ---------------------------------------------------------------------------|
|  ===> Compilation Summary                  USERID.@USREXIT.EXEC(MATCH)       |
|                                                                              |
|  Compilation successful                                                      |
+------------------------------------------------------------------------------+
```

As you can see from the above listing, it shows that everything seems fine in the sample REXX Edit Macro. However, there is a very tiny error in this program that the REXX compiler could not detect and it needs the REXXREF utility program to finish the job.

4.6 The method of how to invoke the 'REXXREF' command

The REXXREF command can be used to generate the REXX program source code cross reference listing and it will be displayed on a panel.

Assume the REXXREF command is typed next to the sample REXX program named 'MATCH' on the PANEL4 panel presented in previous page, then the following cross reference listing will be generated:

```
+------------------------------------------------------------------------------+
|  **** REXX Cross Reference for 'USERID.@USREXIT.EXEC(MATCH)'  06/02/99 11:56:22|
|                                                                              |
|                                                                              |
|  **** Variable XREF             line references, (*) means variable changed  |
|  ---------------------------  ---------------------------------------------|
|  bta                          33                                             |
|  btag                          9*   11    14    16    22    23    30        |
|  etag                         10*   12    17    19    23    32    33        |
|  ispexec                      25    34                                       |
|  isredit                       2                                             |
|  list                          8*    9    10    11    16    17             |
|  listno                       12*   16    17    18*   18                     |
|  zedlmsg                      23*   33*                                      |
|  zedsmsg                      22*   32*                                      |
|                                                                              |
|  **** Label XREF                line references, (*) means location of label |
|  ---------------------------  ---------------------------------------------|
|  matchlists                    4     5     6     8*                          |
|                                                                              |
|  **** Number XREF               line references                              |
|  ---------------------------  ---------------------------------------------|
|  0                            13    15    31                               |
|  1                             7    12    18                               |
|  4                            29                                             |
|  8                            26                                             |
|                                                                              |
|  **** Reserved Word XREF        line references                              |
|  ---------------------------  ---------------------------------------------|
|  Address                       2    25    34                               |
|  Arg                           8                                             |
|  Call                          4     5     6                               |
|  Do                           13    15    21    29    31                     |
|  Else                         21                                             |
|  End                          20    27    28    35    36                     |
|  Exit                          7                                             |
|  If                           15    29    31                               |
|  Parse                         8                                             |
|  Rc                           13    15    26    29    31                     |
```

```
|  Return                          37                                          |
|  Then                            15    29    31                              |
|  While                           13                                          |
+------------------------------------------------------------------------------+
```

Figure 31. The sample output listing of the REXXREF command

```
+------------------------------------------------------------------------------+
|                                                                              |
|  **** REXX Functions XREF         line references                            |
|  -----------------------------  ---------------------------------------------|
|  (none)                                                                      |
|                                                                              |
|  **** REXX Extended Functions     line references                            |
|  -----------------------------  ---------------------------------------------|
|  (none)                                                                      |
|                                                                              |
|  **** REXX Obsoleted Functions    line references                            |
|  -----------------------------  ---------------------------------------------|
|  (none)                                                                      |
|                                                                              |
|  **** The following tokens may be in error. The       ****                   |
|  **** error message indicates what REXXREF believes   ****                   |
|  **** is wrong and it is for your reference only.     ****                   |
|  **** "Never changed" often means the variable that   ****                   |
|  **** is obtained in quotes such as VGET function     ****                   |
|  **** and sometimes the message can be ignored.       ****                   |
|  **** "Never used" can mean that the token has never  ****                   |
|  **** been referenced in the REXX routine. However,   ****                   |
|  **** if the token is setup for the ISPF panel usage, ****                   |
|  **** then the message should be ignored. "Usage      ****                   |
|  **** conflict" usually means the token has the same  ****                   |
|  **** name as the REXX built-in function or reserved  ****                   |
|  **** word, etc. The message can also be ignored.     ****                   |
|                                                                              |
|  bta                            Variable never changed                       |
|  ispexec                        Variable never changed                       |
|  isredit                        Variable never changed                       |
|  zedlmsg                        Variable never used                          |
|  zedsmsg                        Variable never used                          |
|                                                                              |
|  ------------------------------------------------------------------------------|
|  ***** Summary *****                                                         |
|       9 Variables                                                            |
|       1 Labels                                                               |
|       4 Numbers                                                              |
|      13 REXX Words                                                           |
|       0 REXX Functions                                                       |
|       0 REXX Extended Functions                                              |
|       0 REXX Obsoleted Functions                                             |
+------------------------------------------------------------------------------+
```

In the last section of the above listing, you can see that an error message indicates that the variable 'bta' has never been changed. In fact, the variable 'bta' is supposed to be the variable 'btag'. The trailing character 'g' in the variable 'btag' was truncated by mistake when the original REXX program source code was copied from other library into the 'USERID.@USREXIT.EXEC' library. The REXXCHK command function cannot detect such type of errors, however the REXXREF command function can.

Suppose you wrote some subroutines which are no longer needed but you forgot to remove them from the program source, the REXXCHK program will not be able to detect such type of problems either. However, in the REXXREF program generated cross reference listing you may easily find that those obsoleted subroutine

labels will be singled out with "the label never used" error messages. Therefore, the REXXREF program is another very good utility for you to clean up the mess in your REXX programs.

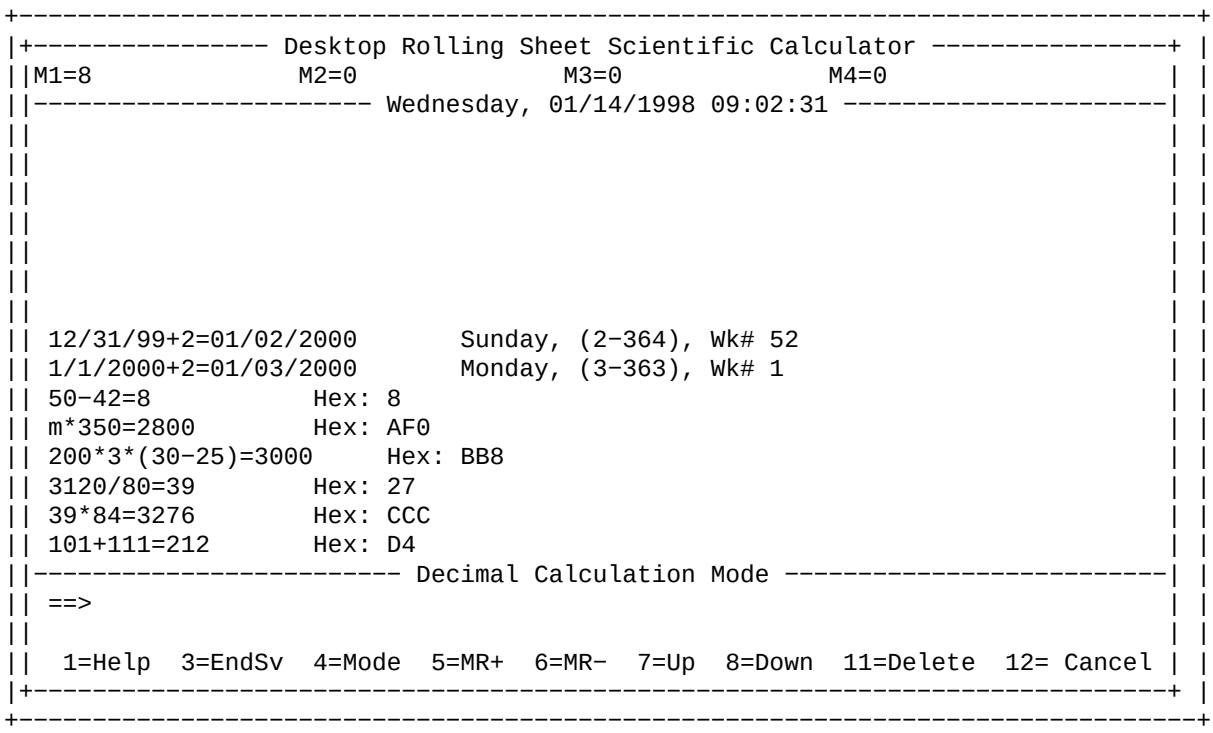
When you display the REXXCHK and REXXREF output listing panels, you may position the cursor at the error code line numbers on the panel screen and press the Enter key. It will put you into the edit mode of the selected REXX program. When the REXX program is displayed in edit, the selected error code line will be shown on the top of the edited file screen, which allows you to make a correction on the error code very easily. Please press the PF1 key on the panel for more information about how to use the REXXCHK and REXXREF panels.

5.0 The Desktop Rolling Sheet Scientific Calculator function

5.1 The example of the 'Desktop Calculator' operation

This tool package has provided a Desktop Rolling Sheet Scientific Calculator which can be used for the arithmetic calculation functions. To execute this function, simply type a 'CALC' command code or press the PF6 key on any command line of the PANEL2, PANEL3, PANEL4, PANEL5, or RECALL command panel, or on the command line of an edited file. When this command is invoked, a calculator window panel will be displayed. The following is a sample panel of this calculator:

Figure 32. The sample usages of Desktop Rolling Sheet Scientific Calculator



As you can see from the above sample diagram that there are several simple calculations have been presented on this calculator, which covered the following applications:

1. In the DATE calculation mode, there are two sample date computations that are apparently Year 2000 compatible.

2. In the DEC calculation mode, the total profit earnings $5,800 of my 950 shares of the stocks I invested were figured out. Note that the first memory register contains a value 8, which was saved from one calculated result.

3. In the same calculation mode, the block size 3276 of the 84 bytes record length file by measuring the ratio from the block size of 3120 bytes and the 80 bytes record length has been derived, and the summation of two decimal numbers 101 and 111 has been figured out.

As a matter of fact, you may use this calculator to perform many more other kinds of computations as you like. More descriptions about this calculator will be presented in next few pages. Note that the date

"01/14/1998" on the sample calculator panel is in the "MM/DD/YYYY" format, which is the USA date format that this calculator has selected.

Note: There are two types of the date format. One is the USA date format and the other is the European date format. In the DATE calculation mode, the date code you entered in the input area must match the date format selected by this calculator. The date format selected by this calculator matches your ISPF version provided by the ISPF package installed on your MVS system by the system programmer. If your ISPF package is in the European date format, then the date displayed on your Calculator screen should be in the "DD/MM/YYYY" format.

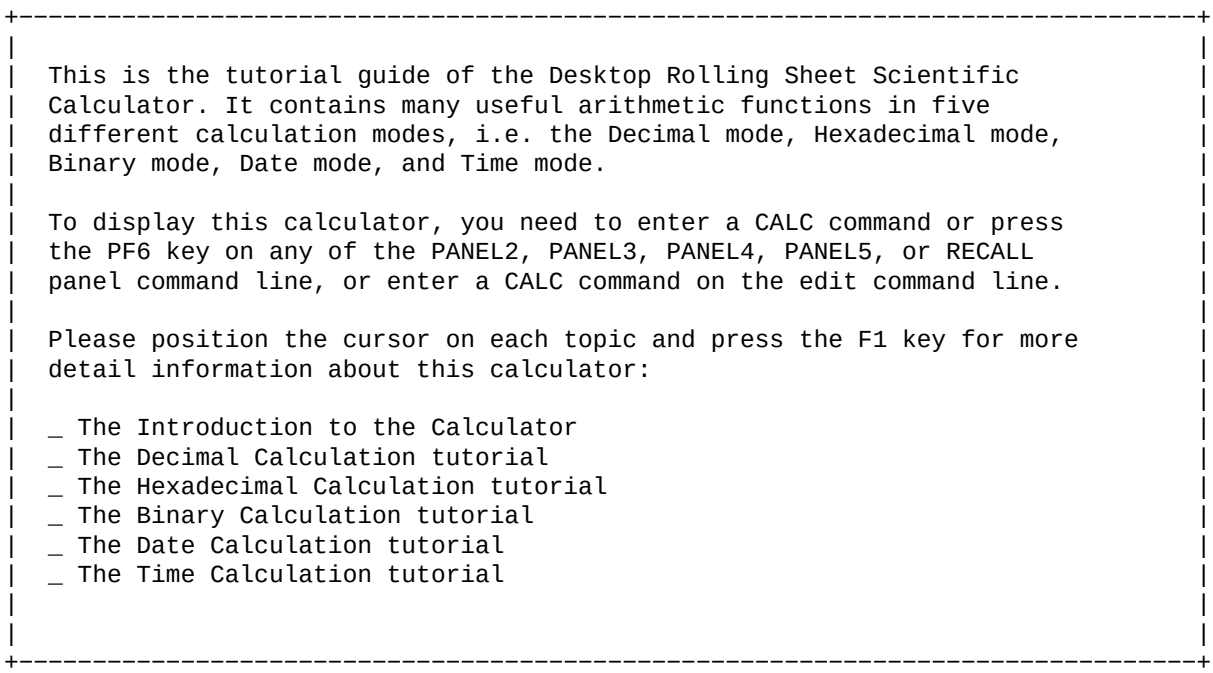
Instead of choosing the USA and the European date styles, the alternative is to choose the ISO date style, which is in the 'YYYY−MM−DD' format. The problem of this style is that when you calculate the difference of two ISO dates, instead of using a single minus sign, i.e. the '−' sign, you need to use the '−−' sign, i.e. a double minus sign, which is quite confusion. There are several ways to turn on the 'ISODATE' mode. The easiest way is to enter an 'ISODATE' command in the Calculator. More detail about this function will be described in detail later.

Since this calculator has only one window available for displaying all kinds of calculated results, thus the window lines of different calculation modes are all mixed up at the same place. The drawback is that it might cause confusion for some cases. For example, the expression of '101+111' displayed on the window could be mistakenly recognized as binary computation unless you see the calculated result, which is 212. From the result you will know that it is in fact a decimal calculation but not a binary calculation. However, in most cases there should not be too much problem to differentiate the calculation modes of each arithmetic expression on the window.

5.2 The 'Desktop Calculator' on−line tutorial

If you press the PF1 key on the calculator screen, then the following main tutorial panel will be displayed:

Figure 33. The Desktop Rolling Sheet Calculator main tutorial panel



5.3 The general information of the 'Desktop Calculator'

If the cursor is placed on the topic of the General Introduction when the PF1 key is pressed, then the following tutorial guide will be presented.

Introduction to the Desktop Rolling Sheet Calculator

This is a Desktop Rolling Sheet Calculator. It covers the arithmetical computation functions in five different modes, i.e. the Decimal, Hex, Binary, Date, and Time modes. To display this calculator, simply enter a CALC command or press the PF6 key on any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panel command line, or enter a CALC command on the edit command line.

On the CALC screen, there are four sections on the calculator window. The top part is a small window that is reserved for the memory registers. The middle part is a window for displaying the calculated results, which are the scrollable data entries. The arrow below the middle section is the input field area. This section can also be used for displaying the error message after the computation if there is any. Below the message line is the fourth section, which contains the PF key definition line.

The Desktop Rolling Sheet Calculator is a very useful function which has already been closely tied-up with this Project Work Manager tool package. It cannot be used as a stand-alone tool or attached to any other tool packages. To use this tool from the outside of this Project Work Manager session, you may enter a 'TSO PROJ CALC' command on the command line of any ISPF panel.

The setup of PF keys:

Currently the assignment of the PF keys of this calculator is defined as follows:

PF1 - (Help) Display the tutorial guide of this calculator
PF3 - (EndSv) End the calculator session and save all window data entry
PF4 - (Mode) Switch the calculation mode in 5-way pattern rotatively
PF5 - (M+) Insert the calculated data to an available memory register
PF6 - (M-) Remove the calculated data from the memory register
PF7 - (PgUp) Move the window data entries up
PF8 - (PgDn) Move the window data entries down
PF11 - (Delete) Delete any unwanted window data entry
PF12 - (Cancel) End the calculator session without saving window data entry

Note that the PF2 and PF9 keys do not contain the SWAP and SPLIT functions any more. These two keys and PF10 key are reserved for the future use, and currently the functions of these three keys are not listed on the screen.

After you enter an arithmetic expression in the input data area, or from the the window lines area, you may press the Enter key to proceed the calculate functions.

Whenever an arithmetical expression is enter from the input field on the CALC screen, it will generate a data line and the computation result will be displayed in the window. These lines will be accumulated and rolled up in the window just like a rolling sheet. When you press the 'EndSv' key, i.e. the PF3 key, these data lines will be saved in a buffer for the future use.

Note: Unlike the PF3 key, the PF12 will end the calculator session without saving the calculation results of the current session. Whatever data entries that have already been saved in the previous sessions will be remained to be saved and the PF12 key cannot scratch them. To remove all calculated data you need to enter a 'CLEAR' command, which will be explained again later.

The usages of input area and window lines area:

If partial arithmetical expression can be found in a window line, instead of typing the entire expression from the input field, you may type the data over the window line to create a new computation result. When you enter the data at the window line area, the CALC program will accept all the data before the '=' sign or before the 'Hex:', 'Dec:', or 'Bin:' special code on the screen. Thus, you may either keep the equal sign as delimiter or remove the unwanted code up to the 'Hex:', 'Dec:', or 'Bin:' code when you modify the window line. Suppose you cannot find the data in the current window screen, but you remember the data has been calculated before, then you may press the 'PgUp' key or use the search command '/' to scroll the screen up to the desired line position. For example, the '/5+5' command can allow you to find the window line which contains the '5+5' expression. The search will start from the bottom of current window line to the end of all window lines. When you modify a window data line, you must keep the cursor on the same line when you press the Enter key. Otherwise, the changes you made on the window lines will be ignored. In other words, you are only allowed to change one window line at a time.

How to scroll window lines up or down:

The 'PgUp' and 'PgDn' keys can be used to scroll the window lines up and down. You may also use the 'UP n' or 'DOWN n' command to move the window lines up or down, where 'n' indicates how many lines will be moved. For example, the 'UP 2' command can move window lines up for 2 lines. Note that a 'TOP' or 'BOTtom' command can be used to locate the top or bottom of the window lines.

How to delete window lines:

To remove all or part of the window lines, you may enter a 'DELete n' or a 'ERase n' command, where 'n' stands for how many window lines counted from the bottom to the top of the window will be deleted. A 'DELete' or 'ERase' command with no line number will allow you to delete only one window line at the bottom of the window. A 'DEL ALL', 'ER ALL', or 'CLEAR' command can be used to erase all window lines. If you want to delete only a single line in the middle of the window, you may position the cursor at that line in the window and press the 'Delete' PF key. If the cursor is at the input area when the 'Delete' PF key is pressed, then the bottom window line will be removed.

How to use memory registers:

The advantages of using this calculator is that you may keep the results of all arithmetical computations as long as you want, and you may use totally 14 window lines as the input fields to enter your input data for the calculation. The drawback is that due to the width constraint of the window, it is only allowed to enter maximum up to 60 characters in each expression string. Since in most cases the input data of the arithmetical

expressions are not very long. Therefore, this limitation is really not a problem.

This calculator has provided the 'Memory Register' function. If you have a very long expression needed to be calculated, then you may break it down and save partial result in the memory registers.

For example, after you finish calculating two parts of the long expression, you may position the cursor at each window line and press the 'MR+' PF key. After the results of the two parts are saved into the memory registers M1 and M2 from the window lines, then you may type a 'M1 + M2', 'M1 − M2', or 'M1 * M2' expression from the input field to obtain the final result.

Totally four memory registers can be used for the Decimal, Hex, Date, and Time modes, and two memory registers can be used for the Binary mode. When you save the data in the memory register, you may press the 'MR+' key. If cursor is in the window line when you press the 'MR+' key, then the data in that window line will be saved in the memory register. If the cursor is at the input field when you press the 'MR+' key, then the latest calculation result will be saved in the memory register. To reset it, you may press the 'MR−' key. When you press the 'MR−' key, the cursor can be either in the input field or at any memory register position. If it is in the input field, then the 'last used' memory register will be reset to 0. If the cursor is at any memory register position, then the contents of the pointed memory register will be reset to 0. Originally, the memory register box will be blank if no data has been saved in any of the memory registers. After all memory registers are reset to 0, the memory register box on the calculator screen will return back to empty box again.

The calculated result can be added or subtracted to any of the four memory registers by using the 'M1+', 'M1−', 'M2+', 'M2−', etc. commands. The 'MC' command can be used to clean up all memory registers.

The calculation modes:

In any of the five calculation Modes, you may type a 'DEC', 'HEX', 'BIN', 'DATE', or 'TIME' command to switch to another calculation mode, and type a 'RETURN' command to return back to 'DEC' mode. There is a Mode PF key available for you to switch from one mode to another in a 5−way pattern. i.e. the DEC mode will be switched to HEX mode, HEX mode will be switched to BIN mode, BIN mode will be switched to DATE mode, DATE mode will be switched to TIME mode, TIME mode will be switched to DEC mode, and so on. The validity checking of each mode are a little bit different, which will be discussed in the tutorial sections of each topic.

Note that on the calculator screen there is a timestamp field that can help you to find out the current date and time. Thus, this calculator not only can be used for the arithmetic calculation, but also can be served as your personal clock if you will. The date form on this timestamp is the valid format that you should choose for the DATE calculation. The Date Calculator provided by this tool package is a Year 2000 compatible function.

5.4 The Decimal Calculation Mode on−line tutorial

In the following few pages, the tutorial guide of each calculation mode will be presented.

If the cursor is placed on the topic of the Decimal Calculation Mode when the PF1 key is pressed, then the following tutorial guide will be shown:

Decimal Calculation Tutorial Information

If you enter a 'HELP' then this screen will appear. Results will be displayed in decimal and the hexadecimal equivalent will also be shown.

Enter any arithmetic expression using the following rules:

Operations:

Add	+	Divide	/
Subtract	−	Remainder	//
Multiply	*	Exponentiation	**

(e.g. 6+.4/3−2; 5*6//3; 4**2)

Notes: No equal sign (=) needed −− Just press the Enter key.
When raising a number to a power, use '**' only for whole number exponents (e.g. 2**3). For fractional exponents, use YX().
Remember, 9**1/2 is not the same as 9**(1/2).

Functions:

Memory add	m1..m4+	Memory subtract	m1..m4−
Memory clear	m1..m4c	Memory read out	mr
Square root	sqrt()	Logarithms	lg(), ln(), lb()
Cube Root	cbrt()	Repeat expression	rpt(ex,v,r)
Fractional exponentiation	yx(n,e)	Factorial	!()
Degrees to radians	d2r()	Radians to Degrees	r2d()
Random numbers	random()	Statistics	stat
Permutations	perm(i,t)	Combinations	comb(i,t)
Trigonometric functions	sin(), cos(), etc.		
Inverse Trigonometric functions	asin(), acos(), etc.		
Hyperbolic functions	sinh(), cosh(), etc.		
Inverse Hyperbolic functions	asinh(), acosh(), etc.		

Code Conversions:

Hex to Decimal	x2d() or x()	Decimal to Hex	d2x() or d()
Hex to Binary	x2b()	Binary to Hex	b2x()
Decimal to Binary	d2b()	Binary to Decimal	b2d() or b()
Char to Hex	c2x()	Hex to Char	x2c()
Char to Decimal	c2d()	Decimal to Char	d2c()
Char to ASCII	c2a()	ASCII to Char	a2c()

− You will stay in the calculator until 'QUIT' or 'QQUIT' is entered, or the 'EndSv' key is pressed.

− Numbers and operators may be separated by a blank but not required.

− Whole number results will be displayed in hex as well as decimal.

− Any type of Decimal, Hex, and binary numbers can be calculated together. For example: x(15)+x(2F); b(1100)+16; x(2F)+b(110)+23; etc.

− Memory register functions require no numeric input −− last result is used. Four memory registers are available − M1, M2, M3, and M4, where

M1 and M are synonymous for addition and subtraction operations. If the 'MR+' PF key is used when the cursor is placed in the window line, then the contents in that window line can be saved in the memory register.

- The Napierian number 'e'(2.71828) can be referenced by using the variable 'e' in calculations as in the expression of e**2, or in the expression of ln(e) for the logarithm of 'e'.

- The constant '3.14159265' can be referenced by using 'pi'.

- The numbers in 'Memory' and 'Result' can be used in calculations by using the variables 'm' and 'r'. For example:

```
4+5     Result: 9
m+      Memory: 9   (or press the MR+ key)
6*3     Result: 18
r/m     Result: 2
```

- The six common trigonometric functions can be obtained by entering: SIN(), COS(), TAN(), COT(), SEC(), or CSC() − where () contains either any number (signifying the input is expressed in degrees) or any number and a 'R' (signifying the input is expressed in radians).

- The Inverse Trigonometric functions are available by entering: ASIN(), ACOS(), ATAN(), ASEC(), ACSC(), ACOT() where () contains any number and either 'D' or 'R' signifying the results are to be expressed in either degrees or radians.

- Hyperbolic and Inverse Hyperbolic functions are available by entering SINH(), COSH(), TANH(), SECH(), CSCH(), COTH() and ASINH() ACOSH()...etc. where () contains any number.

- Common statistical calculations can be performed by entering 'STAT'. All data points/observations must be entered from the input prompt. This function will display the total, max, min, average, standard deviation, variance, skewness, median, number of data points, and the intervals about the mean(+/− 1, 2, and 3 standard deviations)

- A frequency distribution will also be displayed showing the unique data points, their frequency, percent of total, and cumulative percent.

- For repeated hex calculations, the calculator can be put into hex mode where all input is assumed to be in hex. Four functions (+ − * /) are allowed as well as two's complement notation for negative numbers.

- Use parentheses to ensure particular evaluation order
  For example: 4 ** 2 // 3 + 3 * 2 − 4 / 6 = 6.333333333
  whereas ((((4**2)//3)+3)*2)−4) / 6 = 0.666666667

- The a2c() and c2a() can be used to convert from ASCII to character form and vise versa. The ASCII must be a valid 8−bit binary number string.

  For example: c2a(11)=0101000101010001
  c2a(F1)=1010011001010001
  a2c(0101000101010001)=11
  a2c(1011011001010011)=V3

Average:
−−−−−−−−

This function takes the average of a list of numbers or expressions. Syntax is: 'avg(numlist)' (where numlist is a blank−delimited list of numbers.)

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.

E.G. avg (ln(5**3/!(6)), 5, pi, 7, 6.6)
sqrt(avg (9, 4, 1.7, 5, 23))

The arguments in the 'AVG' expression can be separated by commas or blanks.

Cube Root:

This function gives the cube root of a number.
Syntax is: 'cbrt(num)' (where num is any number or previously defined variable such as: m, r, e, pi, etc...)

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.
E.G. cbrt(ln(5**3/!(6))); sin(cbrt(pi))

Factorials:

This function calculates the factorial of a number.
Syntax is: '!(num)' (where num is any number or previously defined variable such as: m, r, e, pi, etc...)

'num' must be (or evaluate to) a positive whole number or an error message will be issued.

A compound expression may be used as the argument to !.
E.G. !((5**2)−3*(7+1)*ln(e)) = 1

Fractional Exponentiation:

The syntax for doing fractional exponentiation is: 'yx(num,exp)' where 'num' is any number or previously defined variable (i.e. r,m,pi...) and 'exp' is any non−whole number or expression or variable.
YX() stands for 'Y raised to the power of X'.

(E.G. yx(e,0.5); yx(9,1/2); yx(r,lg(e)); yx(m+4,5.6429))

Obviously, this function can replace the sqrt function since the first two examples above could also have been written 'sqrt(e); sqrt(9)'. However, both forms will remain in use.

Hexadecimal Functions:

The calculator will display whole−number results of any calculations in hexadecimal as well as decimal. The following functions allow for hex/decimal manipulations.
(For more details on the following, refer to the REXX functions: X2D and
X(hex value<,length>) D(number<,length>)

By using the x() function, you can convert from hexadecimal notation to decimal. Arithmetic may be performed on the results and the number may

be part of a compound expression. If the number is not an acceptable hex character (a−f, A−F, 0−9), an error message will be issued.

Examples:

```
x(b)          Result: 11
x(b)+x(c)     Result: 23
(8+9−3)/x(e)  Result: 1
sqrt(x(90))   Result: 12.0000
x(k)          Result: 'Number contains invalid hex character'
```

If the length argument is not specified, the input is assumed to be an unsigned number. If length is specified, the input is assumed to be a two's complement number expressed as 'n' characters − where 'n' is the length specified in the expression.

Examples:

```
x(FF)        Result: 255
x(FF,2)      Result: −1
x(81)        Result: 129
x(81,2)      Result: −127
```

Decimal to hex conversions can be accomplished using the d() function. The number may be a compound expression. If the number evaluates to a non−whole number, an error message will be issued.
Positive whole numbers need not have a length specified. If the number is negative and a length is NOT specified, it defaults to the length of the original number (including the sign). If a length is specified, the result will be sign−extended to the required length.

Examples:

```
d(−1)        Result: FF
d(−1,8)      Result: FFFFFFFF
d(14)        Result: E
d(1+2+3+4)   Result: A
d(sqrt(144)) Result: C
d(6.87)      Result: 'Not a whole number − no conversion'
```

Note: Results of certain conversions will resemble decimal numbers (e.g. d(45+54) = 63). It should be remembered that the operation being performed is conversion to hex, hence the result is actually '63'x. Since the calculator assumes all input is decimal unless x() is used, it would be possible to erroneously add a decimal number to this answer (e.g. r+10 = 73). If what was really intended was to add a hex 10 to the result, the following should have been entered: x(r)+x(10).

You can also put the calculator into 'HEX' mode where all calculations are assumed to be in hex. Refer to the HEXMODE help screen for further information.

Logarithms:

Syntax:		Examples:
Common logarithms (base 10):	lg()	lg(100) = 2
Natural logarithms (base 'e'):	ln()	ln(100) = 4.605
Logarithm to any base:	lb(base,num)	lb(2,128) = 7

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.

E.G. ln(sqrt(5**3/!(6))); sin(lg(pi))

Memory Register Functions:

Memory add	m1+...m4+	Memory subtract	m1−...m4−
Memory clear	m1c...m4c (or) mc	Memory read out	m1r...m4r (or) mr

There are four (4) memory registers available, accessible by number. The designations: M and M1 are synonymous for the addition and the subtraction operations − they both refer to memory register 1.

The memory read−out function (MR) displays the contents of all four memory registers whether a number is designated or not (e.g. m2r == mr).

If a particular memory is to be set to 0, specify its number − e.g. M3C. For this function, memory register 1 must be explicitly designated as M1C. The memory clear function (MC) will clear the contents of ALL memory registers if no number is designated.

Memory functions require no numeric input −− last result is used

Examples:

m+ or m1+	adds the number in 'Result' to memory register 1
m2+	adds 'Result' to memory 2
m− or m1−	subtracts the number in 'Result' from memory register 1
m3c	clears memory 3 − sets it to 0
mc	clears ALL memory registers
m4	returns contents of memory register 4 in 'Result'
mr or m1r..m4r	displays current contents of ALL memory registers
m3−m2	subtracts contents of memory register 2 from memory register 3

The numbers in 'Memory' and 'Result' can be used in calculations by using the variables 'm' and 'r'. For example:

4+5	Result: 9
m+	Memory: 9
6*3	Result: 18
r/m	Result: 2

Numbers in memory register may be used as arguments to any functions.

E.G. sqrt(m3); log(m*5); sin(m2)

Permutations and Combinations:

These functions calculate the Permutations and Combinations of items.

Syntax is: 'PERM(i,t)' or 'COMB(i,t)'
where '(i,t)' denotes 'i' distinct items taken 't' at a time.

PERM(i,t) = !(i) / !(i − t)
COMB(i,t) = !(i) / (!(t) * !(i − t))

Permutations are concerned with the order of the items.
Combinations however are not concerned with the order of the items.
So, if i=t,
then PERM(i,t) == !(i).
and COMB(i,t) == 1.

(i − t) must evaluate to a positive whole number or 0 or an error message will be issued.

Product:

This function develops the product of a list of numbers or expressions. Syntax is: 'prod(numlist)' (where numlist is a blank-delimited list of numbers.)

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.

```
 E.G. prod (ln(5**3/!(6)), 5, pi, 7, 6.6)
      sqrt( prod (9, 4, 1.7, 5, 23))
```

The arguments in the 'PROD' expression can be separated by commas or blanks.

Degree and Radian Conversion:

By using the R2D() function, you can convert from radians to degrees. Example:

```
       R2D(1.57079) = 90.00..
```

By using the D2R function, you can convert from degrees to radians. Example:

```
       D2R(90) = 1.57079...
```

Random Numbers:

This function generates random numbers.
Syntax is: RANDOM(<min><,<max><,seed>>)

The following explanation is from the REXX Reference manual: Returns a pseudo-random non-negative whole number in the range MIN to MAX inclusive. If only one argument is specified, the range will be from 0 to that number. Otherwise the default values for MIN and MAX are 0 and 999 respectively. A specific SEED (which must be a whole number) for the random number may be specified as the third argument if repeatable results are desired. The magnitude of the range (that is MAX minus MIN) may not exceed 100000.

Here are some examples:

```
  Possible results might be:
  RANDOM()        -->    305
  RANDOM(5,8)     -->    7
  RANDOM(,,1983)  -->    123   (always)
```

Repeat Expression:

This function allows you to repeat an expression and substitute a value.

Syntax is: 'RPT(exp,stval,rep)'

where: 'exp' is the expression to be repeated and MUST contain an equal sign (=) and be enclosed in quotes. (e.g. 'x = x + 5')
'stval' is the starting value for the variable used in the expression. (Default = 0)

'rep' is the number of repetitions. (Default = 1)

RPT uses the 'Result' from the previous calculation repetitively. It's like entering an expression using the 'r' (result) variable a number of times via a retrieve key.

An example of the usage of this function would be to calculate compound interest. If you wanted to know the result of 1000 compounded daily at 6.5 percent for 5 years you would enter:

```
RPT('x=x+(x*(6.5/100)/365)',1000,5*365)    (Result:    1383.99..)
```

More examples:

```
RPT('z=.14*(2000+z)+z+2000',,6)            (Result:    19460.98  ..)
RPT('q=q+9',3)                             (Result:      12     )
RPT('v=v+5')                               (Result:       5     )
```

Square Root:

This function gives the square root of a number.
Syntax is: 'sqrt(num)' (where num is any number or previously defined variable such as: m, r, e, pi, etc...)

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.
E.G. sqrt(ln(5**3/!(6))); sin(sqrt(pi))

Summation:

This function sums a list of numbers or expressions.
Syntax is: 'sum(numlist)' (where numlist is a blank-delimited list of numbers.

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to this function and this function may be included as an argument to another function.

```
 E.G. sum (ln(5**3/!(6)), 5, pi, 7, 6.6)
      sqrt( sum (9, 4, 1.7, 5, 23))
```

The arguments in the 'SUM' expression can be separated by commas or blanks.

Trigonometric Functions:

Syntax: SIN(an<,'R'>), COS(an<,'R'>)...etc.

The six common trigonometric functions: sin, cos, tan, cot, sec, and csc can be obtained by entering: SIN(an<,'R'>), or COS(an<,'R'>),...etc.
where 'an' is any angle expressed in degrees or radians.
E.G. sin(90) == sin(1.57079,'R') == 1

If you wish to use radians instead of degrees for these functions, specify 'R' as the second argument. If the second argument is omitted, or has any other value, the angle will be assumed to be in degrees.
If used, this parameter must be enclosed in single quotes to distinguish it from the 'result' variable, r, which may also be used in the

expression.

E.G. d2r(90); (r=1.57079); sin(r,'R') = 1

Inverse Trigonometric Functions:

Syntax: ASIN(num<,<ac><,'R'>>), ACOS(num<,<ac><,'R'>>)...etc.

The six inverse trigonometric functions: asin, acos, atan, asec, acsc, and acot can be used to determine the angle whose trig function result is 'num'.
E.G. asin(1) = 90 or asin(1,5,'R') = 1.5708

'num' must be between −1 and 1 for the ASIN and ACOS functions and must NOT be between −1 and 1 for the ASEC and ACSC functions.
'ac' represents the number of digits you wish in the result. The default value is 9.
''R'' indicates that the result will be expressed in radians. The default is degrees. If used, this parameter must be enclosed in single quotes to distinguish it from the 'result' variable, r, which may also be used in the expression. (E.G. acos(r,5,'R'))

Any previously defined variable (m,r,e...) may be used as an argument. Compound expressions may be used as arguments to these functions and these functions may be included as arguments to another function.

E.G. ln(sin(5**3/!(6))); sin(lg(pi),r); asec(yx(2,.5),6,'R')

Statistical Functions:

Common statistical calculations can be performed by entering 'STAT'. Data points/observations/sample results can then be entered, one at a time. Data points can be entered on each line (i.e. press the Enter key after entering a data point), or on the same data line separated with at least one blank or comma. The last data entry must be an 'END'.

The maximum number allowed is 20 positions − 10 digits before the decimal point and 9 digits after (i.e. 9999999999.999999999).

The following results will be displayed on a browsed file screen:

- Number of data points
- Total of data points
- Maximum data point value
- Minimum data point value
- Median of data points
- Average of data points
- Standard deviation (Formula used: $(((X-\bar{X})**2)/(n-1))**0.5$)
- Variance
- Skewness
- Intervals about the mean (+/− 1, 2, and 3 std. deviations)

A frequency distribution table will also be displayed showing the unique data points, their frequency, their percent of the total of data points, and a cumulative percent.

The result of the STAT calculation will be saved in a flat file. You may enter a 'STAT BROWSE' (or a 'STAT B') command to browse the flat file at any time.

5.5 The Hexadecimal Calculation Mode on−line tutorial

If the cursor is placed on the topic of the Hexadecimal Calculation Mode when the PF1 key is pressed, then the following tutorial guide will be shown:

Hexadecimal Calculator Tutorial Information

As well as doing hex to decimal and decimal to hex conversions by using the X() and D() functions, you can put the calculator into hexadecimal mode by entering 'HEX' or press the 'MODE' key from 'DEC' mode to switch to 'HEX' mode. Entering 'QUIT' or 'RETURN' or press the 'MODE' key few times will return from HEX mode to the decimal calculator again.

While in this mode, all numbers entered are assumed to be hexadecimal. The allowable operators are: + − * / ( ) < >. Numbers and operators may be separated by one or more blanks, but this is not required. Operations may also be strung together in one entry. If you enter a 'HELP' then this screen will appear. Results will be displayed in hexadecimal and the decimal equivalent will also be shown.

If you enter a '?', then previously entered data will be shown. In this mode, you may also enter the six code conversion functions, which are d2x(), d2b(), x2d(), x2b(), b2x(), and b2d().

Unless otherwise indicated, all numbers are assumed to be positive. In order to use a two's complement number in a calculation, enclose it in '<' and '>'. If a calculation results in a negative number, the answer displayed in the window will be in two's complement notation and will be enclosed in these brackets.

As in the normal calculator mode, the results of the last calculation are stored in the variable 'r' and can be referenced in the following calculation by using this variable in the expression. However, to avoid the possible mixing of mode results, 'r' will be reset to 0 upon entry to HEX mode but the last 'Result' from the decimal calculator will be saved and restored upon return to decimal mode. Therefore results cannot be passed between modes.

There are four memory registers available while in HEX mode and they can be referenced by the variables 'm1', 'm2', 'm3', and 'm4', where 'm' and 'm1' are synonymous. If the contents of the memory registers are other than '0', they will be displayed after each operation.

The operations performed with the memory registers are similar to those used in the decimal calculator:

M1+,...M4+	add the last 'Result' to memory register
M1−,...M4−	subtract the last 'Result' from memory register
M1C,...M4C	clear memory register − set it to 0

If the calculation entered contains any character other than 'a−f, A−F, r, R, m, M, 0−9', blank or any of the operators defined above, a message indicating invalid character value will be displayed.

If the results of a calculation result is not a whole number, an error message will appear since this number cannot be converted to hex.

To exit from HEX mode and return to the other calculator functions, you

```
may enter a 'RETURN' command. If you press the EndSv' or 'Cancel' PF key
then it will exit the calculation operation entirely.

Examples:     (HEX mode entered)
        A +  B
          (Hex mode)   Result: 15     Decimal: 21

        M+     (or press the MR+ key)
          (Hex mode)   Result: 15     Decimal: 21    Memory: 15

        (2*M)/R
          (Hex mode)   Result: 2      Decimal: 2     Memory: 15

        MC    (or press the MR- key)
          (Hex mode)   Result: 2      Decimal: 2

        ((A1C0+B4F)*C/2-E4BD)/10DDF
          (Hex mode)   Result: 3      Decimal: 3

        M+     (or press the MR+ key)
          (Hex mode)   Result: 3      Decimal: 3     Memory: 3

        F + <F2>
          (Hex mode)   Result: 1      Decimal: 1     Memory: 3

        M-    (It is different from pressing the MR- key)
          (Hex mode)   Result: 1      Decimal: 1     Memory: 2

        F - <F2>
          (Hex mode)   Result: 1D     Decimal: 29    Memory: 2

        1 + <F2>
          (Hex mode)   Result: <FF3>  Decimal: -13   Memory: 2

        M+     (It is different from pressing the MR+ key)
          (Hex mode)   Result: <FF3>  Decimal: -13   Memory: <FF5>
```

5.6 The Binary Calculation Mode on-line tutorial

If the cursor is placed on the topic of the Binary Calculation Mode when the PF1 key is pressed, then the following tutorial guide will be shown:

```
                Binary Calculator Tutorial Information


Similar to the 'DEC' and 'HEX' modes, you can put the calculator into
binary mode by entering 'BIN' or press the 'MODE' key from 'HEX' mode to
switch to 'BIN' mode. Entering 'QUIT' or 'RETURN' or press the 'MODE' key
few times will return from BIN mode to the decimal calculator again.

While in this mode, all numbers entered are assumed to be binary digits.
The allowable operators are: + - * / ( ). Numbers and operators may be
separated by one or more blanks, but this is not required. Operations
may also be strung together in one entry. If you enter a 'HELP' then
this screen will appear. Results will be displayed in binary and the
decimal equivalent will also be shown.

If you enter a '?', then previously entered data will be shown. In this
mode, you may also enter the six code conversion functions, which are
```

d2x(), d2b(), x2d(), x2b(), b2x(), and b2d().

As in the normal calculator mode, the results of the last calculation are stored in the variable 'r' and can be referenced in the following calculation by using this variable in the expression. However, to avoid the possible mixing of mode results, 'r' will be reset to 0 upon entry to binary mode but the last 'Result' from the hexadecimal calculator will be saved and restored upon return to decimal mode. Therefore results cannot be passed between modes.

There are only two memory registers available while in BIN mode and they referenced by the variables 'm1' and 'm2', where 'm' and 'm1' are synonymous. If the contents of the memory registers are other than '0', they will be displayed after each operation.

The operations performed with the memory registers are similar to those used in both of the decimal and hexadecimal calculators:

```
            M1+,M2+   add the last 'Result' to memory register
            M1−,M2−   subtract the last 'Result' from memory register
            M1C,M2C   clear memory register − set it to 0
```

If the calculation entered contains any character other than '0, 1, r, R, m, M', blank or any of the operators defined above, a message indicating invalid character value will be displayed.

To exit from BIN mode and return to the other calculator functions, you may enter a 'RETURN' command. If you press the 'EndSv' or 'Cancel' PF key, then it will exit the calculation operation entirely.

```
Examples:     (BIN mode entered)
        100 + 1010
          (Bin mode)  Result: 1110  Decimal: 14

        M+    (or press the MR+ key)
          (Bin mode)  Result: 1110  Decimal: 14  Memory: 1110

        (2*M)/R
          (Bin mode)  Result: 0010  Decimal: 2   Memory: 1110

        MC    (or press the MR− key)
          (Bin mode)  Result: 0010  Decimal: 2

        ((1000+.101)*11−11011)/11
          (Bin mode)  Result: 100   Decimal: 4

        M+    (or press the MR+ key)
          (Bin mode)  Result: 100   Decimal: 4   Memory: 100

        1111 − 1100
          (Bin mode)  Result: 11    Decimal: 3   Memory: 100

        M−    (It is different from pressing the MR− key)
          (Bin mode)  Result: 1     Decimal: 1   Memory: 1
```

5.7 The Date Calculation Mode on−line tutorial

If the cursor is placed on the topic of the Date Calculation Mode when the PF1 key is pressed, then the following tutorial guide will be shown:

Date Calculation Tutorial Information

Dates may be entered by separating the month, day, and year with the slashes (/). The year code in the input date field may contain the century code. If not specified, the current century is assumed in the year code of the input date field.

Two types of input date style can be used, which are the USA style and the European style. The USA style is in the MM/DD/YYYY format and the European style is in the DD/MM/YYYY format. Please see the date style on the calculator screen to determine which date style you should choose.

Note that the default USA date style YYYY/MM/DD used on the ISPF panels is NOT the same date format adapted by this calculator. The date format MM/DD/YYYY used by this calculator actually matches the date style used in the DB2 system and also widely used by the USA Bank systems.

Instead of choosing the USA date style or European date style, you may choose the ISO standard date style, which is in the YYYY-MM-DD format. To set the date format in ISO style, simply enter an 'ISODATE' command. The ISODATE command can toggle the 'ISODATE' mode between On and Off. You may also use the 'TSO PROJ ISODATE' command or the 'PWOPT' command to setup the 'ISODATE' mode on the PROJWRK panel outside of the Calculator.

There are only three basic date manipulation functions available in this tool, which are the date conversion, date difference, and date code generation functions.

For the date conversion function, you may just enter a date code without specifying any operator. For the date difference function, you must enter two date codes and use a subtract operator to find the difference of the two dates. For the date generation function, you must specify at least one date code and add or subtract it to a number. If the date code is omitted, the current day's date is assumed.

The result will be displayed on the window line and contain either a calculated result date or a number. In order to use the calculated result for other calculations, the result and the memory register variables ('R' and 'M1' through 'M4') can be used. For example:

```
12/31/1999 + 1     ==> 01/01/2000         Saturday, (1-365), Wk# 52
R                  ==> 01/01/2000
M+                 ==>                   (M1 contains a date of 01/01/2000)
M1 - 1             ==> 12/31/1999         Friday, (365-0), Wk# 52
M1 + 2             ==> 01/03/2000         Monday, (3-363), Wk# 1
-1 + M1 + 2        ==> 01/02/2000         Sunday, (2-364), Wk# 52
```

In the result of the date '01/01/2000', it shows that the Weekday of that day is Saturday. It is the first day of the year, and there are 365 days remaining for the year due to the year 2000 is a leap year. It is counted as the 52nd week of the year because '01/03/2000', the Monday of next week, will be counted as the first week of the year.

The current century code can be omitted in the input expression. For example, if the current century code is '19', then the '1+12/31/99' input expression will generate the same result as the '1+12/31/1999' input expression. Note that the '1+12/31/99' and '12/31/99+1' will generate the same results.

Instead of entering a digit as the number of days in the expression, you may enter a 'WK' as the unit of 'Weeks'. This tool will convert the weeks with the number of days automatically. For example, if you enter the following input expression:

12/31/1999 + 1 wk ===> 01/07/2000 Friday, (7-359), Wk# 1

In this result, it means one week after the date of 12/31/1999 is the Friday of the first week of the year 2000. It is the next Friday after the last day of the year 1999. Note that the above input expression can also be rewritten as the '12/31/99+wk' or 'wk+12/31/99' style if the current century code is '19'. The number '1' of the 'WK' can be omitted.

To calculate the difference of two dates, you may use a minus sign in between two dates. For example,

01/01/2000 - 12/31/1999 ===> 2

In this result, it shows that the first day of the year 2000 and the last day of the year 1999 are two days apart. The smaller date can be placed in the first operand position of the input expression also. For example:

- 12/31/1999 + 1/1/2000 ===> 2

Notices that the following expression is invalid because this tool cannot calculate the summation of two date codes:

01/01/2000 + 12/31/1999 ===> (Generates an error message)

Suppose Today's date is '03/27/98', when you generate a previous date or a future date using the date code generation function, the current date in the input expression can be omitted. For example, you may enter a '+0' code to display the current date, enter a '-1' code to display Yesterday's date, enter a '5wk' code to display the date of five weeks from now, and enter a '-5wk' code to display the date of five weeks ago:

```
0          ===> 03/27/1998        Friday, (86-279), Wk# 13
-1         ===> 03/26/1998        Thursday, (85-280), Wk# 13
5WK        ===> 05/01/1998        Friday, (121-244), Wk# 18
-5WK       ===> 02/20/1998        Friday, (51-314), Wk# 8
```

From the above generated result, it indicates that the date of 03/27/98 is Friday. It is the eighty-sixth day of the year. There are 279 days remaining for the year, and it is the thirteenth week of the year.

The following expression is equivalent to add two days to the current date, assuming the current date is '03/27/98':

```
1+1        ===> 03/29/1998        Sunday, (88-277), Wk# 13
```

If the 'ISODATE' mode is On, then when you specify the difference of two ISO dates, you need to use '--' (i.e. two minus sign) instead of '-' (one minus sign) between the two dates. The following is such an example:

2000-1-1 -- 1999-12-31 ===> 2

You may rewrite the above calculate statement in the following form. In this case, there is no need to use the '--' operator.

- 1999-12-31 + 2000-1-1 ===> 2

5.8 The Time Calculation Mode on−line tutorial

If the cursor is placed on the topic of the Time Calculation Mode when the PF1 key is pressed, then the following tutorial guide will be shown:

```
--------------------------------------------------------------------------------

                    Time Calculation Tutorial Information


   Times may be entered by separating the hours minutes or seconds with
   the colons (:). Calculation is performed by converting each number
   into the equivalent number of smallest units given (e.g. 14:20 = 860).
   This means that each time must be of the same units. Adding MM:SS to
   HH:MM will not give the answer you want; you would have to add MM:SS
   to HH:MM:0. Adding 0:MM:SS to HH:MM would not work, since the smallest
   units are still different. The smallest unit may be followed by a
   decimal point to include fractional units.

   The result will be displayed as on the window line and contain colons.
   The following is an example of the time calculation with the usage of
   the memory register:

   For example:
   1:30 + :45  ==>  Time Result: 2:15
   R           ==>  2:15
   M2+         ==>  (M2 contains 2:15)

--------------------------------------------------------------------------------
```

6.0 The Desktop Monthly Calendar function

6.1 The 'Desktop Monthly Calendar' on−line tutorial

There is a Desktop Monthly Calendar function provided by this tool package. The calendar screen can be displayed if a 'CAL' command is entered on the command line of any process panels. When you press the PF1 key on the calendar screen, the following tutorial guide will be displayed:

```
------------------------------------------------------------------------------

                  Introduction to the Desktop Monthly Calendar


   This is a Desktop Calendar provided by this tool package. It can also be
   used for the Things−To−Do checklist function, which can be served as a
   reference tool for you to setup the project work schedules. The output
   TODOLIST file of this function can also be used as a weekly or monthly
   reminder for you to trace back the records and write a Status Report of
   the projects that you are working on.

   A Notebook function has also been provided by this tool. You may use this
   function to write down your memo, notes, appointments, addresses, phone
   numbers, etc. By using this tool you can almost write down anything that
   you need to take for a reference to work on the projects.

   To display this calendar, simply enter a 'CALENDAR' or 'CAL' User−Exit
   command on any command line of the PANEL2, PANEL3, PANEL4, PANEL5, and
   RECALL command panels, or enter a 'CAL' command on the edit command line.

   The Desktop Monthly Calendar is a very useful function which has already
   been closely tied−up with this Project Work Manager tool package. It cannot
   be used as a stand−alone tool or attached to any other tool packages. To
   use this tool from the outside of this Project Work Manager session, you
   may use a 'TSO PROJ CALENDAR' command on the command line of any ISPF
   panel. The short command form of the 'TSO PROJ CALENDAR' command is the
   'TSO PROJ CAL' command.


   The setup of PF keys:
   ---------------------

   Currently the assignment of the PF keys of this calendar is defined as
   follows:

   PF1  −  (Help)     Display the tutorial guide of this calculator
   PF3  −  (Exit)     End the calendar session
   PF5  −  (ToDoList) View the Things−To−Do listing of the selected year
   PF6  −  (NoteList) View the Notebook listing of the selected year
   PF7  −  (PgUp)     Move the calendar screen to previous page
   PF8  −  (PgDn)     Move the calendar screen to next page
   PF10 −  (File)     Create a sequential file containing the calendar data
   PF12 −  (Cancel)   Cancel the calendar session same as the PF3 key

   Note that the PF2 and PF9 keys do not contain the SWAP and SPLIT functions
   any more. These two keys and the PF4 and PF11 keys are reserved for the
   future use.

   This calendar occupies two screens for the calendar data. Each of the
   screen contains six months date information. When it is displayed, you
   will need to use the PF7 and PF8 key to swap these two screens in order
   to view the entire year date information.
```

If the cursor is placed at a specific location on the calendar screen when the Enter key is pressed, then the Things-To-Do function and the Notebook function can be processed, which will be described in details later in this tutorial section.

How to display the calendar of a specific year:

You may display the calendar of a specific year by entering a 'CAL yyyy' type of command. For example, the 'CAL 2000' command can be used to display a calendar of the year 2000. If the year parameter code is not specified, the default is to display the calendar of the current year.

To display a calendar of year 2000 from the outside of the Project Work Manager session, you may enter a 'TSO PROJ CAL 2000' command on the command line of any ISPF panel.

To display the calendar of previous years, you may enter a 'CAL -n' type of command, where 'n' is a whole number. For example, the 'CAL -1' command can be used to display the last year calendar. Similarly, the 'CAL +n' type of command, where 'n' is a whole number can be used to display the following years calendar. For example, the 'CAL +1' command can be used to display the next year calendar.

How to save the calendar data in a file:

After displaying a calendar on the screen, you may press the PF10 key to save the calendar data in a sequential file. The file name of the calendar data will be named 'USERID.YEARyyyy.CALENDAR', where 'yyyy' is the year code. For example, the calendar file name for the year 2000 will be named 'USERID.YEAR2000.CALENDAR'. You may print the calendar file and use it to setup the project work schedules.

The style of the displayed monthly date information:

Two types of the monthly date information style of this calendar can be displayed. One is the USA style and the other is the European style.

For the USA style, the 'Sunday' will be shown first on the weekly date format. For the European style, the 'Monday' will be shown first on the weekly date format.

There are two types of the date style for the Desktop Rolling Sheet Calculator provided by this tool package, which are the USA style and the European style also. The USA style is in the MM/DD/YYYY format and the European style is in the DD/MM/YYYY format. From the date style on the calculator screen, you may determine whether your ISPF package is in the USA version or the European version.

The following is an example of the first three months calendar of the year 1998 in USA style:

```
------------------------------------------------------------------------------
     January 1998            February 1998             March 1998
 S  M  T  W  T  F  S      S  M  T  W  T  F  S      S  M  T  W  T  F  S
 -------------------      -------------------      -------------------
                1  2  3      1  2  3  4  5  6  7      1  2  3  4  5  6  7
 4  5  6  7  8  9 10      8  9 10 11 12 13 14      8  9 10 11 12 13 14
```

```
11 12 13 14 15 16 17     15 16 17 18 19 20 21     15 16 17 18 19 20 21
18 19 20 21 22 23 24     22 23 24 25 26 27 28     22 23 24 25 26 27 28
25 26 27 28 29 30 31                              29 30 31
```

The following is an example of the first three months calendar of the year 1998 in European style:

```
      January 1998              February 1998              March 1998
 M  T  W  T  F  S  S       M  T  W  T  F  S  S       M  T  W  T  F  S  S
                1  2  3  4                    1                       1
 5  6  7  8  9 10 11       2  3  4  5  6  7  8       2  3  4  5  6  7  8
12 13 14 15 16 17 18       9 10 11 12 13 14 15       9 10 11 12 13 14 15
19 20 21 22 23 24 25      16 17 18 19 20 21 22      16 17 18 19 20 21 22
26 27 28 29 30 31         23 24 25 26 27 28         23 24 25 26 27 28 29
                                                    30 31
```

How to display the detail date information:

If you need to find out the week number, the days of the year, i.e. the Julian Day, and the remaining days of the year of a specific date, then you may position the cursor at that date field on the screen and then press the Enter key. Then a Calendar Date Information panel with the additional date information of the selected date will be displayed for your reference.

Instead of moving the cursor to the Today's date manually, if the cursor is initially at the left top corner of the Calendar screen then you may simply press the Enter key to position the cursor on Today's date automatically. After this step, you may press the Enter key again to display the additional date information of Today.

How to process the Things-To-Do function:

After viewing the detail information of the selected date, if you press the Enter key again on the Calendar Date Information panel, then a Things-To-Do panel will be displayed. On the Things-To-Do panel, you may enter a brief descriptions of the work item that you need to do for the specific date into the input data field and then press the PF3 key to save the data in a database file. This file is a sequential file. The file name of this flat file is named 'USERID.YEARyyyy.TODOLIST', where 'yyyy' is the year code.

How to process the Notebook function:

After viewing the detail information of the selected date, if you press the PF11 key on the Calendar Date Information panel, then a Notebook process panel will be displayed. On the Notebook panel, there are eight input lines that allow you to enter almost any type of information that you need to save for future reference. Then you may press the PF3 key to save the Note data in a database file. This file is a sequential file. The file name of this flat file is named 'USERID.YEARyyyy.NOTEBOOK', where 'yyyy' is the year code.

How to view the monthly Things-To-Do listing file:

If you position the cursor at a location on the calendar screen that is not a date field, such as the Month Name field, the Weekday Name field, or the dash line header field and press the Enter key, then the Things-To-Do listing of the selected month will be displayed. The file name of the listing file will be named 'USERID.YEARyyyy.MONTHmm.TODOLIST', where 'yyyy' and 'mm' are the year and the month codes. You may print out this monthly Things-To-Do file for the checkup of the progress of your project work schedules. The displayed file will be in the viewed listing format instead of the browsed listing format.

The following is a sample viewed listing of a Things-To-Do listing file:

```
------------------------------------------------------------------------------
VIEW      USERID.YEAR1998.MONTH02.TODOLIST              Columns 00001 00072
Command ===>                                              Scroll ===> CSR
******************************** Top of Data ********************************
000001             The Things-To-Do listing for June of 1998      02/16/1998
000002
000003 Start Date  No.          Work Item Descriptions
000004 ----------  ---  ------------------------------------------------
000005
000006 02/01/1998   1   Write Things-To-Do function in Calendar program
000007
000008 02/02/1998   1   Update the Tape Tracking System design document
000009 02/02/1998   2   Study Lotus Approach for workstation database setup
000010 02/02/1998   3   Walkthru the Tape Tracking design with team lead
000011
000012 02/03/1998   1   Send updated design to the customers for review
000013 02/03/1998   2   Write the tutorial guide for the Calendar function
000014
000015 02/04/1998   1   Convert tape data from VM database to workstation
000016
000017 02/09/1998   1   Update PROJWRK Reference Guide
000018
000019 02/16/1998   1   Call for a Tape Tracking design review meeting
******************************* Bottom of Data ******************************
------------------------------------------------------------------------------
```

Note: There are three more data fields, i.e. the Status, the Plan End Date, and the Actual End Date, cannot be shown in the above listing diagram. In the real viewed listing, you may press the PF11 key to shift the screen to the right-hand side so that you may see the rest portion of the listing.

The Report Date of the viewed listing can be found on the title line. If this date is larger than the Plan End Date of a work item which has a Status Code of 'I' (i.e. the work is still in progress), then an '*' flag will be attached to the Status Code field of that work item line to catch your attention.

Note: On the above listing, if you position the cursor on a date field, say the date of 02/03/1998, and press the PF4 key, then the Things-To-Do panel of that date will be displayed, which allows you to either update the status code, or add more work items, or delete the work item, etc. for the selected date.

Note: If the 'ISODATE' mode is On, then the date field displayed on the above listing will be changed to the 'YYYY-MM-DD' format. To set the 'ISODATE' mode, you may enter a 'TSO PROJ ISODATE' command or a 'PWOPT' command on the PROJWRK panel outside of the Calendar.

Tips: The easiest way to position the cursor at a location on the calendar

screen that is either a date field or not a date field is to position the mouse pointer on the calendar screen and click the left mouse bottom. You may also use the cursor scroll keys to locate a date field on the calendar screen. However, the speed of this method is usually much slower than the mouse clicking method.

If the cursor is at the leftmost position of the top line on the calendar screen which has the current date, then when you press the Enter key the cursor will automatically jump to the current day field on the screen. In this case, you don't need to use the mouse pointer to locate a date field.

Note: To print the above viewed listing, you may enter a 'SF' (Sendfile) command to send the listing file to either a VM account or a printer.

How to view the Yearly Things-To-Do listing file:

While the cursor is at any location on the calendar screen, you may press the PF5 key to display a Things-To-Do listing of the selected year. The displayed file will be in sequential file format. The file name will be 'USERID.YEARyyyy.YEARLY.TODOLIST', where 'yyyy' is the year code. You may print out this yearly Things-To-Do listing file for the checkup of the progress of your project work schedules.

Note: The Yearly and Monthly Things-To-Do listings can be viewed on the Calendar Date Information panel by pressing the PF5 and PF10 keys. Please press the PF1 key on that panel for more information.

How to update the data from the Things-To-Do viewed listing:

On either of the monthly or the yearly Things-To-Do viewed listing you may enter an 'ED' command and position the cursor at a date field on the screen, such as the '02/03/1998' date field, or position the cursor at any column on the data line of that date, and then press the Enter key. Then the Things-To-Do panel of the selected date will be displayed. You may update the data on the Things-To-Do panel very easily.

Instead of entering an 'ED' command on a data line in the viewed Listing panel and manipulate the cursor and Enter key, you may position the cursor at any column on the date field and press the PF4 key. Note that the PF4 key on the viewed listing has already been defined as the 'ED' command by this tool.

How to open/close a To-Do work item from the calendar:

The following is the description of the methods of how to open or close a work item from the Things-To-Do panel on the calendar:

To open a To-Do work item from the calendar, you may follow the following procedure:

(1) If you want to open a work item for the current day, then you may press the Enter key while the cursor is at the top leftmost corner on the calendar of the current day screen. After pressing the Enter key, the cursor will jump to the current day field on the screen automatically. Then you may press the Enter key once again to display a Calendar Date Information panel, and press the Enter key one more time to display a Things-To-Do panel to open a work item.

(2) If you want to open a work item for a date other than the current

day, then you may use the mouse to locate the target date field on the calendar screen and click it to position the cursor on that date. Then press the Enter key twice to display a Things-To-Do panel to open a work item.

To close a work item from the calendar, you may follow the following procedure:

(1) You may use the mouse to locate the target date on the calendar screen and press the Enter key twice to display a Things-To-Do panel just like the open work item procedure, and then enter a 'C' code to close the To-Do work item on the panel.

(2) You may press the Enter key while the cursor is still at the top leftmost corner on the calendar screen. Then the cursor will jump to the current day field on the screen automatically. Press the Enter key once to display a Calendar Date Information panel and then either press the PF5 key to display a Yearly Things-To-Do listing or press the PF10 key to display a Monthly Things-To-Do listing. On the viewed listing files, you may either use the 'ED' command or use the PF4 key to display a Things-To-Do panel. Then you may enter a 'C' code to close the To-Do work item from that panel.

How to view the Yearly Notebook listing file:

While the cursor is at any location on the calendar screen, you may press the PF6 key to display a Notebook listing of the selected year. The displayed file will be in sequential file format. The file name will be 'USERID.YEARyyyy.YEARLY.NOTELIST', where 'yyyy' is the year code. Note that there is no PF key that supports for the display of the monthly Notebook listing. On the viewed Yearly Notebook listing you may position the cursor on a date field and press the PF4 key to display the Notebook process panel of the selected date and update the note contents.

How to merge old listing to new one when year begins:

If you don't merge the old NOTEBOOK or TODOLIST file to the new file when the new year begins, then the data entered in these two files during the previous years cannot be accessed through this year's calendar. To merge the data in the old file to the new file, you may either copy or rename the old NOTEBOOK or TODOLIST file to the new file name with a new YEARxxxx file name code. A window panel will be popped up to ask you whether you want to rename the old NOTEBOOK or TODOLIST file at the beginning of each year. If you press the Enter key on that panel, then the old NOTEBOOK or TODOLIST file will be renamed to new year file for you automatically.

6.2 The Calendar Date Information panel on-line tutorial

If the cursor is placed on a date field, such as the date of 02/03/1998, on the calendar screen when the Enter key is pressed, then a 'Calendar Date Information' window panel with detail date information, such as the following, will be displayed:

Figure 34. The sample Calendar Date Information panel

```
Date Selected:      February 3, 1998   12:34:15
Weekday Name:       Tuesday
Week Number:        6
Julian Day:         34
Remaining Days:     331

Press PF01 for tutorial guide.
Press PF05 to view Yearly Things-To-Do list.
Press PF06 to view Yearly Notebook list.
Press PF10 to view Monthly Things-To-Do list.
Press PF11 to process the Notebook function.
Press ENTER to process the Things-To-Do function.
Press END or CANCEL to return.
```

If the PF1 key is pressed on the 'Calendar Date Information' panel, then the following tutorial guide will be displayed:

On this panel, the selected date and weekday name will be denoted in English. The week number will be stated. The days of the year, i.e. the Julian Day of the selected date will be calculated. The remaining days of the year, i.e. the total of 365 or 366 days subtract the Julian Day, will also be indicated on the panel. To exit this panel, simply press the PF3 or PF12 key.

If the Enter key is pressed, then a Things-To-Do panel will be displayed. You may type in the description of the work on the panel that you want to do for the specific day and save it in a database file.

Other than placing the cursor on the calendar screen to view the Yearly and Monthly Things-To-Do listing, you may press the PF5 and PF10 keys on this panel to view these two Things-To-Do listings also.

If the PF11 key is pressed, then a Notebook process panel will be displayed. You may type in almost anything on the panel that you need to save in a database file for the future reference. You may press the PF6 on this panel to view the Notebook listing.

6.3 The Things-To-Do function panel on-line tutorial

If the Enter key is pressed on the 'Calendar Date Information' panel, then the following sample Things-To-Do panel will be displayed:

Figure 35. The sample Things-To-Do panel

```
The "Things-To-Do" Work item #1 for 02/09/1998 (Monday):

_Update the PROJWRK Reference Guide_____________________________

Current Status:   _I          (C = Completed, D = Deleted,
                               H = On Hold, I = In Progress)
```

```
Plan End Date:    02/12/1998
Actual End Date:  __________

The follow-up remarks:        (optional)
_____________________________________________________________________

Press PF01 for tutorial guide.
Press PF05 to change the Work Item Start Date.
Press PF07 for previous Things-To-Do item.
Press PF08 for next Things-To-Do item.
Press PF10 to compress the Work Item sequence.
Press END to save the updates and exit.
Press CANCEL to cancel the last updates and exit.
```

If the PF1 key is pressed on the 'Things-To-Do' panel, then the following tutorial guide will be displayed:

When the Enter key is pressed on the Calendar Date Information panel, or if the cursor is placed on a date field on a viewed Things-To-Do listing file and the PF4 key is pressed, then this window panel for the Things-To-Do function will be displayed.

On this panel, you may enter the To-Do Work Item Description in the first input data field and press the Enter key. Then the Current Status field will be filled in with a code 'I' automatically, which means that To-Do Work Item will be in progress. Totally about 60 characters can be typed in each Work Item Description field. Meanwhile, the Plan End Date field will be filled in with the current date. You may either change it to a new plan end date or leave it as is. The Plan End Date must not be earlier than the task Start Date. Otherwise a warning message will be issued.

If the Current Status field on the panel is not empty, then the validity check will be performed. There are four types of the valid status codes can be specified in the Current Status field, which are:

C - Complete	The work item is completed
D - Delete	The work item has been deleted
H - On Hold	The work item is put on hold
I - In Progress	The work item is currently in progress

If you change the Status Code from 'I' to 'C', which means the Work Item is completed, then the Actual End Date field will be filled in with the current date automatically when the Enter key is pressed. You may alter the Actual End date field with another date as you wish. If the Actual End Date field is not empty, then the validity check will be performed. The Actual End date of a Work Item cannot be earlier than the task Start Date. Otherwise a warning message will be issued.

If the Status Code field is 'C' and the Actual End Date field has been filled with a date, but the Plan End Date field is empty, then the Plan End Date field will be filled with the same date with the Actual End Date.

The Plan End Date field and the Actual End Date field can be blank out if the Status Code field contains a 'D' (Delete) or a 'H' (On Hold) code.

If you need to change the Start Date of the Work Item, then you may press the PF5 key. A small window panel will be displayed for you to enter a new Start Date of the Work Item. You may only change the numbers of the month and the day code of the old Start Date of the Work Item. The year code of the old Start Date cannot be changed. If the year code of the new Start Date of a Work Item must be changed, then you may open a new Things-To-Do entry in that year and remove the Work Item entry in the current year

```
instead of using the PF5 key to change the Start Date of the Work Item.

You may press the PF8 key to display a new Things-To-Do panel if more than
one Work Item to be specified for the same day is needed. You may press
the PF7 key to return back from second Work Item panel to the first one.
Each Work Item for the selected date is labeled with a sequence number.
You can update the data on the panel by typing it over the input data
field. To save the updated data and exit the process panel, you need to
press the PF3 key. If the PF12 key is pressed, then the last updated data
will not be saved when the process panel is terminated.

Note that if you want to delete a Work Item entry from the Things-To-Do
list, then simply press the PF11 key. If the data was deleted with PF11
key by mistake, then you may press the PF11 key again to restore the
deleted data back to the panel.

If you use the PF5 key to change the Start Date of a Work Item, or blank
out the Work Item Description area to delete a Work Item, then the Work
Item numbers may not be in consecutive sequence. In this case, you may
either press the PF10 key on this panel to compress the Work Item sequence
numbers or leave the non-consecutive sequence numbers as is.

On this panel, there is an optional field which allows you to fill out
the follow-up remarks. The comments entered in this field will not be
shown in the Yearly or Monthly Things-To-Do listings.

Other than pressing the Enter key on the Calendar Date Information panel
to display this Things-To-Do panel, you may enter a TODO or TESTLOG
command on any command line of the PANEL2, PANEL3, PANEL4, or PANEL5
panel, or enter a TODO or TESTLOG command on the command line of an
edited file.
```

Note: On the Things−To−Do panel there is an field that allows you to enter the follow−up comments of a project or work item. For example, if you enter a 'D' code to cancel a project or work item on this panel, you may fill out the reason in the follow−up remarks field to describe why the Work Item is cancelled so that it will be easier for you to track down the status of all the things that you need to do.

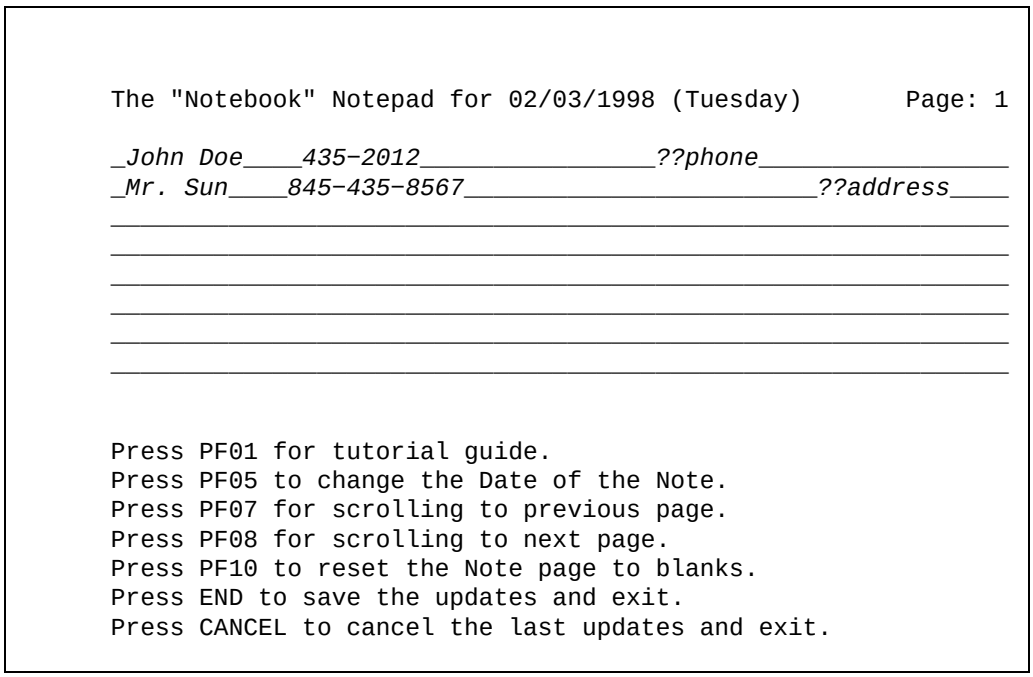
The database file of the TODO User−Exit command is your regular Things−To−Do data file. In case you don't want to mix up your testing logs with your regular Things−To−Do data, then you may use a TESTLOG User−Exit command to create a separate Things−To−Do log file. The function of the TESTLOG command is identical to the TODO command. As a matter of fact, you may create as many similar User−Exit commands as you like, such as the TESTLOG1, TESTLOG2, etc. commands, to record your Things−To−Do logs related to your program testing works.

If the 'ISODATE' mode is On, then all the date field displayed on the panel will be in the YYYY−MM−DD format. To turn the 'ISODATE' mode Off, you may use the 'TSO PROJ ISODATE OFF' command. Instead of using the 'TSO PROJ ISODATE' command to toggle the two states, you may also use a 'PWOPT' command to display a PROJWRK option selection panel to perform the same function.

6.4 The Notebook function panel on−line tutorial

If the PF6 key is pressed on the 'Calendar Date Information' panel, then the following Notebook Notepad panel will be displayed:

Figure 36. The sample Notebook panel



If the PF1 key is pressed on the 'Notebook' process panel, then the following tutorial guide will be displayed:

```
On this panel, you may enter the memo, notes, appointments, addresses,
and phone numbers, etc. You almost can enter anything on this panel for
the future reference. There are totally eight data lines available for
you to enter the data. If you want to add a remark code for a data line,
simply add a '??' tab code, such as shown in the above example. The remark
code must be less than 7 characters. It is optional.

If you need to change the Start Date of the Note Item, then you may press
the PF5 key. A small window panel will be displayed for you to enter a new
Date of the Note Item. You may only change the numbers of the month and
the day code of the old Date of the Note Item. The year code of the old
Date cannot be changed. If the year code of the new Date of a Note Item
must be changed, then you may open a new Notebook entry in that year and
remove the Note Item entry in the current year instead of using the PF5
key to change the Date of the Note Item.

Press the PF8 key to display a new page if more than one Note Item to
be specified for the same day is needed. Press the PF7 key to return
back from the next page to the previous page. You can update the data
on the panel by typing it over the input data field. To save the
updated data and exit the process panel, you need to press the PF3 key.
If the PF12 key is pressed, then the last updated data will not be saved
when the process panel is terminated.

Note that if you want to delete a Note Item entry from the Notebook
panel, then simply press the PF11 key. If the data was deleted with PF11
key by mistake, then you may press the PF11 key again to restore the
deleted data back to the panel.

If you need to insert a blank note line or delete a note line on the
panel, simply enter a '/i' or '/d' code at the leftmost two column of
a note line. Only one '/i' and one '/d' code can be specified on the
Notebook panel each time. The following is an example to insert a blank
note line above the first note line:
```

Figure 37. The sample Notebook panel with a '/i' (Insertion) code.

```
The "Notebook" Notepad for 02/03/1998 (Tuesday)       Page: 1

/iohn Doe____435-2012_________________??phone_____________________
Mr. Sun____32 Carriage Hill Lane_____________??address_____
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________


Press PF01 for tutorial guide.
Press PF05 to change the Date of the Note.
Press PF07 for scrolling to previous page.
Press PF08 for scrolling to next page.
Press PF11 to reset to blank or restore back data.
Press END to save the updates and exit.
Press CANCEL to cancel the last updates and exit.
```

Instead of using a '/i' code to insert a blank line above the selected note line, you may also use a '/a' code to add a blank line below the selected note line. Both of the '/i' code and the '/a' code can insert a blank line on the Notebook panel.

You may enter a MEMO or TESTNOTE User-Exit command on any command line of the PANEL2, PANEL3, PANEL4, or PANEL5 panel, or enter a MEMO or TESTNOTE command on the command line of an edited file also.

6.5 The sample Yearly Notebook listing file

If the PF6 key is pressed while the cursor is placed at any position on the Desktop Monthly Calendar screen, or if the PF6 key is pressed on the Notebook panel when a MEMO or TESTNOTE User-Exit command is issued, then the Yearly Notebook listing, such as the following sample listing, will be displayed in the viewed listing format:

Figure 38. The sample Yearly Notebook listing

```
   The Notebook Listing for the year of 1998              02/16/1998


   Date     Memo, Notes, Appointments, Addresses, Phone numbers, etc.   Tabs
------------------------------------------------------------------------ -------
01/08/1998  Century 21 Company  1-800-876-3535  fax 561-337-6396

------------------------------------------------------------------------
01/12/1998  Help Desk  3-9999                                           IBM
            Work Station problem 293-1111                               IBM
            BOCES 486-4800

------------------------------------------------------------------------
01/16/1998  Inclement weather  1-800-IBM-7991                           IBM
            Password  HEAD2NUT

------------------------------------------------------------------------
01/29/1998  Davis Hardware Store  453-6740
```

```
             ------------------------------------
             Matt Seabold   SEABOLD at IBMUSM21                          ISPF
              PDF/SCLM Development
              Phone:  (919) 254-7086  TL/444-7086
             ------------------------------------
             John Mallory - JMALLORY at IBMUMS21  JMALLORY--CARVM3        ISPF
              tl 444-7155

 ------------------------------------------------------------------------
 02/02/1998  * How to find a name from VM node and Userid
               1) Enter CLAS
               2) Select option 5  Display Report option menu
               3) Select option 1  User Uid report

 ------------------------------------------------------------------------
 02/03/1998  John Doe   435-2012                                          Phone
             Mr. Sun   123 IBM Road                                       address
```

Note: Similar to the Yearly or Monthly Things-To-Do viewed listing, on this Yearly Notebook viewed listing, you may also position the cursor on a date field, say the date of 02/03/1998, and press the PF4 key, then the Notebook panel of that date will be displayed, which allows you to either update or delete the Note Item data for the selected date. Note that when the PF4 key is pressed the cursor can be at any column on the code lines. It is not restrictive that the cursor must be on the date code when the PF4 key is pressed.

When the Yearly Things-To-Do viewed listing or the Yearly Notebook viewed listing of the current year is displayed on the screen, the Note Item at the top line of the listing is usually most close to the current date. After the listing is displayed, you may press the PF7 or PF8 key to scroll the screen page up or down for the information of Note Items of the other dates.

The database file of the MEMO User-Exit command is your regular Notebook data file. In case you don't want to mix up your testing notes with your regular Notebook data, then you may use a TESTNOTE User-Exit command to create a separate Notebook file. The function of the TESTNOTE command is identical to the MEMO command. As a matter of fact, you may create as many similar User-Exit commands as you like, such as the TSTNOTE1, TSTNOTE2, etc. commands, to record your various kinds of notes related to your program testing works.

Appendix A. The sample source code of the Project List file

A.1 The sample '@MISC' Project List member file

The following is the source code of the '@MISC' Project List member file. This member is created on the 'USERID.@PROJWRK.LIST' file when this tool is initially invoked. In this file, it shows that several valid TSO/ISPF commands have also been added for your reference.

The valid TSO/ISPF command codes that can be used by this tool are: 'EX', 'EXEC', 'TSO', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BROWSE', or 'VIEW'.

Figure 39. The sample member file with TSO/ISPF commands

```
/* @FUNCTION: The Transactions Log file and miscellaneous files
/* @HIDE (Remove "/*" to hide this member from showing on the panel)
/* NOTE: Data Set with marker must be in the "Dsname /marker" format
/* NOTE: Data Set with volume must be in the "Dsname /V=volume" format
PANEL(ISR@PRIM)
VIEW 'USERID.LOG.MISC'
VIEW 'USERID.LISTCAT.DSNLIST'
VIEW 'USERID.LISTALC.DSNLIST'
VIEW 'USERID.REXXCHK.OUTLIST'
VIEW 'USERID.REXXREF.OUTLIST'
SYS1.ISP.ISPMENU
SYS1.ISP.ISPPENU
SYS1.ISP.ISPSLIB
SYS1.ISP.ISPTENU
PGM(ISRUDL) PARM(ISRUDLP) SCRNAME(DSLIST)
TSO PRTPDS 'USERID.@PROJWRK.DOCUMENT'
TSO PROEDIT
PGM(ISRBRO) PARM(ISRBRO01)
PGM(ISREDIT) PARM(P,ISREDM01)
USERID.LOGON.*                                          //O=DynExp
USERID.LOGON.CLIST
USERID.LOGON.EXEC
USERID.LOGON.PANEL
```

The code lines in a new project or work item can be entered from the PANEL1 panel. However, since there are only few data set name fields and command code line fields available on the PANEL1 panel, therefor you will definitely need to add other data set names or command code lines by using a file editor, or by using an 'E num' command on the PANEL2 panel, or by using an 'E' command on the PANEL3 panel, if the PANEL1 panel is not big enough for you to enter all input data for a new project or work item.

Note that instead of specifying the TSO/ISPF commands in the Project List member file, you may also specify them in the User−Exit file and define your own commands. The User−Exit method seems better than this Project Panel command method. However, it is up to you to decide which method can best satisfy your needs. Please see the Appendix E section about the usages of the User−Exit function.

The stand alone data set names in the Project List member file should NOT be enclosed in a pair of single quotes but they should be fully qualified. The data set names in the TSO/ISPF command code lines must be enclosed in single quotes unless it is your own data set. You should NOT specify your TSO Userid as the high level qualifier on the data set name field in the code line if the bounded single quotes are omitted because your

TSO logon Userid will be added to the data set name by this tool automatically. More detail about these rules will be described in next section.

Note: If you choose to use the 'TSO SUBMIT' or 'TSO SUB' command code in the code lines, then you may also use the short formats of these two codes, which are 'SUBMIT' and 'SUB'. The example of the 'SUBMIT' command code line will be presented in next section.

Note: The Dsname Level code entry with an asterisk (*), such as the code 'USERID.LOGON.*' in the above sample diagram, can be entered on the PANEL1 panel or added in the Project List member file. When such type of data set name code is found, this tool will expand it in the Project List member file automatically and it will generate a "//O=DynExp" flag attached to the code for the future dynamic expansion. When you enter a 'RESET' or '/R' command on the PANEL3 panel of the project with such type of code entries, this tool will dynamically expand it to refresh the existing expanded data set name list. Note that the "//O=DynExp" is the tool generated flag. Thus, when you add such type of code entries, which contain the asterisk in the data set name filed, you should neither delete nor attach the "//O=DynExp" flag on the Dsname Level code by yourself.

A.2 The sample 'MYPROJ1' Project List member file

The following is the source code of the 'MYPROJ1' Project List member file. It shows that the valid Partitioned, Sequential, GDG base, or VSAM files and the TSO/ISPF commands can all be specified in this file:

Figure 40. The sample 'MYPROJ1' file in Project List file

```
/* @FUNCTION:  This is my first project
/* @HIDE (Remove "/*" to hide this project member on the panel)
/* NOTE: Data Set with marker must be in the "Dsname /marker" format
/* NOTE: Data Set with volume must be in the "Dsname /V=volume" format
SYST.UNITTEST.PLI
SYST.UNITTEST.INCLUDE
SYST.UNITTEST.JCL
USERID.TEST1.GDG      /g
USERID.TEST2.GDG      /g
USERID.TEST3.GDG      /g
SYST.PREPROD.PLI
SYST.PREPROD.INCLUDE
SYST.PREPROD.JCL
OUTPUT.REPORT.LISTING         <===
TSO SUBMIT 'USERID.@TEST.JCL(TESTJOB)'
EXEC 'TOOLKIT.TOOLS.EXEC(@@INIT)'
BROWSE 'USERID.@PROJWRK.CEXEC(ALIASES)'
EDIT 'USERID.LOGON.CLIST(@@INIT)'
IFSSTEST.IFA1.CBS.AH.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AS.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AD.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AT.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.BANK.CLUSTER     /v
IFSSTEST.IFA1.CBS.REGISTRY.CLUSTER     /v
IFSSTEST.IFA1.CBS.IBAVAAS.C.CLUSTER    /v
```

The data set names specified in the Project List member files are in two different formats which can be either with or without a pair of bounded quotes. One of the formats is the stand−alone data set name, the other format is the data set name come together with a TSO/ISPF command. The data set naming rules for the

Project List member files is defined as follows:

1. If the data set name will be used in a TSO or ISPF command, then it must follow the regular data set naming rules. i.e.

    a. If the data set is your own, then the bounded single quotes can be optionally omitted. When the single quotes are omitted, then your TSO logon Userid should be omitted in the data set name prefix area also.

    b. If the data set is not your own, then it must be a fully qualified data set name enclosed in single quotes.

2. Otherwise, it is in a stand−alone data set name format, which must be fully qualified and NOT enclosed in single quotes. If the data set is your own, you will still need to explicitly specified your TSO Userid as the high level qualifier in the data set name even it is not enclosed in single quotes.

Therefore, in this file you need to update the following data set name with your TSO Userid as the high level qualifier:

```
OUTPUT.REPORT.LISTING
```

which is shown as follows:

```
USERID.OUTPUT.REPORT.LISTING
```

where 'USERID' is your TSO logon Userid.

The following data set specified in the 'MYPROJ1' Project List member file is a GDG base:

```
USERID.TEST1.GDG
```

If the cursor is placed on this GDG base and the Enter key is pressed on the PANEL3 or the PANEL5 panel, then the generation files of this GDG base will be expanded under the GDG base file name automatically.

It is highly recommended to add the data set markers or the remark comments to the GDG base files in the Project List member file, which are shown in the following diagram, so that the GDG files can be very noticeable in the data set selection list on the PANEL3 panel.

Figure 41. The sample GDG base file with data set marker and remark comment

```
USERID.TEST1.GDG       /g    -- This is a GDG base
USERID.TEST2.GDG       /g    /* This is a GDG base
USERID.TEST3.GDG       /g    /* This is a GDG base */
```

The data set markers is case sensitive. Thus, the '/g' and '/G' will be displayed on the PANEL3 panel with different markers. However when you search for such data set markers on the PANEL3 panel you may use either the 'FF g' or 'FF G' command to search both markers because the 'FF' command (i.e. the 'FFIND' command) is not case sensitive.

The data set names in the Project List member file is not case sensitive. If you type the lower case letters data set names in the file, it will be automatically converted to uppercase and displayed on the PANEL3 panel as uppercase data set names.

The data set names need not be started at column 1. The data set markers and the data set remark comments, which are shown in the above diagram, are optional yet they are highly recommended.

The data set names and the TSO/ISPF commands can be intermixed together in the same Project List member file. In the above diagram, you can see that there are four TSO commands have been specified in this sample Project List member file, which are:

```
TSO SUBMIT 'USERID.@TEST.JCL(TESTJOB)'
EXEC 'TOOLKIT.TOOLS.EXEC(@@INIT)'
BROWSE 'USERID.@PROJWRK.CEXEC(ALIASES)'
EDIT 'USERID.LOGON.CLIST(@@INIT)'
```

Each of the commands can be simplified. The following is the short forms of these four TSO commands:

```
SUB @TEST.JCL(TESTJOB)
EX  'TOOLKIT.TOOLS.EXEC(@@INIT)'
B   @PROJWRK.CEXEC(ALIASES)
E   LOGON.CLIST(@@INIT)
```

Unlike the stand−alone data set name code entries in the Project List member file, the high level qualifier in the data set names associated with the TSO/ISPF command can be omitted if they are your own data sets, and the bounded single quotes can also be omitted. However, if the data set is not your own, then they must be fully qualified and enclosed in the single quotes.

Note: If you type an 'E', 'B', or 'V' code on the row of these four types of TSO command on the PANEL3 panel, then instead of executing the command the associated file in the command will be either edited, browsed, or viewed.

When the TSO/ISPF commands are displayed on the PANEL3 panel, they will be flagged with a dot '.' as default so that the users can tell apart the TSO/ISPF commands from the regular data set names very easily. You may enter a 'TSO PROJ DOT OFF' command to suppress the display of the dot flag if you like.

In the above sample Project List member file it contains several VSAM file names for our IFS (Interactive Financial System) testings. As you can see that these few data set names contain a '/v' marker. In most cases the the VSAM file names are very lengthy. Therefore, to use this tool to help you to invoke the File−Aid tool package to handle the VSAM file edit and browse functions is highly recommended.

A.3 How to use the Section Separator on PANEL3 panel

In the previous section, the usages of the data set name markers '/g' for GDG files and '/v' for VSAM files have been presented. There is a better method provided by this tool package to separate different files in a project or work item, which is to use the Section Separator code '...', i.e. three dots, in a Project List member file.

In the following diagram, an example of four Section Separator code lines inserted in the 'MYPROJ1' Project List member file has been shown:

Figure 42. The sample 'MYPROJ1' file with four Section Separators

```
/* @FUNCTION:  This is my first project
/* @HIDE (Remove "/*" to hide this project member on the panel)
/* NOTE: Data Set with marker must be in the "Dsname /marker" format
/* NOTE: Data Set with volume must be in the "Dsname /V=volume" format
SYST.UNITTEST.PLI
SYST.UNITTEST.INCLUDE
SYST.UNITTEST.JCL
... GDG files                              <===
USERID.TEST1.GDG      /g
USERID.TEST2.GDG      /g
USERID.TEST3.GDG      /g
...                                        <===
SYST.PREPROD.PLI
SYST.PREPROD.INCLUDE
SYST.PREPROD.JCL
USERID.OUTPUT.REPORT.LISTING
... various sample TSO/ISPF commands       <===
TSO SUBMIT 'USERID.@TEST.JCL(TESTJOB)'
EXEC 'TOOLKIT.TOOLS.EXEC(@@INIT)'
BROWSE 'USERID.@PROJWRK.CEXEC(ALIASES)'
EDIT 'USERID.LOGON.CLIST(@@INIT)'
... VSAM files                             <===
IFSSTEST.IFA1.CBS.AH.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AS.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AD.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.AT.A.CLUSTER     /v
IFSSTEST.IFA1.CBS.BANK.CLUSTER     /v
IFSSTEST.IFA1.CBS.REGISTRY.CLUSTER     /v
IFSSTEST.IFA1.CBS.IBAVAAS.C.CLUSTER    /v
```

Note that the short descriptions following the '...' code on the Section Separator code line is optional. If it is specified, then it must not exceed 40 characters long. Otherwise, it will be truncated when it is displayed on the PANEL3 panel.

The following diagram is the PANEL3 panel screen of the new updated 'MYPROJ1' project. As you can see that the panel screen has been divided into several sections by the Section Separator code in long dot−line format:

Figure 43. The sample PANEL3 panel with Section Separator code lines

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel         Row 1 to 25 of 25|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 2       Project Name ===> MYPROJ1           Time => 10:22:15|
|  Function     ===> This is my first project                                   |
|  Command ===> _____________________________________________ Scroll ===> CSR  |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------|
|  _________     1    SYST.UNITTEST.PLI                                         |
|  _________     2    SYST.UNITTEST.INCLUDE                                     |
|  _________     3    SYST.UNITTEST.JCL                                         |
|  _________     4    ... GDG files ..................................          |
|  _________ g   5    USERID.TEST1.GDG                                          |
|  _________ g   6    USERID.TEST2.GDG                                          |
|  _________ g   7    USERID.TEST3.GDG                                          |
```

```
|  _________      8     ..............................................          |
|  _________      9     SYST.PREPROD.PLI                                        |
|  _________     10     SYST.PREPROD.INCLUDE                                    |
|  _________     11     SYST.PREPROD.JCL                                        |
|  _________     12     USERID.OUTPUT.REPORT.LISTING                            |
|  _________     13     ... various sample TSO/ISPF commands .............      |
|  _________  .  14     TSO SUBMIT 'USERID.@TEST.JCL(TESTJOB)'                  |
|  _________  .  15     EXEC 'TOOLKIT.TOOLS.EXEC(@@INIT)'                       |
|  _________  .  16     BROWSE 'USERID.@PROJWRK.CEXEC(ALIASES)'                 |
|  _________  .  17     EDIT 'USERID.LOGON.CLIST(@@INIT)'                       |
|  _________     18     ... VSAM files ..................................       |
|  _________  v  19     IFSSTEST.IFA1.CBS.AH.A.CLUSTER                          |
|  _________  v  20     IFSSTEST.IFA1.CBS.AS.A.CLUSTER                          |
|  _________  v  21     IFSSTEST.IFA1.CBS.AD.A.CLUSTER                          |
|  _________  v  22     IFSSTEST.IFA1.CBS.AT.A.CLUSTER                          |
|  _________  v  23     IFSSTEST.IFA1.CBS.BANK.CLUSTER                          |
|  _________  v  24     IFSSTEST.IFA1.CBS.REGISTRY.CLUSTER                      |
|  _________  v  25     IFSSTEST.IFA1.CBS.IBAVAAS.C.CLUSTER                     |
|  ****************************** Bottom of data ******************************|
+-------------------------------------------------------------------------------+
```

Note: To display the Section Separator in a long dot−line format on the PANEL3 panel as shown in the above diagram, you need to enter a 'LONG' or 'SW' (SWap) command. If you prefer to change the Section Separator on the PANEL3 panel back to the default short dot−line format from the long format, then you may enter a 'SHORT' or 'SW' (SWap) command.

The Section Separator code lines allow you to group the similar types of data set names or the data sets that belong to the same subtask of a project or work item into the same section. With the Section Separator code lines added to the Project List member file, when the PANEL3 panel is displayed it will show a very organized data set name list screen. These code lines are very easy to be updated, and it is a much better method than using the data set markers. However, it is not a bad idea to use both methods to organize your project files on the PANEL3 panel at the same time, which is as shown in the above diagram, if you don't feel it is redundant.

A.4 The sample 'MYPROJ2' Project List member file

The following is the source code of the 'MYPROJ2' Project List member file.

Figure 44. The sample 'MYPROJ2' file in Project List file

```
/* @FUNCTION:  This is my second project
/* @HIDE (Remove "/*" to hide this member from showing on the panel)
/* NOTE: Data Set with marker must be in the "Dsname /marker" format
/* NOTE: Data Set with volume must be in the "Dsname /V=volume" format
MXG.SAS.CNTL                /V=DSSPK0
mxg.sas.source              /v=dsspk0
-- OUTPUT.PROGRAM1.REPORT
/* OUTPUT.PROGRAM2.REPORT
SYST.TEMPTEST.PLI(PGM1)     /a
SYST.TEMPTEST.PLI(PGM2)     /a
```

In this sample Project List member file, it shows that the data set names are not case sensitive and it shows how to comment out them by inserting a '/*' or '−−' code at the leftmost column. It also shows how to specify a marker or a volume serial number for a data set if it is needed

When you edit the Project List member file you may use the PF4 key, i.e. the 'ED' command function key, to toggle between the '/*' code to be inserted into and dropped from the leftmost column of each code line.

Note: The code '/V=DSSPK0' means that the data set 'MXG.SAS.CNTL' is uncataloged and it resides on the TSO disk pack named 'DSSPK0'. If a data set is already cataloged, then it is not proper to specify a Volume Serial number for that data set in the Project List member file.

Note: The two commented out code lines will be moved to the top of the file after the sort. If you want to keep all these data set names in a certain order even after some data set names are commented out, then you may insert the '//' code in the middle of the code lines instead. The following is such an example:

```
  OUTPUT.PROGRAM1.REPORT    //
  OUTPUT.PROGRAM2.REPORT    //
```

Note that the two member names PGM1 and PGM2 can be explicitly specified with the PDS library file name if these two member files will be used frequently. When these two members are displayed on the PANEL3 panel, you may type either a 'E', 'B', or 'V' code next to a data set name or position the cursor next to a data set name and press Enter key to edit, browse or view them directly.

Note: These two files are at the third and fourth row on the PANEL3 panel because there are two data set names in the Project List member file that have already been commented out. Therefore, if you need to edit, browse or view the member files other than these two members in the 'SYST.TEMPTEST.PLI' library file, simply type a code 'XRF' command next to either of the two members on the PANEL3 panel, or enter an 'XRF 3' or 'XRF 4' command, where '3' and '4' are the data set selection codes of these two member files on the PANEL3 panel.

The data set marker '/a' can be added to the frequently used member files. In this case, the marker 'a' will be shown next to these two member files on the PANEL3 or PANEL5 panel whenever the 'MYPROJ2' project is selected. You may use a 'FF a' or 'LL a' command and press the PF5 key to locate these two member files on the PANEL3 panel very easily.

If the 'MYPROJ2' Project List member file contains a lot of data set names, then by using the markers you can provide the subgroups of the data set name list. The length of the marker is one character. It will be truncated when it is displayed on the PANEL3 or PANEL5 panel if the marker is longer than one character. Note that the '/' (slash) in front of the code 'a' is required because it is a delimiter code. The space in between '/' and 'a' is optional except for the '*' marker, because the code '/*' is the remark comment notation.

Note: The '/=' and '/−' are two invalid data set markers and it will be ignored if you specify either one as a data set marker because these two markers might cause the confusion with the 'last used' data set markers on the PANEL3 panel.

Note: As a matter of fact, to use the '/F' and '/L' data set markers is not recommended because when you search for these two markers on the PANEL3 panel, the 'FF F' and 'FF L' command will be very easily to be confused with the 'FFF' and 'FFL' commands.

The marker code such as '/a' and the volume serial number code '/V=' can be specified for the same data set simultaneously. The following is an example.

```
   SYST.TEMPTEST.PLI(PGM1)   /a  V=DSSPK0
```

The '/V=' code is needed only if the data set is not cataloged and it resides on a specific volume pack. Since the migrated cataloged data set might reside on different disk pack after it is Hrecalled, therefore attach g a '/V=' code to a cataloged data set in the Project List member file is not recommended because it will cause problem. When the data set marker and the volume serial number code are both specified, the data set marker code should be defined in front of the volume serial number code.

A.5 The sample 'PROJECT' Project List member file

The following is the source code of the 'PROJECT' Project List member file. This file is created on the 'USERID.@PROJWRK.LIST' file when this tool is initially invoked.

Figure 45. The sample 'PROJECT' file in Project List file

```
/* @FUNCTION: The MVS Project Work Manager
/* @HIDE (Remove "/*" to hide this member from showing on the panel)
/* NOTE: Data Set with marker must be in the 'Dsname /marker' format
/* NOTE: Data Set with volume must be in the 'Dsname /V=volume' format
USERID.@PROJWRK.PACKAGE
USERID.@PROJWRK.ANNOUNCE
USERID.@PROJWRK.EXEC
USERID.@PROJWRK.CEXEC
USERID.@PROJWRK.LOAD
USERID.@PROJWRK.PANELS
USERID.@PROJWRK.SKELS
USERID.@PROJWRK.TABLE
USERID.@PROJWRK.DOCUMENT
USERID.@PROJWRK.LIST
USERID.@PROJWRK.XREF
```

The first two data sets are the PACKAGE and ANNOUNCE files of this tool package.

The third data set contains the REXX program source code of this tool package. It is a proprietary library file and thus it is not included in this tool package. The code line of this data set name can be very easily added to the Project List member file by using the PANEL4 file editor. Usually you may select the 'PROJECT' project from the PANEL2 panel and select the 'USERID.@PROJWRK.LIST' data set on the PANEL3 panel, and then select the 'PROJECT' member file on the PANEL4 panel to add or delete the code lines in edit.

The next six data sets are the primary library files of this tool package. When you send a copy of this tool package to your friends, you only need to send these six primary library files plus the tool PACKAGE and ANNOUNCE files.

The last two libraries for the Project List and Xref List functions are created by this tool when the 'TSO PROJ' command is invoked at the first time.

Appendix B. A sample process procedures for practice

In this section, the method of using the PANEL5 panel has been described in full details. Since the 'RECALL' command method and the 'EDLAST' command method are much better than the PANEL5 panel method, thus if you are not interested in using the PANEL5 panel, you may skip reading the sample process steps section.

B.1 The descriptions of the sample process steps

The following is the description of few steps of a sample process that you may use as an exercise. More detail descriptions will be will be presented later in the diagram format.

1. Type a 'TSO PROJ' command on the command line of any ISPF panel to enter into the Project Work Manager tool session and display the PANEL2 main panel.

2. On the main panel, type a '4.1' command, for example, to display a PANEL4 panel for the first data set of the fourth project or work item.

3. On the PANEL4 panel, type few 'XRF' commands on several member command lines. This will save few edit commands of the selected members in a Xref Command Buffer. The saved commands can be retrieved in next step.

4. Type an 'XRF' command on the command line on the PANEL4 panel to display the PANEL5 Xref List panel, on which it will show all the retrieved commands in a list under the '4.1' project data set name.

5. On the PANEL5 panel, use the 'R' command or type a '/' code to retrieve the edit commands that you have saved by using the 'XRF' command at step (3).

   Note: At step (3) the 'XRF' codes were typed at the member command lines, and at step (4) the 'XRF' command was entered at the panel command line. The functions of the of the 'XRF' code and the 'XRF' command are different.

6. On the PANEL5 panel, you may either enter a '2.5' command or type a '/' code next to the selection code of '2.5', to switch to the fifth data set of the second project.

   Note: The '2.5' command can also be entered on the PANEL4 command line instead of the PANEL5 command line to switch a project.

7. After switching to the PANEL4 panel of the PDS, which is denoted by a selection code '2.5', then repeat the same steps from (3) to (5). If a '4.1' command is entered on the '2.5' member list panel, then the PANEL5 panel of the data set '4.1' instead of the PANEL4 panel of the data set '4.1' will be displayed. This is because previously few 'XRF' codes were entered on the member command line of the PANEL4 panel in step (3) before.

   Note: At step (2), it is recommended that you should not attempt to memorize the data set selection code, such as '4.1', because the assignment of a selection code to a data set name can be changed very dynamically whenever a project or work item is added or deleted (or hidden) from the Project List file. The alternative is that you may type an 'XRF' command on the PANEL2 panel to display the PANEL5 Xref List panel first, then position the cursor next to the selection code '4.1' and press the Enter key to select the first data set of the fourth project instead of memorizing a specific selection code. However, if you don't change your Project List members layout very often, then the method of

specifying a selection code is much faster and easier. Thus, it is up to you to choose whatever method you like.

On the process panels, wherever you can type a '/' code to select a project or work item or select a data set, you can also type an 'S' code instead. Thus, these two command codes are equivalent. Sometimes, the '/' code can also be replaced with an 'XRF' code. Other than typing the selection codes, you may position the cursor on a row and press these Enter key to select it also. Thus, there are many ways for you to select a project or a data set in this tool.

Note: The functions of 'Select Project', 'Select Data Set', 'Display Cross Reference List panel', 'Save Edit Commands in Xref Command Buffer', 'Extract PDS name', and 'Switch Panels', etc. can all be executed by using a single command code 'XRF'. In this document, you will see that the descriptions of the 'XRF' command appear in several places for different functions and it seems quite confusion at the first glance. However, after you become much familiar with the different features of this tool, you will find that the various 'XRF' command functions are in fact very powerful and very easy to use.

Using this tool, you may switch between the PDS member list panels and between the projects or work item panels back and forth very efficiently by just typing few selection codes or command codes, or by placing the cursor at the proper place on the panel and press the Enter key. A special command, i.e. the '//' command, which will be introduced later in this document, can also be used to switch from one project to another very easily. Therefore, this tool package is most suitable for the programmers who need to handle many programs of several projects simultaneously.

This document has shown that in many cases this tool has provided multiple ways for the single functions. Therefore, this is a very flexible tool package. In fact, sometimes you don't need to know all of the methods and you may still be able to operate this tool quite well. Thus, for each single function provided by this tool you may just choose to learn one of the easiest or the most favorable method and hang on it.

B.2 The sample operation process in the diagram form

Assume that a '4.1' selection code has been entered on the PANEL2 panel from the previous process step, then the following PANEL4 panel will be displayed:

Figure 46. The sample PANEL4 panel of the member list of a selected PDS

```
+-------------------------------------------------------------------------------+
|   PANEL4       The PDS Member List Panel        Menu  Functions  Utilities  Hel|
|   ---------------------------------------------------------------------------|
|   Selection Code ===> 4.1      Project Name ===> PROJECT      Row 00001 of 0000|
|   Data Set Name  ===> USERID.@PROJWRK.EXEC                      Time => 12:51:2|
|   Command ===> __xrf_____________________________________________ Scroll ===> CSR|
|              Name     Prompt       Size   Created          Changed          ID |
|   _________ @PROJWRK                1409  1997/08/26  1999/09/15 09:55:55  USERI|
|   _________ PROJ                     148  1997/08/26  1999/09/17 12:51:17  USERI|
|   _xrf_____ PROJWRK                16156  1997/08/26  1999/10/22 11:51:24  USERI|
|   _xrf_____ PROJMEM                11494  1997/08/26  1999/10/22 10:51:31  USERI|
|   ****************************** Bottom of data ******************************|
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

This sample PANEL4 panel contains only four member files for the simplicity of the demonstration purpose. In the real EXEC file, however, it contains many other member files.

On this panel you may type two 'XRF' codes next to the member files 'PROJWRK' and 'PROJMEM', for example, to save the edit commands of these two files in the Xref Command Buffer.

The next step is to enter an 'XRF' command on the PANEL4 panel command line to display the PANEL5 Xref List panel, which will be shown in next page.

Note that in the above diagram, the two 'XRF' codes should be typed in first, then in next step you may enter the 'XRF' command to display a PANEL5 panel. These two steps were merged into the same diagram as shown above but they should be separated.

B.3 The resulting PANEL5 panel in the diagram format

The following is the PANEL5 Xref List panel that contains the two previously saved edit commands. The selection codes of these two commands are 'R1' and 'R2', which can be used as the retrieve commands to repeatedly execute these two edit commands.

Figure 47. The PANEL5 panel of the Xref list with retrieved commands

```
+-------------------------------------------------------------------------------+
|  PANEL5       The Xref List and Retrieved Commands Panel     Row 32 to 45 of 45|
|  ---------------------------------------------------------------------------- |
|  Caller Panel  ===> From PANEL4 4.1          Project Name ===> PROJECT        |
|  Data Set Name ===> USERID.@PROJWRK.EXEC                       Time => 12:53:32|
|  Command ===> _____________________________________________  Scroll ===> CSR  |
|                                                                               |
|   Select     Code     Project Description, Data set Name, or Command    Volume |
|  -------- ---------- ------------------------------------------------ -------|
|  _________   PROJECT   The MVS Project Work Manager - - - - - - - - -         |
|  _________     4.1     USERID.@PROJWRK.PACKAGE                                |
|  _________     4.2     USERID.@PROJWRK.ANNOUNCE                               |
|  _________     4.3     USERID.@PROJWRK.EXEC                                   |
|  _________   --> R1    PROJWRK  --> E 'USERID.@PROJWRK.EXEC(PROJWRK)'         |
|  _________   --> R2    PROJMEM  --> E 'USERID.@PROJWRK.EXEC(PROJMEM)'         |
|  _________     4.4     USERID.@PROJWRK.CEXEC                                  |
|  _________     4.5     USERID.@PROJWRK.LOAD                                   |
|  _________     4.6     USERID.@PROJWRK.PANELS                                 |
|  _________     4.7     USERID.@PROJWRK.SKELS                                  |
|  _________     4.8     USERID.@PROJWRK.TABLE                                  |
|  _________     4.9     USERID.@PROJWRK.DOCUMENT                               |
|  _________     4.10    USERID.@PROJWRK.LIST                                   |
|  _________     4.11    USERID.@PROJWRK.XREF                                   |
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

On this panel, you may enter a 'R1' command to edit the 'PROJECT' member file. If you enter a 'R' command continuously, then the two member files will be edited alternatively. You may type a 'B2' command, for example, to browse the 'PROJMEM' file instead of editing it. You may also position the cursor on the row of the retrieved command and press the Enter key to edit the member file.

The 'R' command code can be omitted. You may simply press the Enter key while the cursor is still at the PANEL5 panel command line area to retrieve the 'R1' and 'R2' commands alternatively because this pressing Enter key method is equivalent to entering a 'R' command method.

Note: The 'R1' and 'R2' commands are saved in the Xref Command Buffer temporarily and they are available for the current ISPF session only. When the ISPF session is terminated, the Xref Command Buffer will be reset to empty.

In next Appendix section, a better method for permanently displaying the frequently used member files on the PANEL3 and PANEL5 panels will be discussed.

Note:

1. Instead of using the two 'XRF' codes or 'XRF' command, if you enter an 'XRF proj' command on the PANEL4 panel then you will get the same result as well as a third retrieved command of 'R3' for the member 'PROJ' in the 'USERID.@PROJWRK.EXEC' library. It is because that the character string of the first four characters of all these three members match the 'PROJ' character string.

2. On the PANEL5 panel as shown above, you may enter a '/R' command to clean up all the retrieved commands, or type the 'D' code to delete one or more retrieved commands.

On the PANEL5 panel, assume that the data set of the selection code '4.1', for example, is currently displayed on the top of the screen. After pressing the PF7 or PF8 key, the panel rows are scrolled up or down to display another projects. Now if you position the cursor at the row of a selection code '2.5', for example, and press the Enter key, then you can switch to a PANEL4 panel of a data set of another project, which is the fifth data set of the second project in this case.

As you have seen from the previously described process steps, you may type few 'XRF' codes on the rows of several members on the PANEL4 panel in order to save the edit commands of those member files in the PANEL5 panel.

Instead of typing the 'XRF' code, you may do one of the following:

1. Directly edit, browse, or view a PDS member file on the PANEL4 panel and the edit, browse, or view command of that member will also be automatically saved in the Xref List Command buffer.

2. Enter an 'XRF/' command in the PANEL4 command line to save the Edit commands of all members into the Xref Command Buffer.

3. Enter an 'XRF mem' command, where 'mem' is a character string, to save the edit commands of all the members, whose first few characters match 'mem', into the Xref Command Buffer. The 'X proj' command is such an example, which has been described in previous page.

The edit commands, which are saved by using the 'XRF' code, the 'XRF/' command, or the 'XRF mem' command can be displayed on the PANEL5 panel automatically and bypass the display of the PANEL4 panel whenever it is requested to be displayed again, which is the 'PANEL5 Auto Display' function. To cancel the 'PANEL5 Auto Display' mode, you may either enter a 'RESET' or '/R' command on the PANEL5 panel to remove all the retrieved commands, or terminate the ISPF session to empty the Xref Command Buffer.

The previously saved commands in the Xref Command Buffer will be reset to empty automatically after the ISPF session is terminated. These commands can be retrieved only for the same ISPF session. If you want to retrieve the TSO/ISPF commands from the PANEL5 panel in a new ISPF session, you need to restart from beginning and type the 'XRF' code or use the 'XRF/' command again.

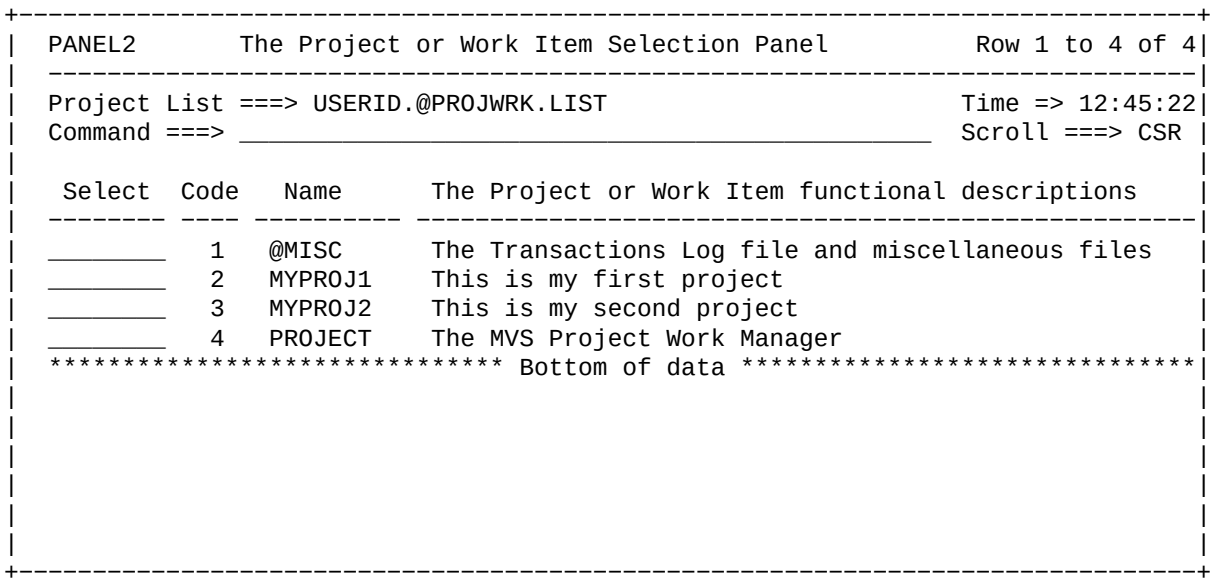
Note: If a partitioned data set has a lot of member files, then using the 'XRF/' command will take a lot of time to process. Thus, the 'XRF/' command is only suitable for the small PDS library files.

Note: This section is the so−called PANEL5 panel method. In the next two sections, the method for editing the frequently used PDS member files and the method of the 'RECALL' command function will be described. Those two methods are better than the PANEL5 panel method, which are highly recommended.

B.4 The various kinds of methods to select projects

Suppose the Project List file contains the four members '@MISC', 'MYPROJ1', 'MYPROJ2', and 'PROJECT' as shown in the previous section, then after a 'TSO PROJ' command is invoke, the following PANEL2 panel will be displayed:

Figure 48. The sample PANEL2 panel for the 'TSO PROJ' command



Previously, we have mentioned three methods for you to select a a project or work item from the PANEL2 panel to display either the PANEL3 or the PANEL4 panel, which are:

1. Type a selection code, such as '1', '2', '3', or '4', on the PANEL2 command line and press the Enter key to display the PANEL3 panel.

2. Type a '/', 'S', or 'X' code next to a project or work item in the selection code field on the PANEL2 panel and press the Enter key to display the PANEL3 panel.

3. Place the cursor **at any column** on the row of a project or work item on the PANEL2 panel and press the Enter key to display the PANEL3 panel.

The first two methods are very easy to use and they are highly recommended. The third method is also very handy because you may put the mouse pointer at any column of a selection code or project name line area to place the cursor to the desired position instead of using the down−arrow key to choose a project or work item.

As a matter of fact there are more than three methods available for selecting a project or work item from the PANEL2 panel, which have all been illustrated before. The following is the descriptions of the other methods:

1. Enter an 'a.b' type of selection code, such as the '4.1' code, on the PANEL2 panel command line or on the selection code line to display a PANEL4 panel of the first data set of the fourth project and bypass the display of the PANEL3 panel.

2. Type an 'XRF' command on the PANEL2 command line to display the PANEL5 Xref List panel. Then apply the three methods similar to the methods described above to display a PANEL4 panel and bypass the display of the PANEL3 panel.

   The three methods are:

   a. Enter a 'a.b' type of selection code on the PANEL5 command line to display a PANEL4 panel.

   b. Type a '/' code on the 'a.b' type of selection code row and press the Enter key to display a PANEL4 panel.

   c. Place the cursor next to a data set name on the PANEL5 panel and press the Enter key to display a PANEL4 panel.

3. Enter a '/2' or '/3' type of command on the PANEL2 panel to display a PANEL3 panel and select the data set name from there. These two commands are the same as the '2' and '3' commands.

4. Enter a Project List member name, i.e. a project or work item name such as MYPROJ1, MYPROJ2, etc. can also switch directly to a specific project or work item.

5. If a project or work item, which is flagged with a '−' marker, i.e. the 'last used' project marker, is the one you want to select and the cursor is still at the PANEL2 panel command line position, then simply press the Enter key.

6. Use a '//num' command, such as the '//', '//2', or '//3' command, to display a project selection window panel to switch to the PANEL3 panel of a specific project.

   Note: If a '//' command is entered on the PANEL3 panel, then after it branches to a PANEL3 panel of a new project, this command can remember the selection code of the original project. To branch back to the original project, all you need to do is enter the '//' command again on the new PANEL3 panel. Thus, this '//' command allows you to switch between two projects back and forth very easily.

Appendix C. The method for editing the frequently used PDS member files

C.1 The PDS library files with member names in Project List file

Assume that 'PROJWRK' and 'PROJMEM' are the two frequently used REXX programs in the 'USERID.@PROJWRK.EXEC' library, then it is not a bad idea to specify these two members with the PDS name explicitly in the Project List member file. You may also optionally attach a data set marker '*' next to each of these two PDS member file names, which is shown as follows:

Figure 49. The sample Project List with PDS member explicitly specified

```
/* @FUNCTION: The MVS Project Work Manager
/* @HIDE (Remove "/*" to hide this member from showing on the panel)
/* NOTE: Data Set with marker must be in the "Dsname /marker" format
/* NOTE: Data Set with volume must be in the "Dsname /V=volume" format
USERID.@PROJWRK.PACKAGE
USERID.@PROJWRK.ANNOUNCE
USERID.@PROJWRK.EXEC(PROJWRK)  / *
USERID.@PROJWRK.EXEC(PROJMEM)  / *
USERID.@PROJWRK.CEXEC
USERID.@PROJWRK.LOAD
USERID.@PROJWRK.PANELS
USERID.@PROJWRK.SKELS
USERID.@PROJWRK.TABLE
USERID.@PROJWRK.DOCUMENT
USERID.@PROJWRK.LIST
USERID.@PROJWRK.XREF
```

The '/ *' code as shown in the above sample diagram is the data set markers. Note that in between the slash '/' and the '*' at least one space is required. Otherwise, it will be treated as the remark comment.

Note: Using an asterisk '*' as the data set marker is not recommended because it might be messed up with the dot sign for the TSO/ISPF type of command code lines on the PANEL3 panel. Similarly, the '/=' and '/−' are two invalid data set markers because the '=' code can be very easily messed up with the '−' flag as the 'last used' data set marker on the PANEL3 panel.

C.2 The various methods for selecting PDS library with members

The Project List member file name in this sample is called 'PROJECT'. After this project or work item is selected, the following PANEL3 panel will be displayed:

Figure 50. The sample PANEL3 panel with markers and 'X' code

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel          Row 1 to 12 of 1|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 4       Project Name ===> PROJECT            Time => 12:49:1|
|  Function     ===> The MVS Project Work Manager                               |
```

```
|  Command ===> x 3_____________________________________________  Scroll ===> CSR |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands     Volume|
|  -------- -------- ------------------------------------------------- ------|
|  ________     1     USERID.@PROJWRK.PACKAGE                                   |
|  ________     2     USERID.@PROJWRK.ANNOUNCE                                  |
|  ________ *   3     USERID.@PROJWRK.EXEC(PROJWRK)                             |
|  _x______ *   4     USERID.@PROJWRK.EXEC(PROJMEM)                             |
|  ________     5     USERID.@PROJWRK.CEXEC                                     |
|  ________     6     USERID.@PROJWRK.LOAD                                      |
|  ________     7     USERID.@PROJWRK.PANELS                                    |
|  ________     8     USERID.@PROJWRK.SKELS                                     |
|  ________     9     USERID.@PROJWRK.TABLE                                     |
|  ________    10     USERID.@PROJWRK.DOCUMENT                                  |
|  ________    11     USERID.@PROJWRK.LIST                                      |
|  ________    12     USERID.@PROJWRK.XREF                                      |
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

Note: In the above diagram, the 'X 3' command the the 'X' code typed next to the PDS member file were merged in the same diagram. These two commands should not be specified at the same time.

Now you may edit the 'PROJWRK' or 'PROJMEM' member file very easily simply by:

1. typing a selection code '3' or '4' command,

2. typing a 'S' or a '/' code next to either of these two data entries, or

3. placing the cursor at any column on these two data entries and press the Enter key.

These three methods allow you to edit a PDS member file without needing to select the member from the PANEL4 panel.

If you want to edit the member other than the two members 'PROJWRK' and 'PROJMEM' in the 'USERID.@PROJWRK.EXEC' library, then you may just use an 'X num' command, such as 'X 3' or 'X 4' command, or type a 'X' code next to either of these two files to extract the PDS name and display a PANEL4 panel of the 'USERID.@PROJWRK.EXEC' library on which either the member name of 'PROJWRK' or 'PROJMEM' will be displayed at the top of the PANEL4 panel screen.

Note: The same type of 'X' command method to display a selected PDS in a PANEL4 panel format from the PDS member file displayed on the PANEL3 panel is also applicable to the RECALL command panel, which will be discussed in next section.

The 'S' and '/' codes, unlike the 'X' code, will edit the member file directly. Thus, the function of the 'X' code is different from the 'S' and '/' code function in this case.

Note:

1. In the Project List member file source code, you may choose other data set markers such as '/a', '/b', etc. to make the frequently used PDS member files to be easily noticeable on the PANEL3 panel if the data set listing is very large. The 'FF a' and the 'FF b' commands can help you to locate these member files very easily. The data set marker is not case sensitive, however using the lower−case letters as the data set marker is recommended.

2. It is very easy to add or delete data set names on the PANEL3 panel simply by using an 'E' command to edit the Project List member file. For example, on the above displayed PANEL3 panel if an 'E'

command is entered at the command line, then the source code of the 'PROJECT' Project List member file will be edited for you to change the contents. You may add or delete the TSO/ISPF commands as well as the data set markers in the edited Project List member file also.

Appendix D. The RECALL command function and the Member Backtrace function

D.1 The example of the 'RECALL' command operation

The 'RECALL' command is one of the most powerful features provided by this tool package. It can be used to display a specially designed panel of a file listing which were previously edited in the Project Work Manager tool session. It allows you to repeatedly work on the most recently worked files in the past many days or many months without needing to spend too much effort to search for them. The short command form of the 'RECALL' command is the 'RC' command. The PF4 key has been assigned as this command function key as default.

When a 'RC' command is invoked or the PF4 key is pressed on any command line of the PANEL2, PANEL3, PANEL4, PANEL5, or RECALL panel, or if a 'RC' command is entered on the edit command line, then a RECALL command panel will be displayed. The following is such an example:

Figure 51. The sample RECALL command panel with the Project Code data

```
+-------------------------------------------------------------------------------+
|  RECALL       The RECALL Command Process Panel                 Row 1 to 9 of 9|
|  ---------------------------------------------------------------------------- |
|  Command ===> _____________________________________________  Scroll ===> CSR  |
|                                                                               |
|  Select  Code  The Recalled Data Sets for Edit or Browse    Proj-Code  Project |
|  ------- ---- ---------------------------------------- ----------- --------- |
|  ________   1  TOOLKIT.@PROJWRK.PANELS(DSLUHLP)              4.4     PROJECT  |
|  ________   2  USERID.@PROJWRK.EXEC(DSLUTIL)                 4.1     PROJECT  |
|  ________   3  SYST.TEMPTEST.PLI(PGM1)                       3.3     MYPROJ2  |
|  ________   4  USERID.@PROJWRK.REXXCOMP(DSLUTIL$)            4.12    PROJECT  |
|  ________   5  USERID.@PROJWRK.REXXCOMP(PROJECT$)            4.12    PROJECT  |
|  ________   6  TOOLKIT.@PROJWRK.PANELS(PNL1HLP)              4.4     PROJECT  |
|  ________   7  TOOLKIT.@PROJWRK.ANNOUNCE                     4.2     PROJECT  |
|  ________   8  USERID.LOGON.CLIST(@@INIT)                    2.14    MYPROJ1  |
|  ________   9  USERID.@PROJWRK.EXEC(RECALL)                  4.1     PROJECT  |
|  ****************************** Bottom of data ********************************|
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

As you can see from the above RECALL command panel that all the partitioned data sets have a member name attached. Thus, if the PDS name is too lengthy, then the member name might be truncated from the panel. In this case, you may type a 'MBR' command next to the PDS to display its member name. Instead of typing the 'MBR' command on the RECALL command panel, you may also enter the 'MBR' command on the edited command line of this PDS to reveal the partially blocked member name in the message field.

Note: All the files displayed on the RECALL command panel are in either the sequential or PDS member file format, which are the files edited on either the PANEL3 or PANEL4 panel before.

D.2 The 'RECALL' command function on−line tutorial

If the PF1 key is pressed on the RECALL command panel, then the following tutorial guide will be displayed:

Figure 52. The introduction tutorial guide of the RECALL command panel

```
+------------------------------------------------------------------------------+
|                                                                              |
|                Introduction to the 'RECALL' Command Functions                |
|                                                                              |
|                                                                              |
|  The 'RECALL' command function can be used to display all of the previously  |
|  edited data sets. The displayed data sets can be edited, browsed, or viewed |
|  repeatedly again on this panel. To invoke this function, simply enter a     |
|  'RECALL' or 'RC' command on the command line of any of the PANEL2, PANEL3,  |
|  PANEL4, PANEL5, or RECALL panel, or on the command line of an edited file.  |
|  The Recall command can be repeatedly invoked on the RECALL command panel    |
|  up to 99 levels deep. To invoke the Recall command from the outside of the  |
|  Project Work Manager session, you may enter a 'TSO PROJ RECALL' command on  |
|  any ISPF panel command line.                                                |
|                                                                              |
|  The purpose of this 'RECALL' command function is to provide a very easy     |
|  way for the users to repeatedly work on the same files without needing      |
|  to spend too much time and effort to search for them. The recalled data     |
|  set names are obtained from the Auto Bookmark string provided by this tool  |
|  package. Thus, if you need to use the 'RECALL' command function, then please|
|  don't turn off the Auto Bookmark function.                                  |
|                                                                              |
+------------------------------------------------------------------------------+
```

The Auto Bookmark is one of the most powerful feature provided by this tool. With this function, this tool can automatically re−display the same file screen when you re−edit a file which has been edited before. Thus, this tool sets the 'TSO PROJ AUTO ON' as default. The Auto Bookmark string created by this function can also be used by the 'RECALL' command. You may drop this function by entering a 'TSO PROJ AUTO OFF' command, however it is not recommended. Instead of using a 'TSO PROJ AUTO ON/OFF' command, you may also use a 'PWOPT' command to display the PROJWRK option selection panel to perform the same function.

By adding a new project or delete an old project, it can change the project or work item selection code scheme, which will cause the Auto Bookmark Buffer to be reset to empty and also cause the RECALL command panel to be reset to empty. You may press the System Attention key to retrieve the original Auto Bookmark data and the RECALL command panel data back if you don't want to reset the Auto Bookmark Buffer to empty.

If you press the Enter key or the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

```
------------------------------------------------------------------------------

Note:           You may bring up the RECALL command panel within the edited
                file session many levels deep and use the 'XCUT' and 'XPASTE
                Edit Macro commands to manipulate the code lines. The code
                of 'RECALL', 'RECALL2', etc. displayed on the RECALL command
                panels indicate which level that the 'RECALL' command functi
                is currently in process. However, with the function of the
                'Edit Ring', it is not necessary to bring up another level
                of the RECALL command panel. Please see the descriptions of
                the 'Edit Ring' function in this tutorial section for more
                information.

Note:           Unlike the PANEL5 Xref List panel, the RECALL command panel
                can only capture the previously edited files on the PANEL3
                or PANEL4 panel. The previously browsed or viewed files will
                not be shown on the RECALL command panel. Note that the
```

edited file by using the 'ED' command on the ISPF option 3.4 data set list panel, which is displayed by using a 'FL' or a 'FF' User−Exit command, will not be shown on the RECALL command panel either.

CMDLIST Panel — Enter a 'CMD' command or press the PF10 key can display a Command List panel for you to select a command function if you cannot remember the command name of that function.

Select a Data set — There are several methods can be used to edit, browse, or view selected file on the RECALL command panel:

(a) Enter a 'E num', 'B num', or 'V num', where 'num' is the data set selection code, to edit, browse, or view a file. The short command form of 'E num' is 'num'. For example, the 'E 3' command can be replaced with a '3' command code to edit the third file listed on the RECALL command panel.

(b) position the cursor at any column of a data set name line and press the Enter key can edit the selected file. If the cursor remains at the panel command line when the Enter key is pressed at the first time, then the default is to edit the top file on the screen. You may enter a 'E', 'B' or 'V' command and position the cursor at any column of a data set name line to edit, browse, or view the selected file.

(c) Type a 'E', 'B', or 'V' code next to a data set name can edit, browse, or view the selected file also.

Note: If you are not authorized to update the edited file, then the edit command function will be automatically changed to view command function unless an 'EDX' command code is used.

List all Members — Enter an 'X num' command or type an 'X' command code on a data set name line can display the PANEL4 panel of the PDS member list of the selected file. This command only works for the partitioned data sets which has a member name shown on the panel. It does not work for the sequential files.

Repeat Execution — If you press the Enter key without specifying a command code or enter a single 'E', 'B', 'V' or 'X' command, and if a data set has been selected by an 'E', 'B', 'V' or 'X' command for editing, browsing, viewing, or displaying PDS members just recently, then that command will be repeatedly executed again. You may enter a '/' command to show what was the last command that has just been executed before.

Edit Ring function — This tool package has provided a very special feature which allows you to edit several data sets that are listed on the RECALL command panel simultaneously. It is a simulation of the VM XEDIT 'Edit Ring' function. To use this function, simply enter a 'RING' command on the panel command line and then type the 'S' code to select the data sets. Then the first selected file will be edited. Whenever the END key or the CANCEL key is pressed, the next selected file will be edited. All selected files will be edited rotatively like a ring. The only way to leave out of the ring is to enter a 'QQUIT' or a 'QQ' command. When you edit each file, you may use the 'XCUT' and 'XPASTE' commands to manipulate the data. Note that the short forms of these two commands are the G (Get) and the 'P' (Put) commands, respectively.

Note: If no 'S' code is specified when a 'RING' command is issued on the RECALL command panel, then a message indicating the selection code missing will be prompted. The reason is that

	the selection code 'S' must be typed in at the same time when the 'RING' command is entered. You may use the 'RING' command on the PANEL4 PDS Member List panel also. There is a slightly difference of the 'RING' command procedure on the PANEL4 panel from the command procedure on this panel, which is the sequence of the selection code 'S' specifications. You may also type a pair of 'SS' code to select a group of data sets for the Edit Ring function.
Note:	You may use a 'BACK' or 'BA' command to move the Ring file in the backward direction without saving the currently edited file. Note that you may press the PF3 key instead of entering the 'END' command. By entering the PF4 key, i.e. the 'ED' command key, you may save the currently edited data set and move the Ring in backward direction.
Note:	A 'RING ALL' command can be used to edit all the data sets listed below the top file on the RECALL command panel. The short form of the 'RING ALL' command is the 'RINGALL' or 'EDITALL' command.
Note:	Similarly, a 'VIEWRING ALL' command can be used to view all data sets listed on the RECALL command panel in a ring. The short form of the 'VIEWRING ALL' command is the 'VIEWALL' or 'VWRALL' command. You may enter a 'VIEWRING' command and use the 'S' code to view few selected data sets on the RECALL command panel in a ring also. The short form of the 'VIEWRING' command is the 'VWR' command.
Note:	Similarly, a 'BRRING ALL' command can be used to browse all data sets listed on the RECALL command panel in a ring. The short form of the 'BRRING ALL' command is the 'BRALL' command. You may enter a 'BRRING' command and use the 'S' code to browse few selected data sets on the RECALL command panel in a ring also. The short form of the 'BRRING' command is the 'BRR' command.
Search Data set	Enter a 'LOCATE data' or a 'L data' command, where data is a character string to be searched, can find the data set name that contains the searched string. The 'FIND data' or the 'F data' command is another format of this function. You may press the PF5 key to repeat the search for the data set on the panel.
Shift Data Set Up	Type a '\' code next to a data set can shift the selected data set name to the top of the RECALL panel screen. More than one '\' code can be typed in to shift several data set names up to the top at the same time. With this function, you may rearrange the data set name sequence on the RECALL command panel so that you can easily reach to the files on the panel.
Set New Top Row	If a '/' code is typed on a data set name line, then that data set line will be scrolled up and become the top row. Note that this command function is different from the '/' command which is entered on the panel command line.
Refresh the Panel	Whenever a data set is edited on the RECALL command panel or on the PANEL4 panel which is displayed by using an 'X' command code, the Auto Bookmark string will be updated. You may enter a 'RESET' or '/R' command to refresh the data set name list on the current level RECALL command panel based on the updated Auto Bookmark string.
Last−Used Date	The 'SWAP' or 'SW' command can swap the displayed data of

the Project selection code and the 'Last-Used' date and time of each file listed on the panel. By checking the date and time information, you may find out if the files have been used too long time ago so that you may decide to remove them from the RECALL command panel by using the 'DELETE' command. Note that the data set names displayed on the panel will be accumulated up to the maximum entries. The oldest file that exceeds the maximum entry limit will not be shown on the panel automatically. Thus, to delete the old data set name entries from the RECALL command panel is really not needed. However, if you do want to delete some old data set name entries from the panel, then simply enter a 'D99' command.

Note: Other than the 'SWAP' command, you may also use a 'DATE' or 'PROJCODE' command to swap the data of the Project selection code and the 'Last-Used' date of each data set name entry listed on the panel also. The short command forms of 'DATE' and 'PROJCODE' are 'D' and 'P', respectively.

WHEN Command Instead of using a 'SWAP' command to display the 'Last-Used' date of all data sets on the RECALL panel, you may typea 'WHEN' command next to a data set to display the 'Last-Used' date information of the selected data set only.

SORT Command The RECALL command panel is originally sorted based on the date and time of the files being used. You may enter a SORT command to sort the RECALL command panel based on the file names. To reset the panel back to the default sorted by date and time format, simply enter a 'RES' or '/R' command.

MBR Command If the data set name is too long, then it is quite possible that the attached member name will be truncated on the RECALL command panel. You may type a 'MBR' command next to this long data set name to display the member name in the message field.

Set New Limit The default maximum rows displayed on the RECALL command panel is 50 lines. A 'MAX num' command can be used to set a new line limit. For example, the 'MAX 100' command can be used to display a smaller RECALL command panel with maximum of only 100 data set name lines.

Note: The 'MAX 100' command can be performed on the PROJWRK option selection panel. Please enter a 'PWOPT' command to display such a panel and press PF1 key for more detail information.

Reset the Limit The 'MAX RESET' command can reset the maximum rows limit back to 50 lines. Note that the 'num' in the 'MAX num' command can be set to a number larger than 50. For example, the 'MAX 300' is a valid command. However, setting a large RECALL command panel will slow down the performance of the 'RECALL' command function and it is not recommended. The upp limit of the Auto Bookmark is 999. Thus, any 'num' larger than the limit will be reset to 999.

Query the Limit The 'MAX ?' command can query the current maximum rows limit on the RECALL command panel.

Scratch All Files Enter a 'SCRatch' or 'CLEAR' command can remove all Auto Bookmarks and will clear up the RECALL command panel. This command will not turn off the Auto Bookmark function. Thus, you may edit several files on the PANEL4 panel and then re-display a new RECALL command panel again at a later time.

Delete Entries There are several methods available for deleting the data

set name entries from the 'RECALL' Command panel, which are:

(a) Enter a 'D num' command, where 'num' is the sequence number of the data set name entry on the panel.

(b) Type a 'D' code on a data set name line to delete it from the panel. You may use the '=' code to delete multiple data set name entries simultaneously.

(c) Type a pair of 'DD' code to delete the data set name entries between the two selected data set names. The two 'DD' codes works only if they are entered in the same screen of the RECALL command panel.

(d) Type a 'D99' code, where '99' can be any whole number, to delete all the data set name entries below the selected data set name line. With the 'D99' command and the 'SCR' command, you may very easily clean up all data set name entries from the RECALL command panel.

Note: This delete function does not actually delete the data set from the MVS system. It only remove the bookmarks of the data sets from this tool internal used Auto Bookmark buffer.

REXXCHK Command — Type a 'REXXCHK' command next to a REXX program can invoke the REXX compiler to do a quick compilation of the selected program and display the result listing on a panel. If you need to see the same result listing again later, you may simply enter a 'REXXCHK /' command on the RECALL panel.

REXXREF Command — Type a 'REXXREF' command next to a REXX program can generate the REXX source code cross reference of the selected program and display the result listing on a panel. If you need to see the same result listing again later, then simply enter a 'REXXREF /' command on the RECALL panel.

LISTA Command — Enter a 'LISTA' command can display all allocated data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set name to edit, browse, or view it. More than one 'E', 'B', or 'V' code to select multiple data sets is allowed.

LISTC Command — Enter a 'LISTC' command can display all cataloged data set names in a list panel. You may type a 'E', 'B', or 'V' code next to a data set to edit, browse, or view it. Select more than one data set is allowed. You may enter a 'LISTC lvl−code' to display all the cataloged data set with the level of the lvl−code. If the lvl−code is omitted, then the default is your TSO logon Userid.

Note: The 'E' command on the LISTA and LISTC panels can always be replaced with an 'ED' command.

XMIT Data Sets — Enter a 'SF num' command or type a 'SF' code on the data name line can send the selected file. More than one file can be sent at the same time by using the '=' code.

Switch Project — Enter a '//' or a '//num' command can display a project selection window panel. On the panel you may press the PF7 or PF8 key to view all project names and then press the Enter key to make a choice to switch to a PANEL3 panel of the selected project. This command applies to any of the panel command lines of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The '//' command remembers the name of the original member list panel, which allows you to switch

	between two projects or work items back and forth easily.
Note:	If the 'RECALL' command is invoked on the PANEL2, PANEL3, or PANEL4 panel, then you may enter a '/a.b', 'a.b', or '/a' type of selection code, such as '/3.2', '3.2', or '/3' code, or enter a Project Name to switch to a new PANEL3 or PANEL4 panel of the selected project. You may also position the cursor on a Project−Code or Project−Name field on the RECALL command panel and press the Enter key to switch to a new PANEL3 or PANEL4 panel of the selected project.
Search data string	Enter a 'XSEARCH string' command, where 'string' is a data string to be searched, can find all files that contain the searched data string in all data sets listed on the panel. The data string(s) will be displayed on a viewed listing. The data string on the command can be omitted. The short form of the 'XSEARCH' command is 'XS'. A process panel will be displayed when the 'XS' command is entered, which allows you to enter more data strings to be searched. On the RECALL command panel, you may type the 'S' code to select several data sets on the panel before pressing the Enter key. You may also type a pair of 'SS' code to select a group of data sets for the extended data strings search.
Note	To repeatedly display the same viewed listing, you may just enter a 'XS /' command on the RECALL command panel or any other panels.
DIR Command	Enter a 'DIR' command can display a panel of the MVS Project Work Director, which contains a list of the primary and/or the secondary Project List Group names for you to select the MVS files specified in the primary or the secondary Project List files that belong to either yourself or your teammates.
Note:	The 'DIFF' (Compare), 'C' (Copy), and 'M' (Move) commands are not supported on the RECALL command panel. However, if the select file on the RECALL command panel is a PDS with a member name, then you may use a 'X' command to display a PANEL4 panel of the selected PDS and apply the 'DIFF', 'C', or 'M' command on that panel.
Return Panels	Enter an 'XX' command on the command line of either the RECALL command panel or an edited file can return back to the 'Select a Project or Work Item' panel, i.e. the PANEL2 main panel. Note that this command is applicable only if the 'RECALL' command is invoked in the Project Work Manager tool session.
Exit Panel	Press the PF3 key can exit the current level of the 'RECALL' command process.
Exit Process	Type a 'QQ' or 'X' command can exit the process entirely. Enter an 'END' command code can exit the process entirely if in the Project Work Director session.
----------	End of the RECALL command on−line tutorial ----------

If you enter a 'SWAP' or 'DATE' command on the Recall command panel, then the 'Proj−Code' field will be changed to the last edited date information of each file listed on the panel, which is as shown in the following diagram:

Figure 53. The sample RECALL command panel with the Last−Used Date/Time

```
+-------------------------------------------------------------------------------+
|  RECALL       The RECALL Command Process Panel                 Row 1 to 9 of 9|
|  ---------------------------------------------------------------------------- |
|  Command ===> _____________________________________________  Scroll ===> CSR  |
|                                                                               |
|  Select  Code  The Recalled Data Sets for Edit or Browse    Last-Used Date/Time|
|  ------- ---- ------------------------------------------- ----------- -------- |
|  _______   1   TOOLKIT.@PROJWRK.PANELS(DSLUHLP)             02/04/1998 12:13:11|
|  _x_____   2   USERID.@PROJWRK.EXEC(DSLUTIL)                02/04/1998 12:12:58|
|  _______   3   SYST.TEMPTEST.PLI(PGM1)                      02/03/1998 12:12:12|
|  _______   4   USERID.@PROJWRK.REXXCOMP(DSLUTIL$)           02/03/1998 12:10:09|
|  _______   5   USERID.@PROJWRK.REXXCOMP(PROJECT$)           02/02/1998 10:15:32|
|  _______   6   TOOLKIT.@PROJWRK.PANELS(PNL1HLP)             02/01/1998 14:33:16|
|  _______   7   TOOLKIT.@PROJWRK.ANNOUNCE                    02/01/1998 14:32:55|
|  _______   8   USERID.LOGON.CLIST(@@INIT)                   02/01/1998 14:32:10|
|  _______   9   USERID.@PROJWRK.EXEC(RECALL)                 01/30/1998 09:23:51|
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

To change the 'Last−Used' date back to the Project Code information on the panel, simply enter a 'SWAP' or 'PROJCODE' command.

Note: The short command format of the 'SWAP' command is 'SW'. The short command formats of the 'DATE' and 'PROJCODE' are 'D' and 'P', respectively. The 'SW' command is easier to use and it is highly recommended. Instead of displaying the 'Last−Used' date information of all the data sets on the RECALL command panel, if you just type a 'WHEN' command next to a data set name, then only the 'Last−Used' date information of the selected data set will be displayed.

With the 'Last−Used' date information you may decide which files listed on the panel are too old, so that you may type a 'D99' command next to the first old data set on the panel to delete all of them to improve the 'RECALL' command performance.

Note that the timestamps associated to each file not only contain the hours, but also contain the minutes and seconds. It shows that how fast you can edit various kinds of files by using this tool.

On the command line of an edited file obtained from the RECALL command panel, you may enter a 'RC' command to bring up the next level RECALL command panel. Using this method, you may use the 'XCUT' and 'XPASTE' edit commands to manipulate the data on several files that were captured in the RECALL command panel. However, there is a better method, i.e. the 'Edit Ring' function, which allows you to manipulate the data in several files on the RECALL panel also. To use this function, simply enter a 'RING' command and type the 'S' code to select several files on the RECALL command panel.

Note: On the RECALL command panel the 'C' (Copy), 'M' (Move), or 'DIFF' (Compare) command codes are all invalid. However, the alternative is that you may use an 'X' command, which is shown in the above diagram, to display a PANEL4 panel of the selected PDS, and then use these three types of commands on the PANEL4 panel instead.

Note: The 'RINGALL' command can edit all data set below the top file on the RECALL command panel in a ring. If the top file listed on the RECALL command panel is the fourth data set, for example, then the first three data sets will not be included in the Edit Ring.

D.3 The 'PDS Member Backtrace' function

On the regular form or short form PANEL4 panel, other than using the RECALL command to trace the previously edited PDS member files, you may use the '\' or '\\' command to backtrace the previously edited, browsed, or viewed PDS member files.

The '\' can be used to backtrace one PDS member at a time, and the '\\' command can be used to display a window panel, which is called the MBKTRACE panel, of the last 12 edited, browsed, or viewed PDS members from the PDS Member Backtrace Buffer. Unlike the 'RECALL' command buffer, which can be carried over the TSO logon sessions, the PDS Backtrace Buffer can be used within one Project Work Manager tool session only. Once you leave the Project Work Manager tool session, the PDS Backtrace Buffer will be reset to empty automatically.

The '\' or '\\' command retrieve the PDS member names from a PDS Backtrace buffer. When you need to reset the buffer to empty and restart the backtrace, you may use a '\\\' command. The '\', '\\', and '\\\' commands also work in the edited or viewed PDS member files.

Assume a '\\' command is entered on the PANEL4 panel of the PDS 'USERID.@PROJWRK.EXEC', then the following sample MBKTRACE window panel will be displayed:

Figure 54. The sample MBKTRACE window panel with 4 backtrace member names

```
+-------------------------------------------------------------------------------+
|                                                                               |
|     Select one member from the following 4 previously                         |
|     edited, browsed, or viewed members backtrace list:                        |
|                                                                               |
|     'USERID.@PROJWRK.EXEC'                                                    |
|                                                                               |
|          1.  @PROJWRK  viewed                                                 |
|          2.  PROJWRK   edited                                                 |
|          3.  PROJ      browsed                                               |
|          4.  PROJMEM   edited                                                 |
|                                                                               |
|                                                                               |
|                                                                               |
|     Press PF01 for Help.                                                      |
|     Press ENTER to proceed the member selection.                              |
|     Press END or CANCEL to cancel the selection.                              |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

Note that maximum up to 12 last backtraced PDS member names can be displayed on the window panel in two columns format. In the above sample diagram only 4 backtraced member were shown. Among them, one is the last browsed member file, and one is last viewed member file.

Suppose you have edited, browsed, or viewed more than 12 member files in a PDS, then the MBKTRACE window panel will still show the last 12 members on the screen even though the PDS Backtrace Buffer contains more than 12 members backtrace data.

D.4 The '\\' (MBKTRACE) command function on−line tutorial

If the PF1 key is pressed on the '\\' command MBKTRACE window panel, then the following tutorial guide will be displayed:

Figure 55. The introduction tutorial guide of the '\\' command window panel

```
+-------------------------------------------------------------------------------+
|                                Introduction                                   |
```

```
|                                                                              |
|       This window panel will be displayed when a '\\' command is entered    |
|       on either the regular form or short form PANEL4 panel command line,   |
|       or on the regular form PANEL4 member line command area, or on the      |
|       edit command line of any edited PDS member file on the PANEL4 panel.   |
|                                                                              |
|       On this panel, it displays the member names of the PDS members that    |
|       were previously edited, browsed, or viewed.                            |
|                                                                              |
|       The PDS Member Backtrace function can remember only the member names   |
|       of those members which were edited, browsed, or viewed within the same |
|       PANEL4 session. The Backtrace Buffer will be reset to empty as soon    |
|       as you exit the PROJWRK session. However, you may re-establish the same|
|       PDS Member Backtrace Buffer by editing, browsing, or viewing the same  |
|       member files in the same PANEL4 session again.                         |
|                                                                              |
|       By using the Edit Ring command on the PANEL4 panel, entering a 'RC'    |
|       command on the PANEL4 panel to display the RECALL command panel and    |
|       edit few files which has the same selection code as the PANEL4 panel,  |
|       or using the Edit Ring command to select files on the RECALL command   |
|       panel can all re-establish the PDS Member Backtrace Buffer also.       |
|                                                                              |
|       This window panel only displays the last 12 edited, browsed, or viewed |
|       member files. You may use the RC command to display the RECALL command |
|       panel to backtrace more member files, or you may use the '\' command to|
|       backtrace one member file at a time.                                   |
|                                                                              |
+------------------------------------------------------------------------------+
```

If you press the Enter key or the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

Select Member	Type a selection code, which is a digit 1-12, to select a member that was previously edited, browsed, or viewed on the same PANEL4 session and press the Enter key can select a member file of the PDS for re-edit, re-browse, or re-view. If you press the PF3 key, then no member file will be selected. When the Enter key is pressed and no selection code is specified, then an error message will be issued except for the case that only two member names are displayed on this panel. If this panel has only two member names, when the Enter key is pressed the default is to select the second member listed on the panel, which allows you to select each of the two member files alternatively.
Note:	If a '\' code instead of a selection code is typed in when the Enter key is pressed, then the second member in the list will be selected. This means that the '\' code on this 'PDS Member Backtrace' panel is equivalent to the '\' command entered on the PANEL4 panel.
Reset Backtrace	#Type a '/R' or '\\\' command on the selection code area can reset the backtrace buffer to empty. You may edit, browse, or view few PDS members to re-establish a backtrace member list buffer again.
Note:	After a member is selected from this window panel, you may just press the Enter key to re-edit the member, enter a 'B' command and press the Enter key to re-browse the member, or enter a 'V' command and press the Enter key to re-view the member. Note that you don't need to enter an 'E' command to re-edit the backtraced member when the cursor is located at the backtraced member line command area.

Return Panels	Type an 'XX' code can return back to the 'Select a Project or a Work Item' panel, i.e. the PANEL2 main panel.

---------- End of the '\\' command on-line tutorial ----------

Appendix E. The usages of the User−Exit command functions

E.1 The sample User−Exit commands in the User−Exit file

This tool package has provided a very useful function which allows the users to define their own TSO or ISPF command names. It is called the User−Exit function. This function applies to the panel command lines and the selection code lines of the PANEL2, PANEL3, PANEL4, PANEL5, LISTA, and LISTC panels, as well as the member command lines on the PANEL4 panel. On any of these applicable panels, you may enter an 'U' (Userexit) command to edit the User−Exit file. In the edited file, you may add your own User−Exit commands, or delete or modify the sample User−Exit command code lines.

Note: Instead of deleting the code lines, it is recommended to use the PF4 key to comment it out. The PF4 key can toggle between the '/*' to be inserted into and dropped from the leftmost column of the code line.

The PROJWRK tool session User−Exit file is named 'USERID.@PROJWRK.XREF(USREXIT)'. This tool package also provides a User−Exit Master Control file named 'USERID.@PROJWRK.XREF(UXTMSTR)'. This two files will be created when you initially invoke the 'TSO PROJ' command. If new User−Exit commands have been added in the new released version of this tool package, and if you don't have the updated User−Exit Master file, then you will need to enter a 'U RESET' command to reset it. Whenever you need to update your own session User−Exit file, you need to enter an 'USER' or 'U' command. You may enter a 'U MASTER' or 'U M' command to edit the User−Exit Master file. To modify the User−Exit Master file is not recommended.

Note: To find out the current version of this tool package, simply enter a 'VER' or 'VERSION' User−Exit command.

The following is the list of several sample User−Exit commands provided by this tool package:

Figure 56. The sample User−Exit commands in the User−Exit Master file

```
 1. REC,    RECEIVE: TSO RECEIVE
 2. HLP:             TSO HELPCMD  1
 3. J,      EOP:     TSO EOP
 4. FL,     \3.4:    PGM(ISRUDL) PARM(ISRUDLP) SCRNAME(DSLIST)
 5. PE,     PROEDIT: TSO PROEDIT
 6. EDL,    EDLAST:  TSO EDLAST   1
 7. TOSUN:           TSO XMIT S390VM.SUN DA(
 8. HR,     HRECALL: TSO HRECALL  1
 9. HM,     HMIGRAT: TSO HMIGRATE 1
10. HD,     HDEL:    TSO HDELETE  1
11. DGDG,   DELGDG:  TSO DGDG     1
12. DVSAM,  DELVSAM: TSO DVSAM    1
13. J2:             TSO SUBMIT 'USERID.UNIT.TEST.JCL(TEST2)'
14. REXXTRY:        TSO REXXTRY
15. PH,     PROJHLP: TSO PROJ HELP            -- PROJWRK HELP
16. SC,     SUPERC,  \3.13: 'PGM(ISRSEPRM) SCRNAME(SUPERCE) NOCHECK'
17. SRCH,   SEARCH,  \3.14: TSO SSEARCH  1
18. FAID:           'ISPEXEC SELECT PANEL(IFAMU01)'
19. QMF:            'PGM(DSQQMFE) NEWAPPL(DSQE) PARM(F=500,R=2048,S=DD1H)'
20. SPUFI:          'CMD(%DSNESC01 FUNC(SPUFI))'
21. DCLGEN:         'CMD(%DSNEDC01)'
```

The User−Exit function is an unique command feature provided by this tool package. It is so powerful that you may use it as the Edit macro command functions also. From the above list, it is very easy to find that each User−Exit command code line must obey certain code pattern, which is the syntax rules of the User−Exit commands. The detail descriptions of this syntax rules is presented in next page.

E.2 The syntax rules of the User−Exit command code lines

The following is the syntax rules of the User−Exit commands:

Figure 57. The syntax rules of the User−Exit command code lines

```
(1) Between the User−Exit command and the TSO/ISPF command code,
    there must be a separator colon ':'. For the same command code,
    if more than one User−Exit commands are chosen, each one must
    be separated by a comma ','.
(2) You may comment out any unused commands by inserting a '/*' or
    '−−' code at column 1.
(3) Only the code between column 1 and column 72 in the User−Exit
    file record will be used.
(4) The parameter for the data set name on the panel to be passed
    to the User−Exit command code must be denoted by ''
    ..., up to '
```

The syntax rules of the User−Exit file are very simple. However, this tool is very restrictive on the User−Exit syntax checking. When you edit the User−Exit file, if this tool finds a syntax error in any code line, the edited file will not be closed until the syntax error is fixed.

E.3 The descriptions of the sample User−Exit commands

The following is the descriptions of the usages of the sample User−Exit commands initially specified in the User−Exit Master file:

1. The first command 'TSO RECEIVE' can be used to receive a file sending from another user account. You may enter a 'REC' short command to perform the receiving files function instead. In edit you may use a 'U REC' command to receive the files.

2. The second command 'TSO HELP' can be used to display the TSO command on−line tutorial. The 'HLP' command can display the help text on a panel format and it allows the users to scroll the help text up and down, which is a very user−friendly feature.

3. The third command 'TSO EOP' can be used to display the batch jobs output listing. Instead of using this command, you may simply enter a 'J' command on the panel command line or the selection code line.

   Note: The TSO command for displaying the batch job listing on your MVS system may be different from this command. You need to modify this code line in your User−Exit file if necessary.

   This tool has provided a utility program called 'JOBSUBLS', which combines the 'EOP' and the 'SUBMIT' functions into one function. Suppose your 'J' command is defined as the following format in your User−Exit file, then you may either display the batch jobs output listing and submit the batch jobs by just using the same 'J' command.

```
J:   TSO JOBSUBLS 1
```

An example of this function will be shown later in this Appendix section.

4. The fourth command 'PGM(ISRUDL)' can be used to display a panel of the cataloged data set name list like the ISPF option 3.4 data set list. Instead of using such a long command, you may just type a 'FL' or '\3.4' command.

   Note: The command code for the ISPF option 3.4 on your MVS system may be different from the sample command. You will need to modify this command code line in your User−Exit file if the sample command is not applicable on your MVS system.

   To modify it, you should search for the 'ISR@PRIM' file for more information first. This file is the ISPF primary panel file in the ISPF system panel library. The 'SYS1.ISP.SISPPENU' library, for example, on your MVS system is most likely the data set that contains this 'ISR@PRIM' member. You may find the 'SYS1.ISP.SISPPENU' library from the 'LISTA' command panel by using a 'FINDMEM ISR@PRIM' command. More information about the 'FINDMEM member' command can be found in the Appendix J section.

   Note: There is another User−Exit command named 'FFF' which can be used to display a Front−end Interface panel, i.e. the 'DSLISTF' panel, of the ISPF option 3.4 data set list. This command is even more powerful and useful than the 'FL' command which will be described in more details in the Appendix G section.

5. The fifth command 'TSO PROEDIT' can be used to edit the DB2 database tables and modify the contents very easily. The PROEDIT is a vendor software product. Instead of using this command, you may enter a 'PE' command for short.

6. The sixth command 'EDLAST' can be used to edit the most recently edited file in the MVS Project Work Manager tool session. This User−Exit command is very useful if you want to repeatedly work on the same file for a long period of time. The 'EDL', 'EDL 2', and 'EDL 3', etc. commands, i.e. the 'EDL n' command, where n can be omitted if n=1, can be used to edit the n−th last edited file.

7. The seventh command 'XMIT' can be used to send the file to a specific target destination. In this example, it sends a file to my VM account 'SUN' at the VM Node 'S390VM' whenever the 'TOSUN' command is typed in next to a file on the selection code command line of the PANEL3 panel or the PANEL5 panel, or at a member command line on the PANEL4 panel.

   Note: The 'TOSUN' command is not better than the 'SF' (Sendfile) command that has already been provided by this tool. However, this is only an example which might be able to inspire you to create the similar type of applications with all your imagination.

8. The eighth command 'TSO HRECALL' can be used to recall the migrated data set. The short format of this command is 'HR'. This command needs a 'code in the command code line as a data set name parameter.

9. The ninth command 'TSO HMIGRATE' can be used to migrate the data set. The short format of this command is 'HM'. This command needs a ' code in the command code line as a data set name parameter also.

10. The tenth command 'TSO HDELETE' can be used to delete a migrated data set. The short format of this command is 'HD'. This command needs a 'code in the command code line as a data set name parameter like the 'HR' and 'HM' commands.

11. The eleventh command 'TSO DGDGB' can be used to delete the GDG base file by using the IDCAMS program.

12. Similarly, the twelfth command 'TSO DVSAM' can be used to delete the VSAM base file and index file using the IDCAMS program.

13. The thirteenth command 'TSO SUBMIT' can be used to submit a specific batch job for unit testing. To be a MVS system tester, if a JCL file is needed to be frequently submitted, then it is really not a bad idea to add this command line in the User−Exit file and use a very simple User−Exit command like 'J2' or 'J3' to execute it. You may also specify the 'TSO SUBMIT' command in a Project List member file and submit the batch job on the PANEL3 panel instead.

    Note that The 'TSO SUBMIT' command can be abbreviated in the 'SUBMIT' or 'SUB' command form. The bounded quotes can be omitted if the high level qualifier of the data set matches the user's TSO logon Userid. Thus, the thirteenth command can be rewritten as the following command format:

```
J2:     SUB UNIT.TEST.JCL(TEST2)
```

    Except the 'SUBMIT' command code, the 'TSO' code is required for all other TSO command codes in the User−Exit command code line.

14. The fourteenth command 'TSO REXXTRY' can be used to try out any REXX command on−line. For example, the following is a sample exercise of using this command:

```
     REXXTRY lets you interactively try REXX statements.
       Each string is executed when you hit Enter.
         Enter 'call tell' for a description of the features.
     Go on − try a few...             Enter 'exit' to end.
  say date()
   21 Jan 1998
     ..................................................... REXXTRY on TSO
  say time()
   16:26:56
     ..................................................... REXXTRY on TSO
  say date('S')
   19980121
     ..................................................... REXXTRY on TSO
exit
```

15. The fifteenth command 'TSO PROJ HELP' can be used to display overall general introduction of this Project Work Manager tool package. This command can also be invoked in the 'TSO PROJ ?' command format. The 'PH' User−Exit command is the short command form of both the 'TSO PROJ HELP' and the 'TSO PROJ ?' commands.

16. The sixteenth command 'PGM(ISRSEPRM)' can be used to compare the data sets by using the SuperCE Utility program. By entering an 'SC' command, the ISPF option 3.13 SuperCE panel will be displayed. This tool package has provided a 'DIFF' command which is even better than this 'SC' (SuperCE) User−Exit command.

17. The seventeenth command 'TSO SSEARCH' is a 'String Search' function. It can be used to search for the data string from a PDS library. By entering an 'SRCH' command, you don't need to enter a split the ISPF panel screen and use the ISPF option 3.14, i.e. the 'String Search−For Utility' option, to search for the data strings.

    If the 'SRCH' command is typed in next to a PDS on the PANEL3 or PANEL5 panel, or entered on the panel command line of the PANEL4 panel, then on the 'String Search−For Utility' panel all you need to do is to fill in the data string to be searched and you don't need to type in the PDS data set

name because it has already been captured on the panel.

After a viewed listing with all the member names of the PDS, which contain the searched data string, is displayed, you may either type an 'ED' command on the viewed listing command line and position the cursor on a member name and then press the Enter key to edit the member file, or simply position the cursor at the member name on the viewed listing and press the PF4 key. Note that the PF4 key has been defined as the 'ED' command function on the viewed listing by this tool package as default.

If you enter an 'ED' command or press the PF4 key while the cursor is still at the command line area of the viewed listing, then all of the members listed on the listing will be edited one by one in an 'Edit Ring' format which allows you to perform a 'Massive Change' function of the data string in all member files. You may use a 'CHANGE' edit command in the first edited member, and then press the PF6 key, i.e. the 'RChange' function key, for the repeatedly change function in the other edited members. The detail description of how to use the 'String Search' and 'Massive Change' functions will be presented in the Appendix I section.

18. The eighteenth command 'FAID' can be used to display the File−AID main process panel. If your Company has the authority to use the excellent File−AID tool package for the VSAM file edit or browse functions, then you may use this command to access that tool functions.

19. The last three commands, which are the 'QMF', 'SPUFI', and 'DCLGEN' commands, are the most frequently used commands for the DB2 programmers. These three sample command code lines may not be applicable to your MVS system. In that case, you will need to copy those command code lines to your own session User−Exit file and modify them or put a 'DUMMY' code in the command code field.

E.4 The limitations of the User−Exit commands

The User−Exit command is not case sensitive. However, it has the following limitations:

1. The reserved command codes that have already been used by this tool may not be used as a User−Exit command code. The following is a list of the reserved command codes of this tool:

   Figure 58. The reserved command codes of this tool package

```
'/R', 'ADD', 'ALL', 'B', 'BROWSE', 'CALC', 'CALENDAR', 'CAL', 'CHECK',
'CK', 'CKVOL', 'COMP', 'COMPRESS', 'COPY', 'COMMAND', 'CMD', 'CMDLIST'
'D', 'DD', 'DEL', 'DELETE', 'DEST', 'DIF', 'DIFF', 'E', 'EDIT', 'F',
'FINDMEM', 'HIDE', 'JOB', 'JOBCARD', 'LISTA', 'LISTC', 'LISTD', 'LSCAN',
'MBR', 'MOVE', 'PDSM', 'PP', 'PROF', 'PRTPDS', 'QQUIT', 'QUIT', 'QVOL',
'QVOLUME', 'RENAME', 'RESET', 'S' , 'SEARCH', 'SELECT', 'SENDFILE',
'SENDPDS', 'SENDSEQ', 'SFX2MVS', 'SF', 'SP', 'SS', 'SFS', 'SFX',
'SSELECT', 'ST', 'STATUS', 'SUB', 'SUBMIT', 'SW', 'SWAP', 'U',
'USEREXIT', 'UNHIDE', 'USER', 'X', 'XMIT', 'XRF', 'XS', 'XSEARCH', 'XX',
'Z', etc.
```

2. On the PANEL4 PDS Member List panel, the User−Exit command can be applied to the member command line. Thus, the reserved command codes such as 'S' (Select), 'E' (Edit), 'B' (Browse), 'C' (Copy), 'M' (Move), 'R' (Rename), 'D' or 'DD' (Delete), and '/' (Recall Last member) etc. cannot be used as a User−Exit command code.

3. On the PANEL5 Xref List panel, the 'R' (Retrieve), 'R1', 'R2', 'E', 'E1', 'E2', 'B', 'B1', 'B2', 'G1', 'G2', '/', and '\', etc. cannot be used as a User−Exit command code.

4. The tool generated project or work item name, such as 'PROJECT' or '@MISC', etc. or the user defined project or work item names, such as 'MYPROJ1', 'MYPROJ2', etc. which are the member names of the Project List file 'USERID.@PROJWRK.LIST', are the reserved command codes and they cannot be used as the User−Exit commands.

5. The numeric numbers, such as '1', '2', '3', '3.2', '5.1', '/2', and '/3', etc. are usually to be used as the project or data set selection codes, and they cannot be used as a User−Exit command code either.

6. The '//num' command, such as '//', '//2', '//3', etc. for the project or work item selection function cannot be used as the User−Exit commands.

7. The User−Exit function is only applicable to the panel command line area and the selection code line command area of the PANEL2, PANEL3, PANEL4, PANEL5, LISTA, and LISTC panels. If a User−Exit command, such as the 'J' command, is entered on the command line of a browsed file, then the following error message will be prompted.

   ```
   COMMAND J NOT FOUND
   ```

   Thus, the User−Exit commands cannot be executed on the command line in a browsed file.

E.5 The comparison of User−Exit commands with Panel commands

As described before, the valid TSO/ISPF command code line specified in the Project List member files must start with the 'TSO', 'EX', 'EXEC', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BROWSE', or 'VIEW' command code. The following is a list of the valid examples that can be applied as the command code:

```
TSO RECEIVE
TSO HELP LISTCAT
TSO HELP LISTALC
TSO PRTPDS 'USERID.@PROJWRK.CEXEC'
SUB 'USERID.@TEST.JCL(TESTJOB)'
CMD(PRTPDS)
PANEL(ISR@PRIM)
PGM(ISRBRO) PARM(ISRBRO01)
B  'USERID.@PROJWRK.CEXEC(PROJ)'
E  'USERID.@PROJWRK.CEXEC(PROJ)'
```

Note:

1. The short forms of the 'TSO SUBMIT', 'EDIT', 'BROWSE', and 'VIEW' command codes are 'SUB', 'E', 'B', and 'V', respectively.

2. Some of the sample User−Exit commands may not be applicable to your MVS system. You will need to either modify or delete those code lines in your User−Exit file.

If you use this tool, you will be able to find all of the 'CMD' and 'PGM' commands from your MVS system libraries very easily. The following is the procedure of how to find them:

a. Enter a 'LISTA' command on any of the PANEL2, PANEL3, PANEL4, and PANEL5 panels to display a listing panel of all allocated data sets.

b. Browse each of the ISPF menu library files, which has a DDNAME of ISPPLIB, and search for the member name of 'ISR@PRIM'. This file contains the ISPF primary panel. In our TSO system, this member file can be found in the 'SYS1.ISP.SISPPENU' library.

c. After finding this ISPF primary panel, start from the selection code section and trace each command panel by panel. You will eventually find all the information you need.

3. When a 'TSO PROJ' command is invoked at the first time, a sample User−Exit file with many sample User−Exit commands will be created for you. You may enter an 'U' command to modify this file for your own needs at any time as you wish.

4. The User−Exit function is very similar to the TSO/ISPF command function defined in a project panel. There is no conflict if you have the same TSO/ISPF commands defined in both the User−Exit file and the Project List member file.

The User−Exit command function is much more flexible. For example, the 'HLP' User−Exit command allows you to enter as many different commands as you want, such as 'HLP ALLOC', 'HLP LISTA', 'HLP LISTC', etc. It would be very tedious if you specify all of these commands in a project panel.

Perhaps you may find that the project panel method for the TSO/ISPF commands may have few advantages, which are:

1. You don't need to worry about the conflict of the User−Exit command codes against the reserved command codes.

2. You don't need to memorize many User−Exit command names because they are listed as selection codes on the panel.

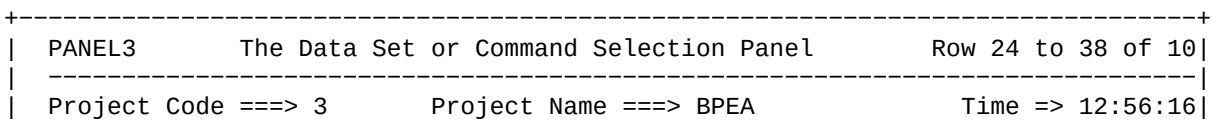
3. By displaying a panel, you may use various methods to select the commands instead of typing a command code.

Despite of these advantages, the User−Exit function is still considered as a better method than the project panel method. In next page, an example of the 'J' User−Exit command function, which can be used either to submit a batch job or to display all the batch jobs output listing, will be presented to show you how flexible an User−Exit function can be.

E.6 The usages of the 'J' User−Exit command

Let us observe the following sample PANEL3 panel on which it contains various data set names and a 'J' User−Exit command:

Figure 59. The sample PANEL3 panel with the 'J' User−Exit command



```
|  Function     ===> The Base Pay Equity Analysis                                |
|  Command ===> _j 27_____________________________________  Scroll ===> CSR |
|                                                                                |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------|
|  ________ g  24     OURSYS.GDG.BPEAWKS.LOADOUT                                |
|  ________ g  25     OURSYS.GDG.BPEAWKS.REJECTS                                |
|  ________ >  G1     OURSYS.GDG.BPEAWKS.REJECTS.G0001V00 (-2)                  |
|  ________ >  G2     OURSYS.GDG.BPEAWKS.REJECTS.G0002V00 (-1)                  |
|  ________ >  G3     OURSYS.GDG.BPEAWKS.REJECTS.G0003V00 (+0)                  |
|  ________    26     OURSYS.JCL.LIB                                            |
|  __j_____ 9  27     OURSYS.JCL.LIB(COMPBPBG)                                  |
|  ________ 5  28     OURSYS.JCL.LIB(COMPBPRF)                                  |
|  ________ 5  29     OURSYS.JCL.LIB(COMPBPRG)                                  |
|  ________ 7  30     OURSYS.JCL.LIB(HRMBPAT)                                   |
|  ________ 3  31     OURSYS.JCL.LIB(HRMLDBPW)                                  |
|  ________ 7  32     OURSYS.PLI.SOURCE(HRMBPAT)                                |
|  ________ g  33   - OURSYS.PLI.SOURCE(HRMBPBG)                                |
|  ________ 5  34     OURSYS.PLI.SOURCE(HRMBPRF)                                |
|  ________ 5  35     OURSYS.PLI.SOURCE(HRMBPRG)                                |
+--------------------------------------------------------------------------------+
```

Note: In the above diagram the command "J 27" on the PANEL3 panel and the command code "J" on the command line should NOT be specified at the same time. It depends upon where the cursor position is located you may choose to use either command to submit a batch job.

Note that the above diagram only shows one screen of the entire PANEL3 panel of this project. On this screen, it contains two GDG base file names, several JCL file names, and four PL/I DB2 program source files. One of the two GDG files has been expanded with three GDG generation files.

As you can see from the above diagram that this was actually a real MVS project that I worked by using my own tool. The project name is called 'BPEA'. It was the third project I was involved in the MVS program development.

On this panel 97 data set names was defined. I was assigned to work on the task #3, #5, #7, and #9 of this project. The PL/I program named 'HRMBPBG' of task #9 was the last one that has been edited and modified.

After the program is updated, the next step is to submit a batch job to compile, link, and bind it. The JCL file for such functions has already been created, which is the 'COMPBPBG' file. On the PANEL3 panel command line if a 'J 27' command is entered, then the batch job will be submitted. If a 'J' code instead of the 'J 27' command is typed next to a JCL file name, then the batch job will also be submitted.

After the batch process is completed, a single 'J' command without specifying any data set selection code can be entered on the PANEL3 panel command line to display all the batch job output listing.

Instead of entering a 'J 27' command, if an 'X 27' command is entered at the panel command line or if an 'X' code is typed next to a the JCL data set name, then the PANEL4 panel of the JCL file, i.e. the 'OURSYS.JCL.LIB' library file, will be displayed. You may type a 'J' User−Exit command code instead of using the 'SUB' command on the 'COMPBPBG' member command line to submit the batch job also.

Note that the 'J' command can be used in edit to submit a batch job and an 'U J' command in edit can be used to display all the batch jobs output status listing also. The method of using a single 'J' command to perform two types of batch job related functions is really handy. I enjoy using this User−Exit function very much and hope you do too.

Note: On the PANEL4 panel of the 'OURSYS.JCL.LIB' library, which was displayed by using an 'X 27' command, this tool can remember the last edited member file but it will associate it with a '3.27' code, where '3' and '27' are the selection codes of the project and the data set, respectively. Thus, if you display the

PANEL4 panel of the same 'OURSYS.JCL.LIB' library file by using an 'X 26', 'S 26', or 'E 26' command, this tool remembers its last edited or browse member and associated it with a '3.26' code. The message showing the last edited or browsed member will show a different member name due to the '3.26' and '3.27' are two different codes although they are representing the same partitioned data set.

E.7 How to write your own User−Exit program

A sample User−Exit program named '@UXSAMP' written in REXX has been provided in the 'USERID.@PROJWRK.CEXEC' library file for your reference. The following is the source code listing of this sample program:

Note: The '@UXSAMP2' in the CEXEC library is a simplified version of this '@UXSAMP' program. When you write your own User−Exit routine, you may copy the '@UXSAMP2' routine instead of using this routine.

```
/* REXX */
/*********************************************************************/
/* @UXSAMP   −  The sample User−Exit program written in REXX.        */
/*                                                                   */
/* Product:     Project Work Manager tool package.                   */
/*                                                                   */
/* Description: This routine can be used as a sample program for the */
/*              TSO command or Edit Macro User−Exit function. You    */
/*              may copy this program to your own User−Exit program  */
/*              file, i.e. the 'USERID.@USREXIT.EXEC' file if you    */
/*              have already created one, and modify its contents.   */
/*********************************************************************/
Trace r     /* Don't change this line. It is for the testing purpose */
"ISPEXEC CONTROL ERRORS RETURN"
'ISREDIT MACRO (PARM1, PARM2, PARM3, PARM4) NOPROCESS'
If rc = 0 then
   Call process_edit_macro_routine
Else
   Do
      Arg parm1 parm2 parm3 parm4 parm5 parm6 parm7
      Call process_TSO_command_routine
   End
Exit

process_TSO_command_routine:
/*−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−*/
/* This is the TSO command routine section of the User−Exit command  */
/* function. Note that all the parm data are in the uppercase        */
/* characters. You may pass the UXDSN and UXVOL data to your ISPF    */
/* panel through the Shared Pool. If the parm2 field is empty, or    */
/* parm2 field contains a dot (.) and parm3 field is empty, then     */
/* it means the data set, which is specified in the parm1 field, is  */
/* a cataloged data set. In this case, the UXVOL field should be     */
/* also empty.                                                       */
/*−−−−−−−−−−−− Special Case for the Uncataloged Data Set −−−−−−−−−−−−*/
/* If the '@UXSAMP' is typed next to an uncataloged data set on      */
/* the ISPF option 3.4 data set list panel as described in this      */
/* section, then the parm2 field will be empty but the UXVOL field   */
/* is not empty, in which it contains the volume serial number. If   */
/* the parm1 and the UXDSN fields are mismatch, then the correct     */
/* name of the uncataloged data set should be in the parm1 field.    */
/*−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−*/
```

```
Say parm1 parm2 parm3 parm4 parm5 parm6 parm7
"ISPEXEC VGET (UXDSN, UXVOL)"
Say uxdsn uxvol
If index(parm1,'(') ^= 0 then
   Do
      Parse var parm1 code '(' .
      panel_cmd = 0
   End
Else
   Do
      code = parm1
      panel_cmd = 1
   End
/*-------------------------------------------------------------*/
/* Ignore all the TSO/ISPF commands fetched from the panel.    */
/*-------------------------------------------------------------*/
If (Abbrev('BROWSE',code,1) | Abbrev('VIEW',code,1) | ,
   Abbrev('EDIT',code,1) | code = 'TSO' | code = 'EX' | ,
   code = 'EXEC' | code = 'SUB' | code = 'SUBMIT' | ,
   code = 'PGM' | code = 'CMD' | code = 'PANEL' | ,
   code = 'ISPEXEC') then
   Exit

"ISPEXEC VGET (RCAPNL)"
Say rcapnl
Select
   /*-------------------------------------------------------------*/
   /* Fetch the data set names on RECALL panel obtained by    */
   /* using the 'S' code or a pair of 'SS' code.              */
   /*-------------------------------------------------------------*/
   When (rcapnl ^= ''  uxdsn = '' parm1 = '') then
      Do
         selftot = ''
         "ISPEXEC VGET (SELFTOT)"
         If selftot = '' | ^datatype(selftot,'W') then
            Return
         Do i = 1 to selftot
            Interpret "'ISPEXEC VGET (SLF"i")';" ,
               "Say slf"i
         End
      End
   /*-------------------------------------------------------------*/
   /* Fetch the data set names on PANEL3 panel obtained by    */
   /* using the 'S' code or a pair of 'SS' code.              */
   /*-------------------------------------------------------------*/
   When (panelid = '3' uxdsn = '' parm1 = '') then
      Do
         seldtot = ''
         "ISPEXEC VGET (SELDTOT)"
         If seldtot = '' | ^datatype(seldtot,'W') then
            seldtot = 0
         Else




            Do
               dsntot = seldtot
               "ISPEXEC VPUT (DSNTOT)"
            End
         If seldtot > 0 then
```

```
         Do i = 1 to seldtot
            Interpret "'ISPEXEC VGET (SLD"i")';" ,
               "Say sld"i"
            End
         Else
            Do
               "ISPEXEC SELECT CMD(%SELDSNP)"
               seldtot = ''
               "ISPEXEC VGET (SELDTOT)"
               If seldtot = '' | ^datatype(seldtot,'W') then
                  seldtot = 0
               Else
                  Do
                     dsntot = seldtot
                     "ISPEXEC VPUT (DSNTOT)"
                  End
               If seldtot > 0 then
                  Do i = 1 to seldtot
                     Interpret "'ISPEXEC VGET (SLD"i")';" ,
                        "Say sld"i
                  End
            End
   End
/*-------------------------------------------------------------*/
/* When @UXSAMP command is entered on the PANEL4 panel     */
/* command line, then the 'SELPDSM' program can be used to */
/* display a PDS Member List panel for selecting members.  */
/*-------------------------------------------------------------*/
When (panelid = '4' panel_cmd = 1) then
   Do
      dataset = parm1
      volume  = parm2
      If volume = '' then
         volume = '.'
      "ISPEXEC SELECT" ,
         "CMD(%SELPDSM" dataset volume 'SELPDSM V'")"
      If rc = 0 then
         Do
            selmtot = ''
            'ISPEXEC VGET (SELMTOT)'
            If selmtot = '' | ^datatype(selmtot,'W') then
               Return
            Do i = 1 to selmtot
               Interpret "'ISPEXEC VGET (SLM"i")';" ,
                  "Say slm"i
            End
         End
   End




/*-------------------------------------------------------------*/
/* Obtain the data set name from parm field.               */
/*-------------------------------------------------------------*/
When (uxdsn = '' | uxdsn ^= parm1) then
   Do
      uxdsn = parm1
      "ISPEXEC VPUT (UXDSN)"
      If (parm2 = '' | parm2 = '.') uxvol ^= '' then
         parm2 = uxvol
      If parm2 = '.' then
         parm2 = ''
      dataset = parm1
```

```
         volume  = parm2
         msg_state = MSG('OFF')
         x = sysdsn(dataset)
         msg_state = MSG('ON')
         If x ^= 'OK' then
            Do
               pwdslst = ''
               'ISPEXEC VGET (PWDSLST)'
               If pwdslst = 'YES' then
                  Do
                     zdlvol = ''
                     'ISPEXEC VGET (ZDLVOL) SHARED'
                     If zdlvol ^= '' then
                        volume = zdlvol
                  End
            End
         Say dataset volume
      End
   /*-------------------------------------------------------------*/
   /* All other cases.                                            */
   /*-------------------------------------------------------------*/
   Otherwise
      Do
         If (parm2 = '' | parm2 = '.') uxvol ^= '' then
            parm2 = uxvol
         If parm2 = '.' then
            parm2 = ''
         dataset = parm1
         volume  = parm2
         Say dataset volume
      End
End

/* Your own TSO command REXX program can be inserted below here */

/*-------------------------------------------------------------------*/
/* The following is an example of changing a pre-defined selection  */
/* code string into the data set names or TSO/ISPF command codes    */
/* that were previously specified on the PROJWRK panels. The code   */
```

Figure 60. The sample User-Exit program written in REXX

```
/* string may contain the single digit code for the project names,  */
/* or the 'a.b' type of code for fetching the data set names of the */
/* command codes. This small section can be a stand-alone User-Exit */
/* routine without needing to fetch the UXDSN and UXVOL data first. */
/* The selection code string can also be modified to fit your own   */
/* testing.                                                         */
/*-------------------------------------------------------------------*/
selcode_str = '1.1  1  2.8  2  11.1'
"ISPEXEC SELECT CMD(%PWDATA" selcode_str")"
selctot = ''
"ISPEXEC VGET (SELCTOT)"
If selctot = '' | ^datatype(selctot,'W') then
   Return
Do i = 1 to selctot
   Interpret "'ISPEXEC VGET (SLC"i")';" ,
      "Say slc"i
End
Return

process_edit_macro_routine:
/*-------------------------------------------------------------------*/
```

```
/* This is the Edit Macro routine section of the User-Exit command   */
/* function. Note that all the parm data are in the original case    */
/* as you entered on the edit command line. There is no restriction  */
/* on the total number of parm data that you may specified in the    */
/* Edit Macro routine. The PARM1 and PARM2 are no longer the data    */
/* set name and volume serial number. You need to use the ISREDIT    */
/* statement to get the data set name and PDS member data. As far    */
/* as the volume serial number of the uncataloged data set, you      */
/* cannot get that information in the ISPF Edit Macro facility of    */
/* the current ISPF release. However, you may check the 'DSNVOL'     */
/* parameter provided by this tool for that information. If dsnvol   */
/* field is empty, it means that the data set is cataloged.          */
/*-------------------------------------------------------------------*/
Say parm1 parm2 parm3 parm4
'ISREDIT (DSN) = DATASET'
'ISREDIT (MBR) = MEMBER'
If mbr ^= '' then
   dsname = dsn"("mbr")"
Else
   dsname = dsn
dataset = "'"dsname"'"
"ISPEXEC VGET (DSNVOL)"
volume = dsnvol
Say dataset volume
uxdsn = dataset
uxvol = volume
"ISPEXEC VPUT (UXDSN, UXVOL)"

/* Your own Edit Macro REXX program can be inserted below here */
Return

---------------------- End of Sample Program -------------------------
```

The purpose of this sample User−Exit program is to assist you to write your own program with the interface of the process panels provided by this tool package. Using this sample program, you should be able to access the data set name and its volume serial number of any files that you have selected on any panel. You may do the following exercises to verify this sample program and write the similar programs very easily.

1. How to test this program as an User−Exit TSO command:

    a. Enter an 'U' command on the PANEL2 or PANEL3 panel command line and add the following code line in a database file, i.e. the 'USERID.@PROJWRK.XREF(USREXIT)' file:

        ```
        @UXSAMP: TSO @UXSAMP 1234567
        ```

        Note: The maximum parameter allowable to be specified in the USREXIT database file is '

        Note: The above code line has already been added to the USREXIT database file for your convenience.

    b. Enter a '@UXSAMP num' command, where 'num' is the selection code of a data set, on the PANEL3 panel command line and observe the trace result. You may specify the parm data also, which is optional. For example, '@UXSAMP 3 TEST', where the parm code 'TEST' is optional.

    c. Enter a '@UXSAMP' command on the PANEL3 panel command line and type few 'S' code on the selection code line to select the data sets and observe the trace result.

    d. Type a '@UXSAMP' command next to a data set on the PANEL3 panel selection code line area and observe the trace result.

e. Enter a '@UXSAMP' command on the PANEL4 panel command line and observe the trace result. You may specify the parm data also, which is optional. For example, '@UXSAMP TEST'. After the PDS Member Selection panel is displayed, you may type few 'S' code to select the members and observe the trace result.

f. Type a '@UXSAMP' command next to a member name of a PDS on the PANEL4 panel and observe the trace result.

g. Enter a '@UXSAMP num' command, where 'num' is the selection code of a data set, on the RECALL command panel command line and observe the trace result. You may specify the parm data also, which is optional. For example: '@UXSAMP 2 TEST'.

h. Type a '@UXSAMP' command next to a data set name on the RECALL command panel and observe the trace result.

i. Type a 'FFF' command on the PANEL2 command line to display the 'DSLISTF' panel. Select any Dsname Level code and display its ISPF option 3.4 data set list panel. Then on the line command area of any data set type a '@UXSAMP' command and observe the trace result.

j. On the ISPF option 3.4 data set list panel displayed from the 'FFF' command, next to a PDS type an 'ED' command to display a PANEL4 panel of the selected PDS. Then you may enter a '@UXSAMP' command either on the panel command line or on the line command area and then observe the trace result.

Note: The PARM1 will contain the data set name and PARM2 will contain the volume serial number if the data set is uncataloged. The UXDSN and UXVOL will contain the data set name and volume serial number in the Shared Pool.

2. How to test this program as an User−Exit Edit Macro:

a. Edit the 'USERID.@PROJWRK.CEXEC(ALIASES)' file and add the following code line in this file:

```
'ISREDIT DEFINE UXS  ALIAS  @UXSAMP'
```

Note: If you don't have the Write Access Authority to the CEXEC library file, you may create a 'USERID.@USREXIT.EXEC' file and copy the 'ALIASES' member file into it, and then add this 'DEFINE ALIAS' code line.

Note: In the 'USERID.@PROJWRK.CEXEC(ALIASES)' file, the above code line has already been added for your convenience.

b. Edit any sequential file on the PANEL3 panel, edit any PDS member file on the PANEL4 panel, edit any file on the RECALL command panel, or enter any member file obtained from the ISPF option 3.4 data set list panel and enter a 'UXS' command on the edit command line, and then observe the trace result. You may specify the parm data in the Edit Macro command also. For example, 'UXS TEST'.

Note: When you create your own TSO command and Edit Macro command routine, try to make the name short. The '@UXSAMP' is a very long command name and it is not a recommended TSO command name or Edit Macro command name.

Note: If you don't have the Write Access Authority to the CEXEC library file, then you may create your own command programs in the 'USERID.@USREXIT.EXEC' file.

Note: With your creativity and imagination, if you create very useful User−Exit programs, and you wish to share with all the users of this tool package, then please don't hesitate to inform the author to include your programs in the future releases of this tool package.

Note: The above sample REXX program seems a little bit complicated. There is another sample REXX program named 'REXCMP' in the CEXEC library that can be used as a better reference User−Exit program.

Appendix F. The usages of five types of data sets transmit functions

This tool package has provided four types of MVS data sets transmit functions, which are the 'PRTPDS', 'SENDFILE', 'SENDPDS', 'SFX2MVS' and 'SENDSEQ' command functions. The short command forms of these five commands are 'PP', 'SF', 'SP', 'SFX', and 'SFS' respectively. These are the very use−friendly functions provided by this tool.

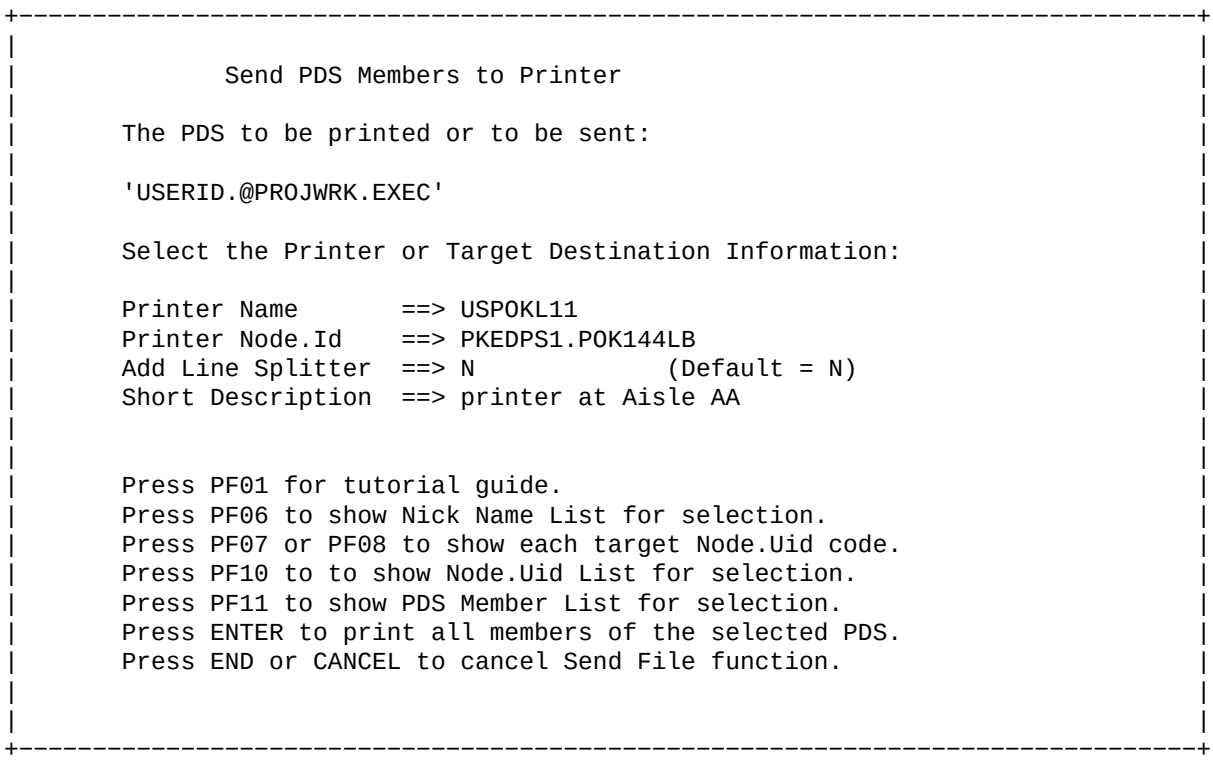
Note: The 'SENDSEQ' command is very similar to the 'SENDFILE' ocmmand except that it is only applicable to the sequential data sets. When this command is executed, it will copy the input file to a new sequential file and add a 4−byte 'Line Splitter' code at the end of each code line first, and then it will send the new file to the target destination.

F.1 The descriptions of the 'PRTPDS' ('PP') command

The 'PRTPDS', i.e. the 'PP', command can be used to send all or part of the PDS member files to a printer in a sequential file format. To apply the 'PP' command, simply type a 'PP' command next to PDS data set name on the PANEL3 or on the PANEL4 panel command line. Then a Printer Node/Uid window panel will be popped up.

The following is such an sample window panel when a 'PP' command is typed next to the 'USERID.@PROJWRK.EXEC' library file name on the PANEL3 panel and the Node and Uid fields have been filled out with new data:

Figure 61. The sample PRTPDS Printer Node/Uid Selection panel



When you initially use this function, you will find that on this panel the 'Printer/Target Node' field contains a 'ANYNODE' code and the 'Printer/Target Uid' field contains a 'ANYUID' code. You may replace these two

fields with the valid data.

If you press the PF1 key on this PRTPDS command panel, then the following introduction tutorial panel will be shown:

Figure 62. The introduction tutorial guide panel of the PRTPDS command

```
+-------------------------------------------------------------------------+
|                                                                         |
|                            Introduction                                 |
|                                                                         |
|       This panel can be used to provide the target destination data     |
|       for printing few or all members of a PDS. You will need to fill   |
|       in the target destination node and Userid if the target is a      |
|       TSO or VM account, or fill in the printer node and printer id     |
|       if the target is a printer.                                       |
|                                                                         |
|       After the target destination data is filled in, it will be        |
|       automatically stored in a 'USERID.@PROJWRK.XREF(XMTDEST)' file,   |
|       which is a shared file with the 'SENDFILE' and 'SENDPDS' commands.|
|                                                                         |
|       You may enter a 'DEST' command to edit that file and then add     |
|       or delete the target destination data directly in the file.       |
|       Initially when you edit this 'XMTDEST' database file, a data line |
|       of your Node/Userid of your TSO session has already been created  |
|       as an example for your reference. You may add as many data lines  |
|       of the various target destinations as you like into this file.    |
|                                                                         |
+-------------------------------------------------------------------------+
```

If you press Enter key or the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

```
        ------------------------------------------------------------
        Target Node.Uid    ==> PLPSC.SUN
        Add Line Splitter  ==> N             (Default = N)
        Short Description  ==> My TSO account at PLPSC
        ------------------------------------------------------------

        If the target is a printer, then the following panel will be
        shown as an example:

        ------------------------------------------------------------
        Printer Name       ==> USPOKL11
        Printer Node.Id    ==> PKEDPS1.POK144LB
        Add Line Splitter  ==> N             (Default = N)
        Short Descripton   ==> Printer at Room B Bldg 002
        ------------------------------------------------------------

        If you press the PF7 or PF8 key, then the target destination data
        will be brought up on the panel screen one by one rotatively.
        You may press the PF10 key to display a panel of all the target
        destination Node/Userid data for you to select one.

        After a target is chosen, if the Enter key is pressed, then all
        the members of the selected PDS will be merged into a sequential
        file and sent to the target destination.

        If the PF11 key instead of the Enter key is pressed, then a Member
        List panel of the selected PDS will be displayed for you to select
        one or more than one member to be sent or printed. On the Member
        List panel, you may edit or browse the members before selecting
        them, or print only the member names of the PDS instead of printing
```

```
the source code, etc. Please press the PF1 key on that panel for
more information about how to use that panel.

If the PF3 key or PF12 key is pressed, then the Printing PDS Member
process will be cancelled before the batch job is submitted.

After the batch job is executed, the member files of the selected
PDS will be merged into a sequential file and sent to a printer
or a VM or MVS USERID. If the sequential file is to be sent to a
printer, then the 'Send to Printer?' option should be set to 'Y'.
Otherwise, it should be set to 'N'.

If the sequential file is received from a TSO account on MVS, then
that file can be restored back to PDS by using a 'GETPDS' command
Please use a 'GETPDS ?' command for more information.

If the sequential file was sent to the PC hard drive in binary mode
and when it is received back to Host from the PC hard drive in
binary mode again, the sequential file may be messed up and will
no longer be in the original format. In this case, the sequential
file cannot be used to restore back to PDS. To solve this problem,
you need to set a 'Y' code in the 'Add Line Splitter' option so that
a 'Line Splitter' code will be added at the end of each source code
line in the sequential file to be transmitted to PC hard drive.
The 'GETPDS' tool will recognize the 'Line Splitter' at each code
line and it can restore the sequential file back to PDS. Note: Use
the 'Add Line Splitter = Y' option only if you want to transmit the
binary sequential file to the PC hard drive in binary transmit mode.

Most of the PDS library files on a MVS system can be portable to
other MVS systems by using this function. The sequential files
generated by this 'PRTPDS' command can be ported through VM system,
Lotus Notes, or Internet. If the PDS is a Text file library, by
using this tool you may print the context of the source code listings
of many member files at the same time. It is really a very handy tool.

Note that the Format-U type of MVS library files, such as the LOAD
Library files, cannot be ported by using this method. You will need
to use the 'SENDPDS' command to transport that type of libraries.
Please see the tutorial guide of the 'SENDPDS' command for more
information.
```

In the Printer/Target Node and Uid fields on the PRTPDS Printer Node/Uid Selection panel, you may specify either a printer Node/Uid or a TSO or VM Node/Userid. If it is a printer Node/Uid, then the 'Send to Printer?' field you should specify a code 'Y' (Yes), otherwise, specify a 'N' (No).

The option code 'A' of the output class will be ignored if the target of the file to be sent is not a printer.

Each time after you enter a new target printer Node/Uid or target destination Node/Userid from the panel, that information will be saved in a 'XMTDEST' database file of the 'USERID.@PROJWRK.XREF' library. A sample 'XMTDEST' file has already presented in the PANEL2 tutorial section.

Note: Rather than entering the new Node/Userid data from the panel it is highly recommended that you should press the PF10 key on the panel to display a 'GETDEST' panel, then on that panel you may enter an 'E' (Edit) command to edit the 'XMTDEST' database file and add the new Node/Userid data in the edited file because this method can guarantee that you will not add the redundant Node/Userid data in the 'XMTDEST' database file. More detail about this method will be described in next section.

Note: In this sample panel, this 'PRTPDS' command will print the output listing at the printer in the printer

room of office 2D42 at Building 706. It will be printed in the duplex format, i.e. both sides of the paper will be printed with the output listings. It will submit a batch job, where the JCL skeleton file will be obtained from the tools SKELS library file, such as the 'TOOLKIT.@PROJWRK.SKELS(PDS2SEQ)' file.

Suppose you don't like the printed format provided by this tool and want to change the JCL to print the output with your own format but you don't have the Write Access of the tools SKELS library, then you may create you own SKELS library file and follow the following few steps to solve the problem:

1. Use the 'C' (Copy) command next to the 'TOOLKIT.@PROJWRK.SKELS' library file on the PANEL3 panel to create your own 'USERID.@USREXIT.SKELS' library file on your TSO account.

2. Meanwhile copy the 'PDS2SEQ' member file from the tools SKELS library to your own SKELS library.

3. Modify the 'PDS2SEQ' member file in your own SKELS library to satisfy your own need.

4. Enter a 'PROF' command to edit the PROFILE file in the XREF library and either change the USEREXIT option code from 'NO' to 'YES'. or add a 'SKELS = USERID.@USREXIT.SKELS' code line in the PROFILE file.

F.2 How to select the Node/Uid from database file

Instead of pressing the PF7 and PF8 key on the Printer Node/Uid Selection panel to select the Node and Userid, you may use the PF10 key to obtain the target destination code from a database file also. The database file is named 'USERID.@PROJWRK.XREF(XMTDEST)'.

Suppose the PF10 key is pressed on the Printer Node/Uid Selection panel, and assume the 'XMTDEST' database file contains the Node/Uid code entries defined as the following example:

Figure 63. The sample XMTDEST file in the Cross Reference List library

```
/*---------- Target Destinations ---------------------------------*/
PLPSC.SUN              My another TSO account at PLPSC
PLPSC.V$NICK           My TSO account at PLPSC
PKMFGVM4.V$NICK        My VM account at PKMFGVM4
S390VM.SUN             My VM account at S390VM
XRFMCL.SUN             My VM account at XRFMCL
/*---------- Printer Names ---------------------------------------*/
PKEDPS1.POK145LB       (USPOKL12,3820) printer at Aisle M
PKEDPS1.POK144LB       (USPOKL11,3820) printer at Aisle AA
PKEDPS1.PR91C          (PR91C,3820) printer at Bldg 004
```

Then the following 'GETDEST' panel will be displayed:

Figure 64. The sample GETDEST panel for the file transmit function

```
+-------------------------------------------------------------------------------+
|  GETDEST         Select a Target Destination Code              Row 1 to 8 of 8|
|  ---------------------------------------------------------------------------- |
|  Command ===> _____________________________________________  Scroll ===> CSR  |
|                                                                               |
|  Select   Code   Node      Userid    Short Descriptions               PtrName  |
|  ------  ------  --------  --------  ----------------------------------------|
```

```
|             1    PLPSC     SUN       My another TSO account at PLPSC           |
|             2    PLPSC     V$NICK    My TSO account at PLPSC                   |
|             3    PKMFGVM4  V$NICK    My VM account at PKMFGVM4                 |
|             4    S390VM    SUN       My VM account at S390VM                   |
|             5    XRFMCL    SUN       My VM account at XRFMCL                   |
|             6    PKEDPS1   POK145LB  printer at Aisle M              USPOKL12 |
|             7    PKEDPS1   POK144LB  printer at Aisle AA             USPOKL11 |
|             8    PKEDPS1   PR91C     printer at Bldg 004             PR91C    |
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

On the 'GETDEST' panel, you may choose any one of the following three methods to select a new Node and Destination code:

1. Type a selection code, such as '1', '2', or '3' on the 'GETDEST' panel command line and press the Enter key.

2. Type a '/' or 'S' code on the row of a Target Destination code line and press the Enter key.

3. Place the cursor at any column on the row of a Target Destination code line and press the Enter key.

On this panel, if you change mind and want to select the Target Destination data from a NAMES file, then you may enter a 'GETNICK' or 'GETN' command or press the PF6 key to display a 'GETNICK' panel and get the the Nick Name code from a NAMES file. More information about the 'GETNICK' panel will be described later in this document.

If an 'E' or a 'DEST' command is entered on the command line of the above 'GETDEST' panel, then the following XMTDEST database file will be displayed in edit:

Figure 65. The sample edited XMIT Node/Userid Code database file

```
+-------------------------------------------------------------------------------+
|  EDIT       USERID.@PROJWRK.XREF(XMTDEST)              Columns 00001 00072    |
|  Command ===>                                             Scroll ===> CSR    |
|  ****** ***************************** Top of Data ************************    |
|  000001 XRFMCL.SUN,N           My TSO account                                 |
|  000002 S390VM.SUN,N           My VM account                                  |
|  000003 PKMFGVM3.P1H08201,Y    SG Printer                                     |
|  000004 PKEDVM9.902C3820,Y     NG Printer                                     |
|  000005 IBMUSM08.TOMJ,N        Tom's Lotus Notes account                      |
|  000006 RHQVM14.JDOE,N         John's VM account                              |
|  000007 PLPSC.P2D43706,Y       Bldg 706 2D43 Printer /l=10                    |
|  ****** ***************************** Bottom of Data *********************    |
+-------------------------------------------------------------------------------+
```

In this edited database file, you may add or delete the code lines or modify the existing code. No two code lines are allowed to contain the identical Node and Userid codes. If it is found, an error message will be issued.

Note: Each code line for the file transmit function that is stored in a database file in the XREF library named 'USERID.@PROJWRK.XREF(XMTDEST)' must be in a fixed format defined as follows:

```
    Node.Userid,Flag   Description
```

The following is the description of the syntax of this code format:

1. Between the Node and Userid, there must be a separator code '.' (Period).

2. If it is a Node/Uid of a printer then the flag should be a code 'Y'. Otherwise, it should be a Node/Userid of a TSO or VM account and the flag should be a code 'N'.

3. Between the Node/Uid and the flag there should be a separator code ',' (Comma).

4. There is no imbedded space in the 'Node/Uid−Flag' code.

5. Follow the 'Node/Uid−Flag' code with one or more spaces, there is an optional description field.

Note:

1. The 'DEST' command can also be entered on the command line of any of the PANEL2, PANEL3, PANEL4, and PANEL5 panels. When the 'DEST' command is invoked, the 'XMTDEST' database file will be displayed in edit. Thus, you don't need to always issue a 'PP', 'SF', 'SP', or 'SFX' command and press the PF10 key on the 'GETDEST' panel when you need to update Note/Uid database file, i.e. the 'USERID.@PROJWRK.XREF(XMTDEST)' file.

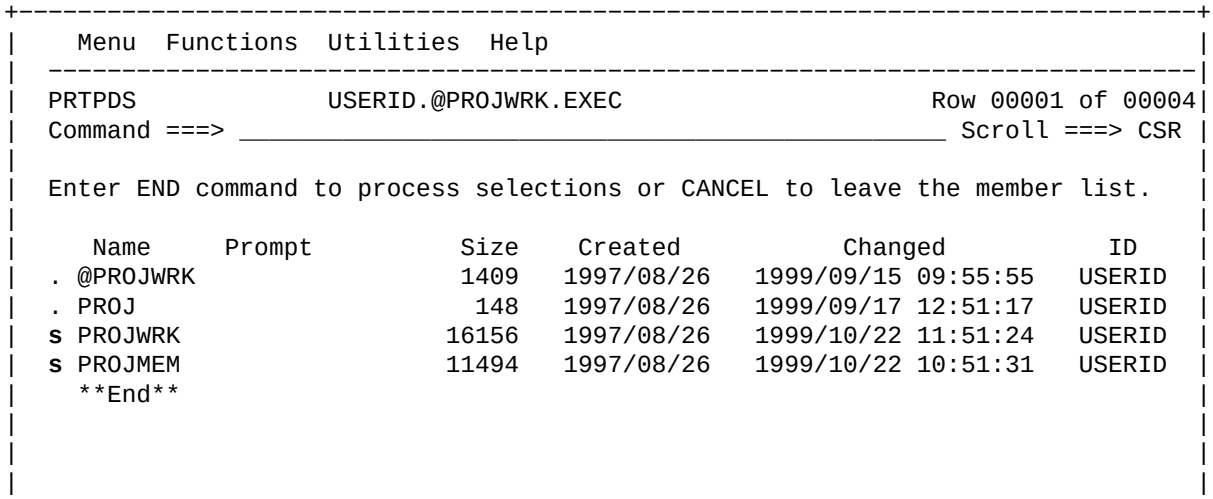
2. The 'DEST' command can be used to edit the XMTDEST database file for you to modify its contents. The Node and Userid code should not be redundantly specified in this file. During the 'DEST' command process, if this tool detect any two code lines in the file contain the duplicated Node and Userid code, an error message will be issued.

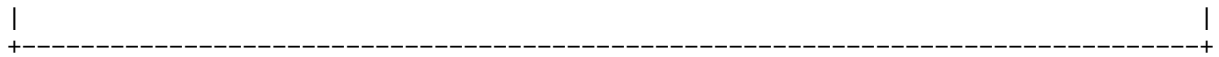
3. All of the 'SF', 'PP', 'SP', and 'SFX' commands share with the same 'XMTDEST' database file. These four commands, which are the short command forms of the 'SENDFILE', 'PRTPDS', 'SENDPDS', and 'SFX2MVS' commands, respectively, are all very useful commands.

If the Enter key is pressed on the Printer Node/Uid Selection panel, then all the members in the 'USERID.@PROJWRK.EXEC' file will be sent to either a printer or a target destination.

However, if the PF11 key instead of the Enter key is pressed on the Printer Node/Uid Selection panel, then the following sample PDS member list panel will be displayed:

Figure 66. The sample PDS member list panel of the PRTPDS command





On this PDS Member Selection panel you may enter the 'S' code, which is as shown in the above diagram, to print just a couple of member files instead of printing the entire PDS.

If you press the PF1 key on the PDS Member Selection panel, then the following tutorial screen will be displayed.

```
 ========================================================================

   Enter an "ALL" command to select all members.

   Enter a "Member" or "M" command to print member name list only,

   Type an "S" code to select a member, enter a blank to deselect,

   Enter a "S str*" command to select members match the string "str",

   Type a pair of "G" code to select a group of members,

   Enter a "END" command to send the PDS members in flat file format,

   Type an "E" code to edit or type a "B" code to browse the member.

 ========================================================================
```

Print entire PDS	Press the Enter key on the Printer Node/Uid panel can submit a batch job to print all member files to a printer or send all member files to a target destination. Enter an 'ALL' command on this Member Selection panel can print all members also. Enter a 'Member' or 'M' command on this panel can print only the member name list of the selected PDS without printing any data set source code line. If a PDS member does not have the stats information, then on the member name list file at least the file size information of that member will be shown.
Select Members	Instead of pressing Enter key, when the PF11 key is pressed this PDS Member List panel will be displayed. You may type an 'S' code in front of the member name to select, or enter an 'S str*' primary command, such as 'S PROJ*' command, to select all members that match the character string 'PROJ'.
Deselect Member	Enter a blank at the selected member line command area on the panel can cancel the selection of a member that was previously selected by the 'S' code.
Select a Group	Type a pair of 'G' code in front of two member names on the panel can select a group of members. Only one pair of 'G' code can be specified each time when you press the Enter key although more than one pair of 'G' code can be used on the same PDS member selection panel.
Edit Member	Type an 'E' code in front of the selected member on the PDS member list selection panel can edit the selected member file.
Note:	If you are not authorized to update the edited file, then the edit command function will be automatically changed to view command function unless an 'EDX' command code is used.
Browse Member	Type a 'B' code in front of the selected member on the PDS member list selection panel can browse the selected member

```
                    file.

View Member         Type a 'V' code in front of the selected member on the PDS
                    member list selection panel can view the selected member
                    file.

Print Members       If you select one or more than one member from the PDS
                    member list panel, then you enter an 'END' command or press
                    the PF3 key at the end of selection to submit a batch job
                    to print the member files or send the members to a target
                    destination.

Cancel print PDS    You may press the PF12 key to cancel the print. If you don't
                    select any member and press the PF3 key, then a message will
                    be prompted indicating the print job is cancelled due to no
                    member has been selected. If a print job is cancelled, then
                    the print batch job will not be submitted.
```

If you continue to press the PF8 key, you will see the tutorial guide of the topic of the original ISPF 'String Search−For Utility' Member Selection.

After entering the 'S' code on the PDS member list panel, all the selected members will be merged into a sequential file before it is sent to a printer or a target destination in a batch job. To submit the batch job, you need to press the PF3 key or enter an 'END' command. If the PF12 key instead of the PF3 key is pressed, then the batch job will be cancelled.

The sequential file created by the PRTPDS command contains three sections:

1. The first section is the table of contents section, in which all of the statistics of the selected member files are listed.

2. The second section is the body section of the source code of all selected members. On top of each member source code, there is a header which contains the creation date information of the selected member.

3. If the sequential file is to be sent to a TSO or VM account, then a third section, i.e. the appendix section, will be attached to the end of the file. This section contains the record length, record format, file organization, the amount of space, and the start/end line numbers of the member in the PDS that has been processed. With this appendix section, you may use a 'GETPDS' utility program, which has been provided by this tool, to restore the sequential file back to PDS library file format.

   Note: After the 'GETPDS' command is issued next to a sequential file generated by the 'PRTPDS' command, the following message line will be displayed:

   ```
   Sequential file 'USERID.DATASET.NAME' will be restored back to PDS
   Enter restore parameters or 'QUIT' or 'END' +
   ```

   You may enter a 'DSN(NEWPDS.NAME)' to restore the sequential file to the new partitioned data set named 'USERID.NEWPDS.NAME', or enter an 'END' command to cancel the restore functon.

On this panel, you may enter a 'ALL' or 'X/' command to print all members in the 'USERID.@PROJWRK.EXEC' file, or you may follow the instructions and type the 'S' code to select few members and then press the PF3 key to print or send the member files. Instead of using the 'S' code you may use the '/' code to select the members also.

Before selecting the members, you may type a 'E' or a 'B' code to edit or browse the member file.

On the 'Select PDS Member for Printing' panel, the 'ALL' or 'X/' command is equivalent to pressing the Enter key on the 'Send PDS Members to Printer' panel. Both ways can send all members of the selected PDS to the printer or the target destination.

The advantage of the 'PRTPDS' function is that when you need to study the contents of a 'Text' library file, instead of browsing each member of a PDS library file you may simply print all the member files out on a printer by using a this function and then read the printed output listings. The 'PRTPDS' command is also applicable to the uncataloged PDS library files.

F.3 The setup of the Account field in Batch JCL jobcard

Since the 'PRTPDS' command function is performed in batch mode, therefore before you use this command you will need to setup a Batch Jobcard.

To do this, simply enter a 'JOBCARD' or 'JOB' command on any of the PANEL2, PANEL3, PANEL4, and PANEL5 panels. When the 'JOB' command is executed, the following message window panel will be displayed.

Figure 67. The JOBCARD panel for the batch Job Account number setup

```
+------------------------------------------------------------------------------+
|                                                                              |
|                                                                              |
|                  JCL Jobcard Data Setup Panel                                |
|                                                                              |
|      Enter the valid Job Account information:                                |
|      ==> ('XXXXXX,09T53J,DEPT09X,09T53J')___________________                |
|                                                                              |
|      ==> MSGCLASS = T   (Enter an one-char MSGCLASS code)                    |
|                                                                              |
|      Enter the OUTPUT destination code:        (Optional)                    |
|      ==> //OUT OUTPUT BUILDING=004,DEPT=42UC,ROOM=0076,___                  |
|      ==> //__PAGEDEF=L120C0,CONTROL=PROGRAM,CHARS=(GT15),_                  |
|      ==> //__DEFAULT=YES,FORMS=WIDE_____________________                    |
|      ==> //*_____________________________________________                    |
|                                                                              |
|                                                                              |
|      Press PF01 for Help.                                                    |
|      Press ENTER to update the ACCOUNT information.                          |
|      Press END or CANCEL to cancel the input data.                           |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

On this panel, you may type a Job Account number in a pair of bounded quotes within the left and right parenthesis. The following is a valid example:

```
    ==> ('XXXXXX,09T53J,DEPT09X,09T53J')___________________
```

In some MVS environments, the Job Account number can be just an eight−character string, such as A873SVPS, which does not need to be bounded by a pair of single quotes or parentheses.

The Message Class is an one letter code. For example, MSGCLASS=T is a valid code. Both the Job Account number and the Message Class are the required fields to build the Batch JCL Jobcard of many utility program functions provided by this tool package.

The OUTPUT destination code as shown in the above diagram is a valid example. This field is optional, thus you may leave this field as is without providing the information as you wish.

Note: The OUTPUT code is not used on every utility program in this tool package. You may find that the OUTPUT code has been used in the 'CODEDIFF' JCL file in the SKELS library of this tool package.

F.4 The sample 'PDS2SEQ' JCL skeleton file

After the 'PRTPDS' batch job is submitted, the JCL skeleton file named 'PDS2SEQ' in the 'USERID.@PROJWRK.SKELS' library will be used as the model to generate the JCL file. The following is a listing of this skeleton file:

```
//JOBCARD
//*
//*********************************************************************
//* THIS JCL CAN BE USED FOR COPYING THE SELECTED MEMBERS OF A PDS  *
//* TO A SEQUENTIAL FILE AND THEN SEND IT TO A TSO OR VM ACCOUNT    *
//* OR SEND TO A PRINTER                                            *
//*********************************************************************
//*
//*******************************************************
//* DELETE SEQUENTIAL FILE IF ALREADY EXIST
//*******************************************************
//DEL1     EXEC PGM=IDCAMS,REGION=1024K
//*
//SYSPRINT  DD  SYSOUT=*
//SYSIN     DD  *
  DELETE (PURGE SCRATCH NONVSAM
//*
//*******************************************************
//* INVOKE THE REXX EXEC TO COPY SELECT MEMBER FILES TO A
//* SEQUENTIAL FILE
//*******************************************************
//CPY2SEQ  EXEC PGM=IKJEFT01,DYNAMNBR=30,TIME=5,REGION=4M
//*
//ISPMLIB   DD  DISP=SHR,DSN=
//ISPTLIB   DD  DISP=SHR,DSN=
//SYSEXEC   DD  DISP=SHR,DSN=.CEXEC
//ISPPLIB   DD  UNIT=SYSALLDA,SPACE=(CYL,(1,1,1)),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=6160)
//ISPSLIB   DD  UNIT=SYSALLDA,SPACE=(CYL,(1,1,1)),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=6160)
//ISPPROF   DD  UNIT=SYSALLDA,SPACE=(CYL,(1,1,1)),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=6160)
//ISPLOG    DD  SYSOUT=*,
//          DCB=(LRECL=120,BLKSIZE=2400,DSORG=PS,RECFM=FB)
//*
//SYSPRINT  DD  SYSOUT=*
//SYSOUT    DD  SYSOUT=*
//SYSTSPRT  DD  SYSOUT=*
```

```
)SEL = PTR
//SEQFILE   DD  DSN=RK,(,
//          DISP=(NEW,CATLG,DELETE),UNIT=SYSALLDA,
//          DCB=(RECFM=FBA,LRECL=)
)ENDSEL




)SEL = FILE
//SEQFILE   DD  DSN=RK,(,
//          DISP=(NEW,CATLG,DELETE),UNIT=SYSALLDA,
//          DCB=(RECFM=LKSIZE=
)ENDSEL
//SYSTSIN   DD *
 ISPSTART CMD(%PDS2SQX -
   -
      -
  -
   -
    -
  -
    -
   -

/*
//*******************************************************
//* PRINT THE FILE AT THE PRINTER (FOR JES2 ONLY)
//* NOTE: IF THE FILE IS SENT TO TSO ACCOUNT, THEN
//*       SEND CODE SHOULD BE SET TO 'TSO' AND THE
//*       XMIT COMMAND WILL BE USED TO SEND THE FILE.
//*******************************************************
)SEL = PTR
//PRINT    EXEC PGM=IEBGENER,REGION=1024K
//FDEF     OUTPUT CHARS=ST=
//         FORMDEF=A10111,DATACK=UNBLOCK,LINECT=
//SYSUT1    DD  DSN=
//SYSUT2    DD  SYSOUT=FDEF),
//          DCB=(RECFM=FBA,LRECL=)
//SYSPRINT  DD  DUMMY
//SYSIN     DD  DUMMY
//*
)ENDSEL
)SEL = FILE
//XMIT     EXEC PGM=IKJEFT01,DYNAMNBR=30,COND=(8,LT)
//SYSPRINT  DD  DUMMY
//SYSTSPRT  DD  DUMMY
//SYSOUT    DD  DUMMY
//SYSUDUMP  DD  DUMMY
//SYSTSIN   DD  *
  XMIT DSN('SEQ
//*
)ENDSEL
//*******************************************************
//* DELETE SEQUENTIAL FILE
//*******************************************************
//DEL2     EXEC PGM=IDCAMS,REGION=1024K
//*
//SYSPRINT  DD  SYSOUT=*
//SYSIN     DD  *
  DELETE (PURGE SCRATCH NONVSAM
```

Figure 68. The sample PDS2SEQ JCL skeleton file of the PRTPDS command

```
//*
//*******************************************************
//* DELETE A FILE WHICH HOLDS SELECTED MEMBER NAMES
//*******************************************************
//DEL3     EXEC PGM=IDCAMS,REGION=1024K
//*
//SYSPRINT  DD  SYSOUT=*
//SYSIN     DD  *
  DELETE (PURGE SCRATCH NONVSAM
//*
//

 ------------------------ End of PDS2SEQ JCL file --------------------
```

If you don't like the printed output listing format provided by this JCL skeleton file and need to modify it, then you may modify the 'FDEF' statement in the 'PRINT' job step of this JCL skeleton file. If this tool package is installed on your own TSO account, then you may very easily modify the 'PDS2SEQ' JCL skeleton file in your SKELS library. However, if this tool package is not installed on your TSO account, then as described before you may create your own JCL skeleton library, i.e. the 'USERID.@USREXIT.SKELS' file, and copy the JCL in the 'PDS2SEQ' file to the newly created library before modifying the 'PRINT' job step.

Note: In the copied JCL file, you may also update the JOB statement in the JOBCARD and other JCL statements in the file if they do not fit in your MVS system.

F.5 The descriptions of the 'SENDFILE' ('SF') command

The 'SENDFILE' command can be used to send the data set to either a printer or a target destination. This command can be invoked in the command line of an edited file also. The short command format of the 'SENDFILE' command is 'SF' (or 'XMIT').

When the 'SENDFILE' command is executed, a Target Node/Uid window panel will be shown. The following is such an example when a "SF" command is typed next to the 'USERID.@PROJWRK.EXEC' file name on the PANEL3 panel:

Figure 69. The sample SENDFILE target Node/Uid window panel

```
+------------------------------------------------------------------------------+
|                 Send Single PDS File Function                                |
|                                                                              |
|      The input PDS file to be sent:                                          |
|                                                                              |
|      'USERID.@PROJWRK.EXEC'                                                  |
|                                                                              |
|      Select the Target Destination Information:                              |
|                                                                              |
|      Target Node.Uid   ==> S390VM.USERID                                     |
|      Always Notify me? ==> Y            (Default = Y)                        |
|      Attach a Message? ==> N            (Default = N)                        |
|      Short Description ==> My VM account                                     |
|                                                                              |
|                                                                              |
|      Press PF01 for tutorial guide.                                          |
|      Press PF06 to show Nick Name List for selection.                        |
|      Press PF07 or PF08 to show each target Node.Uid code.                   |
|      Press PF10 to to show Node.Uid List for selection.                      |
|      Press PF11 to show PDS Member List for selection.                       |
|      Press ENTER to process send PDS file function.                          |
|      Press END or CANCEL to cancel send PDS file function.                   |
```

```
|                                                                              |
+------------------------------------------------------------------------------+
```

The 'SF' command uses the TSO XMIT command to perform the file transmit function. Thus, it does not need the batch jobcard. The 'SF' command not only can be invoked as a TSO command, but also can be invoked as an Edit Macro. This function will be described in details on next page.

If you press the PF1 key on the 'SENDFILE' command panel, then the following tutorial screen will be displayed.

Figure 70. The introduction tutorial guide panel of the SENDFILE command

```
+------------------------------------------------------------------------------+
|                                                                              |
|                              Introduction                                    |
|                                                                              |
|       This panel can be used to provide the target destination data          |
|       for sending a source file. You will need to fill in the target         |
|       destination Node and Userid if the target is a TSO or VM               |
|       account, or fill in the printer node and printer id if the             |
|       target is a printer.                                                   |
|                                                                              |
|       After the target destination data is filled in, it will be             |
|       automatically stored in a 'USERID.@PROJWRK.XREF(XMTDEST)' file,        |
|       which is a shared file with the 'PRTPDS' and 'SENDPDS' commands.       |
|                                                                              |
|       You may enter a 'DEST' command to edit that file and then add          |
|       or delete the target destination data directly in the file.            |
|       Initially when you edit this 'XMTDEST' database file, a data line      |
|       of your Node/Userid of your TSO session has already been created       |
|       as an example for your reference. You may add as many data lines       |
|       of the various target destinations as you like into this file.         |
|                                                                              |
+------------------------------------------------------------------------------+
```

Note that this introduction tutorial section is almost identical to the tutorial screen of the 'PRTPDS' command introduction. Basically, the four commands 'PRTPDS', 'SENDFILE', 'SENDPDS', and 'SFX2MVS' all share with the same target destination database file 'USERID.@PROJWRK.XREF(XMTDEST)' which can be brought up in edit mode by using a 'DEST' command or by entering a 'E' command on the Target Node/Userid Selection panel. The Target Node/Userid Selection panel, i.e. the 'GETDEST' panel, can be displayed by pressing the PF10 key on the command line of the process panels of these three commands.

If you press the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

```
------------------------------------------------------------
Target Node.Uid   ==> S390VM.USERID
Always Notify me? ==> Y            (Default = Y)
Attach a Message? ==> N            (Default = N)
Short Description ==> My VM account
------------------------------------------------------------

If you press the PF7 or PF8 key, then the target destination data
will be brought up on the panel screen one by one rotatively.
You may press the PF10 key to display a 'GETDEST' panel of all the
target destination Node/Userid data for you to select one.

On the 'GETDEST' panel, you may enter a 'DEST' User-Exit command or
an 'E' (Edit) command to edit the 'USERID.@PROJWRK.XREF(XMTDEST)'
file of all the target destination data and modify the contents.
```

After a target is chosen and if the Enter key is pressed, then the selected source file will be sent to the target destination.

By pressing the Enter key, the selected source file will be sent to a target destination, which can be either a TSO or VM account or a printer. If the PF3 key or the PF12 key is pressed, then the send file process will be cancelled.

If the file to be sent is a PDS, and if the PF11 key instead of the Enter key is pressed, then a Member List panel of the selected PDS will be displayed for you to select one or more than one member to be sent. On the Member List panel, you may edit or browse the members before selecting them. Please press the PF1 key on that panel for more information about how to use that panel.

If the 'SF' command is entered on the command line of an edited file, then you may either send the entire edited file or just send a code segment. To send a code segment in edited file, you need to enter a pair of "CC" line command in the prefix line command area.

When you enter a 'SF' command either with or without a pair of 'CC' line command, you may always use a 'X' command or a pair of 'XX' line command to exclude the code lines that you don't want to send. More than one 'X' or one pair of 'XX' line command can be specified in the same edited file at the same time.

If you enter a 'SFS' command instead of a 'SF' command to the sequential file, then the line splitter code will be added to each code of the file to be sent. When you receive the file, you may transmit it to PC and upload back to MVS, and then use a 'GETSEQ' command to restore the received file back to its original sequential file format.

If you need to send the file to more than one destination, then you may press the PF6 key to display the Nick Name list from your NAMES file and select a Nick Name which contains a distribution list. Please enter a 'HLP NICKNAME' command for more detail information on how to create your own NAMES files. Please also see the Reference Guide of this tool package for the examples of the usages of this function.

On the 'GETDEST' panel displayed by pressing the PF10 key, you may enter a 'GETNICK' or a 'GETN' command or press the PF6 key to display the 'GETNICK' panel to select a Nick Name code. On the 'GETNICK' panel displayed by pressing the PF6 key, you may enter a 'GETDEST' or 'GETD' command or press the PF10 key to display the 'GETDEST' panel to select a target destination Node/Userid data. Thus, you may press the PF6 key and the PF10 key to switch between the 'GETDEST' and 'GETNICK' panels back and forth very easily.

On these two selection panels, you may enter a 'L data' or 'F data' command to find the code that contains the searched data string, and use the PF6 key to repeatedly search for the data string on the panels. This is a very useful function if the code listing on the 'GETDEST' or 'GETNICK' panel is very large.

F.6 The example of 'SF' command in the diagram format

Note: The following is the two most frequently used 'SF' command methods on the PANEL3 panel:

1. Type a 'SF' command next to a file and use '=' command code for the other files on the PANEL3 panel can send several files at the same time.

2. On the PANEL3 panel you may also enter a 'SF' command and use the 'S' code next to several data sets or use a pair of 'SS' code to select several data sets to be sent.

The following diagrams can be used to further describe these two 'SF' command methods. Assume you want to send the files of a 'CODEPRTX' tool package defined in your 'CDPRTX' project displayed on a PANEL3 panel to someone by using the 'SF' command, which is as shown below:

Figure 71. The sample 'SF' command with several '=' command codes

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel         Row 1 to 11 of 11|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 12      Project Name ===> CDPRTX            Time => 15:32:53|
|  Function     ===> Format the program code for printing                       |
|  Command ===> _____________________________________________ Scroll ===> CSR  |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------- |
|  _sf_____     1     USERID.CODEPRTX.$PROFILE                                  |
|  _=______     2     USERID.CODEPRTX.CEXEC                                     |
|  _=______     3     USERID.CODEPRTX.CLIST                                     |
|  _=______     4     USERID.CODEPRTX.CODEPRTX                                  |
|  _=______     5     USERID.CODEPRTX.HELP                                      |
|  _=______     6     USERID.CODEPRTX.ISPPLIB                                   |
|  _=______     7     USERID.CODEPRTX.LOAD                                      |
|  _=______     8     USERID.CODEPRTX.PACKAGE                                   |
|  _=______     9     USERID.CODEPRTX.PROC                                      |
|  _=______    10     USERID.CODEPRTX.SOURCE                                    |
|  ________    11     SYS1.EDF.EDFMAC1                                          |
|  ****************************** Bottom of data ******************************|
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

Then after the Enter key is pressed, the ten selected files will be sent to the target destination.

There is an alternative method by entering a 'SF' command on the PANEL3 panel command line, which is as shown below:

Figure 72. The sample 'SF' command with a pair of 'SS' command code

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel         Row 1 to 11 of 11|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 12      Project Name ===> CDPRTX            Time => 15:32:53|
|  Function     ===> Format the program code for printing                       |
|  Command ===> __sf_________________________________________ Scroll ===> CSR  |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------- |
|  _ss_____     1     USERID.CODEPRTX.$PROFILE                                  |
|  ________     2     USERID.CODEPRTX.CEXEC                                     |
|  ________     3     USERID.CODEPRTX.CLIST                                     |
|  ________     4     USERID.CODEPRTX.CODEPRTX                                  |
|  ________     5     USERID.CODEPRTX.HELP                                      |
|  ________     6     USERID.CODEPRTX.ISPPLIB                                   |
```

```
|  ________      7     USERID.CODEPRTX.LOAD                                  |
|  ________      8     USERID.CODEPRTX.PACKAGE                               |
|  ________      9     USERID.CODEPRTX.PROC                                  |
|  _ss_____     10     USERID.CODEPRTX.SOURCE                                |
|  ________     11     SYS1.EDF.EDFMAC1                                      |
|  ****************************** Bottom of data ******************************|
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+
```

In the above diagram, you can see that a pair of 'SS' command code have been typed in next to the first and the tenth data set names on the PANEL3 panel. After Enter key is pressed, then the ten selected files will be sent to the target destination.

The above described method is very handy if you have a lot of files need to be sent because you don't need to type many '=' command codes on the PANEL3 panel. Note that only the files that are displayed on the same PANEL3 panel screen can be selected and sent by the 'SF' command simultaneously.

Suppose you only need to send few files at the same time, or if the files to be sent are not in consecutive sequence order on the PANEL3 panel, then you may enter a 'SF' command on the PANEL3 panel command line and use several 'S' code to select the files instead.

In fact, if you want to send someone only few files displayed on the PANEL3 panel, then the method of using the 'SF' command with few '=' command codes is much easier and it is highly recommended.

Note: On the PANEL4 panel, if you want to send several PDS member files to someone then you will need to use the 'SF' with the '=' code method because the 'SF' with the 'S' code method will not work.

F.7 The examples of the NAMES file for the 'SF' command

If you need to constantly send the files to a group of people, then it is not a bad idea to create a NAMES file on your TSO account, in which it may contain a Nick Name of the distribution list of the target destination codes of the group.

You may create more than one NAMES file. Your primary NAMES file must be named 'USERID.NAMES.TEXT' file, in which it may optionally contain several ':ALTCTL.' tags to specify your secondary NAMES files. Maximum up to 10 secondary NAMES files can be specified for this tag.

The following diagram is an example of the primary NAMES file, in which it contains two secondary NAMES files named 'USERID.NAMES2.TEXT' and 'USERID.NAMES3.TEXT', which are specified at the ':ALTCTL.' tag in the primary NAMES file.

Figure 73. The sample edited primary NAMES file for SENDFILE command

```
+----------------------------------------------------------------------------+
|  EDIT       USERID.NAMES.TEXT                          Columns 00001 00072 |
|  Command ===>                                             Scroll ===> CSR  |
|  ****** **************************** Top of Data ************************  |
|  000001 *-------------------------------------------------------           |
|  000002 * This is a sample NAMES file                                      |
|  000003 *-------------------------------------------------------           |
|  000004 :ALTCTL.  USERID.NAMES2.TEXT                                       |
|  000005 :altctl. 'USERID.NAMES3.TEXT'                                      |
|  000006 *-------------------------------------------------------           |
|  000007 :NICK.S1                          :NAME.anyname1                   |
|  000008 :NODE.ANYNODE1                    :ADDR.                           |
```

```
|  000009 :USERID.USERID1                                                      |
|  000010 *-----------------------------------------------------------         |
|  000011 :nick.S2                                                             |
|  000012 :name.anyname2                                                       |
|  000013 :node.ANYNODE2                                                       |
|  000014 :USERID.USERID2                                                      |
|  000015 *-----------------------------------------------------------         |
|  000016 :NICK.S3                            :NAME.anyname3                   |
|  000017 :NODE.ANYNODE3                      :ADDR.                           |
|  000018 :USERID.USERID3                                                      |
|  000019 *-----------------------------------------------------------         |
|  000020 :NICK.GROUP1                                                         |
|  000021 :LIST. S1 S2 S3                                                      |
|  000022 *-----------------------------------------------------------         |
|  ****** **************************** Bottom of Data ***********************  |
+------------------------------------------------------------------------------+
```

The following is the descriptions of this NAMES file:

1. The NAMES file may contain the comment lines. The comment lines must contain an asterisk '*' at the leftmost column.

2. The code lines in this file are not case sensitive. In other words, they can be either in uppercase, lowercase, or Mixed−case.

3. The data set names of the secondary NAMES file for the ':ALTCTL.' tag must be fully qualified. The bounded single quotes can be omitted. Note that the ':ALTCTL.' tag is optional. In fact, you may specify all of your Nick Name codes in a single NAMES file, i.e. the 'USERID.NAMES.TEXT' file without using any secondary NAMES file.

4. Each Nick Name code entry must contain a ':NICK.' tag at the first non−blank column. This tag is required. The ':USERID.' tag for each Nick Name code entry is also required.

5. The ':NODE.' tag for each Nick Name code entry is optional. If it is not specified, the default is the Node of your logon TSO system.

6. The Nick Name code entry with a distribution list must contain a ':LIST.' tag. This tag is very useful if you need to constantly send your files to a group of people.

The contents of the two secondary NAMES files are similar to the primary NAMES file except that the ':ALTCTL.' tag cannot be used in those NAMES files. The sample diagrams of these two files are not shown in this document, however their Nick Name codes have been made up and displayed on the 'GETNICK' panel as shown in next page.

Note: If you do use a NAMES.TEXT file and if a :ALTCTL. tag, which is optional, has been specified in the file, then be sure that you have the authority to access the NAMES file associated with that tag. Otherwise, you will be prompted with an error message whenever you logon to the TSO system.

After the PF6 key is pressed or a 'GETNICK' command is entered on the Target Node/Userid Selection panel, i.e. the 'GETDEST' panel, the following 'GETNICK' panel will be displayed for you to select a single or distribution list Nick Name:

Figure 74. The sample Nick Name selection panel for SENDFILE command

```
+------------------------------------------------------------------------------+
|  GETNICK      Select a Single or Distribution List Nick Name    Row 1 to 9 of 9|
```

```
|  ------------------------------------------------------------------------------|
|  Command ===> _____________________________________________  Scroll ===> CSR |
|                                                                              |
|  Select   Code   Nick     Node     Userid    The NAMES File Data Set Name      |
|  ------ -------- -------- -------- -------- ---------------------------------|
|  ______      1    S1                        USERID.NAMES.TEXT                |
|  ______      2    S2                        USERID.NAMES.TEXT                |
|  ______      3    S3                        USERID.NAMES.TEXT                |
|  ______      4    GROUP1   *Distrib List*    USERID.NAMES.TEXT                |
|  ______      5    T1                        USERID.NAMES2.TEXT               |
|  ______      6    T2                        USERID.NAMES2.TEXT               |
|  ______      7    GROUP2   *Distrib List*    USERID.NAMES2.TEXT               |
|  ______      8    T3                        USERID.NAMES3.TEXT               |
|  ______      9    T4                        USERID.NAMES3.TEXT               |
|  ******************************* Bottom of data ********************************|
+------------------------------------------------------------------------------+
```

On the 'GETNICK' panel, you may choose any one of the following three methods to select a new Nick Name code:

1. Type a selection code, such as '1', '2', '3', or '4', etc. on the 'GETNICK' panel command line and press the Enter key.

2. Type a '/' or 'S' code on the row of a Nick Name code line and press the Enter key.

3. Place the cursor at any column on the row of a Nick Name code line and press the Enter key.

If you change your mind and want to select the Target Destination code from the 'XMTDEST' database file from the 'USERID.@PROJWRK.XREF' library instead of selecting a Nick Name code from the NAMES database file, then simply enter a 'GETDEST' or 'GETD' command or press the PF10 key on this panel to display the 'GETDEST' panel. The detail information of the 'GETDEST' panel has already been described in the previous section of this document.

Thus, you may use the 'GETD' and 'GETN' commands or press the PF10 and PF6 keys to switch between the 'GETDEST' and 'GETNICK' panels back and forth very easily.

F.8 The 'SF' command to be used as an Edit Macro

When you enter a 'SF' command in an edited file, then it will be executed as an Edit Macro. The 'SF' Edit Macro can either send the entire edited file or send only a part of the edited file to the target destination.

To send the entire file, you may enter a 'SF ALL' command or simply enter a 'SF' command on the edit command line. When you enter a 'SF' command on the edit command line, you may use a 'X' or a pair of 'XX' command to exclude some code lines that you don't want to send.

There are two other methods can be used to send just a part of the edited file by using the 'SF' command:

1. When you enter a 'SF' command on the edit command line, you may use a pair of 'CC' line command to select a block of code to be sent. Between two 'CC' line commands, you may use a 'X' line command or a pair of 'XX' line command to exclude the code lines that you don't want to send. More than one 'X' or one pair of 'XX' line command can be specified in the same edited file at the same time.

2. If you use the 'XCUT' or 'G' (Get) command to cut several code line blocks in the buffer, instead of using the 'XPASTE' command to paste the code back to the edited file, you may enter a 'SF PASTE' or 'SF PUT' command, or simply enter a 'SF P' command, to send the cut code lines to a target

destination.

Please enter a 'SF ?' command and a 'XCUT ?' command in edit for more detail information.

F.9 The brief descriptions of the 'SENDSEQ' ('SPS') command

The 'SENDSEQ' command can be used to send the sequential file with the 'Line Splitter' code to a target destination. The short command format of the 'SENDSEQ' command is 'SFS'.

When you download a variable length sequential file to the workstation and upload it back to host, sometimes its logical record length will be changed.

In order to prevent such problem from occurring, you may use the 'SFS' command to create a new sequential file with the 'Line Splitter' code first before downloading it to the workstation. After you upload the file back to host, you may apply the 'GETSEQ' command to remove the 'Line Splitter' code from the input file and restore it back to its original sequential file format.

By using this method, all the sequential data sets can be easily transported via the PC diskettes or IOMEGA Zip 100 disks. Please see the description of the 'SENDPDS' command in next section for more information about how to transport the PDS library files using the similar method.

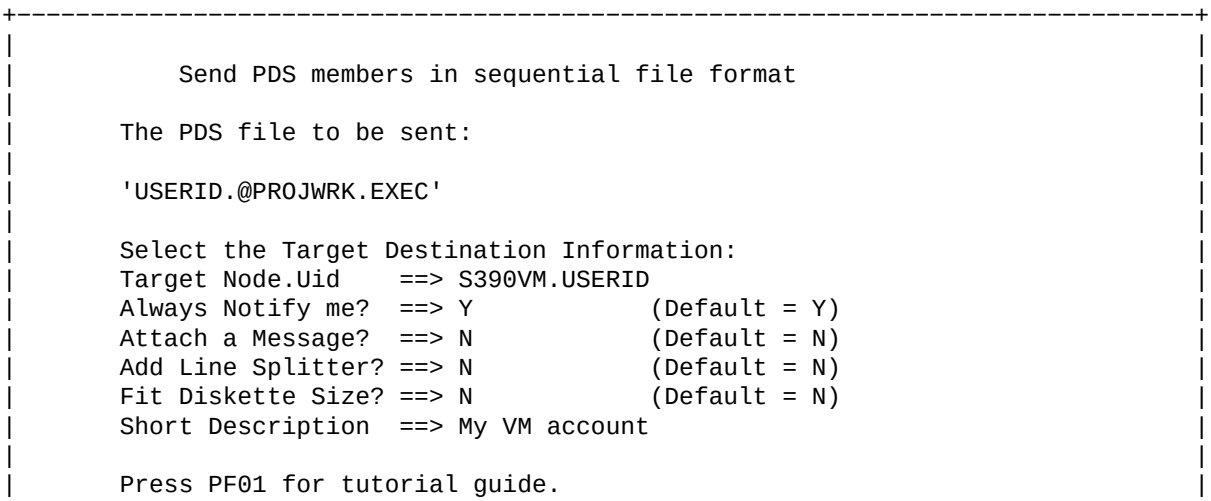
F.10 The descriptions of the 'SENDPDS' ('SP') command

The 'SENDPDS' command can be used to send the PDS to a target destination in a sequential file format. The short command format of the 'SENDPDS' command is 'SP'.

The purpose of this function is to provide a very simple method for the users to transport any types of the MVS library files from one MVS system to another MVS system. The sequential file generated by this command can be downloaded to the PC hard drive. Then the PC file on workstation can be transmitted through Internet or copied to the writable CD or IOMEGA Zip 100 diskettes, and finally the PC files can be uploaded back to host at a later time.

When the 'SENDPDS' command is executed, a Target Node/Userid Selection panel will be shown. It is very similar to the 'PRTPDS' and 'SENDFILE' commands. The following is such an example when a "SP" command is typed next to the 'USERID.@PROJWRK.EXEC' file name on the PANEL3 panel:

Figure 75. The sample SENDPDS target Node/Uid window panel



```
|       Press PF06 to show Nick Name List for selection.                        |
|       Press PF07 or PF08 to show each target Node.Uid code.                   |
|       Press PF10 to to show Node.Uid List for selection.                      |
|       Press PF11 to show PDS Member List for selection.                       |
|       Press ENTER to send all members of the selected PDS.                    |
|       Press END or CANCEL to cancel Send File function.                       |
|                                                                               |
+-------------------------------------------------------------------------------+
```

This command uses the 'TSO XMIT' command to merge the PDS member files into the 'IEBCOPY' utility program generated sequential file in the 80 bytes fixed block format. This type of sequential file is not readable and it is not suitable to be printed at a printer. However, this sequential file can be transported to another MVS system in binary mode and can be restored back to the PDS format by using a 'RECEIVE INDA(/)' command if the sequential file is transmitted directly from one MVS system to another MVS system.

However, if the sequential file is downloaded to workstation from one MVS system and uploaded back to another MVS system in binary mode, then it will no longer be in the 80 byte fixed block format. In this case, the 'RECEIVE INDA(/)' command will not work. To solve this problem, you must insert the 'Line Splitter' code to each line to create a 84 byte fixed block format by using this tool and apply a 'XRSTOR' batch JCL provided by this tool package to stripped off the 'Line Splitter' codes before executing the 'RECEIVE INDA(/)' command.

A sample JCL of the XRSTOR batch job can be found in the 'USERID.@PROJWRK.DOCUMENT' library. The XRSTOR batch job invokes a REXX program called 'XRESTORE' to strip off the 'Line Splitter' code. To be sure that the files can be transmitted to a target MVS system successfully by using the 'SENDPDS' command with the 'Line Splitter' code, the source code of both the JCL file 'XRSTOR' and the REXX program 'XRESTORE' must be transmitted to the TSO account of the target MVS system in text mode at the first place.

If you press the PF1 key on the SENDPDS command panel, then the following tutorial screen will be displayed.

Figure 76. The introduction tutorial guide panel of the SENDPDS command

```
+-------------------------------------------------------------------------------+
|                                                                               |
|                              Introduction                                     |
|                                                                               |
|       This panel can be used to provide the target destination data           |
|       for sending a source PDS. You will need to fill in the target           |
|       destination Node and Userid if the target is a TSO or VM                |
|       account.                                                                |
|                                                                               |
|       After the target destination data is filled in, it will be              |
|       automatically stored in a 'USERID.@PROJWRK.XREF(XMTDEST)' file,         |
|       which is a shared file with the 'PRTPDS' and 'SENDFILE' commands.       |
|                                                                               |
|       You may enter a 'DEST' command to edit that file and then add           |
|       or delete the target destination data directly in the file.             |
|       Initially when you edit this 'XMTDEST' database file, a data line       |
|       of your Node/Userid of your TSO session has already been created        |
|       as an example for your reference. You may add as many data lines        |
|       of the various target destinations as you like into this file.          |
|                                                                               |
+-------------------------------------------------------------------------------+
```

If you press the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

```
-------------------------------------------------------------
Target Node.Uid    ==> S390VM.USERID
Always Notify me?  ==> Y            (Default = Y)
Attach a Message?  ==> N            (Default = N)
Add Line Splitter? ==> N            (Default = N)
Fit Diskette Size? ==> N            (Default = N)
Short Description  ==> My VM account
-------------------------------------------------------------
```

If you press the PF7 or PF8 key, then the target destination data will be brought up on the panel screen one by one rotatively. You may press the PF10 key to display a panel of all the target destination Node/Userid data for you to select one.

After a target is chosen, if the Enter key is pressed, then all the members of the selected PDS will be sent to the target destination in a 80 bytes fixed block sequential file format

If the PF11 key instead of the Enter key is pressed, then a Member List panel of the selected PDS will be displayed for you to select one or more than one member to be sent. On the Member List panel, you may edit or browse the members before selecting them. Please press the PF1 key on that panel for more information about how to use that panel.

If the PF3 key or PF12 key is pressed, then the Sending PDS Member process will be cancelled.

If the sequential file is received from a TSO account on MVS, then that sequential file can be used to restore the PDS by using a 'RECEIVE INDA(/)' command on the ISPF option 3.4 data set list panel.

If the sequential file was sent to the PC hard drive in binary mode and when it is received back to Host from the PC hard drive in binary mode again, the sequential file may be messed up and it will no longer be in the original format. In this case, the sequential file cannot be used to restore back to PDS. To solve this problem, you need to set a 'Y' code in the 'Add Line Splitter' option so that a 'Line Splitter' code will be added at the end of each source code line in the sequential file to be transmitted to PC hard drive.

If the PC file will be uploaded to another MVS system and if its size is too large, sometimes it is not easy to be transported and processed. The 'Fit Diskette Size' option can be set to 'Y' for this case so that the large PDS can be broken down to several small sized sequential files each one fits into a diskette so that each piece can be transported separately. When each piece of PC files are uploaded to an MVS site, there are two utility programs, i.e. GETPDS and XRESTORE, can be used to put them together and restore them back to the original large PDS format. The XRSTOR command can be used to invoke the XRESTORE progarm and restore these uploaded small piece PC files back to PDS format in batch mode.

The 'XRSTOR' tool can recognize the 'Line Splitter' at each code line and it can convert the sequential file back to a normal FB-80 sequential file for the 'RECEIVE INDA(/)' command to restore it back to PDS. Note: Use the 'Add Line Splitter = Y' option only if you want to transmit the IEBCOPY generated binary sequential file to the PC hard drive in binary transmit mode. In the regular cases, you don't need to send the PDS in a sequential file format with a 'Line Splitter' code at the end of each source code line.

F.11 The descriptions of the 'SFX2MVS' ('SFX') command

The 'SFX2MVS' command can be used to duplicate the data set at another MVS system using the JCL file without needing the human intervention. It is a utility program that is most suitable for the installation of the library files from the current MVS system on various other MVS systems. The short command format of the 'SFX2MVS' command is the 'SFX' command.

When the 'SFX' command is executed, a Target MVS system Node/Uid window panel will be shown. The following is such an example when a "SFX" command is typed next to the 'USERID.@PROJWRK.EXEC' file name on the PANEL3 panel:

Figure 77. The sample SFX2MVS target Node/Uid window panel

```
+-------------------------------------------------------------------------------+
|             Duplicate File at Another MVS System                              |
|                                                                               |
|      The file to be sent to target MVS system:                                |
|                                                                               |
|      'USERID.@PROJWRK.EXEC'                                                   |
|                                                                               |
|      The name of receiving file at target MVS system:                         |
|                                                                               |
|      'USERID.@PROJWRK.EXEC'                                                   |
|                                                                               |
|      Select the Target MVS System Information:                                |
|                                                                               |
|      Target Node.Uid  ==> PLPSC.USERID                                        |
|      Password         ==> _         (Required)                                |
|      Target Volume    ==>           (Optional)                                |
|                                                                               |
|      Press PF01 for tutorial guide.                                           |
|      Press PF07 or PF08 to show each target Node.Uid code.                    |
|      Press PF10 to to show Node.Uid List for selection.                       |
|      Press ENTER to send file across to another MVS system.                   |
|      Press END or CANCEL to cancel send file function.                        |
|                                                                               |
+-------------------------------------------------------------------------------+
```

On this panel, the target MVS system 'PLPSC', for example, has been specified. Assume that the current MVS system is 'XRFMCL', then the target MVS system specified on this panel, such as 'PLPSC', must be different from the current MVS system. In other words, it is restrictive to specify the same 'XRFMCL' name on the Target Node field on this panel. You may not specify a VM node or Printer Id as the Target Node name on this panel either.

The 'SFX' command uses the JCL file to perform the file transmit and receive functions. Thus, it needs the batch jobcard to be setup ahead of time.

If you press the PF1 key on the 'SFX2MVS' command panel, then the following tutorial screen will be displayed.

Figure 78. The introduction tutorial guide panel of the SFX2MVS command

```
+-------------------------------------------------------------------------------+
|                              Introduction                                     |
|                                                                               |
|       This panel can be used to provide the target destination data           |
|       for duplicating a source file at another MVS system. You need to        |
```

```
|       fill in the target destination node and userid if it is only a          |
|       TSO account. Please don't fill in any VM or printer Uid in the          |
|       target node and userid field on this panel.                             |
|                                                                               |
|       After the target destination data is filled in, it will be              |
|       automatically stored in a 'XREF(XMTDEST)' file,         |
|       which is a shared file with the other sendfile commands, such           |
|       as the 'SENDFILE', 'SENDPDS', or 'PRTPDS' command, etc.                 |
|                                                                               |
|       You may enter a 'DEST' command to edit that file and then add           |
|       or delete the target destination data directly in the file.             |
|       Initially when you edit this 'XMTDEST' database file, a data line       |
|       of your Node/Userid of your TSO session has already been created        |
|       as an example for your reference. You may add as many data lines        |
|       of the various target TSO node/userid as you like into this file.       |
|                                                                               |
+-------------------------------------------------------------------------------+
```

If you press the PF8 key on the tutorial panel, then the following tutorial guide will be displayed.

```
-----------------------------------------------------------------
Target Node.Uid  ==> PLPSC.USERID
Password         ==> _          (Required)
Target Volume    ==>            (Optional)
-----------------------------------------------------------------
```

On this panel, two file names have been defined. One is the input file you have selected from the current MVS system, and the other is the receiving file that will be duplicated at the target MVS system. Both file names are identical. You may modify the receiving file name so that the name of the duplicated file at the target MVS system can be different from the original input file name on the current system.

If you press the PF7 or PF8 key, then the target destination data will be brought up on the panel screen one by one rotatively. You may press the PF10 key to display a 'GETDEST' panel of all the target destination Node/Userid data for you to select one.

On the 'GETDEST' panel, you may enter a 'DEST' User−Exit command or an 'E' (Edit) command to edit the 'USERID.@PROJWRK.XREF(XMTDEST)' file of all the target destination data and modify the contents. Note that the password field is required. Each time you will need to enter the password in order to duplicate the file at the target MVS system.

The Volume of the target file is optional. If it is specified, then the received file will be duplicated at the specified Disk Volume. The default of this field is a blank.

After a target is chosen and if the Enter key is pressed, then the selected source file will be sent to the target destination for duplication. Note that the same name file on the target MVS system will be deleted before a new duplicated file is created. It is your own responsibility to create a backup file at the target MVS system if you don't want to lose the original copy of the existing file. In this case, you may alter the name of the receiving file name at target MVS system to another file name to avoid the problem also.

By pressing the Enter key, the selected source file will be sent to a target destination. If the PF3 key or the PF12 key is pressed, then the duplicate file process will be cancelled.

You may duplicate the input source file to only one target MVS account at a time. Thus, the 'GETNICK' command to fetch the Nick

```
name of a group of MVS accounts is not a provided command on the
'GETDEST' panel for the 'SFX' command.

After executing the 'SFX2MVS' command and receiving the JCL output
from the remote MVS JES system, be sure to purge the JCL output
listing before issuing a 'RECEIVE' command on your current MVS
system. Otherwise, you will obtain the following error message from
the 'RECEIVE' command:

INMR901I Dataset X.RECEIVE.INVALID.FILE from ? on ?
INMR907A Enter copy parameters or 'DELETE' or 'END' +

In this case, you may enter a 'DEL' command to delete the received
junk files.

If your TSO session is entered in PROG755 mode and the following
error message is prompted, then you may press the 'Cntl' key to
get out of PROG755 mode first:

-INMR921I Received file appears not to be an Interactive Data
Transmission facility file. The first record is:
INMR922I

Then you may replace the code 'INMR922I' with a 'DEL' code to
delete the junk file.
```

Note: The high level qualifier of the source library file to be duplicate must not be changed at the target MVS system. If you do want change the high level qualifier at the target MVS system, then you may use the 'SENDFILE' command instead.

F.12 The comparison of the 'PP', 'SF', and 'SP' commands

1. When the 'PRTPDS' and 'SENDPDS' commands applied to a PDS library file, the selected members will be merged into a sequential file format. Both type of sequential files can be restored to PDS. The sequential file produced by the 'PRTPDS' command is suitable to be printed at a printer.

   The 'SENDFILE' command is very similar to the regular XMIT command. It does not alter the original PDS data set format before sending the file.

2. The 'SF' command is the short command form of the 'SENDFILE' command. This command can also be invoked in the edit command line. The 'PP' command, i.e. the short command of the 'PRTPDS' command, and the 'SP' command, i.e. the short command of the 'SENDPDS' command, cannot be invoked in the edit command line.

3. All of the 'PRTPDS', 'SENDFILE', and 'SENDPDS' commands can display the PDS Member List panel to allow you to select several members when you send the PDS member file. This feature is very useful especially for the 'SENDFILE' command because you may use it to send only a few member files instead of sending the entire PDS if the size of the PDS is extremely large. In the edited file, you may also use the 'SF' (SENDFILE) command and a pair of "CC" line commands to send only a segment of the member file to the target destination.

4. The "Text" type of files can be very suitable to be sent by using the 'PRTPDS' or 'SENDFILE' command. To send a non−readable file, such as the Load Library files, it is recommended to use the 'SENDPDS' command.

5. The files sent by all three commands to another MVS system must be received by using a 'RECEIVE' command.

The 'RECEIVE' command receives the PDS as an unchanged PDS format when it is sent by an 'SENDFILE' command. However, it will receive the PDS library file, which is sent by the 'PRTPDS' and 'SENDPDS' commands, as a sequential file. You may restore the received sequential file sent by 'PRTPDS' command back to PDS by using a 'GETPDS' command. The sequential file sent by the 'SENDPDS' command can be restored back to PDS by using a 'RECEIVE INDA(/)' command.

Note: Instead of using the 'RECEIVE INDA(/)' command, you may use the 'GETPDS' command on the 'SENDPDS' command generated sequential file to restore it back to PDS also.

If the sequential file sent by 'SENDPDS' contains the line splitter code, then you need to run a batch job named 'XRSTOR' before applying the 'RECEIVE INDA(/)' command to restore it back to PDS. Instead of using the 'XRSTOR' batch job, you may use the 'XRESTORE' command provided by this tool package to strip off the line splitter code also.

Note:

1. For all of these three commands, you may transmit the file by using either the 'GETDEST' panel or the 'GETNICK' panel to determine the target destination. On the 'GETDEST' panel you may enter a 'GETNICK' command or press the PF6 key to switch to the 'GETNICK' panel, and on the 'GETNICK' panel you may enter a 'GETDEST' command or press the PF10 key to switch to the 'GETDEST' panel.

2. At the bottom of the sequential file created by the 'PRTPDS' command there is an appendix section which contains the start and end line numbers of the PDS member source files in the body section. If you need to use the 'GETPDS' command to restore the sequential file back to its original PDS format, then you had better not modify the contents in the sequential file. Otherwise, the line numbers in the appendix section and the source code lines in the body section will not match, and the 'GETPDS' command will produce incorrect PDS.

   Note that the 'GETPDS' command can strip off the 'Line Splitter' code in the sequential file sent by the PRTPDS command. Thus, it does not need to run the XRSTOR batch job.

3. When the 'PRTPDS', 'SENDFILE', and 'SENDPDS' commands are applied on the PANEL2, PANEL3, PANEL4, or PANEL5 panel, it is recommended to use their short format commands, i.e. the 'PP', 'SF', and 'SP' commands because they are easier to use.

   These three commands can also be applied to the panel displayed by the 'LISTA', 'LISTC', or 'RECALL' command, or the ISPF option 3.4 data set list panel displayed by using the 'FFF' command. However, these three commands cannot be applicable to the panels displayed on the split ISPF panel screen. If you need to use these commands on the split ISPF panel screen, you must establish the second Project Work Manager tool session.

4. The 'PRTPDS' and 'SENDPDS' commands are applicable to a specific member file of a PDS. However, it is not applicable to the sequential files, GDG generation files, and VSAM files. The 'PRTPDS' command is not applicable to the Load libraries either. Only the 'SENDPDS' command can be used to transport the Load libraries.

Note: The 'SFX2MVS' command is very similar to the 'SENDFILE' command, except that it performs both of the XMIT and RECEIVE functions in a batch job and the high level qualifier of the source file and the received file must be identical.

Appendix G. The usages of the FL, FFL, DIFF, and ADD commands

G.1 The descriptions of the 'FL' command

The 'FL' command, i.e. the File List command, is an User−Exit command. It can be used to invoke the ISPF option 3.4 data set list utility program and display a cataloged data set listing. Instead of using the 'FL' command, you may use a 'FFL' command. The 'FFL' User−Exit command, i.e. the Front−end File List command, can be used to display a Front−end Interface panel, i.e. the 'DSLISTF' panel, before displaying the ISPF option 3.4 data set list utility panel.

The 'DIFF' User−Exit command can be used to invoke the ISPF option 3.13, i.e. the SuperCE function, to compare two files.

The 'FL' and 'DIFF' commands can help you to save a lot of time on typing the data set names on the ISPF panels while comparing various files. The following is such an example:

Suppose a 'FL' command has been entered on the command line of any process panel in the Project Work Manager tool session, and assume that the following ISPF option 3.4 data set list utility panel is displayed after the 'FL' command is typed next to a GDG data set 'USERID.TEST1.GDG.*' on the PANEL3 panel of the 'MYPROJ1' project, which is shown as follows:

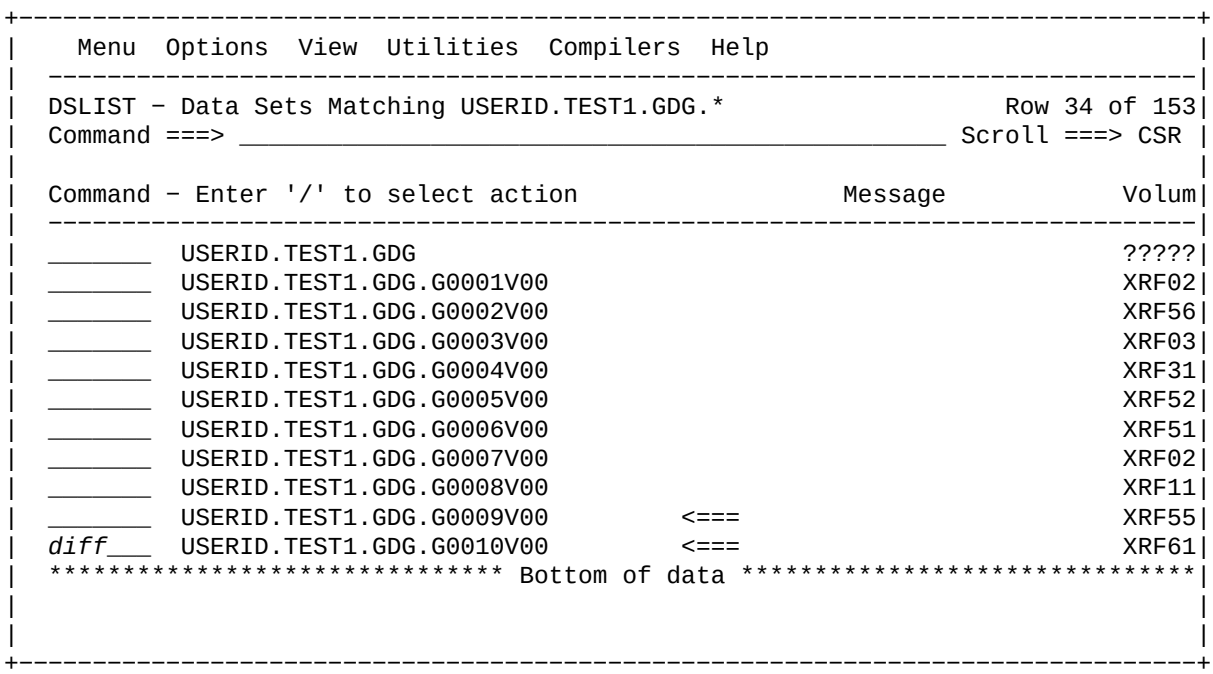
Figure 79. The sample ISPF option 3.4 data set list panel with GDG files

```
+-------------------------------------------------------------------------------+
|    Menu  RefList  RefMode  Utilities  Help                                     |
|  ---------------------------------------------------------------------------- |
|                              Data Set List Utility                            |
|  Option ===> ____________________________________________________________     |
|                                                                               |
|     blank Display data set list              P Print data set list            |
|         V Display VTOC information          PV Print VTOC information         |
|                                                                               |
|  Enter one or both of the parameters below:                                   |
|     Dsname Level . . . USERID.TEST1.GDG.*_____________________               |
|     Volume serial  . . ______                                                 |
|                                                                               |
|  Data set list options                                                        |
|     Initial View . . . 1  1. Volume          Enter "/" to select option       |
|                           2. Space           /  Confirm Data Set Delete       |
|                           3. Attrib          /  Confirm Member Delete         |
|                           4. Total                                            |
|                                                                               |
|  The following actions will be available when the list is displayed:          |
|     Enter a "/" on the data set list command field for command prompt pop−up. |
|     Enter TSO commands, CLIST, REXX execs, or "=" to execute previous command.|
|                                                                               |
+-------------------------------------------------------------------------------+
```

G.2 The descriptions of the 'DIFF' command

After pressing the Enter key on the above ISPF option 3.4 data set list utility panel, the following sample ISPF option 3.4 data set list panel will be displayed:

Figure 80. The sample ISPF option 3.4 data set list panel with 'DIFF' command

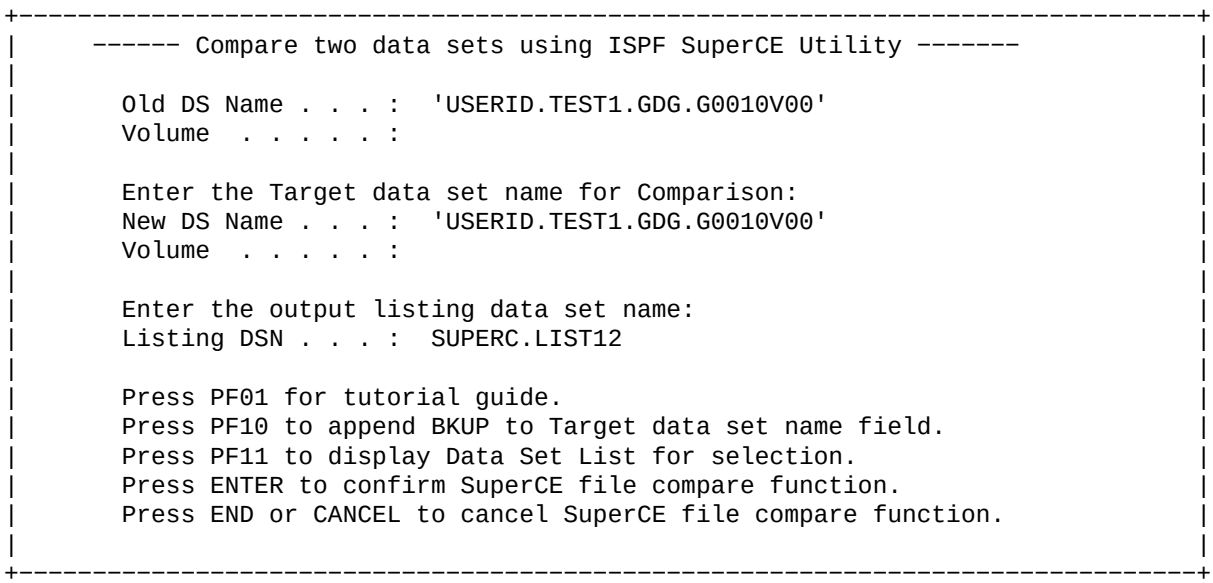


If you want to compare the difference of the two GDG generation files, say G0009V00 and G0010V00, of this GDG base file, all you need to do is type a 'DIFF' command next to either of the two files, which is shown in the above diagram.

Note: It is not recommended to use a '\3.13' User−Exit command to replace the 'DIFF' command because these two command functions are different, which will be explained in next page.

After the 'DIFF' command is typed and the Enter key is pressed, a 'DIFFPNL' Utility panel, i.e. the SUPERC Utility front−end panel will be displayed, on which the source Old DS Name and target New DS Name on the window panel will be initially identical. The following is the diagram of this panel:

Figure 81. The sample 'DIFFPNL' Utility panel



On this window panel, you may either fill in the New DS name manually or press the PF11 key to display a 'SELPROJ' panel and select the target data set name from that panel.

Instead of using the PF11 key to search for the New DS name from the 'SELPROJ' panel, if the target is an existing file but it cannot be found on the SELPROJ panel, then you may type the target file name partially on the panel ended with a '/' or '*' code and press the Enter key to expand the data set name.

For example, on the 'DIFFPNL' utility panel if you may type the code such as 'TOOLKIT.@PRO/WRK.EXEC' at the New DS Name field, then this tool will search all the cataloged data set names that match the code 'TOOLKIT.@PRO' and display the data set name list on a selection panel. On that panel you may type one and only one 'S' code and press the PF3 key to select a target data set name.

Note that the '/' or '*' code can be inserted in the middle of the New DS Name field because the code to the right of the '/' or '*' code will be ignored.

The method of selecting a target data set name from the 'SELPROJ' panel is very useful and perhaps you might be interested in creating an User−Exit utility function in REXX by yourself that is similar to this 'DIFF' command procedure. The following is the instructions of how to write your own User−Exit routine similar to this function:

1. First of all you need to create an ISPF panel file that is similar to the above sample 'DIFFPNL' Utility panel. The source code of this panel can be found in the PANELS library provided by this tool package for your reference.

2. You don't need to pass the source data set name into your User−Exit routine from a panel. In your User−Exit routine your source data set name can be obtained from the 'Arg' statement obtained from PANEL3 or PANEL4 panel. Suppose it is called 'olddsn' and its volume is called 'volume1', then you may use the following sample REXX routine to invoke the 'DSNFIND' utility program to obtain the target data set name from the 'SELPROJ' panel:

```
/* REXX */
Arg olddsn volume1
"ISPEXEC SELECT CMD(%DSNFIND DS" olddsn volume1")"
Parse value '' with pwdsn pwvol pwmbr
"ISPEXEC VGET (PWDSN, PWVOL, PWMBR)"
If index(olddsn,'(') ^= 0 index(olddsn,')') ^= 0 then
   Parse var olddsn . '(' ckmbr ')'
Else
   ckmbr = ''
pwdsn = strip(pwdsn,'B',"'")
If pwdsn = '' then
   pwdsn = olddsn
Else
   Do
      If pwmbr ^= '' then
         newdsn = "'"pwdsn"("strip(pwmbr)")'"
      Else
         Do
            If ckmbr ^= '' then
               newdsn = "'"pwdsn"("strip(ckmbr)")'"
            Else
               newdsn = "'"pwdsn"'"
         End
   End
If pwvol ^= '' then
   volume2 = pwvol
Else
   volume2 = ''
Parse value '' with pwdsn pwvol pwmbr
```

```
"ISPEXEC VPUT (PWDSN, PWVOL, PWMBR)"
Exit
```

3. After this sample REXX program is executed, you will find that the 'newdsn' and 'volume2' variables contain the New DS name and the volume of the target data set that you select from the 'SELPROJ' panel.

4. Note that the first parameter 'DS' that is passed into the 'DSNFIND' utility program is a DSORG code of the input source data set 'olddsn'. The 'DS' code means that the input source data set passed into the 'DSNFIND' utility can be either a partitioned or sequential file. In this case the target data set to be selected can be either a partitioned or a sequential data set and it must matches to the DSORG of the source data set.

Note:

1. On the PANEL3 panel, if the source file and the target file that you want to compare are on the same PANEL3 panel screen, then instead of using the above described method you may simply type a 'DIFF' command next to the source file and type an 'S' (Select) code next to the target file and press the Enter key to compare the two files.

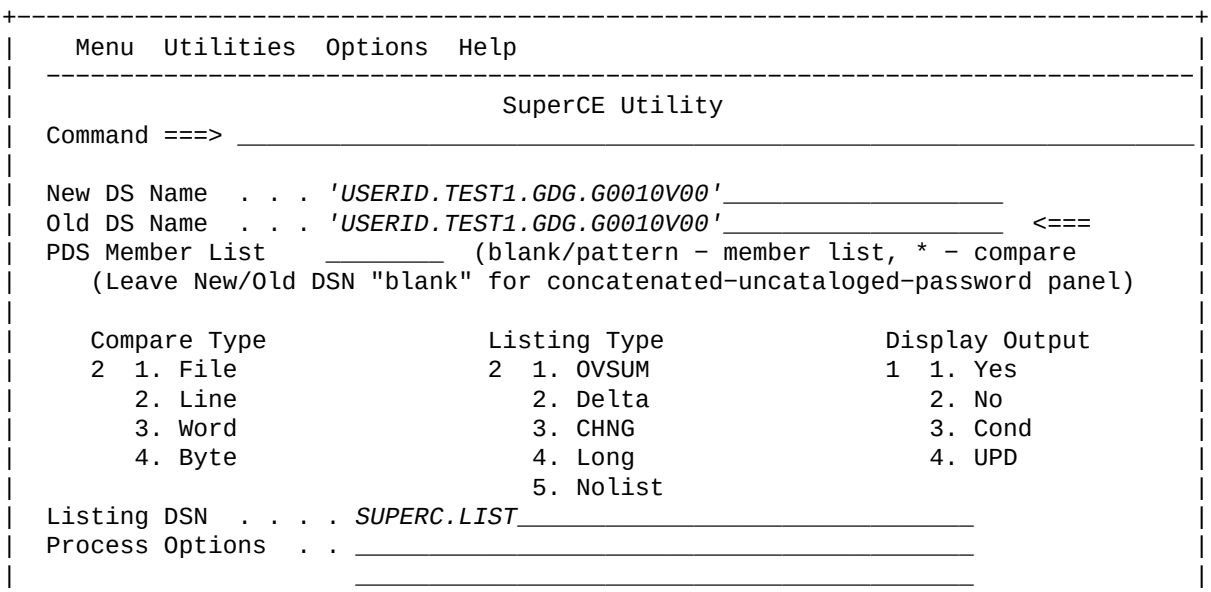
2. Similarly, if the two files you want to compare are two PDS members displayed on the same PANEL4 panel screen, then you may type the 'DIFF' command next to the source member and type an 'S' code next to the target member and press the Enter key to compare them.

The other valid parameter codes other than 'DS' are 'PO' and 'PS', which means that the DSORG of the target data set must match the source data set which is restricted to be either partitioned data set or sequential data set. You can only select only one type of data sets but not both types in one User−Exit routine.

On the 'DIFFPNL' Utility panel you may enter a digit from '1' to '99' or a dash code '−' to update the Listing DSN suffix on the panel. For example, you may enter a number '13' on the panel command line area to rename the SUPERC.LIST12 file to SUPERC.LIST13 file.

After pressing the Enter key the following SuperCE function panel, i.e. the ISPF option 3.13 panel, will be displayed:

Figure 82. The sample SuperCE panel of the ISPF option 3.13



```
|  Statements Dsn . . . SUPERC.STMTS_____________________________               |
|  Update DSN . . . . . _____________________________________________           |
|                                                                               |
|  Execution Mode . . . 1  1. Foreground        Output Mode . . 2  1. View      |
|                          2. Batch                                2. Browse    |
+-------------------------------------------------------------------------------+
```

On the above displayed sample SuperCE Utility panel, you need to changed the GDG generation level in the 'New DS Name' field from G0010V00 to G0009V00 in order to compare these two GDG generation files.

This method is very handy if the GDG data set names that you want to compare are very lengthy.

The SuperCE panel displayed by using the ISPF option 3.13 or the '\3.13' User−Exit command cannot capture the selected data set name in the 'New DS Name' and 'Old DS Name' fields. Thus, the 'DIFF' command is definitely a lot superior.

To repeatedly viewing the SuperCE output file, i.e. the SUPERC.LIST file in this example, you may enter a 'DIFF' or 'DIFF /' command on any panel command line, enter a 'TSO DIFF' command on the ISPF optoin 3.4 data set list panel command line, or type a 'DIFF' command next to any file on the ISPF option 3.4 data set list panel.

If you have used the 'DIFF' command to perform the 'Data Sets Comparison' functions many times, and each time you specified different output listing file names, such as SUPERC.LIST2, or SUPERC.LIST3, etc., then after you enter a 'DIFF //' instead of a 'DIFF /' command, all of these DIFF command generated output listing files will be displayed on a selection panel for you to select one to view its contents.

Note: If the GDG generation files were expanded from a GDG base file on the PANEL3 panel for the 'MYPROJ1' project, then instead of using a single 'DIFF' command you may type a 'DIFF' command next to the 'USERID.TEST1.GDG.G0010V00' file and type an 'S' command code next to the 'USERID.TEST1.GDG.G0009V00' file on the PANEL3 panel to compare these two files.

G.3 The descriptions of the 'ADD' command

On the sample GDG data set list displayed on the ISPF option 3.4 data set list panel as shown before, suppose you enter an 'ADD' command instead of a 'DIFF' command, then the GDG base file name 'USERID.TEST1.GDG' instead of the GDG generation file name 'USERID.TEST1.GDG.G0010V00' will be added to a selected Project List member file.

Other than the GDG files, the 'ADD' command can also be used on the PDS, sequential files, and the VSAM files.

When the 'ADD' command is executed, a Project Selection window panel will be displayed. The following is such an example:

Figure 83. The sample Project Selection window panel

```
+-------------------------------------------------------------------------------+
|     ---------------- Select a Project or Work Item -----------------           |
|                                                                               |
|       Choose an MVS Project or Work Item to add Dsname:                       |
|                                                                               |
|       The data set to be added:                                               |
|                                                                               |
|       'USERID.TEST1.GDG'                                                      |
|                                                                               |
```

```
|       Project Code ==> 2                                                      |
|       Project Name ==> MYPROJ1                                                |
|                                                                               |
|       Function     ==> This is my first project                               |
|                                                                               |
|       Press PF01 for tutorial guide.                                          |
|       Press PF07 or PF08 to view all projects.                                |
|       Press ENTER to switch to the selected project.                          |
|       Press END or CANCEL to cancel the selection.                            |
|                                                                               |
+-------------------------------------------------------------------------------+
```

You may press the PF7 or the PF8 key to display the names of the project or work item rotatively and then press the Enter key when you decide to choose one such that the data set name will be added to the selected project or work item in a Project List member file.

If the ISPF option 3.4 data set list panel is displayed from outside of the Project Work Manager tool session, then you may still be able to use the 'ADD' command and the '=' command code to add several data set names into the Project List member file. Therefore, you may type an 'ADD' command next to a data set name on the ISPF option 3.4 data set list panel even the PROJWRK tool session is closed. In this case, the data set names are added to the primary Project List file.

If you want to add the data set names into the secondary Project List file by using the 'ADD' command, then you must use the Project Work Directory to display the secondary Project Work Manager tool session and use a 'FF' command to display the ISPF option 3.4 data set list panel in order to use the 'ADD' command.

The 'ADD' command can also be typed in next to a data set name on the LISTA or LISTC command panel.

If the data set to be added from the ISPF option 3.4 data set list panel is an uncataloged data set, then you don't need to add its Volume Serial number in the Project List member file manually because the ADD command can capture the Volume Serial number information of the selected uncataloged data set even when the Project Work Manager tool session is closed.

The 'ADD' command is applicable to your own primary and secondary Project Work Manager tool sessions only. Suppose you are accessing other person's Project Work Manager tool session by using the 'DIR' command and enter an 'ADD' command next to a data set on the ISPF option 3.4 data set list panel or PANEL3 panel of other person's Project Work Manager tool session, then the selected data set name will be added to your own Project List member file instead other person's file.

You may add several data set names into a Project List member file all at once. After it is all done, the added data set names will not be shown on the PANEL3 panel of the selected project or work item unless you enter a 'RESET' or '/R' command on the PANEL3 panel to refresh it.

If a data set name is added to a project or work item when the Project Work Manager tool session is closed, then you will also need to enter a 'RESET' or '/R' command on the PANEL3 panel of the selected project or work item in the Project Work Manager tool session to display the new added data set name.

G.4 The descriptions of the 'FFL' command

The short command form of the 'FFL' command is the 'FF' command. If you use a 'FF' or 'FFL' User−Exit command to display an ISPF option 3.4 data set list panel, then a Front−end Interface panel such as the following sample panel, will be displayed.

Figure 84. The sample ISPF option 3.4 Front−end Interface 'DSLISTF' panel

```
+-------------------------------------------------------------------------------+
|  DSLISTF      The Data Set List Front-end Interface panel       Row 1 to 9 of 9|
|  ---------------------------------------------------------------------------- |
|  Command ===> _e_____________________________________________  Scroll ===> CSR|
|                                                                               |
|  Select  Code  Dsname Level codes                  Descriptions          Volume|
|  ------ ----- ---------------------------------- ---------------------- ------|
|  _______    1   *                                 Data sets on TSOPAK   TSOPAK|
|  _______    2   MXG.*                             The MXG stuff         DSSPK0|
|  _______    3   USERID.*                          My data sets                |
|  _______    4   SYS1                              SYS1 data sets              |
|  _______    5   SYSTOOL                           System tools                |
|  _______    6   SYSTOOL.*.LOAD                    System tools loadlib        |
|  _______    7   TOOLKIT                           TOOLKIT files               |
|  _______    8 - TOOLKIT.@PROJWRK                  PROJWRK libraries           |
|  _______    9   SAS.*                             SAS tools                   |
|  ****************************** Bottom of data ******************************|
+-------------------------------------------------------------------------------+
```

Initially when the 'FF' or 'FFL' command is invoked at the first time, you will only see two Dsname Level code entries on this 'DSLISTF' panel, which are your TSO logon Userid and 'SYS1', i.e. the third and fourth data entry as shown in the above diagram. You may enter an 'E' (Edit) command on the command line of this panel, which is as shown in the above diagram, to edit a database file 'USERID.@PROJWRK.XREF(DSLUTIL)' and add as many 'Dsname Level code' data entries as you want.

Note: To delete a data entry from the DSLISTF panel, you must edit its database file first and then delete the Data Set Level code from the file instead of the panel.

Instead of using an 'E' command to edit the DSLUTIL database file, you may enter a 'DSN' command with a new Data Set Level code. For example, you may enter the following command on the panel command line:

```
DSN  USERID.LOGON.CLIST
```

Then this 'DSN' command will display an ISPF option 3.4 data set listing of the data set 'USERID.LOGON.CLIST', and then this new Data Set Level code will be added to the bottom of the DSLUTIL database.

The short form of the 'DSN' command is the 'E' command. For example, you may enter the following command on the panel command line also:

```
E  'TOOLKIT.@PROJWRK.*'
```

Note that the bounded quotes of the data set name is optional. However, the spcified data set name in the 'DSN' or 'E' command must always be fully qualified.

On the 'DSLISTF' panel, you may choose any one of the following methods to select a Dsname Level code:

1. Type a selection code, such as '1', '2', or '3', etc. on the 'DSLISTF' panel command line and press the Enter key.

2. Type a '/' or 'S' command code in front of a Dsname Level code and press the Enter key. The command code '/' or 'S' can be omitted if the cursor is placed on the selection code line when the Enter key is pressed.

Note: If you place the cursor at any column of a Dsname Level code field on the panel and press the Enter key, then the code to the left of the cursor will be used as the dsname search pattern, and all the cataloged data sets that match the pattern will be displayed in an ISPF option 3.4 data set list utility panel.

On the above sample panel, the eighth Dsname Level code has been flagged with a '−' marker, which means it has been selected most recently. If you want to continue to select this Dsname Level code, all you need to do is simply press the Enter key while the cursor is still at the 'DSLISTF' panel command line position.

On the 'DSLISTF' panel, if you enter a selection code on the panel command line, or position the cursor on a Dsname Level code line and press the Enter key, then the ISPF option 3.4 data set list panel of the selected Dsname Level will be displayed. However, if you enter a 'FF' or 'FL' command with a selection number, such as the 'FF 2' or 'FL 4' command, on the command line, or type a 'FF' or 'FL' command code in front of a Dsname Level code on the 'DSLISTF' panel, then the ISPF option 3.4 data set list utility panel will be displayed instead. Note that the 'FF' and 'FL' command codes used on the 'DSLISTF' panel are not the User−Exit commands and they are different from the ones used on the PANEL3 or other panels.

If the listing of the Dsname Level codes specified on the 'DSLISTF' panel is too large, and the Dsname marker '−' is not shown on the current panel screen, then you may enter a '/' command on the panel command line to locate the last selected Dsname Level code. You may use a 'F data' command, where 'data' is a character string, to search for any Dsname Level code or the Short Description code that matches the data string. You may use the PF5 key to repeat the search function on the panel. To cancel the 'DSLISTF' selection function, simply press the PF3 key.

After a Dsname Level code is selected from the 'DSLISTF' panel, the ISPF option 3.4 data set list panel will be displayed directly. When you enter a 'FL' command again next time, the ISPF option 3.4 data set list utility panel with the latest selected Dsname Level code will be displayed. If you change the Dsname Level code on the ISPF option 3.4 data set list utility panel, then the new Dsname Level code will be captured at the bottom of the 'DSLUTIL' database file. You will need to provide the short description for the newly added Dsname Level code in the database file by using a 'FFL E' command when you edit the database file. The description field of each Dsname is optional. In the edited database file, you may sort the Dsname Level code list by entering a 'SORT' command at the edit command line.

If you have several previously entered Dsname Level codes that are currently obsoleted from the MVS system, then you may enter a 'CHECK' or 'CK' command on the 'DSLISTF' panel to remove them. However, if the Dsname Level code list on the 'DSLISTF' panel is very large, then the 'CK' command will take very long time to perform. Therefore, if you know which Dsname Level codes are obsoleted, it is recommended that you may delete them in edit by using a 'FFL E' command on the 'DSLISTF' panel, or by using the 'FFL E' command on the PANEL2 or PANEL3 panel.

The 'FF' User−Exit command can be entered on the command line of any of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The 'FFL' command, which is the long command form of the 'FF' command, can also be entered on the command line of an edited file. The 'FF' and 'FFL' commands are the extended commands of the 'FL' and '\3.4' commands. The 'FL' command and the '\3.4' command can both be used to display the ISPF option 3.4 data set list utility panel directly. However, these two commands cannot display the ISPF option 3.4 Front−end Interface panel, i.e. the 'DSLISTF' panel. The 'FFL LIST' or 'FFF' command can be entered on any panel to display the 'DSLISTF' panel.

Note: Because there are so many different command forms of this function, you may just need to remember the usages of three commands, i.e. the 'FF', 'FL', and 'FFF' commands, and ignore the definition of other 'FFL' type of commands, where 'FF' is the short form of the 'FFL' command and 'FFF' is the short form of the 'FFL L' command.

Note: The 'FF' command has a very special feature on the PANEL3 and PANEL4 panels, which can bypass the display the 'DSLISTF' panel, if it is entered in front of a data set name on the PANEL3 panel, or entered on the panel command line or in front of a member name on the PANEL4 panel. This special feature has already been discussed in the PANEL3 and PANEL4 tutorial sections.

The code lines in the 'DSLUTIL' database file must follow certain syntax rules. The descriptions of this syntax rules will be presented in next page.

To return from the 'DSLISTF' panel back to the caller panel, simply press the PF3 key. To return from this panel back to the PANEL2 main panel, you may enter an 'XX' command.

If the 'E' (Edit) command is entered on the 'DSLISTF' panel, then the following DSLUTIL database file will be displayed in edit:

Figure 85. The sample edited Dsname Level code database file

```
+-------------------------------------------------------------------------------+
|  EDIT       USERID.@PROJWRK.XREF(DSLUTIL)              Columns 00001 00072    |
|  Command ===>                                             Scroll ===> CSR    |
|  ****** ***************************** Top of Data ************************   |
|  000001 * /V=TSOPAK            Data sets on TSOPAK                            |
|  000002 MXG.*  /V=DSSPK0       The MXG stuff                                  |
|  000003 USERID.*               My data sets                                   |
|  000004 SYS1                   SYS1 data sets                                 |
|  000005 SYSTOOL                System tools                                   |
|  000006 SYSTOOL.*.LOAD         System tools loadlib                           |
|  000007 TOOLKIT                TOOLKIT files                                  |
|  000008 TOOLKIT.@PROJWRK       PROJWRK libraries                              |
|  000009 SAS.*                  SAS tools                                      |
|  ****** ***************************** Bottom of Data ********************   |
+-------------------------------------------------------------------------------+
```

The code lines in the 'DSLUTIL' database file is in the following format:

```
   Dsname /V=volser Description
```

where:

1. 'Dsname' is the Data Set Name Level Code. If it is omitted in the code line, an '*' (asterisk) will be padded on the panel, which is shown as the above example. Thus, the first code line in this sample file can also be rewritten as '/V=TSOPAK' without specifying the '*'. This special feature does not apply to the PANEL1 panel.

2. The '/V=' is a code for the Volume Serial number of the Dsname Level code. It is an optional field. If the Dsname field is not specified, then this field must be specified.

3. The short description field is optional. It can be used to describe what the Dsname Level code is used for.

4. These three field must be separated by at least one blank space.

5. If both the '/V=' code and short description are specified for the same Dsname Level code, then it is recommended that the '/V=' code should be placed in front of the short description field.

6. The leftmost field of each code line should always be either a '/*' or '−−' code, or a Dsname Level code, where the '/*' and '−−' are the comment header codes.

Note: If you select the first entry on the above sample panel, then all the data sets on the Volume 'TSOPAK' will be displayed on the ISPF option 3.4 Data Set list panel.

Note: In the edited 'DSUTIL' database file, the PF4 key can be used to toggle between the '/*' code to be inserted into or dropped from the leftmost column of the Dsname Level code line. This is a very handy tool to temporarily comment out a Dsname Level code in the 'DSUTIL' database.

You may press the PF1 key on the 'DSLISTF' panel, which is displayed by using a 'FFF' command, for more information about this command functions.

Appendix H. The usages of the Edit Ring function

The 'Edit Ring' function provided by this tool package is a simulated function of the VM XEDIT Edit Ring. It allows you to edit several PDS member files listed on a PANEL4 panel or several sequential or member files listed on the RECALL command panel simultaneously. All the selected edited files can be processed in edited session one by one in a ring format. It is a very useful function when you need to edit several files together and use the 'XCUT' and 'XPASTE' edit commands to manipulate the data.

H.1 How to use the Edit Ring on the PANEL4 panel

The following is a sample PANEL4 panel screen with a 'RING' command and several 'S' codes typed on the PDS member line command area.

Figure 86. The sample PANEL4 panel with the 'RING' command

```
+-------------------------------------------------------------------------------+
|  PANEL4       The PDS Member List Panel        Menu  Functions  Utilities  Help|
|  -----------------------------------------------------------------------------|
|  Selection Code ===> 4.1      Project Name ===> PROJECT      Row 00001 of 00004|
|  Data Set Name  ===> USERID.@PROJWRK.EXEC                      Time => 12:47:40|
|  Command ===> ___ring_____________________________________ Scroll ===> CSR|
|             Name     Prompt       Size   Created          Changed          ID  |
|  _________ @PROJWRK               1409  1997/08/26  1999/09/15 09:55:55  USERID|
|  __s______ PROJ                    148  1997/08/26  1999/09/17 12:51:17  USERID|
|  __s______ PROJWRK               16156  1997/08/26  1999/10/22 11:51:24  USERID|
|  __s______ PROJMEM               11494  1997/08/26  1999/10/22 10:51:31  USERID|
|            **End**                                                            |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

After the Enter key is pressed, the first selected member file 'PROJ' will be edited. You may modify the contents in this file or use the 'XCUT' or 'G' (Get) edit command to get a piece of code segment. After this is done, then you may enter an 'END' command or press the PF3 key. Then the second selected member file 'PROJECT' will be edited. In the second edited file session, you may use the 'XPASTE' or 'P' (Put) edit command to insert the code segment that was extracted from the first member file. Please enter a 'XPASTE ?' and a 'XCUT ?' command in edit for more information about the usages of these two Edit Macro commands.

Instead of pressing the PF3 key to save the changes and move the ring forward, you may also enter a 'NEXT' (or a 'N') command. The 'N' command can move the ring forward without saving the currently edited file. Similarly, if you need to save the currently edited file and move the ring backward, then you may press the PF4 key, i.e. the 'ED' command key. By entering a 'BACK' (or a 'BA') command, the ring will be moved backward without saving the currently edited file. The only way to leave out of the Edit Ring is to enter a 'QQ' or 'QQUIT' command.

Note: Other than the 'QQ' or 'QQUIT' command, you may also enter an 'OUT' command to get out of the Edit Ring.

Note: If you need to select several PDS member files which are not on the same PANEL4 panel screen as

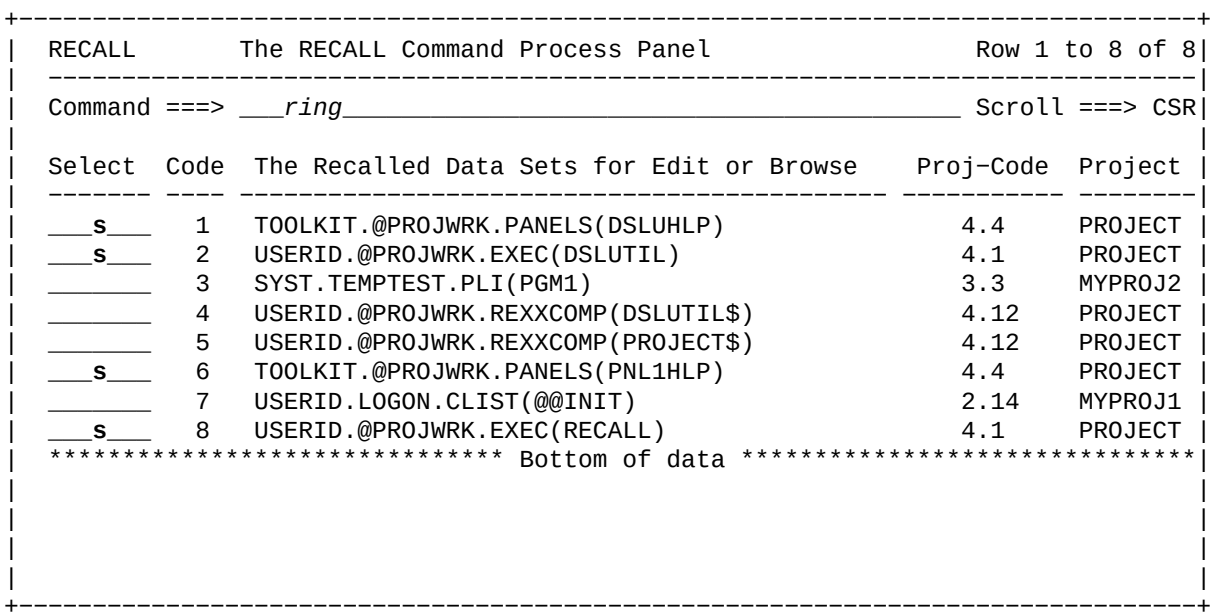
shown in the above example, then you may simply enter a 'RING' command and press the Enter key without typing any 'S' code. In this case, a PDS member selection panel similar to the PANEL4 panel will be displayed as soon as the Enter key is pressed. Now you may use the PF7 or PF8 key to scroll the panel screen up and down and then type several 'S' codes to select any member files as you want.

Note: On the PANEL4 panel you may enter a 'RING' command and use a pair of 'SS' code to select several members in a ring. Note that the two 'SS' code must be typed in on the same PANEL4 panel screen.

H.2 How to use the Edit Ring on the RECALL command panel

The following is a sample RECALL command panel screen with a 'RING' command and several 'S' codes typed on the data set line command area.

Figure 87. The sample RECALL command panel with the 'RING' command



Similar to the 'RING' command process on the PANEL4 panel, after the Enter key is pressed the first selected data set from the RECALL command panel will be edited. You may modify the contents in this file or use the 'XCUT' or 'G' (Get) edit command to get a piece of code segment. After it is done, then you may enter an 'END' command or press the END key, i.e. the PF3 key. Then the second selected data set will be edited. In the second edited file session, you may use the 'XPASTE' or 'P' (Put) edit command to insert the code segment that was extracted from the first data set.

Instead of pressing the PF3 key to save the changes and move the ring forward, you may also enter a 'NEXT' (or a 'N') command. The 'N' command can move the ring forward without saving the currently edited file. Similarly, if you need to save the currently edited file and move the ring backward, then you may press the PF4 key, i.e. the 'ED' command key. By entering a 'BACK' (or a 'BA') command the ring will be moved backward without saving the currently edited file. The only way to leave out of the Edit Ring is to enter a 'QQ' (i.e. 'QQUIT') or 'CAN' (i.e. 'CANCEL') command.

Note: If you need to select several data sets, which are not on the same screen as shown in the above example, then before pressing the Enter key you may directly use the PF7 or PF8 key to scroll the screen up or down and type the 'S' code to select the files. If you enter a 'RING' command and press the Enter key right away without typing any 'S' code, then an error message will be prompted to indicate that the selection code 'S' is missing. Therefore, the 'RING' command process on the RECALL command panel is a little bit different from

that on the PANEL4 panel. However, similar to the PANEL4 panel you may use a pair of 'SS' code on the same RECALL command panel screen to select several files in a ring.

H.3 The usages of the Edit Ring commands and PF keys

The following is the summary of the usages of various commands and PF keys applied to the Edit Ring function:

1. To move the ring in forward direction:

    a. If you need to save the currently edited file, simply press the PF3 key.

    b. If you don't need to save the currently edited file, then enter a 'N' (Next) command.

2. To move the ring in backward direction:

    a. If you need to save the currently edited file, simply press the PF4 key, i.e. the 'ED' command key, while the cursor is at the edit command line area.

    b. If you don't need to save the currently edited file, then enter a 'BA' (BAck) command.

3. To exit the ring, simply enter a 'QQ', 'CAN', or 'OUT' command.

H.4 The methods of working on several files simultaneously

This tool package has provided several methods for you to work on several files at the same time very efficiently. You can choose any method, which you think is the easiest, to help you to improve your work productivity.

1. The first method is to use a 'RING' command on the PANEL4 panel and type the 'S' code to select several member files to edit the selected files in an Edit Ring format, which has already mentioned in this section.

2. The second method is to type the 'XRF' code to select several member files on the PANEL4 panel and put them in the Xref Command Buffer. Then enter an 'XRF' command to display a PANEL5 panel and use the 'R', 'R1', or 'R2' command to retrieve the edited commands of several files. The detail information of this method can be found in the tutorial section of the PANEL5 panel.

3. The third method is to edit several member files on the PANEL4 panel initially, then use the '\' or '\\' command to backtrace each member and then press the Enter key to edit the previously edited member. The detail information of this method can be found in the tutorial section of the PANEL4 panel.

4. The fourth method is to use a 'RECALL' or 'RC' command to display a RECALL command panel and edit the files. On this panel, you may also use the 'RING' command to edit several files at the same time in a ring format. The 'RC' command method is a very powerful and very useful method, which has already been described in one of the previous appendix tutorial sections.

5. When you are editing a file and wish to edit few files that you just edited before, then you may enter the 'EDL', 'EDL 2', or 'EDL 3', etc. commands, i.e. the 'EDL n' command, where n = 1, 2, 3, etc. and n can be omitted when it is equal to 1, on the edit command line to edit those previously edited files. The short command form of the 'EDL 2' edit command is the 'EE' command, the short form of the 'EDL 3' edit command is the 'EEE' command. There is no short forms for the 'EDL 4' edit command

or higher.

Note that the first three methods allow you to work on several member files of the same PDS simultaneously on a PANEL4 panel. If you need to work on several files that are the members of different PDS, then it is highly recommended that you should use the fourth method, i.e. the 'RC' command method, or the fifth method, i.e. the 'EDLAST' command or the 'EDL n' command method, which is similar to the method of selecting the n−th entry on the RECALL command panel by using a 'RC' command. The difference is that the 'EDL n' command will not display a panel like the RECALL panel. Thus, if you cannot remember clearly which files you have previously edited, then it is recommended to use the 'RC' command because it is much easier to use. However, if you can remember the last couple of files you have just edited, then use the 'EDL n' command will be much faster. You may frequently use the 'EDL', 'EE', or 'EEE' command in edit if you can remember exactly which are the three edited files most recently.

If a PDS is displayed on the LISTA or LISTC command panel, or it is displayed on a ISPF option 3.4 data set list panel displayed from the 'DSLISTF' panel by using a 'FFF' User−Exit command, then you may use a 'ED' command to display a PANEL4 panel of this PDS and work on several member files of this selected PDS at the same time.

H.5 How to expand the Edit Ring

The Edit Ring created on the PANEL4 panel and the RECALL command panel can be expandable. There are two methods available for the Edit Ring Expansion function:

1. The first method is to enter an 'EDX' command on the edit command line of an Edit Ring file to display a PANEL4 panel of the selected PDS and edit any other member files. After the selected members are edited, then those selected members will be automatically merged into the Edit Ring.

2. The second method is to enter a 'RC' command on the edit command line of an Edit Ring file to display a RECALL command panel. On the RECALL command panel you may edit any sequential or PDS member files as you want. After the selected files are edited, then those files will also be automatically merged into the Edit Ring.

Note: On the edit command line of an edited file in an Edit Ring, you may use either an 'EDX' command or a 'RC' command to expand the Ring. The second method allows you to mix up the sequential files in the Edit Ring which contains only the PDS member files. In the edited file of a PDS member, you may also enter a 'ST' command in edit to display the statistics of the edited member file.

Note: On the PANEL4 panel, if you want to edit several PDS members which are not on the same PANEL4 panel screen, instead of just entering a 'RING' command on the PANEL4 panel and press the Enter key right away, you may type few 'S' command code to select few members on the same screen before pressing the Enter key, then on the edit command line of the first Edit Ring file you may use an 'EDX' command to display a PDS member selection panel to select the members on the other screens to expand the Edit Ring later.

Note: If you need to edit all members below the top member on the PANEL4 panel screen in a ring or edit all the data sets below the top file on the RECALL command panel screen in a ring, then you may enter a 'RING ALL' command instead of entering a 'RING' command and use many 'S' codes to select the files. The short command form of the 'RING ALL' command is the 'RINGALL', 'EDITALL', or 'ERALL' command.

H.6 The View Ring and the Browse Ring functions

Similar to the Edit Ring, this tool package has provided the View Ring and the Browse Ring functions on the PANEL4 panel and the RECALL command panel, which allows you to view or browse several files at the same time if you just want to read the contents but don't want to change them in the files.

The following is the descriptions of the View Ring usages:

1. On the PANEL4 panel or RECALL command panel, you may enter a 'VIEWRING' command and use the 'S' code to view few selected files in a ring. The short form of the 'VIEWRING' command is the 'VWR' command.

2. You may enter a 'VIEWRING ALL' command to view all members below the top member of the PANEL4 panel screen in a ring or below the top file of the RECALL command panel screen in a ring. The short form of the 'VIEWRING ALL' command is the 'VRALL' command.

3. In the View Ring, you may use the PF3 and PF4 keys and use the 'NEXT', 'BACK', and 'QQ' (or 'CAN' or 'OUT') command just like the Edit Ring.

4. In the View Ring of the PDS members, you may enter a 'ST' command to display the statistics of the viewed member.

The following is the descriptions of the Browse Ring usages:

1. On the PANEL4 panel or RECALL command panel, you may enter a 'BRRING' command and use the 'S' code to browse few selected files in a ring. The short form of the 'BRRING' command is the 'BRR' command.

2. You may enter a 'BRRING ALL' command to browse all members below the top member of the PANEL4 panel screen in a ring or below the top file of the RECALL command panel screen in a ring. The short form of the 'BRRING ALL' command is the 'BRALL' command.

3. In the Browse Ring, you need to press the PF3 key to browse the next file and press the PF4 key to browse the previous file in the ring.

4. To exit the Browse Ring, you may enter a 'CAN' (i.e. 'CANCEL') command on the browse command line or press the PF12 key.

   Note: The 'QQ' and 'OUT' are invalid commands in the Browse Ring function. Try to use the 'CAN' command to exit the Browse Ring instead. Note that the 'QQ' and 'OUT' commands only work for the Edit Ring and View Ring, however the 'CAN' command works for all three types of rings.

Appendix I. The 'String Search' and 'Massive Change' functions

There are two extremely useful utility functions that have been provided by this tool package, which are the 'String Search' function and the 'Massive Change' function. In next few sections, the process steps of how to use these two functions will be described in details.

I.1 The descriptions of the 'String Search' function

Assume that an 'SRCH' User−Exit command is entered next to the 'USERID.@PROJWRK.PANELS' file on the PANEL3 panel as shown in the following diagram:

Figure 88. The sample PANEL3 panel with a 'SRCH' User−Exit command

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel          Row 1 to 11 of 1|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 4       Project Name ===> PROJECT            Time => 12:37:3|
|  Function     ===> The MVS Project Work Manager                               |
|  Command ===> _____________________________________________  Scroll ===> CSR|
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands     Volume|
|  -------- -------- ------------------------------------------------- ------|
|  ________     1     USERID.@PROJWRK.PACKAGE                                   |
|  ________     2     USERID.@PROJWRK.ANNOUNCE                                  |
|  ________     3     USERID.@PROJWRK.EXEC                                      |
|  ________     4     USERID.@PROJWRK.CEXEC                                     |
|  ________     5     USERID.@PROJWRK.LOAD                                      |
|  _srch___     6     USERID.@PROJWRK.PANELS                                    |
|  ________     7     USERID.@PROJWRK.SKELS                                     |
|  ________     8     USERID.@PROJWRK.TABLE                                     |
|  ________     9     USERID.@PROJWRK.DOCUMENT                                  |
|  ________    10     USERID.@PROJWRK.LIST                                      |
|  ________    11     USERID.@PROJWRK.XREF                                      |
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

Note:

1. On the PANEL3 panel, instead of entering a 'SRCH' command next to a PDS library file, you may also enter a 'SRCH num' command, such as 'SRCH 5' command on the PANEL3 panel command line, to search all members in the 'USERID.@PROJWRK.PANELS' library file.

2. The 'SRCH' command can also be entered on the PANEL4 panel command line of the 'USERID.@PROJWRK.PANELS' library file.

3. When you edit a PDS member file on the PANEL4 panel, you may enter a 'SRCH' edit command on the edit command line and then place the cursor in the file area to fetch a data string from the screen and display a 'String Search−For Utility' panel. This method is the same as the method of entering a 'SRCH' command on the PANEL4 panel command line. But the advantage of this method is that it allows you to fetch the searched data string from the edit screen.

Note: Similarly, you may enter an 'XS' (or 'XSRCH') command on the PANEL3 data set selection code command line or on the PANEL4 panel command line to perform the 'Extended String Search' function for a

single PDS, which will be discussed later in this document. When you edit a PDS member file on the PANEL4 panel, you may also enter a 'XS' edit command and place the cursor in the file area to fetch a data string and display an 'Extended String Search−For Utility' panel. The difference of this method and the 'SRCH' edit command method is that the 'SRCH' edit command will convert the fetched data string to uppercase, and the 'XS' edit command will leave the fetch data string as is on the 'Extended String Search−For Utility' panel.

After pressing the Enter key the following 'String Search−For Utility' panel, i.e. the ISPF option 3.14 panel, will be displayed. On this panel, the data set name 'USERID.@PROJWRK.PANELS' has already captured from the PANEL3 panel. Note that the '(*)' code is also attached to the captured data set name as default, which means that all the members in the selected PDS will be searched.

Figure 89. The sample Search−For Utility penal similar to ISPF option 3.14

```
+-------------------------------------------------------------------------------+
|  SEARCH           Search-For Utility           Menu  Utilities  Options  Help  |
|  ---------------------------------------------------------------------------- |
|  Command ===> _b_____________________________________________________________ |
|                                                                               |
|  Enter Search Strings and Optional operands (WORD/PREFIX/SUFFIX,C)            |
|    ==> 'string search'_____________________________________________           |
|    ==> _____________________________________________________________           |
|    ==> _____________________________________________________________           |
|    ==> _____________________________________________________________           |
|    ==> _____________________________________________________________           |
|    ==> _____________________________________________________________           |
|    ==> _____________________________________________________________           |
|                                                                               |
|  Partitioned or Sequential Data Set:                                          |
|                                                                               |
|    Data Set Name  . . 'TOOLKIT.@PROJWRK.PANELS(*)'_____________________       |
|    Volume Serial  . . _______   (If not cataloged)                            |
|                                                                               |
|  Listing Data Set . . SRCHFOR.LIST_____________________________________       |
|                                                                               |
|  Enter "/" to select option  Execution Mode     Output Mode    Edit/View Member|
|     More search strings      1  1. Foreground   1  1. View     2  1. Edit      |
|     Mixed Mode                  2. Batch           2. Browse      2. View      |
|                                                                               |
+-------------------------------------------------------------------------------+
```

On the 'String Search−For Utility' panel, except the input 'Search String' field has been expanded from one line to seven lines and the input data set field is modified, all the other data fields are identical to the original ISPF option 3.14 panel, and the method of usages of each field still remains the same.

At the 'Search String' field of this sample 'String Search−For Utility' panel, you may enter any character string to be searched from all members in the 'USERID.@PROJWRK.PANELS' library file.

On the 'String Search−For Utility' panel, you may enter a 'F' or 'B' command to process the string search function in foreground or batch mode instead of altering the 'Execution Mode' code on the panel. By entering a 'F' or 'B' command, the original 'Execution Mode' code on the panel, which is the code '1' in this example, will not be changed.

Note:

1. On the PANEL3 panel, you may type a 'SRCH' command next to a sequential file for the string search function also. It is the same function as the 'Find' command in edit of a sequential file, thus to use a 'SRCH' command on a single sequential file is really not necessary.

2. If a '/' code is entered at the 'Specify additional search strings' field, then a 'String Search−For Utility' panel will be displayed to allow you to enter ten more input searched string fields in addition to the seven input search string fields on this panel.

3. On the PANEL4 panel command line, instead of just entering a 'SRCH' command, you may enter a 'SRCH string' command to search for the character string 'string' from all the members of the selected PDS. For example, on the PANEL4 panel of the 'USERID.@PROJWRK.PANELS' file, you may enter a command, such as "SRCH 'string search'", to display the ISPF option 3.14 'String Search−For Utility' panel which has been shown in previous page.

4. On the PANEL4 panel, if you need to search few members on the same panel screen of the PANEL4 panel, then you are allowed to type few 'S' codes next to the members before pressing the Enter key on the 'SRCH' command.

5. If you did not use the 'S' to select the members on the PANEL4 panel after executing the 'SRCH' command, and you need to select some PDS members the string search, then you may either press the PF11 key, enter a 'SEL' command on the 'String Search−For Utility' panel, or remove the "(*)" code from the captured data set name on the 'String Search−For Utility' panel and press the Enter key to select the members from the specific PDS.

6. On this sample 'String Search−For Utility' panel, you may either alter the 'Execution Mode' code to '2' or enter a 'B' command to submit a batch job to search for the data strings. By entering a 'B' command, the 'Execution Mode' code on this panel will NOT be changed from '1' to '2'. Similarly, if the 'Execution Mode' is 2, i.e. in Batch Mode, then you may enter a 'F' command to search the string in foreground mode and the 'Execution Mode' on the panel will NOT be changed from '2' to '1' either.

7. To repeatedly display the SRCHFOR.LIST output listing on the PANEL3 or PANEL4 panel, simply enter a 'SRCH /' command. On the other panels, you may either use a 'SRCH' or a 'SRCH /' command to view this output listing, if it has been created before.

8. If you have used the 'SRCH' command to perform the 'String Search' functions many times, and each time you specified different output listing file names, such as SRCHFOR.LIST2, or SRCHFOR.LIST3, etc., then after you enter a 'SRCH //' instead of a 'SRCH /' command, all of these SRCH command generated output listing files will be displayed on a selection panel for you to select one to view its contents.

9. The 'SRCH' command can be typed at the line command area on the 'LISTA' or 'LISTC' command panel to perform the string data search function from the selected data sets also.

I.2 The 'ED' command applied to the SRCHFOR output listing

Suppose the data string to be searched is 'STRING SEARCH', which is as shown on the sample panel in previous page, then you may press the Enter key to proceed the string search function either in foreground or in batch mode.

After the string search function is completed, the following viewed output listing will be displayed:

Figure 90. The sample viewed listing obtained from the Search−For utility

```
+------------------------------------------------------------------------------+
|    File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help                |
|  ----------------------------------------------------------------------------|
|  VIEW      USERID.SRCHFOR.LIST                          Columns 00001 00072|
```

```
|  Command ===> __ed_____________________________________________ Scroll ===> CSR |
|  ****** **************************** Top of Data ****************************|
|  000001 1  SUPERC - MVS/PDF FILE/LINE/WORD/BYTE/SFOR COMPARE UTILITY - ISPF FOR|
|  000002   LINE-#  SOURCE SECTION              SRCH DSN: USERID.@PROJWRK.PANELS|
|  000003                                                                       |
|  000004   @PRJHLP2                    --------- STRING(S) FOUND ---------------|
|  000005                                                                       |
|  000006      219  %   The Extended String Search and Massive Change functions: |
|  000007      222  {   This tool package has provided a%String Search{function w|
|  000008                                                                       |
|  000009   @PRJTUTD                    --------- STRING(S) FOUND ---------------|
|  000010                                                                       |
|  000011      196  {   This tool package has provided an Extended String Search |
|  000012                                                                       |
|  000013   CPY2PDSH                    --------- STRING(S) FOUND ---------------|
|  000014                                                                       |
|  000015       23  #       The selected PDS members are obtained from the 'Strin|
|  000016       25  #       name can be found. To display this panel, on the 'Str|
|  000017                                                                       |
|  000018   LISTAHLP                    --------- STRING(S) FOUND ---------------|
|  000019                                                                       |
|  000020       94  #                   data string search.                     |
|  000021                                                                       |
|  000022   LISTCHLP                    --------- STRING(S) FOUND ---------------|
|  000023                                                                       |
|  000024       71  #                   data string search.                     |
|  000025                                                                       |
|  000026   PNL3CMDL                    --------- STRING(S) FOUND ---------------|
|  000027                                                                       |
|  000028      132  %String Search and #Type a 'SRCH' command code in front of a |
|  000029      134  #                   string for the String Search function. On|
|  000030                                                                       |
+-------------------------------------------------------------------------------+
```

Assume the View Mode is specified at the 'Edit/View Member' option on the sample 'String Search−For Utility' panel, then on the above sample viewed output listing, you may enter an 'ED' command on the command line, which is shown in the above diagram, and position the cursor on a member name data line, such as the member name 'CPY2PDSH', and then press the Enter key to edit the selected member file. Instead of using the 'ED' command, you may simply position the cursor on the same member name data line and press the PF4 key, then the selected member file can also be edited.

Note: The PF4 key has been defined as the 'ED' command function key. The PF4 key method is a lot simpler than the 'ED' command method and it is highly recommended.

Note: As the 'ED' is a very common command name, the PF4 key has been modified to be defined to an 'EDT' command instead of the 'ED' command. The 'ED' and 'EDT' are two idential edit commands.

In the edited member file, you may press the PF5 key, i.e. the 'RFind' key, to repeatedly search for the searched character string of 'STRING SEARCH'. This is the so−called 'String Search' function.

If the cursor is still on the viewed listing command line when the PF4 key is pressed, then all the member files listed below the top line will be edited in a 'Edit Ring', which allows you to perform the 'Massive Change' function. This function will be discussed in next section.

Note: In fact, if you position the cursor at any location other than the panel command line and the member name line on the viewed listing when you press the PF4 key, then this tool can still figure out which member file you want to edit.

Note that if you search for the data string from the members of an uncataloged PDS without using the 'SRCH' command, then you cannot use the 'ED' command or the PF4 key on the viewed output listing if it is produced

by the original ISPF option 3.14 'String Search−For Utility' program because an error message of 'Data set not found' will be prompted. However, if you choose to run the data string search process by using this tool, then this tool will modify the output listing and append each uncataloged data set name with a Volume Serial number. In this case, when you use the 'ED' command or the PF4 key to edit the selected uncataloged PDS member file there will be no problem.

Note:

1. You may enter a 'CPY' (Copy Member) command on the VIEW listing command line if you need to copy all the source code of the members that are listed on the SRCHFOR output listing.

2. You may enter a 'FM IN' (Find Included Members) command on the VIEW listing command line if you need to display a PDS member list panel of the members that are listed on the SRCHFOR output listing. The 'FM' is the short form of the 'FM IN' ocmmand.

3. If a 'FM OUT' (Find Excluded Members) command is entered on the VIEW listing command line, then a PDS member list panel of all the members that are not listed on the SRCHFOR output listing will be displayed.

I.3 The descriptions of the 'Massive Change' function

On the viewed output listing generated by the 'String Search−For Utility' function, suppose you enter an 'ED' command or press the PF4 key while the cursor is still at the command line area, then all of the members listed below the top line of the viewed listing will be edited one by one in an 'Edit Ring' format which allows you to perform a 'Massive Change' function in all edited member files.

You may use a 'CHANGE' edit command in the first edited member to change the searched string to another character string, then press the PF3 key or enter a 'END' command to save the changes, and then the next file will be automatically edited. Now, you may press the PF6 key, i.e. the 'RChange' function key, to repeatedly change the same searched string in all other edited members. This is the so−called 'Massive Change' function. If you want to move onto next file without saving the changes of the currently edited file, simply enter a 'NEXT' command.

If you press the PF4 key instead of the PF3 key, then the change you made will be saved and the previously edited file in the 'Edit Ring' will be edited automatically. In other words, the 'Edit Ring' will be moved backward instead of forward. Similarly, if you enter a 'BACK' command instead of a 'NEXT' command, then the 'Edit Ring' will be moved in backward direction without saving the changes made in the currently edited file.

The short command form of the 'NEXT' command is 'N', and the short command form of the 'BACK' command is 'BA'.

To cancel the 'Massive Change' function in the middle of the process and leave out of the 'Edit Ring', simply enter a 'QQ' (i.e. 'QQUIT') or a 'CAN' (i.e. 'CANCEL') command. Then a message window panel will be popped up to ask you to confirm the cancellation. You may either press the Enter key to confirm it, or press the PF3 key to continue the 'Massive Change' function. At the end of editing the last member file, by pressing the PF3 key can leave out of the Edit Ring also. In other words, this is not a closed ring. It is an 'open ended' ring that allows you to leave the ring when the last file is processed.

Note:

1. The PF4 key on the viewed 'String Search−For Utility' result listing is the function that allows you to perform the 'Massive Change' function in an 'Edit Ring' format. The PF4 key on each edited file in the

'Edit Ring' is a function that is very similar to the 'BACK' command. These two PF4 key functions are completely different. However, both of them are labeled as 'ED' command in the Keylist.

2. This is a very useful utility function provided by this tool package. For example, if you have received a JCL library from someone and need to change all of the Job Account number in each JCL file to your own, then you may use this utility to save your time. The PF4 key method is a lot easier than the 'ED' command method and it is highly recommended.

3. Instead of entering an 'ED' command on the panel command line of the viewed listing, you may also use a 'RING' command. The difference between these two commands is that the 'ED' command will generate an 'open−ended' Edit Ring and the 'RING' command will generate a closed Edit Ring.

4. As you can see that the 'Massive Change' function provided by this tool package requires you to change each member file one by one manually in edit. If you have a lot of member files in a PDS that need to be changed, then this method might take very long time to process. The 'Massive Change' function in batch job is not support by this tool package. To use the 'Massive Change' in batch job, you might take the risk of changing some data strings that you don't want them to be changed. Thus, to use the 'Massive Change' in a batch job is not a good idea and it is not currently supported.

5. On the ISPF option 3.4 data set list panel displayed by using the 'FF' command, it is highly recommended that you should use the 'ED' command instead of the 'E' command on the line command area to edit a PDS library file. The reason is that the 'ED' command can allow you to edit the PDS library file with a PANEL4 panel, on which you may apply the 'SRCH' User−Exit command to perform the 'Extended Search−For', 'Massive Change', and many other functions, and the regular 'E' command does not have such capabilities at all.

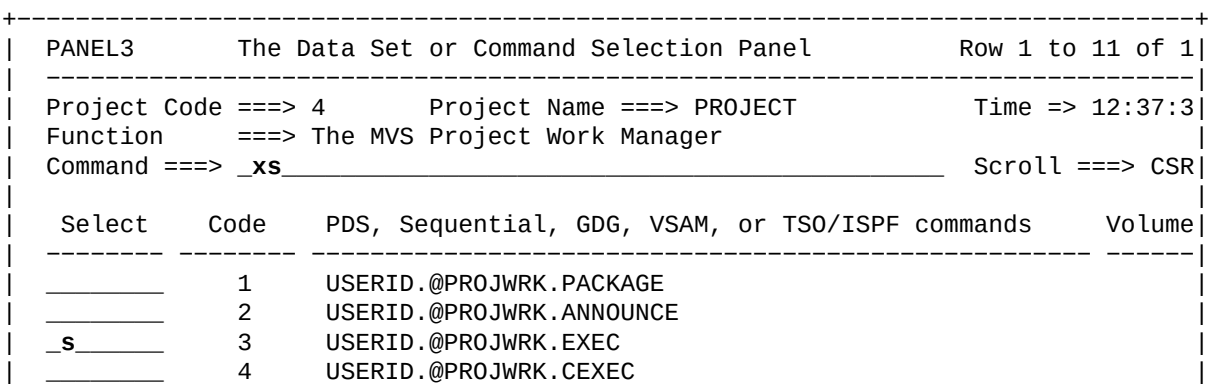
6. If the data set to be edited on the viewed listing is in use by others, then the 'ED' command will fail. In this case, you may use a 'BRW' or or 'VW' command to browse or view the data set instead.

I.4 The descriptions of the 'Extended String Search' function

This tool package has provided another function, i.e. the 'Extended String Search' utility, which is a very powerful tool. This function allow you to perform the 'String Search' process on multiple partitioned and sequential files simultaneously.

On the PANEL3 panel, assume a 'XSRCH' or a 'XS' command is entered on the panel command line, then all the data sets listed on the panel will be selected as the input for the string search function. You may optionally type one or more 'S' selection codes on the PANEL3 panel to select the data sets on the panel when the 'XS' command is entered. The following is the diagram of such an example:

Figure 91. The sample PANEL3 panel with a 'XS' command



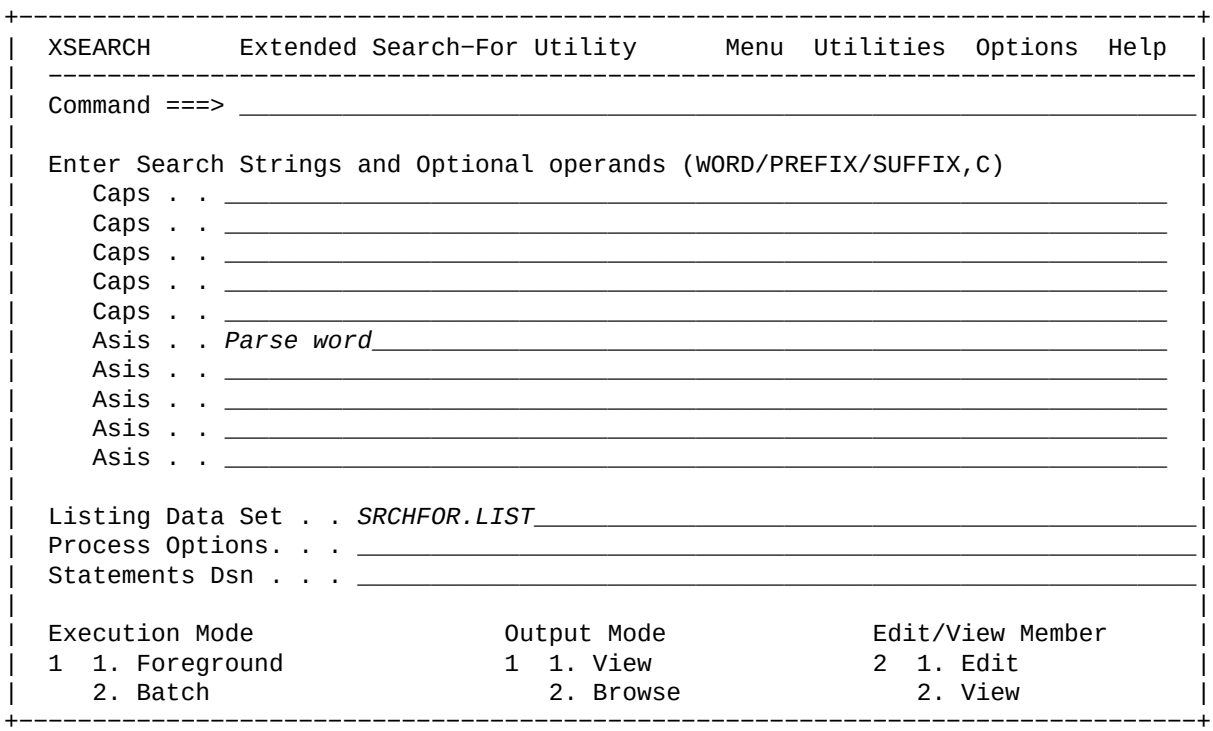
```
|  _________      5     USERID.@PROJWRK.LOAD                                    |
|  _s_______     6     USERID.@PROJWRK.PANELS                                  |
|  _s_______     7     USERID.@PROJWRK.SKELS                                   |
|  _________      8     USERID.@PROJWRK.TABLE                                   |
|  _________      9     USERID.@PROJWRK.DOCUMENT                                |
|  _________     10     USERID.@PROJWRK.LIST                                    |
|  _________     11     USERID.@PROJWRK.XREF                                    |
|  ****************************** Bottom of data ******************************|
|                                                                               |
+-------------------------------------------------------------------------------+
```

The 'XS' command for the 'Extended String Search' function is also be applicable to the LISTA, LISTC, and RECALL command panels. The selection code 'S' can be applied on each of these panels to select the input data sets, which can be either sequential or PDS.

If this command is applied on the ISPF option 3.4 data set listing panel, which is displayed by using a 'FFF' command, then you need to use a 'TSO XSEARCH' command to bring up the 'Extended String Search−For Utility' panel, which will be described in next page. In this case, the selection code 'S' cannot be used on each data set listed on the panel. However, you may still use a 'SEL' command or press the PF11 key to display a 'SELDSN' panel to select the input data sets. The usages of the 'SELDSN' panel will be described later in this document.

After pressing the Enter key on the previous sample PANEL3 panel, the following 'Extended String Search−For Utility' panel will be displayed:

Figure 92. The 'Extended String Search−For' penal similar to ISPF option 3.15



On the 'Extended String Search−For Utility' panel, except the input 'Search String' field has been expanded from five line to ten lines and the input data set field is modified, all the other data fields are identical to the original ISPF option 3.15 panel, and the method of usages of each field still remains the same. For example, you may use a 'F' or 'B' command to execute the string search function in the foreground or batch mode instead of changing the Execution Mode code on the panel.

On the 'Extended String Search−For Utility' panel, you may optionally enter a 'SELECT' or 'SEL' command or press the PF11 key to display a 'SELDSN' panel to choose the members of the selected partitioned data sets for the string search.

Note:

1. If any data set displayed on the PANEL3 panel is neither partitioned no sequential, then it will automatically not selected. If the 'Foreground' Execution Mode is selected, then to save time all the migrated data sets listed on the panel will not be searched. If you want to be sure all the data sets listed on the panel will be searched, then it is highly recommended that you should choose to either type a 'HR' command next to the migrated data set to perform a 'HRECALL' process first and then perform the 'Extended String Search−For Utility' process in 'Foreground' Execution Mode later, or enter a 'B' command to run the 'Extended String Search−For Utility' process in a 'Batch' Execution Mode.

2. On this process panel, you may enter several search string data. If the 'XS string' command instead of the 'XS' command is entered on the PANEL3 panel, then the search data 'string' will be captured as the first search string on this panel. You may press the PF4 key to clean up all the search strings on the panel except the first one.

3. The usages of the search qualifiers, i.e. WORD, PREFIX, SUFFIX, and C, are still the same as the 'SRCH' command.

4. To repeatedly display the viewed output listing on the PANEL3 panel, simply enter a 'XSRCH /' command. On the other panels, you may use either a 'XSRCH' or a 'XSRCH /' (or a 'XS /') command to view this output listing.

5. The 'XS' command can be entered on the PANEL4 panel command line also. You may enter a 'XS string' command on the PANEL4 panel to search for the character string 'string' from all PDS member files. By entering a 'XS /' command you may view the output listing again.

6. Similarly, you may also use a 'XS //' command to view any of all 'XS' command generated output listing files. There is no difference of the output listing file names displayed on the selection panels created by the 'SRCH //' or the 'XS //' command.

7. On the PANEL4 panel, if you need to search few members on the same panel screen of the PANEL4 panel, then you are allowed to type few 'S' codes next to the members before pressing the Enter key on the 'XS' command. If the members you want to search are not on the same panel screen of the PANEL4 panel, then you need to enter a 'XS' command and press the Enter key to display the 'Extended String Search−For Utility' panel first, and then enter a 'SEL' command or press the PF11 key to display a PDS Members selection panel to select the members.

8. On the RECALL command panel, you may also enter a 'XS' command and type several 'S' code next to the data entries on the panel to select several PDS member files to perform the 'Extended String Search−For Utility' function.

9. Both of the 'SRCH' and 'XS' commands can be used in the edited PDS member file as the Edit Macro commands. When these two edit commands are used in an edited sequential file, then they will be converted to 'FFIND' edit command.

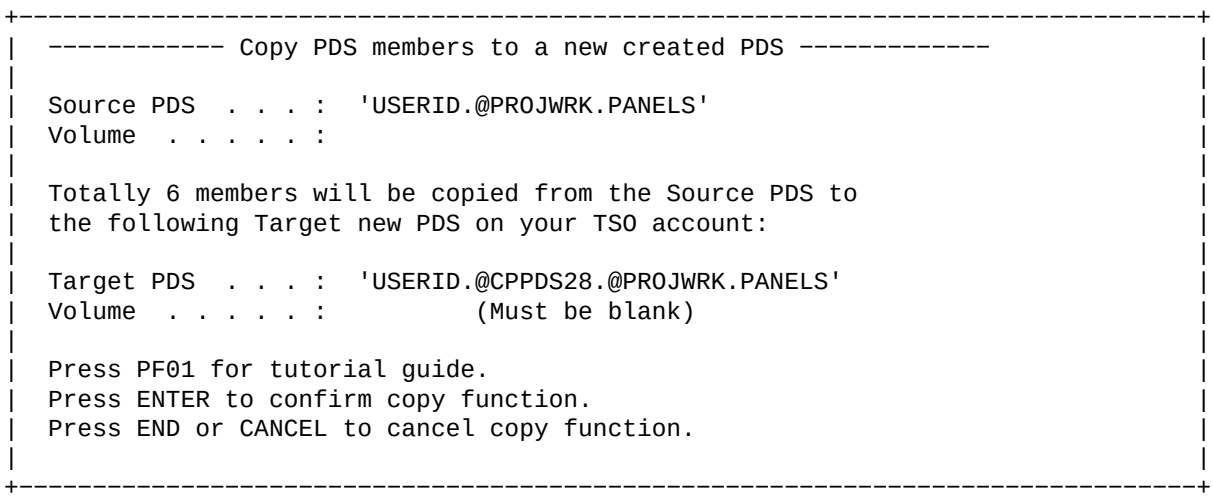
I.5 The descriptions of a special 'CPY2PDS' command function

On the sample 'String String Search−For Utility' generated result listing, which has been shown in the previous section, it contains six PDS members names, i.e. '@PRJHLP2', '@PRJTUTD', 'CPY2PDSH', 'LISTAHLP', 'LISTCHLP', and 'PNL3CMDL' in the 'USERID.@PROJWRK.PANELS' library. All these members contain the searched character string: 'string search'.

Instead of using the PF4 key to edit each PDS member file, you may enter a 'CPY2PDS' (or 'CP') command on the viewed panel command line to copy all these member files, which contain the searched string data, from the PANELS library to a new created PDS file.

When a 'CP' command is entered on the viewed listing panel command line, the following window panel will be displayed:

Figure 93. The sample 'CPY2PDS' command panel



To continue this 'CP' command process, press the Enter key. If you want to abort this process, simply press the PF3 or PF12 key.

In the above diagram, the '@CPPDS28' in the middle of the target PDS file name is this tool generated code. If this PDS already exists, it will be deleted first and then this tool will create a new PDS with the same file name. All the six PDS members obtained from the viewed output listing will be copied to this new PDS after the 'CP' command is executed. This new PDS will be created on your TSO account.

Note that the 'CP' command works only for the PDS files only. Thus, if the viewed output listing is generated by the 'Extended String Search−For Utility' and it contains the searched results of both PDS and sequential files, then the 'CP' command will ignore all sequential file names on the listing.

After the 'CP' command process is completed, on any process panel you may enter a 'FFF' command to display a 'DSLISTF' panel and then display the ISPF option 3.4 data set list panel of your TSO account. Then you may type a 'PP' command next to the new created PDS and print the entire PDS at a printer for your own reference.

If the viewed output listing contains more than one PDS, then a 'PDS Selection Panel' will be displayed first for you to select the PDS one by one for the 'CP' command process.

I.6 The advantages of using the 'Extended String Search−For' function

The 'Extended String Search−For Utility' function is similar to the ISPF option 3.15 utility function. There are several advantages of using this function, which are:

1. If you want to search for the data strings from a single data set, it is not restricted to use only the 'SRCH' command. You may use the 'XS' command to search for the data strings from a single input data set also.

2. On the original ISPF option 3.15 utility panel, you need to obey certain rules when you concatenate several PDS files together for a string search. The 'Extended String Search−For Utility' function provided by this tool package does not have such limitation. You may select any type of PDS files together on the PANEL3 panel or other panels when you need to use this function.

3. On the original ISPF option 3.15 utility panel, the total number of available input file fields is very limited, and it is very awkward and very time consuming to type in the long and tedious data set names on that panel each time. However, if you use the 'Extended String Search−For Utility' function provided by this tool package, then you may very easily select as many input files from the panel for the string search as you want.

4. In the output listing generated by this function, the 'SRCH FOR:' data set names code which was originally on the top of the 'Extended String Search−For Utility' output listing, have all been moved to be attached to each member name line so that you may very easily find out which input PDS that member file belongs to.

5. If you search for the data string from the members of an uncataloged PDS and when the search result listing is displayed in a viewed listing, then you cannot use the 'ED' command or the PF4 key to edit the members listed on the output listing if it is produced by the original ISPF option 3.15 because the 'Data set not found' error message will be prompted. However, if you choose to run the string search by using this tool, then it will modify the output listing and append the Volume Serial number of the uncataloged data set to the 'SRCH DSN:' code, which allows you to apply the 'ED' command or press the PF4 key to edit the selected member files listed on the viewed listing.

6. If the search results contains a lot of data, then the ISPF 3.15 utility may not be able to run successfully in foreground process due to the B37 abend problem, and it might have S322 abend problem in batch process unless you modify the JCL first before running the job. By using this extended string search function, you don't need worry about these kinds of problems.

I.7 The Summary of the 'SRCH' and 'XSRCH' functions

The 'SRCH' command can be used to search the data string from a single data file only. Thus, the 'SRCH' command entered on PANEL3 panel command line area is invalid and it will automatically be converted to the 'SRCH /' command to display the previous search result listing. The 'SRCH' command on PANEL3 panel should be typed next to a single PDS data set name to search for the data string in the members of the selected PDS. The 'SRCH' command can be entered on the PANEL4 panel command line area to search for the data string in a PDS also.

On the 'String String Search−For Utility' panel you may press the PF11 key to display a PDS member selection list panel and type few 'S' code to select the members before the searching so that only the selected members in the single PDS will be searched.

On any process panel you may always type a 'SRCH /' to display the previous search result listing. The '/' code can be omitted if the 'SRCH' command is entered at some panel location, such as the PANEL3 panel command line area, from where this tool knows that it is impossible for the users to search for the data strings at that place by using a 'SRCH' command.

The 'XSRCH' command is valid when it is entered on PANEL3 panel command line area. It does the extended search of the data string in all the PDS or sequential files listed on the PANEL3 panel. On the PANEL3 panel you may type few 'S' codes to select the data set before the extended string search, or you may press the PF11 key on the 'Extended String Search−For Utility' panel to select few data set on the PANEL3 panel before the search. The 'XSRCH /' command can be used to display the previous extended search result listing. The short form of the 'XSRCH' command is the 'XS' command. Note that the 'XS' command can be typed next to a single PDS on the PANEL3 panel or entered on the PANEL4 panel command line area just like the 'SRCH' command. This command can also be entered on the RECALL command panel with few 'S' code to selected the searched files.

On the viewed result listing generated from either the 'SRCH' or 'XSRCH' command you may press the PF4 key to directly edit the PDS member or the sequential file that contains the searched data string, then you may use the PF5 to find the data and use the PF6 to change the data. This is the so−called 'Massive Change' function.

Appendix J. The usages of the FINDMEM command

J.1 The 'FINDMEM' command function

The 'FINDMEM member' command is another very useful utility function provided by this tool package. Suppose that you need to search for a member name from a bunch of PDS library files, then by using this command function you may save a tremendous amount of time on searching each individual file by hand. The short form of the 'FINDMEM' command is 'FM'.

Let's observe the following sample PANEL3 panel screen. Assume that a 'fm project' command, where the 'project' is just a member name that you want to search for, is entered on this panel which is as shown:

Figure 94. The sample PANEL3 panel with a 'FM PROJECT' command

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel          Row 1 to 11 of 1|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 4       Project Name ===> PROJECT            Time => 12:37:3|
|  Function     ===> The MVS Project Work Manager (Enter a 'PH' for help)       |
|  Command ===> __fm project_____________________________________  Scroll ===> CSR |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands     Volume|
|  -------- -------- ------------------------------------------------- ------  |
|  _________     1     USERID.@PROJWRK.PACKAGE                                  |
|  _________     2     USERID.@PROJWRK.ANNOUNCE                                 |
|  _________     3     USERID.@PROJWRK.EXEC                                     |
|  _________     4     USERID.@PROJWRK.CEXEC                                    |
|  _________     5     USERID.@PROJWRK.LOAD                                     |
|  _________     6   - USERID.@PROJWRK.PANELS                                   |
|  _________     7     USERID.@PROJWRK.SKELS                                    |
|  _________     8     USERID.@PROJWRK.TABLE                                    |
|  _________     9     USERID.@PROJWRK.DOCUMENT                                 |
|  _________    10     USERID.@PROJWRK.LIST                                     |
|  _________    11     USERID.@PROJWRK.XREF                                     |
|  ****************************** Bottom of data ******************************|
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

After pressing the Enter key the following Find PDS Members Utility panel will be displayed:

Figure 95. The sample Find PDS Members Utility penal

```
+-------------------------------------------------------------------------------+
|                         Find PDS Members Utility                              |
|  ---------------------------------------------------------------------------- |
|  Command ===> _____________________________________________________________  |
|                                                                               |
|  Specify 1 or more Search Members below:                                      |
|    ==> PROJECT_____________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
|    ==> _____________________________________________________________________  |
```

```
|    ==> _____________________________________________________________________________|
|    ==> _____________________________________________________________________________|
|                                                                                      |
|  Listing Data Set . . . @FINDMEM.LIST_______________________________________________|
|                                                                                      |
|  Execution Mode        Output Mode                                                   |
|  2  1. Foreground      1  1. View                                                    |
|     2. Batch              2. Browse                                                  |
|                                                                                      |
+--------------------------------------------------------------------------------------+
```

Note:

1. On the PANEL3 panel you may type the 'S' code to select several PDS files for the member search which is very similar to the 'Extended String Search' function.

2. If any data set displayed on the PANEL3 panel is not PDS, then it will automatically not selected. If the 'Foreground' Execution Mode is selected on this panel, and if any selected PDS on the PANEL3 panel has been migrated, to save your time those migrated data sets will not be searched. Thus, it is highly recommended that you should choose the 'Batch' Execution Mode on this panel.

   On the 'Find PDS Member' panel, you may enter a 'F' or 'B' command to process the member search function in foreground or batch mode instead of altering the 'Execution Mode' code on the panel. By entering a 'F' or 'B' command, the original 'Execution Mode' code on the panel will not be changed.

3. On this process panel, you may enter several searched member data. The member name in the 'FM member' command will be captured as the first search member on this panel. You may press the PF4 key to clean up all the search members on the panel except the first one.

4. The usages of the search qualifiers, i.e. WORD, PREFIX, and SUFFIX are still the same as the 'SRCH' command. Note that the 'C' search qualifier is not valid in this function.

   For example, if the 'FM PROJ PREFIX' command instead of the 'FM PROJECT' command is entered, then all the members in the PDS library files whose first four characters match the 'PROJ' character string will be displayed. In this case, more PDS members are expected to be found in the PDS library files displayed on the PANEL3 panel.

5. The 'FM member' command not only works on the PANEL3 panel, but also works on the 'LISTA' and 'LISTC' command panels.

6. If the 'FM member' command is entered on the ISPF option 3.4 data set list panel, which is displayed by using a 'FFF' command, then the command format should be 'TSO FINDMEM member' instead of 'FM member'. In this case, you cannot type the 'S' code to select the PDS on the ISPF option 3.4 data set list panel when the 'TSO FINDMEM' command is entered.

   However, on the 'FINDMEM' process panel, you may always enter a 'SELECT' or 'SEL' command or press the PF11 key to display a 'SELDSN' panel and type the 'S' code to select the PDS for the member search.

7. To repeatedly display the 'FINDMEM' viewed output listing file, i.e. the FINDMEM.LIST file, on the PANEL3 panel, simply enter a 'FM /' command. On the other panels, you may either use a 'FM' or a 'FM /' command to view this output listing.

8. If you have used the 'FM' command to perform the 'PDS Member Search' functions many times, and each time you use different output listing file names, such as FINDMEM.LIST2, or FINDMEM.LIST3, etc., then you may use a 'FM //' instead of a 'FM /' command to display all of

these files on a selection panel to select one and view its contents.

J.2 The 'ED' command applied on the FINDMEM output listing

After the execution of this 'FINDMEM' command is completed, the following viewed listing will be displayed, which indicates that the member named 'PROJWRK' has been found in four PDS library files:

Figure 96. The sample FINDMEM output listing

```
------------------------------------------------------------------------------
VIEW      USERID.@FINDMEM.LIST                              Columns 00001 00072
Command ===> ed_____________________________________________ Scroll ===> CSR
****** ***************************** Top of Data ****************************
000001 The Member PROJWRK  was found in 'TOOLKIT.@PROJWRK.CEXEC'
000002 The Member PROJWRK  was found in 'USERID.@PROJWRK.EXEC'
****** **************************** Bottom of Data ***************************



------------------------------------------------------------------------------
```

On this viewed listing, you may enter an 'ED' command, which is shown in the above diagram, and position the cursor on a data line and press the Enter key to edit the selected PDS library file. Instead of using the 'ED' command, you may simply position the cursor on a data line and press the PF4 key to edit the selected PDS library file. The PF4 key method is a lot easier to use and it is highly recommended.

Appendix K. The usages of the WORDPRF command

K.1 The 'WORDPRF' command function

The "WORDPRF" command can be used for the word spelling check of just few words or for the word proofreading of the paragraphs or a block of code lines of the SCRIPT files. The short form of the "WORDPRF" command is the "W" command, which can be invoked as either the TSO command or the edit command. In edit, you may also use the "W" line command or a pair of "WW" line command for the word proofreading of a paragraph or a block of code lines.

K.2 The method of usages

Enter "W" command at the COMMAND line and press Enter key, then the word proofreading can be performed for the entire SCRIPT file. If you just need to proofread one paragraph, then simply type a "C" line command at the first line of that paragraph. If you need to proofread a block of SCRIPT code lines, then you may type a pair of "CC" line command to cover the range of the selected code block.

During the words proofreading, if there is any word has been corrected, then you must type a "SAVE" edit command to save the changed temporary work file before pressing the PF3 key to exit the PROOF work session. Else, all the changed data will be lost.

Instead of using a "W" edit command with a "C" line command or a pair of "CC" line command, you may also use a single "W" edit line command or a pair of "WW" edit line command to perform the word proofreading of a paragraph or a block of SCRIPT code lines also.

In edit command line or on any process panel command line you may type a "W" command with few words (maximum 5 words) for spelling check. In edit, if you type a "W" edit command or a "W" line command and place the cursor at a word in the edit file area, then that word will be picked up from the edit file screen for the spelling check.

Note:

1. To perform the word proofreading of the entire SCRIPT file, instead of using a "W" edit command without typing any "C" or a pair of "CC" line command, you may use a "PROOF" edit line command also. Note that the "PROOF" can also be used as a TSO command to perform the word proofreading of the selected SCRIPT file, but the "WORDPRF" or "W" command can only be used in edit file to proofread the entire file.

2. If you cannot be sure the spelling of a word is correct or not, then you may type a "W" or "WORD" command in edit or on any process panel to verify it. For example, you may enter a "W CANCELLED" and a "W CANCELED" commands in edit to verify which of these two words is correct. After verifying it, you will find that the spelling of both of these two words are actually correct.

Appendix L. The usages of the CODEDIFF command

L.1 The 'CODEDIFF' command function

The "CODEDIFF" command can be used to compare two files in the batch job and it will create a result file in the side−by−side source code listing format. The short form of the "CODEDIFF" command is the "CDIFF" command.

L.2 The method of usages

Enter "CDIFF" command at the COMMAND line area in edit, or on the PANEL3 or PANEL4 panel command line area, or on the PANEL3 panel command with a "S" code typed next to a data set name, or on the PANEL4 panel with a "S" code typed next to a PDS member file, and then press the Enter key.

On the PANEL3 or PANEL4 panel, after you enter the "CDIFF" command on the panel command line, you may type two "S" codes to selected two files at the same time if both files are on the same PANEL3 or PANEL4 panel screen.

After the Enter key is pressed, a 'CODEDIFF' utility panel will be displayed, on which the selected data set names will be shown. Please press the PF1 key on that panel for more detail information about the usages of that panel.

When the setup of the 'CODEDIFF' utility panel is completed, after pressing the Enter key again, a Two−File comparison batch job will be submitted.

Note: The two−file comparison function is performed in batch mode, and it requires the 'OUTPUT' destination code to be defined in the JOBCARD setup panel. Please enter a "JOB ?" command for more detail information.

Appendix M. The ISPF window panel facilities

This tool package has provided several very useful ISPF window panel facilities, which are the 'MSGBOX', 'ITEMBOX', 'MENUBOX', and 'HELPBOX'. The following few sections contain the descriptions the rules and usages of each facility.

M.1 How to use the 'MSGBOX' utility to display a message box panel

If you would like to write a REXX program to display few messages on the ISPF screen in a message box format, then you may use the 'MSGBOX' utility routine as the interface. The following is a very simple example of this REXX Caller Routine:

Figure 97. The sample MSGBOX Caller Routine

```
/* REXX */
'NEWSTACK'
data = '#This is a message'
Queue data
'ISPEXEC SELECT CMD(%MSGBOX)'
'DELSTACK'
Exit
```

The data field in the above example is a regular message code line. You may specify as many as 18 message code lines in a REXX Caller Routine.

In the data field, you may also specify the following three types of special code lines:

```
data = 'TITLE=%This is a title'
data = 'HEADING=\This is a message heading'
data = 'COL=15'
data = 'ROW=4'
data = 'WIDE=50'
```

where the 'TITLE=' code line will display a message title on the message box, the 'HEADING=' code line will display a highlighted heading on the panel, the 'COL=' and 'ROW=' code lines can be used to determine where to display the MSGBOX on the screen, and the 'WIDE=' code line can set the width of the message window box.

The following are the restrictions for the MSGBOX utility:

1. The total number of regular message code lines is 18. If more than 18 message code lines are passed into MSGBOX routine, an error message will be issued.

2. If the length of a message code line is longer than 70 characters, then it will be truncated. You may specify a 'WIDE=' code line to setup the MSGBOX window width to certain value if all the message

code lines are very short.

3. The length of the TITLE cannot exceed 50 characters. Else it will be truncated. Only one TITLE code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the TITTLE line will be converted to the double quote.

   The length of the HEADING cannot exceed 65 characters. Else it will be truncated. When it is displayed on the MSGBOX, it will be highlighted. Only one HEADING code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the HEADING line will be converted to the double quote.

   The 'HEADING=' code line can display a highlighted heading on the MSGBOX panel either in YELLOW, RED, or TURQ color depending upon the first character on the heading code line. If the first character is '\' then it will be in YELLOW color, if it is '¬' then it will be in RED color, and if it is 'then it will be in TURQ color. The default is highlighted with the YELLOW color.

4. If the COL code line is not specified, the default column number will be calculated based on the maximum length of the message code lines. It will figure out the column position so that the Message Box will be displayed at the center of the ISPF screen.

5. If the ROW code line is not specified, the default row number will be calculated based on the total number of code lines passed in and the size of the ISPF screen. It will figure out the row position so that the Message Box will be displayed at the center of the ISPF screen.

6. The vertical bar character '|' is a reserved code and it cannot be used in the tutorial code lines. To specify a vertical bar character in the tutorial code line, you may use a 'varaible instead. Similarly, you may use a 'variable to represent a '%' code, use a 'variable to represent a '#' code, use a 'variable to represent a '/*' code, use a 'variable to represent a '*/' code, use a 'variable to represent a '{' code, use a 'variable to represent a '}' code, use a 'variable to represent a '\' code, use a 'variable to represent a '^' code, and use a 'variable to represent a '$' code.

   For example, in the tutorial guide if you want to describe the code line such as "/* REXX */" on the tutorial box panel, then you must write the code line in the format of "REXX instead because all the tutorial code lines are bounded in a single comment block.

You may find out how to use this MSGBOX function from a sample test routine named '@MSGBOX', which is in the 'TOOLKIT.@PROJWRK.CEXEC' library. You may type a 'RUNX' command next to this REXX program to test it out. Please see the prolog in that routine for more information.

The following is a list of colors defined for the message code lines in the MSGBOX panel internally:

Figure 98. The attribute code lines defined on the MSGBOX panel

```
)ATTR
%  TYPE(TEXT) COLOR(WHITE)
#  TYPE(TEXT) COLOR(YELLOW)
~  TYPE(TEXT) COLOR(TURQ)
{  TYPE(TEXT) COLOR(GREEN)
}  TYPE(TEXT) COLOR(RED)
```

M.2 How to use the 'ITEMBOX' utility to display an item selection panel

If you would like to write a REXX program to display a list of frequently used data set names or any frequently referenced line items so that you may use the CUT and PASTE function to get the data string and paste it to any ISPF application panels, then you may use the 'ITEMBOX' utility routine as the interface. The following is a very simple example of this REXX Caller Routine:

Figure 99. The sample ITEMBOX Caller Routine

```
/* REXX */
'NEWSTACK'
line.1 = '  This is item1'
line.2 = '  This is item2'
line.3 = '  This is item3'
pickone = 'PICKONE=Y'
itmtitle = 'TITLE=Select a line item'
'NEWSTACK'
Queue itmtitle
Queue pickone
Do i = 1 to 3
   Queue line.i
End
'ISPEXEC SELECT CMD(%ITEMBOX)'
xrc = rc
'DELSTACK'
If xrc ^= 0 then
   Exit
'ISPEXEC VGET (TOTITEM)'
If totitem = '' | totitem = 0 then
   Exit
Do kk = 1 to totitem
   Interpret "'ISPEXEC VGET (ITM"kk")';" ,
      "item."kk "= itm"kk
   Say item.kk
End
```

The data line field in the above example contain the regular item data strings. You may specify as many item data lines in a REXX Caller Routine as you like. If more than 18 item data lines are specified, then it will make the displayed Item Selection panel scrollable.

Note: In the above example, if you just want to display the Item Box and use the Cut/Paste method to fetch the item data, then you don't need to write the Do−loop to fetch the selected item data using the VGET command.

In the data field, you may also specify the following four types of special code lines:

```
line = 'TITLE=%This is a title'
line = 'HEADING=\This is the heading'
line = 'COL=5'
```

```
line = 'ROW=10'
line = 'PICKONE=N'
line = 'SEQNUM=N'
line = 'PRESEL=itemcode'
line = 'PNLCMD=cmd1/n1 cmd2/n2'
line = 'PDS='pdsdsn
line = 'HELP=This is the tutorial of ...'
line = 'HELP=so and so...'
```

where the 'TITLE=' code line will display a Item Box title on the Selection Box, the 'HEADING=' code line will display a highlighted heading on the panel, the 'COL=' and 'ROW=' code lines can be used to determine where to display the ITEMBOX on the screen, the 'PICKONE=Y' or 'PICKONE=N' code determines more than one item can be selected or not, and the 'PDS=' code provides the PDS data set name if the listed items are the member names of a PDS. On the displayed Item Box, you need to type a 'S' code to select the items. After the data items are selected, you need to use a Do−loop in the REXX program to fetch the item data as shown in the above example, where the data item can be either the data set name, the PDS member name, the command code, or something else. In the 'PICKONE=N' mode, you may type in a pair of 'SS' code to select a range of items from the same Item Box screen, or press the PF11 key or enter a 'SELDSEL' command to select all items or deselect all items on the panel. If you need to add the item sequence number to the return data field, then you may specify the 'SEQNUM=Y' code. The default of 'SEQNUM=' is 'N'. The 'PRESEL=' code define those items which will be selected as default. The 'PNLCMD=' code defines the valid panel command list to be passed to the REXX Caller Routine. The 'HELP=' code lines can be used to create your own personal tutorial guide for the ITEMBOX. If it is not specified, the default ITEMBOX tutorial guide will be used.

The following are the restrictions for the ITEMBOX utility:

1. If the length of a item code line is longer than 65 characters, then it will be truncated.

2. The length of the TITLE cannot exceed 50 characters. Else it will be truncated. Only one TITLE code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the TITLE line will be converted to the double quote.

3. The length of the HEADING cannot exceed 65 characters. Else it will be truncated. When it is displayed on the ITEMBOX, it will be highlighted. Only one HEADING code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the HEADING line will be converted to the double quote.

   The 'HEADING=' code line can display a highlighted heading on the ITEMBOX panel either in YELLOW, RED, or TURQ color depending upon the first character on the heading code line. If the first character is '\' then it will be in YELLOW color, if it is '^' then it will be in RED color, if it is '|' then it will be in TURQ color, and if it is '!' then it will be in WHITE color. The default is highlighted with the YELLOW color.

4. If the COL code line is not specified, the default column number will be calculated based on the maximum length of the item code lines. It will figure out the column position so that the ITEMBOX will be displayed at the center of the ISPF screen.

5. If the ROW code line is not specified, the default row number will be calculated based on the total number of code lines passed in and the size of the ISPF screen. It will figure out the row position so that the ITEMBOX will be displayed at the center of the ISPF screen.

6. The PICKONE option code must be either Y or N, where Y means you may only use only one item from the Selection Box, and N means you may use the 'S' code to select more than one item from the Selection Box. If this option is not specified, the default is restricted to select only one item.

You may specify 'PICKONE=X' to bypass the selecting of an item. When you press the Enter key without selecting any item, the displayed ITEMBOX will be automatically terminated.

7. The SEQNUM option code must be either Y or N, where Y means that the sequence number of the selected items will be added as the first code in the returned data field in the ITEM1, ITEM2, etc. code. The default of this option is 'N'.

8. The PRESEL option code specify those item code lines that will be pre−selected.

9. The PNLCMD option code specify the valid command list to be passed to the REXX Caller Routine. For example, the 'PNLCMD=EDIT,1 BROWSE,3 VIEW,2' option means that you may enter an 'E', 'BRO', or 'VI' command on the ITEMBOX panel and the command code will be passed to your REXX Caller Routine. Note that if the 'PNLCMD=BROWSE,1' option code is specified, then the 'B' will be a valid command. The 'PNLCMD=EDIT' option means that the 'EDIT' but not the 'E' command is the only valid command.

10. If the items listed on the ITEMBOX are the member names of a PDS, then you need to provide a 'PDS=' code with the PDS data set name. Otherwise, when you type a 'E', 'B', or 'V' command code to edit, browse, or view the member file, an error message will be issued.

11. If the input line does not have any control keyword, the it is assumed to be the ITEM code line. The ITEM code lines can be a data set name or a PDS member name. In either case, you may attach a '/V=vol' code to define its volume serial number if the data set is not cataloged.

12. The 'HELP=' code line is optional. More than one such code line can be specified for a Item Box. Each 'HELP=' code line should not be more than 75 characters long. If the on−line tutorial guide can be accessed from a PANEL library, then you need to specify a 'TUTORIAL=' code line, such as 'TUTORIAL='USERID.@PROJWRK.PANELS'.

13. The vertical bar character '|' is a reserved code and it cannot be used in the tutorial code lines. To specify a vertical bar character in the tutorial code line, you may use a 'varaible instead. Similarly, you may use a 'variable to represent a '%' code, use a 'variable to represent a '#' code, use a 'variable to represent a '/*' code, use a 'variable to represent a '*/' code, use a 'variable to represent a '{' code, use a 'variable to represent a '}' code, use a 'variable to represent a '\' code, use a 'variable to represent a '^' code, and use a 'variable to represent a '$' code.

    For example, in the tutorial guide if you want to describe the code line such as "/* REXX */" on the tutorial box panel, then you must write the code line in the format of "REXX instead because all the tutorial code lines are bounded in a single comment block.

The following is a list of colors defined for the text code lines in the ITEMBOX panel internally:

Figure 100. The attribute code lines defined on the ITEMBOX panel

```
)ATTR
%  TYPE(TEXT) COLOR(WHITE)
#  TYPE(TEXT) COLOR(YELLOW)
~  TYPE(TEXT) COLOR(TURQ)
{  TYPE(TEXT) COLOR(GREEN)
}  TYPE(TEXT) COLOR(RED)
```

On the ITEMBOX panel you may enter a 'S n', 'D n', 'E n', 'B n', or 'V n' type of command, where 'n' is the selection code of an item to select, deselect, edit, browse, or view the selected item, if the selected item is a

data set name or PDS member name. If it is a PDS member name, be sure that the 'PDS=' option with a PDS data set name is specified.

Instead of using the ITEMBOX panel command, you may also type a 'S', 'D', "E', 'B', or 'V' line command next to an item on the panel. A pair of 'SS' line command can select several items and a pair of 'DD' line command can deselect several selected items simultaneously. When the cursor is placed on the panel command line area, you may press the PF11 key to select or deselect all items on the panel. If the cursor is placed at the line command area of an item when the PF11 key is pressed, then only one item, which is located by the cursor, will be selected or deselected.

The 'S n' panel command and the 'S' line command can be omitted if the cursor is placed next to the nth item on the ITEMBOX panel when the Enter key is pressed. By doing this, you don't need to type any 'S' command code to select an item. p.If the ITEMBOX panel allows you to select multiple items, then after making several selections you need to press the PF3 key to select the items. To cancel the selection, you may press the PF12 key.

Before you edit, browse, or view a file, you may type a 'FF' command next to the data set name on the ITEMBOX panel to check from an ISPF option 3.4 type of data set name list panel to find out if the file is valid or if it has been migrated.

You may find out how to use this ITEMBOX function from few sample test routines named '@ITEMBOX', '@ITEMBO2' and '@ITEMBO3', which are in the 'TOOLKIT.@PROJWRK.CEXEC' library. You may type a 'RUNX' command next to each REXX program to test them out. Please see the prolog in each routine for more information. After a Item Seleciton panel of this sample program is displayed, you may press the PF1 key to see more information of how to select the items from the Item Box.

When you edit a PDS member file on the PANEL4 panel, on the edit command line you may type a 'GET /' or 'G /' edit command to display a scrollable window panel of all the member names of the PDS. On that panel you may type a 'S' code to copy that PDS member to the edited file, or type a 'E', 'B', or 'V' code to edit, browse, or view the selected PDS member file. The 'G /' command is an example of the application of the 'ITEMBOX' utility.

M.3 How to use the 'MENUBOX' utility to display a menu selection panel

If you would like to write a REXX program to display an ISPF window panel just like one of the ordinary process panels and modify the input data you have selected, then you may use the 'MENUBOX' utility routine as the interface. The following is a very simple example of this REXX Caller Routine:

Figure 101. The sample MENUBOX Caller Routine

```
/* REXX */
Arg dsname
'NEWSTACK'
If dsname = '' then
   Do
      Say 'Input file not specified.'
      Exit
   End
line = '44,Please fill in the data set name:\'dsname
Queue line
totline = 1
```

```
'ISPEXEC SELECT CMD(%MENUBOX)'
xrc = rc
'DELSTACK'
If xrc ^= 0 then
   Exit
Do kk = 1 to totline
   Interpret "'ISPEXEC VGET (CODE"kk")';" ,
      "code."kk "= code"kk "; upper code."kk
   Say code.kk
End
```

The data line field in the above example contain several code fields separated by the delimiters of comma (,) and the backslash code (\). In this example, the code '44' means that the length of the 'dataset' can be maximum up to 44 characters. The text code after the comma (,) is the description of the menu code entry, which cannot be more than 60 characters long. On the input data line it must contain a backslash code (\) or a plus sign (+), then followed by the menu code name. Both of the menu text field and the menu code field are optional, but they cannot be both empty. For example, the following are the valid cases of the input data lines:

```
line = '44,\'dataset
```

In this case, it is recommended to use the 'TITLE=' line for the menu description.

```
line = '44,Enter a data set name:\'
```

In this case, the menu text field on the MENUBOX is empty.

```
line = '44,Enter a data set name:\\'daname
```

In this case, a blank line will be inserted in between the menu description line and the menu code entry line.

```
line = '3,Type Y or N and press Enter key:+'yesno
```

In this case, the menu text and menu code are displayed at the same code line on the screen of the menu box. The 'yesno' variable can be maximum up to 3 characters.

```
line = '3,Type Y or N:+'yesno'-(Default=Y)'
```

In this case, the menu text and menu code are not only displayed at the same code line on the screen of the menu box, but a remarks code (Default=Y) has also been added to the same code line.

```
line = '3,Type Y or N:^yesno+'yesno'-(Default=Y)'
```

In this case, you may specify a 'CSRPOS=' to place cursor to the data field defined after the '^' sign.

These are the regular MENU type of code lines. In the input data lines, you may also specify the following few types of special code lines:

```
line = 'TITLE=This is title'
line = 'HEADING=This is the heading'
line = 'TEXT=~This is text line 1'
line = 'TEXT=~This is text line 2'
line = 'COL=15'
line = 'ROW=4'
line = 'PFKEYS=Y'
line = 'CSRPOS=FIELD'
line = 'HELP=This is the tutorial of ...'
line = 'HELP=so and so...'
```

where the 'TITLE=' code line will display a Menu Box title on the displayed panel, the 'HEADING=' code line will display a highlighted heading on the panel, the 'TEXT=' code lines can be used to display more menu descriptions, the 'COL=' and 'ROW=' code lines can be used to determine where to display the MENUBOX on the screen, and the 'HELP=' code lines can be used to create your personal tutorial guide for the MENUBOX. If not specified, the default MENUBOX tutorial guide will be used.

The following are the restrictions for the MENUBOX utility:

1. If the length of a menu code line is longer than 75 characters, then it will be truncated.

2. The length of the TITLE cannot exceed 50 characters. Else it will be truncated. Only one TITLE code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the TITLE line will be converted to the double quote.

3. The length of the HEADING cannot exceed 65 characters. Else it will be truncated. When it is displayed on the MENUBOX, it will be highlighted. Only one HEADING code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the HEADING line will be converted to the double quote.

   The 'HEADING=' code line can display a highlighted heading on the MENUBOX panel either in YELLOW, RED, or TURQ color depending upon the first character on the heading code line. If the first character is '\' then it will be in YELLOW color, if it is '^' then it will be in RED color, and if it is '°' then it will be in TURQ color. The default is highlighted with the YELLOW color.

4. If the COL code line is not specified, the default column number will be calculated based on the maximum length of the item code lines. It will figure out the column position so that the MENUBOX will be displayed at the center of the ISPF screen.

5. If the ROW code line is not specified, the default row number will be calculated based on the total number of code lines passed in and the size of the ISPF screen. It will figure out the row position so that the MENUBOX will be displayed at the center of the ISPF screen.

6. The 'PFKEYS=' code line is optional. The valid code of this option is 'Y' or 'N'. The default is 'N'. If the 'Y' code is specified, whenever a PF key other than the PF1, PF2, PF3, PF9, and PF12 is pressed, you may get the PF key code from the 'ZCMD' variable in the Caller Routine by using the 'ISPEXEC VGET (ZCMD)' command.

7. The 'CSRPOS=' code line is optional. The option works only if the is input data line contains a '^' sign followed by the data field and then followed by a '+' sign with the menu data.

8. The 'TEXT=' code line is optional. More than one such code line can be specified for a Menu Box. Each 'TEXT=' code line should not be more than 60 characters long. The TEXT type of code lines always appear on the top of the MENUBOX screen. The sequence of the 'TEXT' type of code lines and the regular 'MENU' type of code lines is very important. The code lines displayed on the MENUBOX screen will be based on the sequence of these two types of code lines specified in the REXX Caller Routine.

9. The 'HELP=' code line is optional. More than one such code line can be specified for a Item Box. Each 'HELP=' code line should not be more than 75 characters long. If the on−line tutorial guide can be accessed from a PANEL library, then you need to specify a 'TUTORIAL=' code line, such as 'TUTORIAL='TOOLKIT.@PROJWRK.PANELS'.

10. The vertical bar character '|' is a reserved code and it cannot be used in the tutorial code lines. To specify a vertical bar character in the tutorial code line, you may use a 'varaible instead. Similarly, you may use a 'variable to represent a '%' code, use a 'variable to represent a '#' code, use a 'variable to represent a '/*' code, use a 'variable to represent a '*/' code, use a 'variable to represent a '{' code, use a 'variable to represent a '}' code, use a 'variable to represent a '\' code, use a 'variable to represent a '^' code, and use a 'variable to represent a '$' code.

    For example, in the tutorial guide if you want to describe the code line such as "/* REXX */" on the tutorial box panel, then you must write the code line in the format of "REXX instead because all the tutorial code lines are bounded in a single comment block.

You may find out how to use this MENUBOX function from a sample test routine named '@MENUBOX', which is in the 'TOOLKIT.@PROJWRK.CEXEC' library. You may type a 'RUNX' command next to this REXX program to test it out. Please see the prolog in that routine for more information. After a Menu Seleciton panel of this sample program is displayed, you may press the PF1 key to see more information of how to modify the data in the Menu Box.

The following is a list of colors defined for both of the MENU and TEXT types of code lines in the MENUBOX panel internally:

Figure 102. The attribute code lines defined on the MENUBOX panel

```
)ATTR
```

```
   %  TYPE(TEXT) COLOR(WHITE)
   #  TYPE(TEXT) COLOR(YELLOW)
   ~  TYPE(TEXT) COLOR(TURQ)
   {  TYPE(TEXT) COLOR(GREEN)
   }  TYPE(TEXT) COLOR(RED)
```

The following is a sample REXX Caller Routine if the "PFKEYS=Y" code is specified:

Figure 103. The sample MENUBOX Caller Routine with PFKEYS option

```
/* REXX */
Arg dsname
restart:
'NEWSTACK'
line = '44,Please fill in the data set name:\'dsname
Queue line
line = 'PFKEYS=Y'
Queue line
'ISPEXEC SELECT CMD(%MENUBOX)'
xrc = rc
'DELSTACK'
If xrc ^= 0 then
   Exit
'ISPEXEC VGET (ZCMD, CODE1)'
dsname = code1
If dsname = '' | zcmd = 'PF7' | zcmd = 'PF8' then
   Signal restart
Exit
```

M.4 How to use the 'HELPBOX' utility to display an on−line tutorial

If you would like to write a REXX program to display the on−line tutorial guide in a window panel format without using any ISPF panel libraries, then you may use the the 'HELPBOX' utility routine as the interface. The following is a very simple example of this REXX Caller Routine:

Figure 104. The sample HELPBOX Caller Routine

```
/* REXX */
Arg parm
If parm = '?' then
   Call help
Exit
linenum: Return sigl
help:
'NEWSTACK'
!title = 'TITLE=The tutorial of the "sample" command'
Queue title
k = linenum() + 11
Do i = k to 9999
   line = sourceline(i)
   If word(line,1) = '*/' then
      Leave
```

```
   Queue line
End
'ISPEXEC SELECT CMD(%HELPBOX)'
'DELSTACK'

/*
 The sample command REXX program start with REXX
 This is a tutorial line2 for the sample command routine
 This is a tutorial line3 for the sample command routine
 This is a tutorial line4 for the sample command routine
*/
Return
```

You may specify nearly 500 HELP code lines as you wish. Other than the HELP code lines, in the input data field you may also specify the following few types of special control code lines:

```
line = 'TITLE=This is title'
line = 'HEADING=\This is the heading'
line = 'WINTYPE=N'
line = 'DISPLAY=N'
line = 'WIDE=60'
```

where the 'TITLE=' code line will display a title line on the on−line tutorial guide, the 'HEADING=' code line will display a highlighted heading on the panel, the 'WINTYPE=' code determines the tutorial panel to be displayed in a window panel format or fullscreen format. The 'DISPLAY=' is the option to determine whether to display the on−line tutorial on the screen on the fly or just create a tutorial file. The 'WIDE=' code can be used to determine how wide the displayed window panel can be, which is a valid option only if 'WINTYPE=Y' because the width of the fullscreen on−line tutorial panel is always 80 characters.

The following are few restrictions for the HELPBOX routine:

1. The total HELP code lines cannot exceed 490 lines. This utility program cannot generate more than one HELPBOX file if too many input HELP code lines are specified.

2. The length of the TITLE cannot exceed 50 characters. Else it will be truncated. Only one title code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the TITTLE line will be converted to the double quote.

3. The length of the HEADING cannot exceed 65 characters. Else it will be truncated. When it is displayed on the HELPBOX, it will be highlighted. Only one HEADING code line can be specified. If more than one is specified, the last one will be used. The single quote characters in the HEADING line will be converted to the double quote.

4. The 'HEADING=' code line can display a highlighted heading on the HELPBOX panel either in YELLOW, RED, or TURQ color depending upon the first character on the heading code line. If the first character is '\' then it will be in YELLOW color, if it is '¬' then it will be in RED color, and if it is 'then it will be in TURQ color. The default is highlighted with the YELLOW color.

5. The 'WIDE=' code can determine the width of the on−line tutorial window panel. If it is not specified, then this utility will measure the length of each input HELP code line to decide how wide the window panel can be. The max length of each HELP code line cannot exceed 75 characters long.

6. The 'WINTYPE=' code must be either 'Y' or 'N'. If the 'WINTYPE=N' option is specified, the fullscreen on−line tutorial panel will be displayed. In this case, the 'WIDE=' option code is ignored if it is specified. The default is 'WINTYPE=Y', which means the on−line tutorial will always be displayed in window panel format. The 'WINTYPE=Y' option can be omitted.

   When the 'WINTYPE=N' option is specified, it must be specified before all the TEXT code lines, and either the 'TITLE' or the 'HEADING' code line will be used as the header line in each page on the tutorial panel. In this case, the tutorial panel width is 80 characters. However, you may specify the HELP text code only between column 1 and column 79.

7. The 'DISPLAY=' code must be either 'Y' or 'N'. If the 'DISPLAY=N' option is specified, then the on−line tutorial file will be created but it will not be displayed right away.

8. The vertical bar character '|' is a reserved code and it cannot be used in the tutorial code lines. To specify a vertical bar character in the tutorial code line, you may use a 'varaible instead. Similarly, you may use a 'variable to represent a '%' code, use a 'variable to represent a '#' code, use a 'variable to represent a '/*' code, use a 'variable to represent a '*/' code, use a 'variable to represent a '{' code, use a 'variable to represent a '}' code, use a 'variable to represent a '\' code, use a 'variable to represent a '^' code, and use a 'variable to represent a '$' code.

   For example, in the tutorial guide if you want to describe the code line such as "/* REXX */" on the tutorial box panel, then you must write the code line in the format of "REXX instead because all the tutorial code lines are bounded in a single comment block.

Note:

The following is a list of colors defined for the text code lines in the HELPBOX panel internally:

Figure 105. The attribute code lines defined on the HELPBOX panel

```
)ATTR
%  TYPE(TEXT) COLOR(WHITE)
#  TYPE(TEXT) COLOR(YELLOW)
~  TYPE(TEXT) COLOR(TURQ)
{  TYPE(TEXT) COLOR(GREEN)
}  TYPE(TEXT) COLOR(RED)
```

This "HELPBOX" function is very similar to the functon of the "MSGBOX" except that the screen of this "HELPBOX" is wider and the data entries on this "HELPBOX" tutorial panel can be scrollable if more than a full screen of the help tutorial code lines are specified.

You may find out how to use this HELPBOX function from a sample test routine named '@HELPBOX', which is in the 'TOOLKIT.@PROJWRK.CEXEC' library. You may type a 'RUNX' command next to this REXX program to test it out. Please see the prolog in that routine for more information.

Appendix N. How to handle the VSAM file on−line functions

Do you feel frustrated sometimes because the ISPF tool does not allow you to edit or browse the VSAM files on−line and the only way you can modify your VSAM files is to run the batch jobs? If your organization has purchased the license and installed the File−AID facility on the MVS system, then this tool will automatically switch to use that tool package to handle your VSAM files. If your organization did not install the File−AID facility, then you may still be able to edit, browse, or view the VSAM files on−line. The following is the descriptions of this very useful feature provided by this tool package.

N.1 The File−AID tool package interface function

If the File−AID facility is available on your MVS system, then you may use a 'FASETUP' command to setup the File−AID interface profile on the XREF library. Whenever you edit or browse the VSAM files on the process panel of this tool, it will automatically switch to use the FILEAID process panels to process your files. Usually most of the VSAM file names are very lengthy. By using the FILEAID through the use of this tool as the interface, you don't need to type those long VSAM data set names on the FILEAID process panels any more.

N.2 What is the File−AID tool package

The File−AID tool package is an excellent software product written by the Compuware Corporation at Farmington Hills, Michigan. This tool can be used to edit or browse the VSAM files that the ISPF tool is not capable to do. The File−AID tool package is a licensed tool. If your MVS system does not have equipped such tool package, please contact the Sales Representatives of the Compuware Corporation or visit their Web Site at 'www.compuware.com/fafaq' for more information.

N.3 How to setup the File−AID tool package interface

The setup of the File−AID interface with this tool is very simple. The following is the descriptions of this interface procedures:

1. To setup the File−AID interface with this tool package, you may enter a 'TSO PROJ FASETUP' command on any ISPF panel, or enter a 'FASETUP' User−Exit command on any of this tool process panels. Then a FILEAID profile named 'USERID.@PROJWRK.XREF(FILEAID)' file will be created and displayed in edit for you to modify its contents.

   Note: You don't need to use a 'FASETUP' command to setup the File−AID interface profile if the '@FASETUP' file in the 'TOOLID.@PROJWRK.CEXEC' library has already been properly setup by the tools administrator.

   Note: To initiate the FILEAID interface on each Project Work Manager tool session, you may either use a 'TSO PROJ FILEAID' command, or use a 'PROF' command to edit the PROFILE file in the XREF library and change the FILEAID option code from 'NO' to 'YES'.

2. The following is a sample FILEAID profile in edit session:

   Figure 106. The sample FILEAID profile listing

```
EDIT       USERID.@PROJWRK.XREF(FILEAID) − 01.00       Columns 00001 00072
```

```
Command ===> _____________________________________________ Scroll ===> CSR
****** **************************** Top of Data ************************
000001 /*-------------------------------------------------------------------
000002 /* @FUNCTION: File-AID tool package
000003 /* @HIDE (Remove "/*" to deactivate the File-AID Interface)
000004 /*-------------------------------------------------------------------
000005 TOOLID.FILEAID.CLIST      /* CLIST
000006 TOOLID.FILEAID.ISPMLIB    /* ISPMLIB
000007 TOOLID.FILEAID.ISPPLIB    /* ISPPLIB
000008 TOOLID.FILEAID.ISPSLIB    /* ISPSLIB
000009 TOOLID.FILEAID.ISPTLIB    /* ISPTLIB
****** **************************** Bottom of Data ***********************

_____________________________________________________________________________
```

3. When the PROJWRK tool package detects the existence of this profile, it will first check the 'Hide' indicator. Then it will check the existence of the five files. Note that the remark comments such as '/* CLIST' and '/* ISPMLIB', etc. on each code line should not be removed. If all of these five files can be found in your MVS system, then this tool will concatenate them to the tool library files of this tool package automatically.

4. The FILEAID.CLIST file can be allocated to a 'SYSPROC' file in your initial logon CLIST file. Note that the 'TOOLID.FILEAID.LOADLIB' library must be pre−allocated to a 'ISPLLIB' in your intial logon CLIST if it has not been allocated to the LINKLIST in your MVS system by the system programmer.

   When you logon the TSO system, at the 'COMMAND' field on your TSO logon panel you may enter the following parameter as an example:

   ```
   EXEC 'USERID.@PROJWRK.CEXEC(@@FAINIT)'
   ```

   Please check this '@@FAINIT' file and make sure the setup of the CLIST and LOAD libraries in this file for the File−AID tool package interface fit to your MVS system. If not, then you need copy this file to your own LOGON.CLIST file and modify its contents.

5. After this FILEAID profile is created, this tool will automatically establish the File−AID interface whenever the Project Work Manager tool session is entered.

   To edit or browse a VSAM file by using the File−AID, simply type an 'E' or a 'B' command code next to the VSAM file on the PANEL3 panel. By using this method, you don't need to use the cut and paste method to edit or browse the VSAM data set names on the File−AID process panels.

6. On the ISPF option 3.4 data set list panel, which is displayed by using an 'FFF' command on the process panel of this tool package, if you want to edit or browse a VSAM file, then you may type an 'ED' or 'EDB' command. The 'ED' or 'EDB' command can automatically switch to use the FILEAID facility to process the VSAM files that are not listed on the the PANEL3 panel.

7. To deactivate the File−AID interface, simply remove the '/*' code from the 'Hide' indicator code line or rename the FILEAID member name in the 'USERID.@PROJWRK.XREF' library to any other name.

   Note: It is not recommended to deactivate the File−AID interface once you have completed such setup.

N.4 How to use this tool provided VSAM file on−line functions

If your MVS system does not have the FILEAID facility, then you may still use the VSAM file on−line edit, browse, view, load, and unload functions provided by this tool package. The following is the summary of how to handle your VSAM file on the PANEL3 panel on−line:

1. Next to the CLUSTER file (or a INDEX, or DATA file) on the PANEL3 panel you may type an 'E' (Edit), 'B' (Browse), or 'V' (View) command to edit, browse, or view the file.

2. Next to the CLUSTER file (or a INDEX, or DATA file) on the PANEL3 you may type an 'C' command to copy the VSAM file to a new created sequential file. This is the so−called VSAM file unload function.

3. Next to the sequential file on the PANEL3 panel you may type an 'C' command to copy the sequential file to an existing VSAM file. This is the so−called VSAM file load function.

4. On the ISPF option 3.4 data set list panel, you may use the 'ED', 'BRW', or 'VW' command to edit, browse, or view the VSAM file. You may also use a 'CP' command next to a valid sequential file or a VSAM file to perform the VSAM file load or unload functions.

The following is a sample PANEL3 panel diagram with an 'E' command typed in next to a VSAM file on the fourth row for the VSAM file edit function:

Figure 107. The sample PANEL3 panel with an 'E' command code on a VSAM file

```
PANEL3       The Data Set or Command Selection Panel   Data set #6 last chosen
------------------------------------------------------------------------------
Project Code ===> 3       Project Name ===> VSAM              Time => 15:13:26
Description  ===> VSAM file testing
Command ===> ____________________________________________  Scroll ===> CSR

 Select     Code   PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume
--------- ------- ------------------------------------------------- -------
__________     1    USERID.@@TEST.VSAM.CLUSTER
__________     2    USERID.@@TEST.VSAM.DATA
__________     3    USERID.@@TEST.VSAM.INDEX
__e_______     4    USERID.@@TEST2.VSAM.CLUSTER
__________     5    USERID.@@TEST2.VSAM.DATA
__________     6  - USERID.@@TEST2.VSAM.INDEX
__________     7    USERID.@@FLAT.FILE.@@TEST.VSAM
****************************** Bottom of data ******************************
```

Note:

1. On this panel there are two VSAM files, one is 'USERID.@@TEST.VSAM.CLUSTER' and the other is 'USERID.@@TEST2.VSAM.CLUSTER'.

2. On the panel the sixth data entry, i.e. an INDEX file, was previously selected for the edit, browse, or view function. You are supposed to select a CLUSTER file of a VSAM file to type the 'E', 'B', or 'V' command. However, if you type the 'E', 'B', or 'V' command next to a DATA or INDEX file instead of the CLUSTER file, then this tool will search for the CLUSTER file for you. It will slow down the process if you select the DATA or INDEX file and it is not recommended.

3. If you want to unload the VSAM file to a sequential file, then simply type a 'C' command next to a

CLUSTER file.

4. Assume the seventh data entry, i.e. the 'USERID.@@FLAT.FILE.@@TEST.VSAM' file, is the sequential file that you want to unload the VSAM file, then you may type a 'C' command next to a CLUSTER file and type a 'S' code next to this sequential file.

5. If you type a 'C' command next to this sequential file and type a 'S' command next to a CLUSTER file, then the contents of this sequential file will be loaded to the VSAM file.

The following is a sample PANEL3 panel diagram with the 'C' (Copy) next to a VSAM file and the 'S' (Select) command next to a new sequential file for the VSAM file unload function:

Figure 108. The sample PANEL3 panel for the VSAM file unload function

```
PANEL3       The Data Set or Command Selection Panel   Data set #6 last chosen
------------------------------------------------------------------------------
Project Code ===> 3       Project Name ===> VSAM              Time => 15:13:26
Description  ===> VSAM file testing
Command ===> _____________________________________________  Scroll ===> CSR

 Select     Code   PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume
--------- ------- ------------------------------------------------- -------
__c______     1    USERID.@@TEST.VSAM.CLUSTER
__________    2    USERID.@@TEST.VSAM.DATA
__________    3    USERID.@@TEST.VSAM.INDEX
__________    4    USERID.@@TEST2.VSAM.CLUSTER
__________    5    USERID.@@TEST2.VSAM.DATA
__________    6  - USERID.@@TEST2.VSAM.INDEX
__s______     7    USERID.@@FLAT.FILE.@@TEST.VSAM
****************************** Bottom of data ******************************
```

Note:

1. If the sequential file already exists, then a window panel will be popped up to ask you to confirm that if you really want to override the existing sequential file with the VSAM file records. You may either press the Enter key or PF3 key to continue or abort the process.

2. In the above diagram if the 'C' and 'S' command codes are reversed, then it means that you want to copy the sequential file to the VSAM file. In this case, it is assumed that the sequential file already exists and it must contain the valid data. Otherwise, an error message file will be displayed.

3. If one of the attributes of the VSAM file is NOREUSE, then when you load the VSAM file be sure that the KEY field in the sequential file cannot contain the duplicate key data with the key data in the VSAM file. Otherwise, an error message file will be displayed.

Appendix O. The frequently used procedures, various comments, and tips

The following is the descriptions of several frequently used procedures and various usefule methods on how to use this tool package.

O.1 The frequently used procedures

This tool is very flexible. For each of the functions provided by this tool package, usually there are several methods available for the users to choose. This document contains a lot of detail descriptions of each method. Sometimes it is quite difficult for the users to completely understand. Therefore, based on my experience of using my own tool, I have listed the following simple procedures that I frequently used for your reference, and hope that it can help you to fully utilize this tool package as well.

1. To create a new project or work item, instead of using the PANEL1 panel method I usually select the 'PROJECT' project on the PANEL2 panel, and edit the 'USERID.@PROJWRK.LIST' library file, i.e. the Project List member file, on the PANEL3 panel. Then apply the 'PDS Member Copy' method on the PANEL4 panel to copy any existing PDS member to a new member and then edit it on the PANEL4 panel. In edit, I can modify this new member file and add as many data set names as I want. After this process is done, I enter an 'XX' command on the PANEL4 panel to return back to PANEL2 panel and use a '/R' command to refresh the PANEL2 panel.

   Note that the 'XX' command can be entered either on the PANEL4 command line or typed next to any member name on the PANEL4 panel to return back to PANEL2 panel.

2. To add or delete the data set names of an existing project or work item, I can either type an 'E' code next to the selected project or work item name on the PANEL2 panel, or enter an 'E' command on the PANEL3 panel of the selected project or work item.

3. To select a project or work item on the PANEL2 panel, I usually type a selection code of the project or work item on the panel command line or move the cursor down to a project or work item name row and press the Enter key. Most of the time I just need to press the Enter key to choose the most recently selected project or work item.

   If the cursor is not on the PANEL2 command line area but on a project or work item name row, which happen to be the one I want to select, then all I need to do is to press the Enter key. If it is not the one I want to select, I may either move the cursor up or down to another project or work item name row or simply type a new selection code and then press the Enter key. Note that the selection code can also be typed on a project or work item name row instead of the PANEL2 panel command line area.

4. To select a data set on the PANEL3 panel, I usually enter a selection code on the panel command line or move the cursor down to a data set name line and press the Enter key. Most of the time I just need to press the Enter key to pick the most recently selected data set.

   If the cursor is not on the PANEL3 command line area but on a data set name row, which happen to be the one I want to select, then all I need to do is to press the Enter key. If it is not the one I want to select, I may either move the cursor up or down to another data set name row or simply type a new selection code and then press the Enter key. Note that the selection code can also be typed next to a data set name instead of the PANEL3 panel command line area.

5. On the command line of the PANEL2, PANEL3, PANEL4, or PANEL5 panel, or on the command line of an edited file, I always use a 'FFF' command to display a 'DSLISTF' panel. On the 'DSLISTF'

panel command line I can enter an 'E' command to edit the 'DSLUTIL' database file and add as many Dsname Level code lines as I want. With this function, I don't need to directly deal with the original ISPF option 3.4 data set list panel any more.

On the ISPF option 3.4 data set list panel displayed by the 'FF' command, I may use an 'ADD' command to add the selected data set name to the bottom of the Project List member file of a project or work item. I may also use an 'ED' command to edit the file on the ISPF option 3.4 data set list panel.

On the PANEL3 panel, if I want to use the ISPF option 3.4 data set list panel to edit a data set instead of using the PANEL4 panel to edit a data set, I can type a 'FF' command next to that data set name line on the panel. Note that the 'FF' command on the PANEL3 panel is different from the 'FFF' command.

On the PANEL4 panel, I can also enter the 'FF' command on the PANEL4 panel command line to display the ISPF option 3.4 data set list panel to edit that data set. Note that the 'FFF' command entered on the PANEL4 panel command line can be used to display the 'DSLISTF' panel instead of the ISPF option 3.4 data set list panel. I usually use both of the PANEL4 panel and the ISPF option 3.4 data set list panel to edit my data sets because either method has its advantages and disadvantages. On the PANEL4 panel the 'String Search' and 'Massive Change' functions, which are two most useful utility functions provided by this tool, can be executed.

On the PANEL4 panel, I usually just press the Enter key to edit the most recently edited member file. Sometimes I use a '/' command to locate most recently edited member file and position the cursor next to the file and press the Enter key to edit it. If I don't want to work on the last edited file, then I usually enter a 'L str', where 'str' is the first few characters of the name of the member file, to locate the member file that I will work on. Sometimes I use the 'FF str' (FFIND) command to locate a member if the character string 'str' to be searched is not the leftmost few characters of any members on PANEL4 panel.

6. If I have to constantly edit the member files in a very large PDS, I can use a 'SW' (Swap) command to switch to display the short form PANEL4 panel. On this panel, I always first use my mouse pointer to select a member file and the press the Enter key to edit a file. More detail information about how to use this panel can be found from the on−line tutorial guide.

7. If I need to search for a system command, or locate a member file named 'mbr' from a PDS that is allocated in my TSO session, on any of the panel command lines I can enter a 'LISTA' command to display a panel with all the allocated files, and enter a 'FINDMEM mbr' command on the 'LISTA' command panel to search for that system command. I can also enter a 'HLP cmd' command on any of the panel command lines to display the on−line tutorial of the TSO system command named 'cmd'.

8. If I want to repeatedly edit the most recently edited file, I usually press the Enter key twice starting from the PANLE2 panel and ended at the PANEL4 panel and then press the Enter key again to edit that file. Sometimes, I use the 'EDL' command to edit the 'last used' file. But most frequently I enter a 'RC' command to display a RECALL command panel and select the files from the top of the panel. I rarely use the PANEL5 panel to edit the most recently edited files.

9. If I need to browse or view the most recently edited file, I usually press the Enter twice starting from PANEL2 panel and ended at the PANEL4 panel and then I enter a 'B' or 'V' command on the PANEL4 panel to browse or view that file.

10. The 'XX' command can be entered almost on any panel command line to return back to the PANEL2 panel. It can also be entered on the command line of an edited file to return back to PANEL2 panel after the edited file is closed and saved. To switch from one project to another project, I usually enter

an 'XX' command to return back to the PANEL2 panel and select a new project from there. Sometimes I use the '//' command or the '/a.b' type of command code to switch the project also. I rarely use the PANEL5 panel to switch projects unless I cannot remember which project or work item that a data set name belongs to. On the PANEL4 panel, sometimes I just enter a number command such as '2', '5', '6', etc. or enter a 'N' (Next) or 'A' (Above) command to switch to another PANEL4 panel, and then enter a 'BK' command to switch back.

11. To send a file, I usually type the 'SF' command next to a data set name on the PANEL3 panel, or type the 'SF' command next to a member file on the PANEL4 panel. I can also use the 'SF' command on the ISPF option 3.4 data set list panel which is displayed by the 'FF' command.

    On the Target Destination panel displayed by the 'SF' command, if I need to change the target I usually press the PF10 key to display the 'GETDEST' panel and then enter an 'E' command to edit the 'XMTDEST' database file. In the database file, I can add as many destination code as I want. If I need to send the file to a group of people, then on the 'GETDEST' panel I can press the PF6 key or type a 'GETNICK' command to display a 'GETNICK' panel.

12. I can also use the 'SF' command to send a file while I am editing it. In the edited file screen, I can type a pair of 'CC' prefix line command to send just a part of the source code to the target destination.

13. If I need to study the program source code of a PDS library, I usually type a 'PP' command next to the PDS library file on the PANEL3 panel or enter a 'PP' command on the command line of the PANEL4 panel to print the member files at a printer. The 'PP' command can also be entered next to the PDS on the ISPF option 3.4 data set list panel.

    On the Printer Node/Uid Selection panel, in the 'Short Description' field I usually specify a '/L=10' code to allow the program source code to be printed at the center of the paper.

    The 'PP' command will submit a batch job to print the PDS member files, which needs the users to setup the 'ACCOUNT' field in the batch JCL jobcard. I usually use the cut and paste method to copy the JCL jobcard of any existing JCL file to the JCL control panel for the setup. This setup is not related to the 'ACCOUNT' setup function in the ISPF option 0.

14. If I need to search for the data strings in all members of a PDS, I usually type a 'SRCH' command on the PANEL4 command line of that PDS. If I need to search the data strings from several data sets, then I use an 'XS' command on either the PANEL3 panel or the RECALL command panel and use the 'S' code to select the data sets from the panel.

15. If I need to work on several member files of a PDS simultaneously, then I usually enter a 'RING' command on the PANEL4 panel of that PDS to edit these files. I can also use the '\' and '\\' command to perform the PDS members backtrace function and work on several PDS member files at the same time.

    If the files I want to work with are not the members of the same PDS, then I can edit each file very quickly without manipulating the data, and then I enter a 'RC' command at any panel to display the RECALL command panel and then use the 'RING' command to edit all of them on the RECALL command panel at the same time in an Edit Ring.

16. If I need to create a new PDS based on the data set format of an existing PDS, and if I have already included the existing PDS data set name in a Project List member, then all I need to do is to type a 'C' (Copy) command in front of that PDS on the PANEL3 panel and type in the new PDS data set name in a popped up window panel. I rarely use the ISPF option 3.1 and option 3.2 directly to create a new PDS because that method is too tedious.

17. If I forgot which command is valid on a process panel, then I can place the cursor on either the panel command line area or on the line command area and press the PF11 key to display the command summary tutorial guide of that panel on−line. If I feel the summary tutorial guide does not contain enough information about those commands, then I can always press the PF1 key to display the detail tutorial guide of the selected panel, or refer to this Reference Guide document for more information.

18. I personally perfer to use the MEMO and TODO command to deal with only one Notebook and one Things−To−Do database. However, there is a TESTNOTE and a TESTLOG User−Exit command available for you to create a Notebook and a Things−To−Do database file if you don't like to mix up your testing notes and testing progress logs related to your program testing works with your regular work notes and Things−To−Do data.

19. If I need to access the MVS files or execute the TSO/ISPF commands that are defined in the Project List member file on the TSO account of my teammate, then all I need to do is enter a 'DIR' command on the process panel to display a PROJDIR panel. Then I may enter a 'NEW' command and enter my teammate's TSO account Userid on a PRJDNEW popped up window panel to create a new Project List Group entry.

O.2 The comments on several primary commands and line commands

There are several commands provided by this tool package, such as the 'X', 'FF', 'ED', 'PP', 'SF', and 'SP' commands, can be served for multiple functions which are based on which process panel the command is invoked. These are all very useful and very powerful command functions. However, sometimes it might cause some kinds of confusions to the users.

The following is the descriptions of these commands and hopefully it can help you to understand these commands much better:

1. The 'X' command entered on the PANEL2, PANEL3, or PANEL4 panel can exit the Project Work Manager tool session entirely.

   The 'X' command, which is the same as the 'S' or '/' command, typed next to a project or work item on the PANEL2 panel can display the PANEL3 panel of the select project or work item. There are many ways to select a project or work item on the PANEL2 panel and the 'X' command method is one of them.

   The 'X' command typed next to a PDS with member on the PANEL3 panel or RECALL command panel can display a PANEL4 panel, i.e. the PDS Member List panel, of the selected PDS for edit function.

   The 'X' command, which is equivalent to an 'E', 'S', or '/' command in this case, typed next to a PDS on the PANEL3 panel can display a PANEL4 panel of the selected PDS for edit function.

   The 'X' command, which is equivalent to an 'E', 'S', or '/' command in this case, typed next to a sequential file, on the PANEL3 panel can edit the selected file immediately.

2. The 'FF' command (the short form of the 'FFL' command) entered on the PANEL2, PANEL3, or PANEL5 panel will display the Front−end Interface panel, i.e. the 'DSLISTF' panel, of the ISPF option 3.4 data set list utility panel.

   The 'FF' command (the short form of the 'FFL' command) entered on the PANEL4 panel or typed next to a data set on the PANEL3 panel can display an ISPF option 3.4 data set list panel of the selected

data set.

The 'FL' command entered on the PANEL4 panel or typed next to a data set on the PANEL3 panel can display an ISPF option 3.4 data set list utility panel of the selected data set. On that utility panel, you can modify the Dsname Level code and then display an ISPF option 3.4 data set list panel.

The 'FFF' command (i.e. the short form of the 'FFL L' or 'FFL LIST' command) entered on the command line of the PANEL2, PANEL3, PANEL4, or PANEL5 panel, typed next to a data set on the PANEL3 panel, typed on a member name line on the PANEL4 panel, or entered on the command line of an edited file can display the Front−end Interface panel, i.e. the 'DSLISTF' panel, of the ISPF option 3.4 data set list utility panel. Instead of using the 'FFF' command, you may also use a '3.4F' command because both are the same User−Exit commands.

The 'FF str' command (the short form of the 'FFIND' command) entered on the PANEL2 panel can search for the character string 'str' from the project or work item name and its descriptions.

The 'FF str' command (the short form of the 'FFIND' command) entered on the PANEL3 panel can search for the data set markers.

The 'FF str' command (the short form of the 'FFIND' or the 'LLOCATE' command) entered on the PANEL4 panel can search for the members that contain the character string 'str', which is an extended command of the 'L str' or 'LOCATE str' command on the PANEL4 panel.

Enter a 'FF' command and position the cursor on a non−blank line in the file area of an edited file can setup the target data string and you may use the PF5 key to find all the target data string repeatedly later on.

3. The 'E' or 'ED' command on the PANEL2 panel can edit the Project List library file, i.e. the 'USERID.@PROJWRK.LIST' file.

   The 'E num' or 'ED num' command on the PANEL2 panel and the 'E' or 'ED' command on the PANEL3 panel can edit a Project List member file of the selected project or work item.

   The 'E' or 'ED' command typed next to a data set on the PANEL3 panel can edit the selected data set.

   The 'E' or 'ED' command entered on the PANEL4 panel can edit the most recently edited member file.

   The 'E' or 'ED' command typed next to a member file on the PANEL4 panel can edit the selected member file.

   The 'ED' command, which has been assigned to the PF4 key function, typed on a code line in the Project List member file in edit can toggle between the '/*' code to be inserted into and dropped from the leftmost column of each code line.

   The 'ED' command typed next to a data set on the ISPF option 3.4 data set list panel can edit the selected data set either with or without displaying a PANEL4 panel based on whether the data set is a PDS or not.

   The 'ED' command, which has been assigned to the PF4 key function, entered on a viewed listing of the TODOLIST, NOTELIST, FINDMEM, or SRCHFOR file can display or edited the selected item or member file.

   The 'ED' command, which has been assigned to the PF4 key function, entered on an edited member file in the LIST or XREF library can toggle between the '/*' code to be inserted into and dropped from

the leftmost column of the code line to comment out or un−comment out the data set name field in the file.

The 'EDX' command entered on the edit command line of an edited PDS member file from the PANEL4 panel or the RECALL command panel can display another PANEL4 panel of the same PDS, on which the edited member is displayed on the top of the PDS member listing. On the displayed PANEL4 panel you may enter a 'Z' command to compress the PDS or use other TSO commands to perform any other functions.

To prevent you from being burned by the irritating RACF warning message, whenever you type an 'E' command next to an Unauthorized Updated file and attempt to edit that file on the PANEL3, PANEL4, or RECALL command panel, this tool will automatically convert the edit command function to the view command function so that you will not make a mistake to change the file. You may use an 'EDX' command to edit the unauthorized file instead, in which case it will not be converted to the view command function. However, it is not recommended.

The 'EDL' command can be used to edit the most recently edited file. This command can be either entered on any process panel or entered on the edit command line. The 'EDL n' command, such as 'EDL 2' and 'EDL 3', is another form of this command that allows you to edit the n−th last edited file.

4. The 'PP' command entered on the PANEL2 panel can send all Project List member files to a target destination or a printer in sequential file format.

   The 'PP num' command entered on the PANEL3 panel or the 'PP' command typed next to a PDS on the PANEL3 panel will send the PDS member files to a target destination or a printer in sequential file format.

   The 'PP' command entered on the PANEL4 panel will send the PDS member files to a target destination or a printer in sequential file format.

   The 'PP' command typed next to a member file on the PANEL4 panel will send the selected PDS member file to a target destination or a printer.

   The 'PP' command can also be typed next to a PDS on the ISPF option 3.4 data set list panel.

   The sequential file generated by the 'PP' command can be restored back to its original PDS file format by using a 'GETPDS' command.

5. The 'SF' command entered on the PANEL2 panel can send all Project List member files to a target destination or a printer.

   The 'SF num' command entered on the PANEL3 panel or the 'SF' command typed next to a PDS on the PANEL3 panel will send the entire file to a target destination or a printer as a whole file.

   The 'SF' command entered on the PANEL4 panel will send all the PDS member files to a target destination or a printer individually.

   The 'SF' command typed next to a member file on the PANEL4 panel will send the selected PDS member file to a target destination or a printer.

   The 'SF' command can also be typed next to a PDS on the ISPF option 3.4 data set list panel.

6. The 'SP' command entered on the PANEL2 panel can send the Project List library file to a target destination in a 80−type sequential file format.

The 'SP num' command entered on the PANEL3 panel or the 'SP' command typed next to a PDS on the PANEL3 panel will send the PDS to a target destination in a 80−byte sequential file format.

The 'SP' command entered on the PANEL4 panel will send all the PDS member files to a target destination in a 80−byte sequential file format.

The 'SP' command typed next to a member file on the PANEL4 panel will send the selected PDS member file to a target destination in a 80−byte sequential file format. If the 'Line Splitter' option is selected for the 'SP' command, then the sequential file to be sent will be in a 84−byte format.

The 'SP' command can also be typed next to a PDS on the ISPF option 3.4 data set list panel.

The 'SFS num' command entered on the PANEL3 panel to send a sequential file to a target destination with the 'Line Splitter' code in each code line.

The 'SFS' command can also be typed next to a sequential file on the ISPF option 3.4 data set list panel.

The sequential file generated by the 'SFS' command can be restored back to its original sequential file format by using a 'GETSEQ' command.

7. The 'CAL' command entered on any process panel can be used to display a Desktop Monthly Calendar, on which the users may press the PF5 key to display a TODOLIST listing file, or press the PF6 key to display a NOTELIST listing file.

   The 'CALC' command entered on any process panel can be used to display a Desktop Rolling Sheet Scientific Calculator, on which the users may apply five different calculate functions.

   In an edited file the 'CAL' and 'CALC' are the two edit commands just like the "CAL' and the 'CALC' TSO commands. The 'CA' edit command, however, is to be used for locating the subroutine of a 'CALL' statement in the edited file, and the 'CAN' edit command can be used to perform the 'CANCEL' command function.

O.3 The sample logon procedures

In the 'USERID.@PROJWRK.CEXEC' library file, other than the '@@INIT' file there are several other logon procedure files such as '@@FAINIT', '@@MYTOOL', '@@SAMPLE', and '@@START', etc. The '@@INIT' and '@@START' are two identical files except the last code line in '@@START' is not an 'ISPF' command statement.

The '@@SAMPLE' is a very useful sample logon procedure if you usually use an **"EXEC 'DB2SYS.PROD.EXEC(LOGON)'"** parameter, for example, on your logon panel. In order to use this tool package, instead of using this parameter you may an **"EXEC LOGON(LOGON)"** parameter, and in the LOGON file of your 'USERID.LOGON.CLIST' library you may specify the following few code lines:

```
PROC 0
CONTROL NOLIST NOCONLIST NOSYMLIST NOFLUSH
SET =
SET =
```

```
EXEC '.CEXEC(@@START)' EXEC
EXEC 'DB2SYS.PROD.EXEC(LOGON)' CLIST
```

This sample logon procedure not only can execute your regular logon procedure, but also can concatenate the required 'USERID.@PROJWRK.CEXEC' library file in the beginning of logon process.

Note that if the 'LOGON' program in your 'DB2SYS.PROD.EXEC' was written in CLIST format, then you need to add a keyword code 'CLIST' at the end of the 'EXEC' code line even the file type qualifier in this library file is 'EXEC'.

O.4 How to restore the Project List library file

If you deleted the 'USERID.@PROJWRK.LIST' file by mistake and you forgot to save a backup copy of this LIST library file, then you may restore it back from the 'USERID.@PROJWRK.XREF' file, provided that the XREF library file has not been deleted by mistake. If your XREF library file has been deleted by mistake, then you may enter a '/R' or 'RESET' command on PANEL2 panel to restore the 'USERID.@PROJWRK.XREF(XREF1)' file back. However, the rest of files in the XREF library are lost and need to be recreated.

To restore the Project List library back, you may simply type a 'XRF2LST' command next to the 'XREF1' member file of either the 'USERID.@PROJWRK.XREF' or 'USERID.@PROJWRK.XREF.BKUP' library on the PANEL4 panel.

Note: It is highly recommended you may type the 'C' (Copy) command next to these two library files on the PANEL3 panel to save a backup copy of both XREF and LIST library files once for a while.

O.5 The 'String Search' and 'Massive Change' functions sample procedures

The following is the step by step sample procedures of the 'String Search' and 'Massive Change' functions on the PANEL4 panel:

1. On the PANEL4 panel command line enter a 'SRCH' command and press the Enter key, then a 'String Search−For Utility' panel will be displayed.

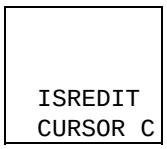
2. Before pressing the Enter key you may type few 'S' code to select the members that you want to search for the string.

3. On the 'String Search−For Utility' panel, type one or more searched string code. You may specify the qualifier 'WORD', 'PREFIX', 'SUFFIX', or 'C' together with the search string code.

   For example, if you need to find all the code lines in the the following search string code format in your Edit Macro programs:

```
'ISREDIT CURSOR = (ROWNUM, COLNUM)'
'ISREDIT (CURROW,CURCOL) = CURSOR'
```

   Then you enter the following two lines of code on the 'String Search−For Utility' panel:



4. If the searched file is not large, then select the Foreground search mode either by entering an 'F' command on the panel command line or type a '1' code at the Execution Mode field.

5. After pressing Enter key, the search result will be displayed in a viewed listing format.

6. On the viewed listing command line press the PF4 key to edit each member, which contains the searched string, one by one in an Edit Ring to perform the 'Massive Change' function.

   Note: The same 'String Search' and 'Massive Change' process can be performed on the PANEL3 panel and the RECALL command panel also.

O.6 How to apply 'Massive Change', 'SV', 'EDX', etc. command functions

The following is a sample procedure of how to do a 'String Search' and 'Massive Change' functions on a REXX program library and then compile each updated REXX program using the REXCMP command:

Suppose we want to correct a character string in several REXX programs in a REXX program library named 'USERID.@PROJWRK.EXEC'. Then on the PANEL4 panel command line of this library we may enter a 'SRCH' or 'XS' command to display the 'String Search' Utility panel.

1. We may type in the data string on the 'String Search−For Utility' panel and press the Enter key. Then the search result listing will be displayed in a viewed listing.

2. On the viewed listing press PF4 key to edit the PDS member that contains the searched string and change it. When the PF4 key is pressed, we may either place the cursor at any PDS member name line on the viewed listing or leave the cursor at the viewed listing panel command line.

3. After the string change is completed in the edited file, enter a 'SV' command to save the updated member file.

4. Then enter an 'EDX' command to display a PANEL4 panel of the PDS member listing of the 'USERID.@PROJWRK.EXEC' library. The top member on the displayed PANEL4 panel listing will be the member file we just edited. Now, next to this member on the PANEL4 panel type a 'REXCMP' command to compile the updated REXX program. Other than this function, you may also enter a 'Z' command on the PANEL4 panel to compress the PDS, use the 'SF' command to send the PDS member files, etc. You can do many functions provided by the PANEL4 panel in this 'String Search−For Utility' process.

5. After the REXX compile is completed, press PF3 key to return back to edit mode.

6. In edit, press PF3 key to return back to the searched result viewed listing and edit next PDS member to repeat the same steps again.

You may simulate the above described sample procedures and apply it to any other type of programs to do the 'Massive Change' and REXX code compiling functions.

Note: In this procedure the 'SV' and 'EDX' are the two Edit Macro commands and 'REXCMP' is a sample User−Exit command.

O.7 How to find a TSO command in your TSO session

The following is a sample procedure of how to find a TSO command in your TSO session:

1. On any of the process panel command line enter a 'LISTA' command. Then the LISTA command panel with the names of all the library data sets that are allocated to your TSO session will be displayed.

2. Enter a 'FINDMEM' command to display the PDS Member Name Search Utility panel. You may type 'S' code to select the ISPEXEC or the SYSPROC library files for the search.

3. On the FINDMEM command panel, type the TSO command names on in the member name field. Select either the batch or foreground execution mode and press the Enter key to search for the TSO command.

4. If the TSO command cannot be found from the ISPEXEC or SYSPROC libraries, then you may try the 'LINKLIST' or 'LPALIB' command to search the TSO command from the MVS system Linklist or LPA area.

Note: The 'FINDMEM' command process is quite slow. It is recommended that you may run a batch job to search for the TSO command name if necessary.

O.8 How to copy or move the PDS members efficiently

If you need to copy or move the members from one PDS to another, instead of entering the ISPF option 3.3 panel directly, you may follow the following simple procedure to copy or move the PDS member on the PANEL3 panel:

1. On the PANEL3 panel, next to the data set name of a PDS you may type a 'C' (Copy) or 'M' (Move) command, then a 'Copy/Move to a New or Existing Data set' window panel will be popped up to ask you to enter the target PDS data set name.

2. If the target PDS can be found on the same PANEL3 panel screen that the source PDS is currently defined, then when you type the 'C' or 'M' command next to the source PDS data set name, you may type a 'S' (Select) command code next to the target PDS data set name at the same time to copy or move the file.

3. If the target PDS is not defined on the same PANEL3 panel screen but it is defined on other PANEL3 panel, then you may either fill in its name on the popped up window, or press the PF11 key on the popped up window to display a 'SELPROJ' panel and search for the target PDS name from that panel.

4. If the target PDS is a new data set, then a 'Copy/Move to a New Data set' window panel will be popped up to ask you to define the the new PDS structure. After pressing the Enter key the new PDS will automatically be created. Meanwhile, the source PDS will be copied or moved to the new PDS right away nearly at the same time.

If the target is an existing file but it cannot be found on the 'SELPROJ' panel, instead of pressing PF11 key to search for it you may type the target file name partially on the panel ended with a '/' or '*' code and press the Enter key to expand the data set name and display the name list on a selection panel named EXPDSNS. On the panel you may type one and only one 'S' code and press the PF3 key to select a target data set name.

5. If the target PDS is an existing PDS, then the ISPF option 3.3 panel will automatically be displayed to process the file copy or move function.

6. On the ISPF option 3.3 panel the 'C' or 'M' option code has already been entered by this tool. All you need to do is to press the Enter key to display the second panel.

7. On the second panel, the target data set name has also been captured. You may just press the Enter key to copy or move the members. Be sure to type a '/' code at the 'Replace like−named members' field on the panel if you want to always replace the existing members in the target PDS.

Note: If you type a 'FF' command next to the PDS data set name on the PANEL3 panel to display a ISPF option 3.4 data set list panel, then you may type either a 'CP' or 'MV' command next to the data set name on that panel to bring up the ISPF option 3.3 utility panel, then follow the normal procedure and enter a 'C' or 'M' command code to copy or move the PDS members.

You may also follow the following simple procedure to copy or move the PDS member on the PANEL4 panel:

1. On the PANEL4 panel, next to the PDS member you may type a 'C' (Copy) or 'M' (Move) command, then a window panel will be popped up to ask you to enter the target PDS data set name and member name.

2. If the target data set is the same PDS and the target member is a new member, then you may enter the target member name at the 'User Data' area at the source member line where the 'C' or 'M' command code is typed in.

3. If the target data set is not the same PDS or if the target PDS member is an old member file, then you may either fill in the target PDS name or member name on the popped up window, or press the PF11 key on the popped up window to display a 'SELPROJ' panel and search for the target PDS name from that panel.

4. After the target PDS data set name or the target member name is specified in the popped up window panel, you may simply press the Enter key to copy or move the source PDS member file.

O.9 How to build an Edit Ring on ISPF option 3.4 data set list panel

As described above, if you type a 'FF' command next to the PDS data set name on the PANEL3 panel or enter a 'FFF' command to display a 'DSLISTF' panel and select a Dsname Level code on that panel, then the ISPF option 3.4 data set list panel will be displayed. On that panel you may type either a 'CP' or 'MV' command next to the data set name to bring up the ISPF option 3.3 utility panel to copy or move the PDS members.

Suppose you type an 'ED' command instead of the 'CP' or 'MV' command next to a PDS on the ISPF option 3.4 data set list panel, then a PANEL4 panel of the selected data set will be displayed. On the PANEL4 panel you may enter a 'RING' command and optionally type several 'S' code to select the PDS members to build an Edit Ring. On the PANEL4 panel you may also enter a 'Z' command to compress the PDS, enter a '\' or '\\' command to backtrace the PDS members, or select a member file for edit, browse, or view just like the regular

O.10 How to create a backup PDS library file and compare it

If you need to create a backup PDS library file, instead of using the ISPF options 3.1, 3.2, and 3.3 utility panels you may simply type a 'C' (Copy) command next to a PDS library file on the PANEL3 panel to display a 'Copy to a New or Existing PDS' window panel, and then enter the backup PDS library data set name and press the Enter key to create it.

For example, the following is the diagram of the sample window panel will be displayed after a 'C' command is entered next to the 'USERID.@USREXIT.EXEC' library file on the PANEL3 panel:

Figure 109. The sample utility panel for creating a backup PDS library

```
+-------------------------------------------------------------------------------+
|            Copy to a New or Existing Partitioned Data Set                     |
|                                                                               |
|    Source Data Set . . :  'USERID.@USREXIT.EXEC'                              |
|    Volume  . . . . . . :                                                      |
|                                                                               |
|    Enter the target PDS data set name for the copy function:                  |
|                                                                               |
|    Target Data Set . . :  'USERID.@USREXIT.EXEC.BKUP'                         |
|    Volume  . . . . . . :                                                      |
|    Copy All Members? . :  *         (*/Blank, Default = *)                    |
|                                                                               |
|                                                                               |
|    Press PF01 for tutorial guide.                                             |
|    Press PF11 to display Data Set List for selection.                         |
|    Press ENTER to confirm Copy function.                                      |
|    Press END or CANCEL to cancel Copy function.                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

In the above diagram, you may change the target data set name to any new PDS library name and then press the Enter key to create it. After the Enter key is pressed, the following sample window panel will be displayed:

Figure 110. The sample utility panel for allocating new PDS library space

```
+-------------------------------------------------------------------------------+
|                   Copy to a New Partitioned Data Set                          |
|                                                                               |
|     Source Data Set . . :  'USERID.@USREXIT.EXEC'                             |
|     Lrecl:   84    Recfm:  VB    Blksz: 6160                                  |
|     Primary: 192   Secondary: 14    Directory: 7     Type: TRACK              |
|     Volume  . . . . . . :                                                     |
|                                                                               |
|     Fill in the data for the allocation of a new PDS:                         |
|                                                                               |
|     Target Data Set . . :  'USERID.@USREXIT.EXEC.BKUP'                        |
|     Lrecl:   84    Recfm:  VB    Blksz: 6160                                  |
|     Primary: 192   Secondary: 14    Directory: 7     Type: TRACK              |
|                                                                               |
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

The above sample utility panel can be used to allocate the space for creating a new PDS library. This panel allows you to create either a smaller or larger PDS library based on the original PDS library structure. If you change the Lrecl (Logical Record Length) value and don't know how to define the Blksz (Block Size) value, then you may fill in an "*" (asterisk) in that field.

After the backup PDS library is created, you may add the data set name of this new PDS library file to the PANEL3 panel and use a 'DIFF' command to compare it. To compare the original PDS library with the backup PDS library, simple type a 'DIFF' command next to the original PDS library name and optionally type an 'S' (Select) command next to the backup PDS library name on the PANEL3 panel. The following is a sample PANEL3 panel screen that contains a 'DIFF' and an 'S' command code:

Figure 111. The sample PANEL3 panel with the 'DIFF' and 'S' command codes

```
+-------------------------------------------------------------------------------+
|  PANEL3       The Data Set or Command Selection Panel         Row 1 to 13 of 13|
|  ---------------------------------------------------------------------------- |
|  Project Code ===> 4       Project Name ===> PROJECT           Time => 10:22:32|
|  Function     ===> The MVS Project Work Manager (Enter a 'PH' for help)       |
|  Command ===> _____________________________________________ Scroll ===> CSR  |
|                                                                               |
|   Select    Code    PDS, Sequential, GDG, VSAM, or TSO/ISPF commands    Volume |
|  -------- -------- ------------------------------------------------- -------- |
|  _________     1     USERID.@PROJWRK.PACKAGE                                  |
|  _________     2     USERID.@PROJWRK.ANNOUNCE                                 |
|  _________     3     USERID.@PROJWRK.EXEC                                     |
|  _________     4     USERID.@PROJWRK.CEXEC                                    |
|  _________     5     USERID.@PROJWRK.LOAD                                     |
|  _________     6     USERID.@PROJWRK.PANELS                                   |
|  _________     7     USERID.@PROJWRK.SKELS                                    |
|  _________     8   - USERID.@PROJWRK.TABLE                                    |
|  _________     9     USERID.@PROJWRK.DOCUMENT                                 |
|  _________    10     USERID.@PROJWRK.LIST                                     |
|  _________    11     USERID.@PROJWRK.XREF                                     |
|  _diff____    12     USERID.@USREXIT.EXEC                                     |
|  ___s_____    13     USERID.@USREXIT.EXEC.BKUP                                |
|  ******************************* Bottom of data ********************************|
|                                                                               |
|                                                                               |
+-------------------------------------------------------------------------------+
```

After the 'DIFF' and 'S' command codes are applied on the PANEL3 panel, you may press the Enter key to display an ISPF option 3.13 SuperCE panel to compare the two PDS library files.

Note: In the above sample PANEL3 panel, if the 'DIFF' and 'S' command code positions are swapped, then the "Old DS Name" and the "New DS Name" of the two selected data sets on the ISPF option 3.13 SuperCE panel will also be swapped.

Note: On the above sample PANEL3 panel, if you type a 'C' (Copy) or 'M' (Move) command next to the data set #12 to pair up with the 'S' command next to the data set #13 instead of typing the 'DIFF' and 'S' command pair, then the members in the 'USERID.@USREXIT.EXEC' library can be copied or moved to the 'USERID.@USREXIT.EXEC.BKUP' library.

O.11 How to ease off the Cut/Paste efforts by using Edit Ring

When you need to do a lot of cuts or pastes of the code lines from one file to another by using the 'G' (Get) and 'P' (Put) edit commands, which are the alias names of the Cut and Paste edit commands, then you must edit the two files back and forth and manually do each piece one by one very carefully. Otherwise, you will

very easily make mistakes. However, if you use the Edit Ring method to edit two files at the same time, you will find that the Cut and Paste of two edited files will be a lot easier.

If the two files you are about to do cutting and pasting are the two different members of the same PDS, then on the PANEL4 panel you may enter a 'RING' command and use two 'S' (Select) code to select the two members to bring them into an Edit Ring. In the ring, you may use the 'G' and 'P' edit commands to cut and paste the code from one file to another file very easily. To switch from one file in the ring to another in the ring, simply press the PF3 key. You may bring more than two files in the edited ring at the same time also. In this case, you might need to press the PF4 key to move the ring in backward direction. Note that the PF3 key always move the ring to the next file direction, i.e. the forward direction. You may also enter a 'NEXT' or 'BACK' edit command to move the ring to either direction without saving the updated data. The PF3 and PF4 key will always save the updated data first before move to the next or previous file in the ring. To exit the Edit Ring, you need to enter a 'QQ' (i.e. the QQuit) edit command. It is not recommend to use more than two files in an edited ring for the cut and paste function because it might cause confusion and make mistakes.

If two files are not the members of the same PDS, then you may edit two files separately first and then enter a 'RC' (Recall) command to display the RECALL command panel. On the RECALL command panel you may use the RING command and two 'S' command codes to edit the two files in an Edit Ring and then proceed the cut and paste function.

Note: In addition to the Edit Ring method, you may also use the following methods to ease off the Cut and Paste effort.

1. If you have already edited the two PDS member files that you want to do Cut and Paste, then instead of using the Edit Ring you may also use the '\' PDS member backtrace command method to toggle between the two files on the PANEL4 panel

2. If you need to cut one piece of code segment but need to paste it to several places. then instead of using the 'P' edit command to paste the code you may add a parameter 'K' (Keep) in the 'P' edit command, i.e. use the 'P K' edit command, to keep the code lines in the Cut/Paste code buffer after the pasting. Only when you paste the code to the last place, then you may use the 'P' edit command instead of the 'P K' edit command. Note that you may also enter a 'P C' or 'G C' command to clear the Cut/Paste code buffer before using the 'G' command to cut another piece of code. Please type a 'P ?' or 'XPASTE ?' command in the edit command line for more information

---

O.12 How to send just few load modules to another load library

If you need to send only one or few updated load modules from one LOAD library of a source TSO account to the LOAD library of a target TSO account, then you may do the following procedure:

1. On the source TSO account you need to enter the Project Work Manager tool session. Assume the LOAD library name is 'USERID.TEST.LOAD' and it contains the load module, say 'CHECK1', that you are about to send has already been defined on the PANEL3 panel, then you may type a 'SF' command next to the LOAD library name on the PANEL3 panel.

2. When a Target Destination Selection window panel is displayed, be sure to select the proper Node and Userid name of the target TSO account.

   On that window panel, you may press the PF10 key to display a 'GETDEST' panel and select the proper Note/Userid, and you may press the PF11 key to display a PDS member name list panel of the source LOAD library to select the member.

3. On the PDS member list type a 'S' code to select one or few updated load modules that you want to

send and then press the PF3 key. Then the selected load module will be sent to the target TSO account.

The load module file to be sent will be a new data set named 'USERID.@SENDFxx.TEST.LOAD', where 'xx' is any sendfile sequence number. In this new library it will contain only one load module named 'CHECK1' that you have just selected.

4. On the target TSO account, you need to establish the Project Work Manager tool session and enter a 'REC' command on the PANEL2 panel or any other panel to receive the load module.

5. Enter a 'FFF' command on the PANEL2 panel or any other panel to display a 'DSLISTF' panel. From that panel you may select your Userid to display an ISPF option 3.4 data set list panel of all your cataloged data sets, on which the new received load library name can be found.

6. Next to the new LOAD library type a 'CP' command to display the ISPF option 3.3 panel and then follow the normal procedure on the ISPF option 3.3 panel to copy the load module 'CHECK1' to any load library that is on the target TSO account.

O.13 How to send a PDS member file through Lotus Notes

The following is a sample procedure of how to send a PDS member file to another member of your team through the Lotus Notes:

1. On the PANEL4 panel of the PDS member listing, next to the member file type a 'CS' command on the line command area to create a sequential file of the selected PDS member.

2. Exit the ISPF session and enter into the TSO 'Ready' mode.

3. On the 'Ready' mode of TSO, click the 'Recv' button on the tool bar of the 'Session A' panel, where 'Session A' is the window panel of eNetwork Communication in which it contains your TSO host session. This function can transmit the TSO file to the C−Drive of your workstation. If the PDS member file to be sent is a JCL file, then be sure to select the 'Text' type for the file transmission.

4. On Lotus Notes, click the 'File' drop−down menu and select the 'Attach' option to attach the PC file to your note.

O.14 How to use the 'EXPAND' Edit Macro

If you enter an 'E' command on the PANEL3 panel to edit the Project List member file and add a new data set name, but you can only remember the first few characters of the data set name, then it is suggested that you may use this "EXPAND' Edit Macro to help you to fill it in the edit file.

Assume that the edited Project List member file is the sample Project file named 'PROJECT' in your 'USERID.@PROJWRK.LIST' library, which is shown below:

Figure 112. The sample Project List Member file

```
/*-------------------------------------------------------------
/* @FUNCTION: The MVS Project Work Manager (Enter a 'PH' for help)
/* @HIDE (Remove "/*" to hide this Project List member on the panel
```

```
/*-------------------------------------------------------------
TOOLKIT.@PROJWRK.PACKAGE
TOOLKIT.@PROJWRK.ANNOUNCE
TOOLKIT.@PROJWRK.CEXEC
TOOLKIT.@PROJWRK.LOAD
TOOLKIT.@PROJWRK.PANELS
TOOLKIT.@PROJWRK.SKELS
TOOLKIT.@PROJWRK.TABLE
TOOLKIT.@PROJWRK.DOCUMENT
```

and if you may enter a 'EXP' edit command and place the cursor under the first letter 'K', for example, of any of the data set name lines and press the Enter key, then the data string to the left of the cursor, which is 'TOOL', will be picked up as the input data set name pattern by the 'EXPAND' Utility program for the data set names expansion.

Instead of using the 'EXP' edit command, if the edit file is not a Project List member file as shown above, then you may type a 'EXP' line command at any prefix line area, place the cursor under a data set name field in the edit file and press the Enter key to perform the data set name expansion also.

If the edit file is a Project List member file, then you may simply place the cursor under a data set name field and press the PF4 key, i.e. the 'ED' command key, to perform the data set name expansion.

After the data set name expansion is completed, all expanded data set names will be displayed on a selection panel. On that panel, you may type a 'S' or '/' code to select a file name, or type a pair of 'SS' code to select a group of file names. You may also use the 'E', 'B', or 'V' code to edit, browse, or view the file. You may use a 'D' code to deselect the file name which has been selected by using a 'S' code.

After the file names are selected, you need to press PF3 key to save them in a buffer. Then in the edited Project List member file you may use the 'P' line command to paste the file names in edit.

On that panel, you may also enter a 'F string' command to search for a data set name. You may press the PF5 key to repeatedly search for the data set names that contain the searched string.

In the above example since we only provided a very short data set name pattern for the search, thus it will take very long time to complete the data set names expansion. On our MVS system, it will generate more than 4,000 data set names with the high level qualifiers of 'TOOLDEV', 'TOOLKIT', 'TOOLMVS', and 'TOOLSUP' from the catalog. Since it will take too much time to complete the expansion, for every 1,000 data set names it generated, this tool will pop up a confirmation message to allow you to have a chance to quit the expansion process. Thus, it is recommended that you should provide a longer data set name pattern in the edit file so that the expansion time dan be shortened when you use this Edit Macro.

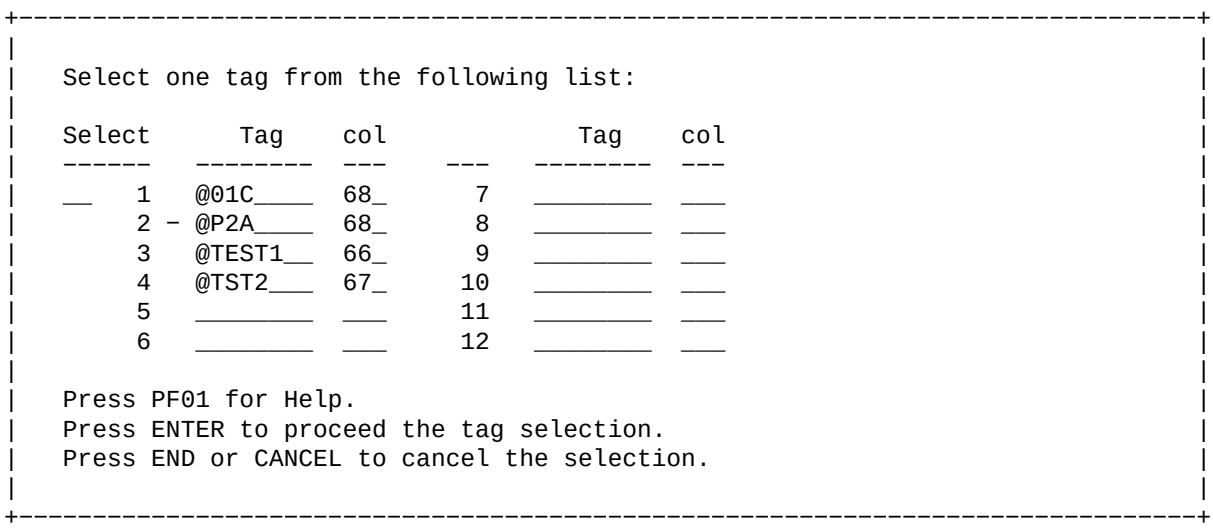
O.15 How to use the 'TAG' Edit Macro

The 'TAG' Edit Macro can be used to insert the program tags on all the changed code lines in an edited program file. It can be used as a line command to insert a GML tag at the first column of a data line in an edited script file also.

O.16 The method of adding a progaram tag

For the program tag insertion function, initially in the edit file you may type a 'TAG S' command to display a Tags Table Selection panel. The short command form of the 'TAG S' command is the 'TAGS' command. The displayed table panel is as shown below:

Figure 113. The table panel for the program tag insertion



When you type in a tag on the table, you don't need to type in the associated column number. If the column number of a tag data entry is not specified, then this tool will search for the default right margin of the Comment Line Utility function to determine which is the best column position for you to insert that program tag. Note that a marker '−' has already been flagged on the second data entry on this sample table.

After the program tags are well defined and the Enter key is pressed, whenever you change some code lines in a program, you may enter a 'TAG' command on the edit command line to insert the tag '@P2A' on all the changed code lines near at the column 68 position.

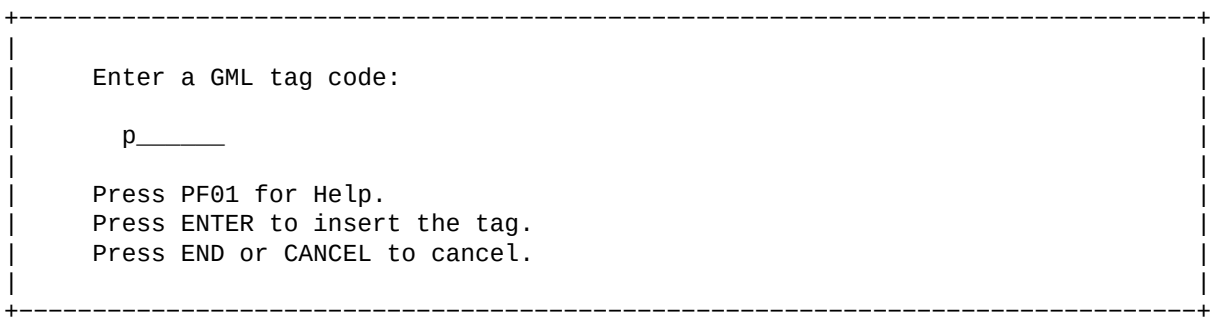
If you want to add a new program tag on this table, or want to change to select the first tag, all you need to do is type a 'TAGS' command to display this table again and either add a new tag at the next available data entry or type a '1' code on the selection field.

Note that the 'TAG' command can be used as a line command in edit also. If a 'TAG' line command is typed on a code line, then a program tag will be added on that code line no matter it has been changed or not.

O.17 The method of adding a GML tag

For the GML tag insertion function, in the edited script file you may type a 'TAG' line command next to a code line, then a small window panel, which is as shown below, will be poped up:

Figure 114. The window panel for the GML tag insertion



Assume that you enter a GML tag 'p' or 'li' on the panel, after pressing the Enter key the '

' or ':li.' GML tag will automatically insert at the first column of the script code line.

If a 'TAGS' instead of the 'TAG' line command is typed in the script file, then it will enter the 'Automatic Balance Code Insertion' mode. In this mode, you may type in a GML tag such as '

```
', then
this tool will automatically add a balance GML tag '
```

' in the script file for you.

O.18 How to install your own newest 'CODEPRTX' tool package

The CODEPRTX is an excellent tool package that can be used to print various kinds of program source code in a very neat format. This CODEPRTX tool is applicable to several types of program source, such as the REXX, C, and PL/X, etc. program code.

If the CODEPRTX tool has already been installed on your TSO system, and if your tools administrator could not catch up to install the newest version CODEPRTX tool package, then you may use this tool to install the newest version CODEPRTX tool package for yourself. The following is the procedure of how to install the CODEPRTX tool or any other tool that you have found on the MVSTOOLS tools library:

1. On your VM account enter the 'OMNIDISK MVSTOOLS' command to access the MVSTOOLS tools catalog listing.

2. Use the PF4 key to send the 'CODEPRTX' tool package files to your VM reader.

3. Enter a RDRLIST command to display a reader file listing panel.

4. On the RDRLIST panel, use the SENDRDR command to send the received reader files to your TSO account.

5. Receive the tool files from your TSO account.

6. Create a new project or work item, such as 'CDPRTX', on the PANEL2 panel and add the received tool file names in this project. Among them, one is named 'USERID.CODEPRTX.CEXEC'.

7. On the PANEL2 panel enter a 'PROF' command to edit the PROFILE file in the XREF library.

8. In the edit PROFILE file, add a code line to allow the 'USERID.CODEPRTX.CEXEC' library file to be automatically concatenated with the SYSPROC file of this tool package:

   Figure 115. The sample PROJWRK profile for the CODEPRTX tool interface

```
+-------------------------------------------------------------------------------+
|   /*-----------------------------------------------*/                         |
|   /* This is the PROJWRK sample PROFILE file      */                         |
|   /*-----------------------------------------------*/                         |
|   FILEAID  = NO   /* Default no File-AID interface                            |
|   USEREXIT = NO   /* Default not to link User-Exit Lib                        |
|   EXEC   =                                                                    |
|   EXEC   =                                                                    |
|   CLIST  = USERID.CODEPRTX.CEXEC     <=== Add this code line                  |
|   CLIST  =                                                                    |
|   SKELS  =                                                                    |
|   SKELS  =                                                                    |
```

```
|   PANELS =                                                                    |
|   PANELS =                                                                    |
|   LOAD   =                                                                    |
|   LOAD   =                                                                    |
+-------------------------------------------------------------------------------+
```

After the procedure is completed, whenever you enter a 'CODEPRTX' command next to a program file you can be sure that you are using the newest version of this 'CODEPRTX' tool package that is installed on your own TSO account. More detail information about the usages of the user−defined PROFILE file can be found in the Appendix section in the User's Guide.

O.19 How to avoid using the split ISPF panel screen

When you edit a program file, which is a member file of a PDS, if you wish to copy some code lines from other programs, instead of pressing the PF2 key to split the ISPF panel screen to edit the other program files, you may choose to use either of the following two methods:

1. The first method is to enter an 'EDX' command on the command line of the edited file to display a PANEL4 panel of the same PDS. On the panel you may type a 'E' command code next to a member to edit a selected member, or enter a 'FFF' command on the PANEL4 panel to display the 'DSLISTF' panel, select a code to display an ISPF option 3.4 data set list panel, and then use an 'E' or 'ED' command next to a file to edit the file.

2. The second method is to enter a 'RC' command on the command line of the edited file to display a RECALL command panel. On the panel you may enter a selection code to edit a file, or type a 'X' command next to a file on the RECALL command panel to display a PANEL4 panel of the selected PDS and then select a member on the PANEL4 panel for edit.

After editing the other program file, you may use the Cut command to copy the code lines, and then press the PF3 key to return to the originally edited file session. Finally you may use the Paste command to fetch the copied code lines into the edited program file.

Note: By observing the above description, you may find that the 'EDX' and 'RC' commands are very much like the external communicator for edit and they allow you to get across the boundary and enter into the outside of the edit session.

O.20 When to use the RESET command on the PANEL2 and PANEL3 panels

There are two types of '/R' (or 'RES') command can be used: one is to be used on the PANEL2 panel the other can be entered on the PANEL3 panel.

If you add a new member in the Project List member file to create a new project or work item, such as the example that you use a 'C' (Copy) command on the PANEL4 panel to copy an existing member in the Project List file (i.e. 'USERID.@PROJWRK.LIST' file) to create a new member and then use 'E' (Edit) command to modify the new member file contents in edit, then you will have to enter a '/R' (or 'RESET') command on the PANEL2 panel, and then you will be able to see the updated project name on the PANEL2 panel. The data set name list on the PANEL3 panel will also be refreshed as the result of this reset process. If the new project is created from the PANEL1 panel, then the PANEL2 reset process will be automatically executed behind the scene. In this case, no need to manually enter a 'RESET' command.

If you use an 'ADD' command to add the new data set names on the ISPF option 3.4 data set list panel, or use an 'E' (or ED) command on ISPF option 3.4 data set list panel to edit a Project List member file and add or

delete the data set names, or if you use an 'E' (Edit) command on the PANEL4 panel to modify the contents of a Project List member file in edit, then you will need to use a '/R' (or RES) command on the PANEL3 panel to update the selected project. In this case, you may also enter the 'RESET' command on PANEL2 panel instead of entering the 'RESET' command on the PANEL3 panel. Either way will work. The major difference of entering the 'RESET' command on these two panels is that the 'RESET' command on the PANEL2 panel will reset the bookmark buffer to empty and thus it will reset the entire 'RECALL' command buffer to empty . The 'RESET' command on the PANEL3 panel, on the other hand, will only partially reset the 'RECALL' command buffer of the selected project to empty and you may still recall the files of other projects from the RECALL command panel after the reset process is completed.

If you enter an 'E' command next to a project name on the PANEL2 panel to edit the Project List member file and modify its contents, or enter an 'E' command on the PANEL3 panel command line to edit the Project List member file of the selected project and modify its contents, then you don't need to enter a 'RESET' (or '/R') command because the reset command function will be automatically executed behind the scene if the Project List member file of the selected project is altered.

Any time after you manually update the Project List member file in edit and the PROJWRK tool does not know about it, you will need to use the RESET command on either the PANEL2 or PANEL3 panel to make the XREF1 file in the 'USERID.@PROJWRK.XREF' to be in synchronize with the contents of all the members in the Project List file, where XREF1 file and XREF2 files are the two Cross Reference files to be used as the database of the PANEL5 panel. XREF1 is to be used on the upper screen and XREF2 is to be used on the lower screen when the ISPF panel screen is split. The PROJWRK tool can be used in two different sessions on split ISPF panel screen but using the split ISPF panel screen is not recommended.

O.21 How does the PF3 key work on the PROJDIR panel

When the 'DIR' command is initially invoked, it must be invoked on a panel in the Primary Project Work Manager tool session to enter into the 'DIR' mode. Later in the Project Work Manager tool session we may enter a selection code other than '1' to enter into a non−Primary Project Work Manager tool session.

On the non−Primary Project Work Manager tool session we may either press PF3 key, type a 'QQ' (QQuit) command, or enter another 'DIR' command to return back to the Project Work Manager tool session again. At this time when the PF3 key is pressed on the PROJDIR panel, the 'DIR' mode will be dropped and the panel in the Primary session where the first 'DIR' command was initially issued will be returned. It will not return to the non−Primary Project Work Manager tool session, even though it was the place where the last 'DIR' command was issued.

The selection code '0' (zero) has been made equivalent to the 'DIR ' command. On any of the non−Primary Project Work Manager tool session, we can enter a '0.1' selection code to branch back to the PANEL2 panel of the Primary Project Work Manager tool session in the 'DIR' mode, and on any of the panels of the Primary Project Work Manager tool session we can enter a '0.3' selection code, for example, to display the PANEL2 panel of the third non−Primary Project Work Manager tool session listed on the PROJDIR panel to bypass the display of the PROJDIR panel.

O.22 A special method for transporting the MVS tool packages

There are several methods provided by this tool package that can be applied to transport the MVS tool package files to any MVS systems in the world. The best method is to use the 'SF' command, which uses the 'TSO XMIT' command function to transmit the files.

I had an experience on attempting to install my tool files in my TSO account at an MVS system of IBM Manassas for the Core Banking Controller system testing purpose. That TSO system happen to be a stand−alone system whose system node id is not defined in JES system. Thus, I was unable to send any file to

that TSO system from my other TSO accounts by using the 'SF' command.

The alternative method I chose to use was to apply the 'SP' command to send my tools library files to a TSO account in the 84 bytes sequential file format and each code line in that file has a line splitter code attached to it. Then I download the sequential file from VM or TSO host to the PC hard drive. To download the file, on the host window panel I can click the 'Recv' icon. On the target TSO account at IBM Manassas MVS system I click the 'Send' icon to upload the file back to the host in binary format.

While uploading the PC file, if the file is very large sometimes an error might occur. For example, assume the PC file to be uploaded is the PROJWRK.CEX file. The host file that the PC file will be copied to is named 'USERID.PROJWRK.CEXBIN', where 'USERID' is the TSO logon Userid. When this PC file is to be transmitted, the following error message might be issued due to TSO space segmentation problem:

```
X374000I userid,logonprc,SYS00004,Attempting SPACSECI For userid.
         PROJWRK.CEXBIN ddname,1
X374441I Recovery not allowed for Contig Allocations
```

If this error occurs, the TSO will be hang in the X−PROG756 mode. To solve the problem, I need to press the Attention key first and then logoff the TSO account at IBM Manassas MVS system and log back on again. Then I apply the ISPF option 3.2 to allocate an very large empty 'USERID.PROJWRK.CEXBIN' sequential file on the host using the following template:

```
Data Set Name . . . : USERID.PROJWRK.CEXBIN

Volume serial . . . .           (Blank for authorized default volume)
Generic unit. . . . .           (Generic group name or unit address)
Space units . . . . . TRACK     (BLKS, TRKS, CYLS, KB, MB or BYTES)
Primary quantity. . . 100       (In above units)
Secondary quantity. . 50        (In above units)
Directory blocks. . . 0         (Zero for sequential data set)
Record format . . . . VB
Record length . . . . 255
Block size  . . . . . 6233
```

After this large variable length record empty CEXBIN file is created, then I can proceed the file transmit function to upload the PC file back to host again.

When the PC file is uploaded to the CEXBIN file on the host, I need to either run the 'XRESTORE' command next to the CEXBIN file on the ISPF option 3.4 data set list panel, or submit a 'XRSTOR' batch job to strip off the line splitter code from the CEXBIN file. At the final step, I need to execute a 'RECEIVE INDA(/)' command next to the XRESTORE command generated 80−byte record length sequential file on the ISPF option 3.4 data set list panel to convert this sequential file back to the PDS library file format. Note that there are two sample files, i.e. the XRESTORE program file and the XRSTOR batch JCL file, which are available in the DOCUMENT library of this tool package.

−−

The above described procedure is not easy and it is very time consuming. From my experience, it will take more than 2 hours to complete the whole process to restore this tool package files from the PC file format back to the PDS file format running in foreground. The process time can be cut to half if running in batch but it is still very long. However, since the method of using the magnetic tapes to transport the MVS tool

packages is not popular and it is the method that only the MVS system operators know about, thus this slow method is in fact the best choice for us to transport the MVS tool packages so far. This method is very suitable for personal usage on transporting the small or medium sized MVS tool packages from one MVS system to another. It is an ideal method to transport this tool package as this is only a medium sized tool.

During executing this process, you may save the PC files on a writable CD or IOMEGA Zip 100 diskettes, or save them in a Lotus Note file, and then send the PC files through Lotus Notes or Internet, or bring the writable CD or IOMEGA Zip 100 diskettes over to the target MVS system of any Company in the world, and finally perform the PC file uploading operation to load this tool package back to MVS system.