



Problem Solving

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PROBLEM SOLVING

Replacing The Computer's Backup Battery

The computer has a clock that runs continuously. When the computer is turned-off, a battery keeps the clock running. The backup battery needs replacing if there are intermittent problems starting up the computer and the date is reset to something other than the current year.

For some computers it's a simple procedure to replace the battery, for others it may require a qualified engineer to provide this service.

Replacing the battery may affect the settings in the control panel:

- Date and time
- Memory
- Monitors and sound
- Keyboard and mouse

Make a note of the settings before replacing the battery.

PROBLEM SOLVING ON A MAC

Rebuilding The Desktop

The desktop file is one of the many files on a Mac, which is invisible under most circumstances. Deleting the desktop file will effectively lose all files and programs. The desktop file has a rather long memory and saves records of all the files created long after they have been deleted. This creates an enormous file which slows up the computer and creates errors. It is really a database of all files and the finder uses it whenever it looks for a file. If the desktop file becomes confused, 2 symptoms may appear:

- The 'generic icons' will appear blank.
- 'Application not found' message appears after double clicking on the file.

One of the most basic of all maintenance operations is to rebuild the desktop, which can be performed once a month. Turn the computer on and hold down:

Apple/Alt

Hold down these keys until a message appears, 'Rebuild the desktop' and click OK.

Zapping The PRAM

The PRAM is a small area of special memory that is kept alive by the Mac's built-in memory. The PRAM stores the settings made in the control panel, such as volume, mouse speed, memory, network, SCSI and screen settings. The area of memory sometimes gets corrupted. Typical symptoms, are the control panel does not retain their settings or file cannot be printed. Switch-on the computer and hold down:

Apple/Alt/P/R

Release the keys after the second or third start-up chord.

Switch-Off Extensions

Each extension is a self-loading background program, such as a screen saver, that is installed in the system folder. They are written by a programmer who has no information about what other extensions are being used. As a result, two extensions may clash resulting in the message, 'Sorry, a system error occurred'. Switch-on the computer and hold down:

Shift key

Release the key after the message, 'Extensions off'. You can then remove extension from the 'Extensions folder' to see if the problem can be solved. Extension problems usually occur after installing new software. A software solution can be used if the problem persists, 'Conflict Catcher' tells you when a conflict is about to occur. See also INIT Clashes and System Conflicts.

Force Quit

Used when escaping from a frozen program:

Apple/Alt/Esc

De-Fragmenting Hard Drive

When a file is saved to a disk with alot of space, the tracks will be more or less continuous. However from time to time files will be deleted and this will leave gaps. Sometimes when a file is saved it will find these gaps and the file will be stored in this area. If the whole of the file cannot be stored in this gap, it will search until it finds another gap and save the file. This operation continues until the complete file has been saved.

When retrieving a file when the disk is nearly full, can be a time consuming process because the read and write heads of the disk drive mechanism, are scanning the disk to find all the parts of a file, if it has been saved in the gaps.

As a regular process, perhaps once a month, de-fragmenting the hard disk should be considered. This process moves files around so that each file again forms a continuous block and all the gaps are put together at the end, so new files can be saved. Before the process takes place all files on the hard disk should be backed-up, this is a precaution in case anything goes wrong. The de-fragmenting process can be time consuming and should be done when the computers are not in use, at the end of a shift or in the evening. Disk de-fragmenting software is part of the

windows operating system on a PC. On a Mac, software like Norton Utilities needs to be used.

INIT Clashes And System Conflicts

Hardware and software can be easily installed on a Mac, installing these items produces items on the computer called INIT's. These INIT's can be found in the Extensions Manager in the Control Panel. These INIT's when brought into the RAM memory may clash with other INIT's and cause the computer to freeze or crash.

If there is a conflict then items which are in the Extensions Manager need to be switched-off, this needs to be done by a process of elimination until the offending INIT is found. This can be very time consuming, another choice is to use Conflict Catcher software to see what INIT is causing the problem.

A record needs to be kept of what software was being used when the crash took place. What operation was being performed within the software? Sometimes it is worth restarting the computer, to see if this clears the problem.

Testing And Repairing The Hard Disk

The System Software CD has a Utilities Folder that has 2 very useful files for testing and repairing the hard disk:

- **Disk First Aid**
- **Drive Setup**

When using the above software, start up from the System Software CD:

- Switch-on computer
- Press the CD eject button to open the CD tray
- Place System Software CD in the tray
- Close tray
- Hold down the 'C' key
- Restart the computer

The CD icon appears in the top righthand corner. The following tests and repairs can be performed on the hard disk:

- Repair Directory
- Update Hard Disk Driver
- Test Hard Disk For Physical Damage
- Initialize Hard Disk

Repair Directory

Use **Disk First Aid** to repair the directory. Disk First Aid is a utility application that verifies the directory structure on a Mac hard disk. If the directory structure of the Mac is damaged, Disk First Aid can be used as a first step to repair the problem. If the damage is severe, other utility applications or repair methods may be needed.

Select the volume that needs to be verified or repaired. Click verify to begin verification process or repair to verify and repair. The results of a verification or repair are shown in a window.

Update Hard Disk Drivers

Some problems with the hard disk can be fixed by updating the driver. Use **Drive Setup** program, select the hard disk which needs updating. Open the Functions menu and select Update Driver.

Be careful not to select the Initialize button, this will erase the contents of the hard disk. If inadvertently selected, click cancel.

Test Hard Disk For Physical Damage

Use **Drive Setup** program, select the hard disk which needs testing. Open the Functions menu and select Test Disk. If the test reveals a problem, the hard disk may need to be re-initialized.

If the problem persists the hard disk is probably damaged and needs replacing.

Initialize Hard Disk

Another term for initializing the hard disk is formatting. The hard disk inside the computer was initialized when the computer was built. It should only require initializing if the hard disk is damaged and cannot be repaired with Disk First Aid.

The hard disk can be initialized with the **Drive Setup** program. Initializing the hard disk erases all information on the disk. If possible copy files to another disk. Select the disk which needs initializing, by clicking on the Initialize button.

If the initialization process fails, choose the Function menu and select Low Level Format. This option adds significant time to the process.

If the initialization fails a second time, test the hard disk drive for physical damage using the **Drive Setup** program.

Installing System Software

If there is a problem with the system software, the monitor may show an icon of a floppy disk with a question mark in the middle of the screen. The first stage is to follow the procedure for **Repairing A Damaged Disk**. If repairing the disk does not help then reinstall the system software.

If the system software is being installed on a hard disk for the first time, make sure that the hard disk has been initialized or formatted. This process prepares the disk to store information. Switch-off any software that runs in the background like virus protection software.

When using the above software, start up from the System Software CD:

- Switch-on computer
- Press the CD eject button to open the CD tray
- Place System Software CD in the tray
- Close tray
- Hold down the 'C' key
- Restart the computer

Double click on Mac OS Install icon. A welcome screen appears that guides you through the various stages.

A **Normal System Software Installation** replaces changed system files and adds new ones, but leaves others alone. When installing system software using a **Clean Installation** the Installer creates a new System Folder on the hard disk. The old System folder is renamed Previous System Folder.

Performing a clean installation does not erase the contents of the hard disk

Performing a clean installation can be complicated and lengthy procedure, but if there are problems with the computer or it is running slow, it may help.

When the installation is complete, restart the computer to make sure it is working properly. Re-install extensions, fonts, control panel and other items not installed with the Mac OS. Drag these items one at a time from the Previous System Folder to the new System Folder and restart the computer.

If everything is working okay, delete the Previous System Folder.

PROBLEM SOLVING ON A PC

The following programs can be found in Programs/Accessories/System Tools on a PC:

Disk Cleanup

Used to free space on the hard disk by deleting the following files:

Temporary internet files
Downloaded program files
Recycle bin
Temporary files

Disk De-Fragmenter

When de-fragmenting hard drive the following can be selected:
Re-arrange program files so that they start faster.
Check drive for errors.

ScanDisk

Checks hard disk for errors, the types of tests are:
Standard: checks files and folders for errors.
Thorough: performs Standard test and scans disk surface for errors.

Basic Input Output System (BIOS)

This is a program on a ROM chip powered by a small battery, each time the computer is switched on the BIOS performs a Power On Self Test (POST). This checks that the disk drives, com ports, CPU settings etc. are installed. If everything is okay it will search for and load the operating system. To access this area of the computer:

Press the **DELETE** key as the computer is switched-on.

Operating Windows In Safe Mode

If the computer when switched-on does not load the operating system a list of items may appear, one of which may be Safe Mode. It may be useful to use Safe Mode, so that the computer goes through to the desktop. Safe Mode will not load all the features that are installed but will give you the opportunity to go to any help menus to resolve the problem. When switching-on the computer if the Safe Mode facility does not appear:

Restart the computer and press the **CTRL** key.

Restarting The Computer

It is worthwhile if the computer is not functioning normally to restart the computer to allow the 'checking' procedure to take place. This is good practice if the computer is having problems 'seeing' the disk drives and CD-Rom. This routine may need to be performed several times.

QUESTIONS ON PROBLEM SOLVING

- (1) Give a symptom on a computer that the battery needs replacing?
- (2) Name a symptom that the desktop needs re-building?
- (3) Which keys need to be pressed to zap the PRAM?
- (4) Why do extensions clash?
- (5) When would you use force quit?
- (6) What happens when the hard disk drive is being defragmented?
- (7) Where can INIT's be switched-off?
- (8) Name the 2 files in the Utilities Folder which can be used for testing and repairing the hard disk drive?
- (9) Describe how to start-up the computer from the System Software CD?
- (10) Describe how to repair the directory on the hard disk drive?
- (11) Describe how to test the hard disk drive for physical damage?
- (12) Give another name for initializing the hard disk?

- (13) Why does initializing the hard disk needs to be performed as a last resort?

- (14) What needs to be checked before installing the System Software?

- (15) Name the 2 methods of installing the System Software?

- (16) Name the 3 files on a PC which can be used for problem solving?

- (17) Describe the function of the BIOS on a PC?

- (18) When restarting the computer in safe mode which key needs to be pressed?

- (19) If there are problems with your computer not functioning normally, what are the first stages to resolving it?