

## **CHAPTER 5**

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## **5.1 Introduction**

### **5.1.1 Purpose**

The purpose of this document is to formally describe the system requirements of *iBOS* ( Internet Browsing Operating System ). The functional level requirements are specified using the Use Case Model approach. Following this approach, the Requirements Model of the *iBOS* system has been prepared. The documents describes various requirements comprehensively so as to ensure an efficient design of the *iBOS* system.

### **5.1.2 Scope**

*iBOS* system aims at providing an operating system for the lower end machines so as to enable web browsing. The user of *iBOS* can view a given piece of Information available on the web. An *iBOS* user can only view a web page and cannot save it on the local disk.

The *iBOS* consists of mainly two components :

- i) The kernel which the integral part of the operating system and provides the basic functionalities needed by the web browser.
- ii) The browser which acts as a window in the world wide web for the end user.  
*iBOS* supports a text based browser and not a graphical browser.

### **5.1.3 Acronyms and definitions**

<i>iBOS_user</i>	: any person using <i>iBOS</i> or <i>iBOS</i> services actively or passively. Generalizes both <i>Active_user</i> and <i>Passive_user</i> .
<i>Passive_user</i>	: any person using <i>iBOS</i> passively i.e. such a user simply views <i>iBOS</i> display screen to gain any relevant information. Such a user cannot trigger any event w.r.t. <i>iBOS</i> .
<i>Active_user</i>	: any person using <i>iBOS</i> actively i.e. such a person interacts with <i>iBOS</i> actively. He/she can trigger a event or events within the domain of <i>iBOS</i> . While waiting for a response from the system, an <i>Active_user</i> becomes a <i>Passive_user</i> .
<i>Web_server</i>	: a remote server holding a resource or a piece of information, an <i>iBOS_user</i> is interested in. The user connects to the remote server via <i>iBOS</i> 's browser.
<i>View_screen</i>	: Refers to the activity of an <i>iBOS_user</i> viewing the system screen in order to gain some information such as system state, request for system or web

resource etc.

Generate_event	: refers to the activity of generating/ triggering an event w.r.t. <i>iBOS</i> by an Active_user such as changing the state of information, feeding some information, requesting for a web or a system resource.
Use_system_controls	: refers to the controls available to the Active_user to control the system ( <i>iBOS</i> ) such as shutting down the system or restarting the system etc.
Use_browser_controls	: refers to the controls available to an Active_user needed to control the navigation process in a browser window. Some of the controls are sending the web request, aborting a request, closing a browser window.
Access_webpage_elements	: describes the activity of an Active_user selecting and using various web page elements such as various hypertext controls
Text_input	: refers to the activity of feeding, text based input by an Active_user.
Change_display_screen	: refers to the scenario of changing the contents of the display screen of the system ( <i>iBOS</i> ).
Change_browser_state	: refers to the phenomena of changing the state or mode of the browser. Some of the states can be waiting, when waiting for a web response sending when sending a web request or static state when simply displaying a web page.
Use_Hypertext_controls	: refers to the controls available on web page such as buttons, combo boxes, list boxes etc.
Stop_system	: refers to the scenario of Active_user shutting down the system.
Restart_system	: refers to the scenario of Active_user shutting down the system.
Fill_text_box	: refers to the scenario of Active_user selecting a text Box available on the displayed web page and feeding text based data.

Fill_text_area	: refers to the scenario of Active_user selecting a text area available on the displayed web page and feeding text based data.
Fill_URL_box	: refers to the scenario of Active_user selecting the URL box available in the browser window for entering a URL.
Scrolling	: refers to the situation of an Active_user scrolling down the contents of the displayed page.
Back	: refers to the scenario of an Active_user using navigation controls to see a page already in the cache.
Forward	: refers to the scenario of an Active_user using navigation controls to see a page already in the cache.
Reload	: refers to the situation of an Active_user requesting again for an already requested web resource.
Stop	: refers to the situation of an Active_user stopping the processing of a web request.
Go	: refers to the scenario of an Active_user initiating the processing of a web request.
Select_URLbox	: refers to an activity of an Active_user selecting a URL box in order to type an URL.
Use_button	: refers to the scenario of an Active_user using a button available on a displayed web page in the browser window.
Use_hyperlink	: refers to the scenario of an Active_user using an hyperlink available on the displayed web page in the browser window.
Use_combo_box	: refers to the scenario of an Active_user setting the value of a combo box available on the displayed web page in the browser window.

Use_list_box	: refers to the scenario of an Active_user setting the value of a list box available on the displayed web page in the browser window.
Use_check_box	: refers to the scenario of an Active_user setting the value of a check box available on the displayed web page in the browser window.
Use_radio_button	: refers to the scenario of an Active_user setting the value of a radio box available on the displayed web page in the browser window.

## 5.2 User Requirements Modeling

1.

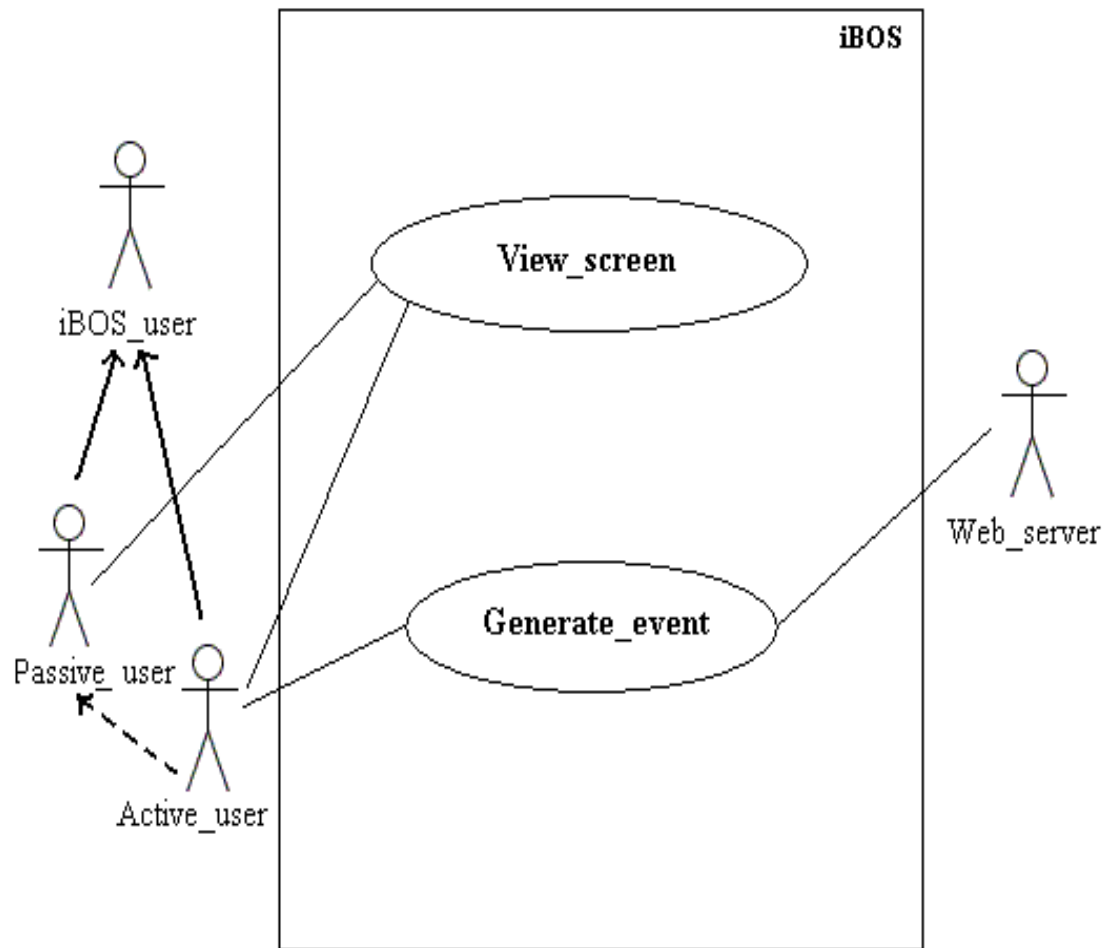


Figure 1 Primary Level Use Case Diagram

## Use Case Specifications

<b>Use case number</b>	: One
<b>Use case name</b>	: View_screen
<b>UCD</b>	: Primary level UCD
<b>Parent use case</b>	: none
<b>Note</b>	: Active_user inherits Passive_user iBOS_user generalizes Active_user, Passive_user
<b>Primary actor</b>	: Passive_user
<b>Secondary actor</b>	: Active_user
<b>Goal in context</b>	: View information displayed on the screen.
<b>Scope</b>	: iBOS
<b>Level</b>	: Primary
<b>Pre condition</b>	: iBOS running
<b>Post condition</b>	: Information viewed.
<b>Trigger</b>	: iBOS event generated.
<b>Main success scenario</b>	: Information gained
<b>Failure end condition</b>	: none.
<b>Description</b>	:1. iBOS generates an event. 2. Relevant information is displayed. 3. Active_user/Passive_user views the information displayed. 4. User interprets it and accordingly may/may not take the necessary action.

**Use case number** : Two

**Use case name** : Generate\_event

**UCD** : Primary level UCD 1

**Parent use case** : none

**Note** : NA

**Primary actor** : Active\_user

**Secondary actor** : Web\_server

**Goal in context** : Input some information.  
Or Retrieve some information.  
Or Change the state of the system.  
Or Change the state of the browser.  
Or Change display screen of the browser.  
Or Generate blank/redundant event/s

**Scope** : iBOS

**Level** : Primary

**Pre condition** : System is in accepting state.

**Post conditions** : 1. Event is echoed, and  
2. System state/ browser state/ display screen is changed  
Or  
System state/ browser state/ display screen is not changed for  
blank/ redundant event.

**Trigger** : Input from input device Or response from web server.

**Main success scenario** : according to chronicle order of goal in context  
Information is feed.  
Or Information is retrieved.  
Or State of the system is changed.  
Or State of the browser is changed.  
Or Display screen is changed.  
Or system state/browser state/display screen is not changed

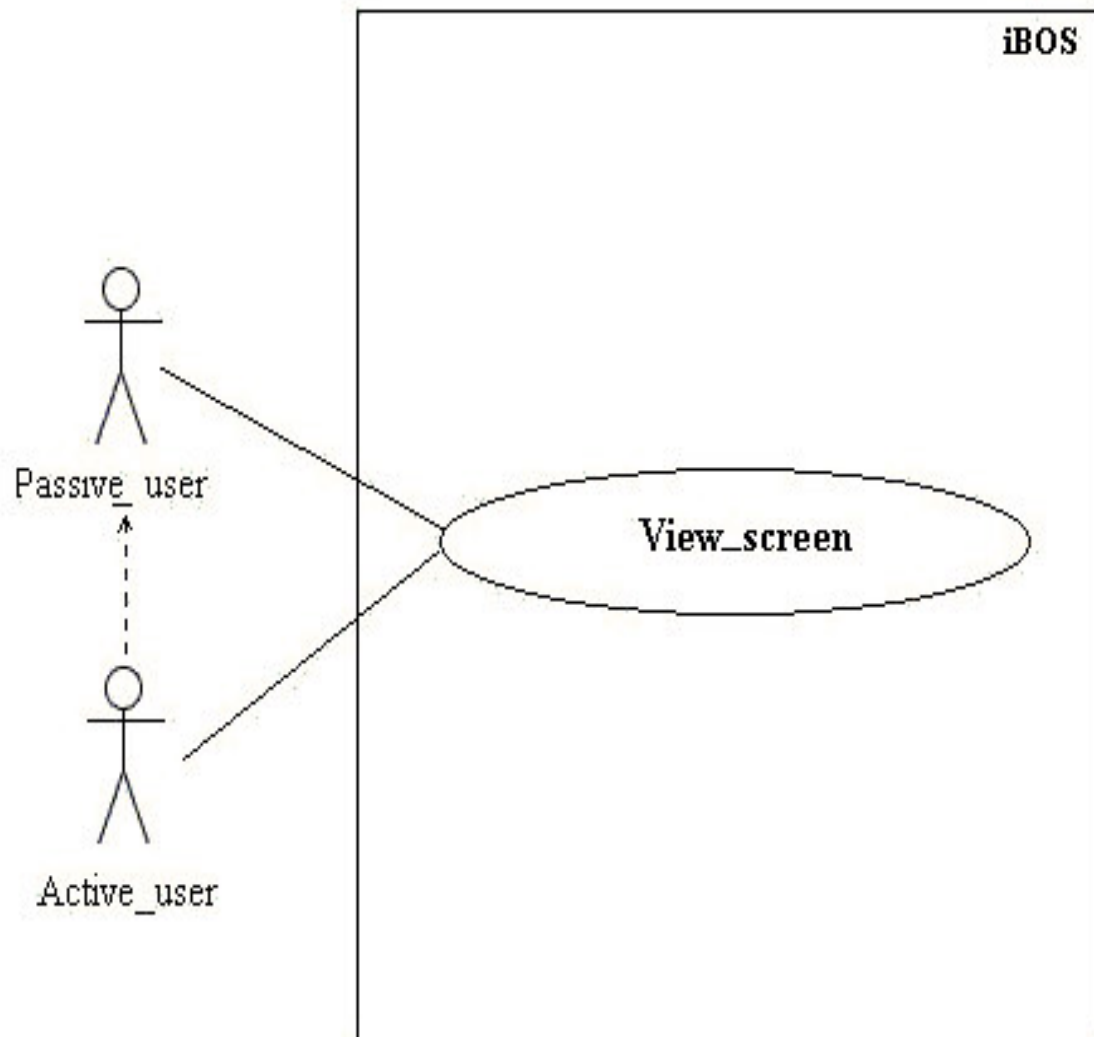


**Failure end condition** : 1. I/O error  
2. *iBOS* does not respond to the web server.

**Description** : 1. user generates key strokes to feed information  
Or request system services like shutting down/ restarting the system  
Or request a web resource  
Or generates redundant/blank events  
Or change the display screen.  
Or Web server responds to an *iBOS* request with an error message/requested web resource.

2. *iBOS* receives the trigger and invokes the corresponding handler and an appropriate event is generated.

2.



**Figure 2 Secondary Level Use Case Diagram 1**

**Use case number** : Three

**Use case name** : View\_screen

**UCD** : Secondary level UCD 1

**Parent use case** : View\_screen

**Note** : Active\_user inherits Passive\_user

**Primary actor** : Passive\_user

**Secondary actor** : Active\_user

**Goal in context** : View information displayed on the screen.

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : iBOS running

**Post condition** : Information viewed.

**Trigger** : iBOS event generated.

**Main success scenario** : Information gained

**Failure end condition** : none.

**Description** : 1. iBOS generates an event.  
2. Relevant information is displayed.  
3. Active\_user/Passive\_user views the information displayed.  
4. User interprets it and accordingly may/may not take the necessary action.

3.

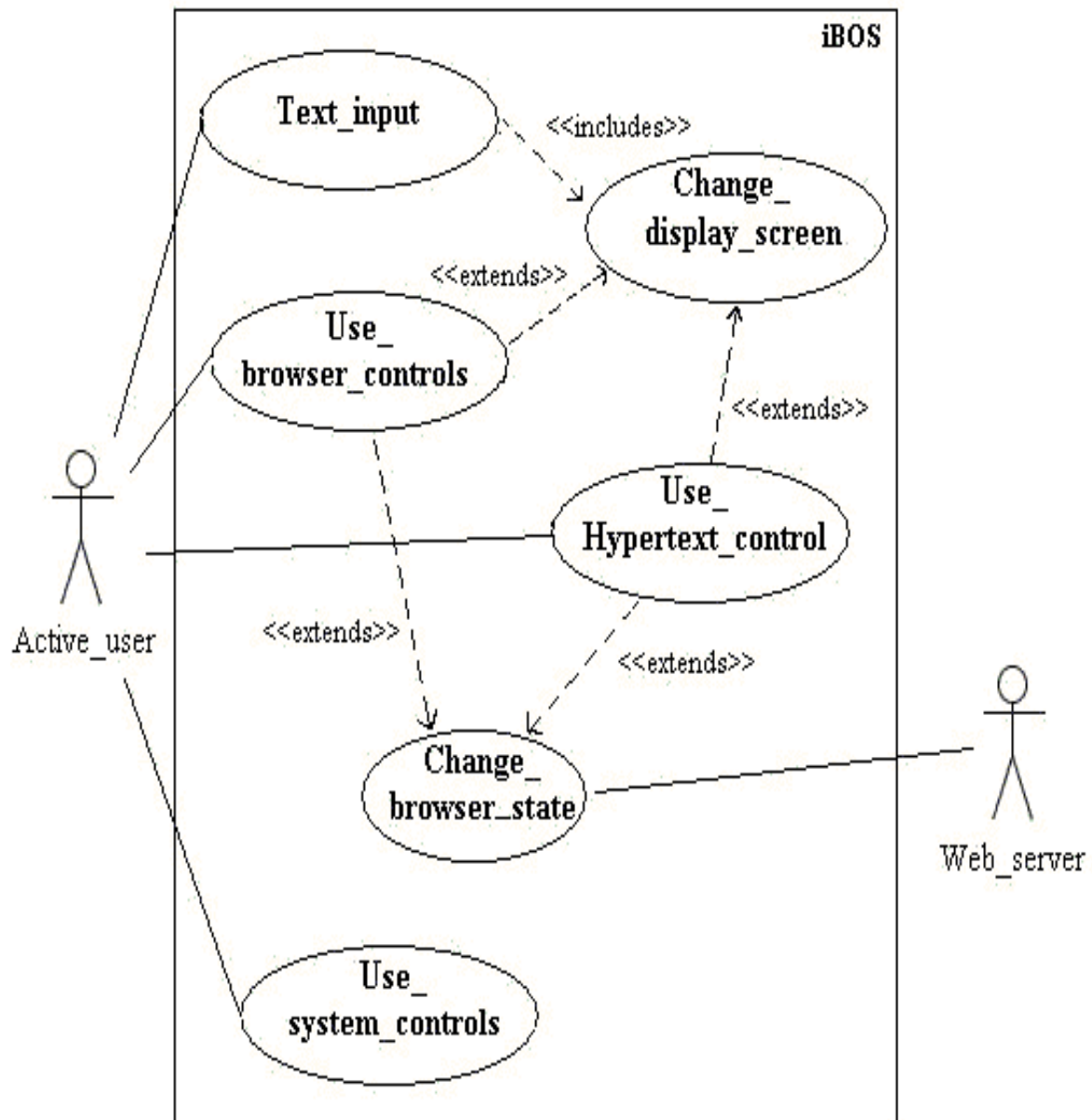


Figure 3 Secondary Level Use Case Diagram 2

**Use case number** : Four

**Use case name** : Text\_input

**UCD** : Secondary Level UCD 2

**Parent use case** : Generate\_event

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To feed in some information

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : System in accepting state.

**Post condition** : Text input is echoed.

**Trigger** : Input from the keyboard.

**Main success scenario** : 1. Text input is echoed  
2. Text data is accepted by appropriate component.

**Failure end condition** : Text input is not echoed.

**Description** : 1. Active\_user generates some keystrokes.  
2. Corresponding characters are displayed on the screen.  
3. Entered text data reaches the appropriate component is accepted.

**Use case number** : Five

**Use case name** : Use\_browser\_controls

**UCD** : Secondary Level UCD 2

**Parent use case** : Generate\_event

**Note** : extends Change\_browser\_state  
extends Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : Use browser controls for navigation of pages.

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : Browser in accepting state

**Post condition** : Display screen is changed  
Or browser state is changed  
Or both, display screen and state is changed

**Trigger** : user generates browser specific key strokes

**Main success scenario** : Correct behavior of browser control is achieved.

**Failure end condition** : Incorrect behavior of browser control.

**Description** : 1. user generates browser control specific keys.  
2. iBOS invokes appropriate handler.  
3. handler initiates appropriate action.

Sp: as a response either only display screen changes like inscrolling the page Or only browser state is changed such as using STOP Or both are changed such as usages of REFRESH, FORWARD, BACKWARD.

**Use case number** : Six

**Use case name** : Use\_Hypertext\_controls

**UCD** : Secondary Level UCD 2

**Parent use case** : Generate\_event

**Note** : extends Change\_display\_screen  
extends Change\_browser\_state

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To access various elements of displayed web page.

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : Web page is loaded in the browser window

**Post conditions** : 1. Appropriate hypertext control is accessed.  
2. It is either used (hyperlink) or its value is set (combo box, Text box Radio button etc)

**Trigger** : User generates hypertext control specific keystrokes.

**Main success scenarios** : 1. Appropriate hypertext control is accessed.  
2. It is either used (hyperlink) or its value is set (combo box, text box radio button etc)

**Failure end conditions** : 1. user is unable to access appropriate hypertext control  
2. user is unable to set value of a hypertext control.

**Description** : 1. Requested page is loaded in the browser window  
2. Hypertext controls are laid down properly in the display web page.  
3. user generates Hypertext control specific keystrokes.

**Use case number** : Seven

**Use case name** : Use\_system\_controls

**UCD** : Secondary Level UCD 2

**Parent use case** : Generate\_event

**Note** : none

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To change the state of the system by restarting, shutting down the system

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : System is in accepting state

**Post condition** : System state is changed

**Trigger** : Input from input device

**Main success scenario** : System state is changed

**Failure end condition** : System state is not changed

**Description** : 1.User wants to either restart or shut down the system.  
2.User hits the appropriate keystrokes when the system is in accepting state.



**Use case number** : Eight

**Use case name** : Change\_browser\_state

**UCD** : Secondary Level UCD 2

**Parent use case** : Generate\_event

**Note** : extended by Use\_browser\_controls  
extended by Use\_Hypertext\_controls.

**Primary actor** : Web\_server

**Secondary actor** : none

**Goal in context** : Change the state of the browser.

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : Browser is in a waiting state.

**Post condition** : Browser exits from the waiting state.

**Trigger** : response from the web server.

**Main success scenario** : Browser state is changed.

**Failure end condition** : Browser state is not changed.

**Description** : 1. iBOS sends a resource request to a remote web server.  
2. Browser goes into a waiting state, where it is waiting for a response from the server.  
3. Remote server responds with a resource or with a error message.  
4. Browser receives response and comes out of waiting state.

**Use case number** : Nine

**Use case name** : Change\_display\_screen

**UCD** : Secondary Level UCD 2

**Parent use case** : none

**Note** : included by Text\_input  
extended by Use\_browser\_controls  
extended by Use\_Hypertext\_controls

**Primary actor** : none

**Secondary actor** : none

**Goal in context** : To change the contents of display screen.

**Scope** : iBOS

**Level** : Secondary

**Pre condition** : web page was displayed previously ( for BACK )  
Or  
Current webpage has some hypertext links ( for FWD )  
Or  
Requested page may be loading ( GO,STOP )  
Or  
Contents of the page are larger than the screen ( Vertical Scrolling )  
Or  
Some hypertext control is accessed/used  
Or  
Some text input has taken place.

**Post condition** : Contents of the display screen are changed.

**Trigger** : input from the keyboard.

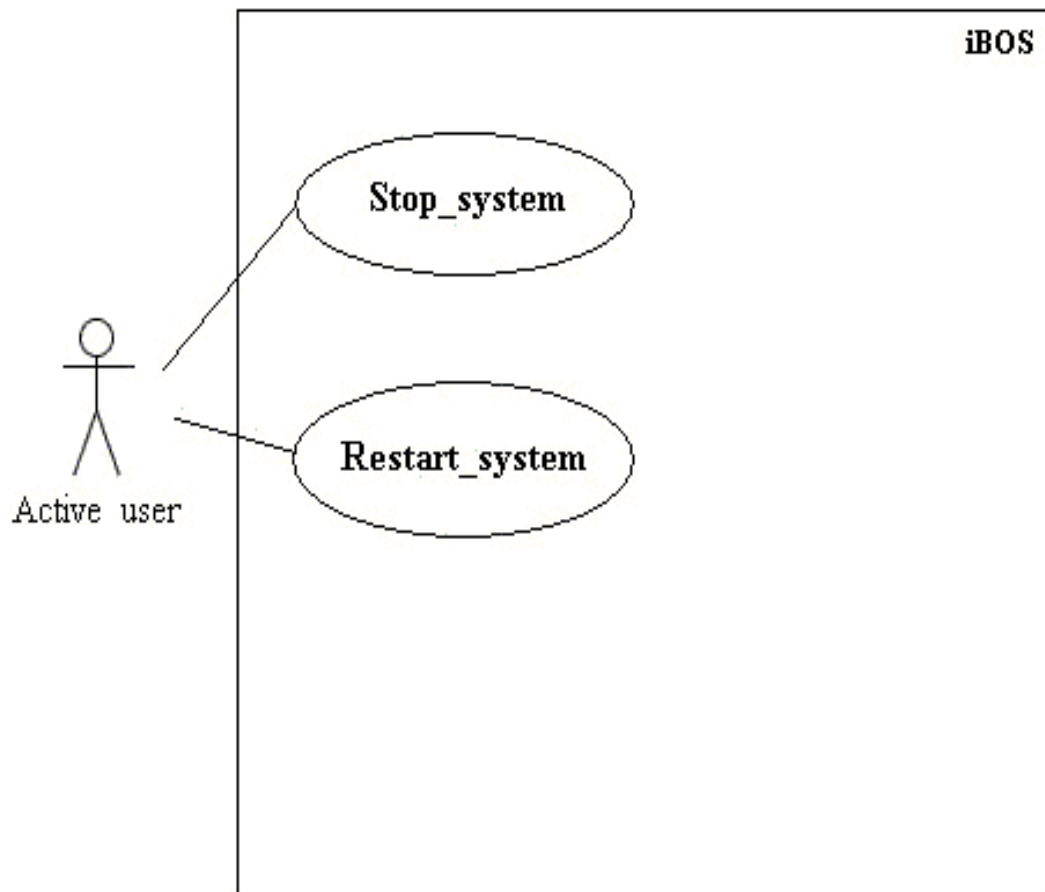
**Main success scenario** : Contents of the display screen are changed.

**Failure end condition** : Contents of the display screen are not changed.

**Description** : 1. user generates keystrokes( general, browser control, hypertext control )  
2. appropriate handler is invoked.

3. handler generates the correct output contents.
4. Contents are laid out on the screen.

4.



**Figure 4 Tertiary Level Use Case Diagram 1**

**Use case number** : Ten

**Use case name** : Stop\_system

**UCD** : Tertiary Use Case Diagram 1

**Parent use case** : Use\_system\_controls

**Note** : not applicable

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To shut down the system.

**Scope** : iBOS

**Level** : Tertiary

**Pre condition** : System in accepting state

**Post condition** : System is shut down

**Trigger** : Shut down specific keystrokes.

**Main success scenario** : System shuts down properly.

**Failure end condition** : System goes in an indefinite waiting state.

**Description** : 1. user wishes to shut down the system.  
2. User provides necessary shut down specific keystrokes.  
3. iBOS saves the internal state and shuts down.

**Use case number** : Eleven

**Use case name** : Restart\_system

**UCD** : Tertiary Use Case Diagram 1

**Parent use case** : Use\_system\_controls

**Note** : not applicable

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To restart the system.

**Scope** : iBOS

**Level** : Tertiary

**Pre condition** : System is running.

**Post condition** : System restarts and enters accepting state.

**Trigger** : Restart specific keystrokes.

**Main success scenario** : System restarts.

**Failure end conditions** : 1. System goes in an indefinite waiting state.  
2. System does not restarts.

**Description** : 1. user wishes to restart the system.  
2. User provides necessary restart specific keystrokes.  
3. iBOS saves the internal state and restarts.  
4. iBOS loads system state and programs.

5.

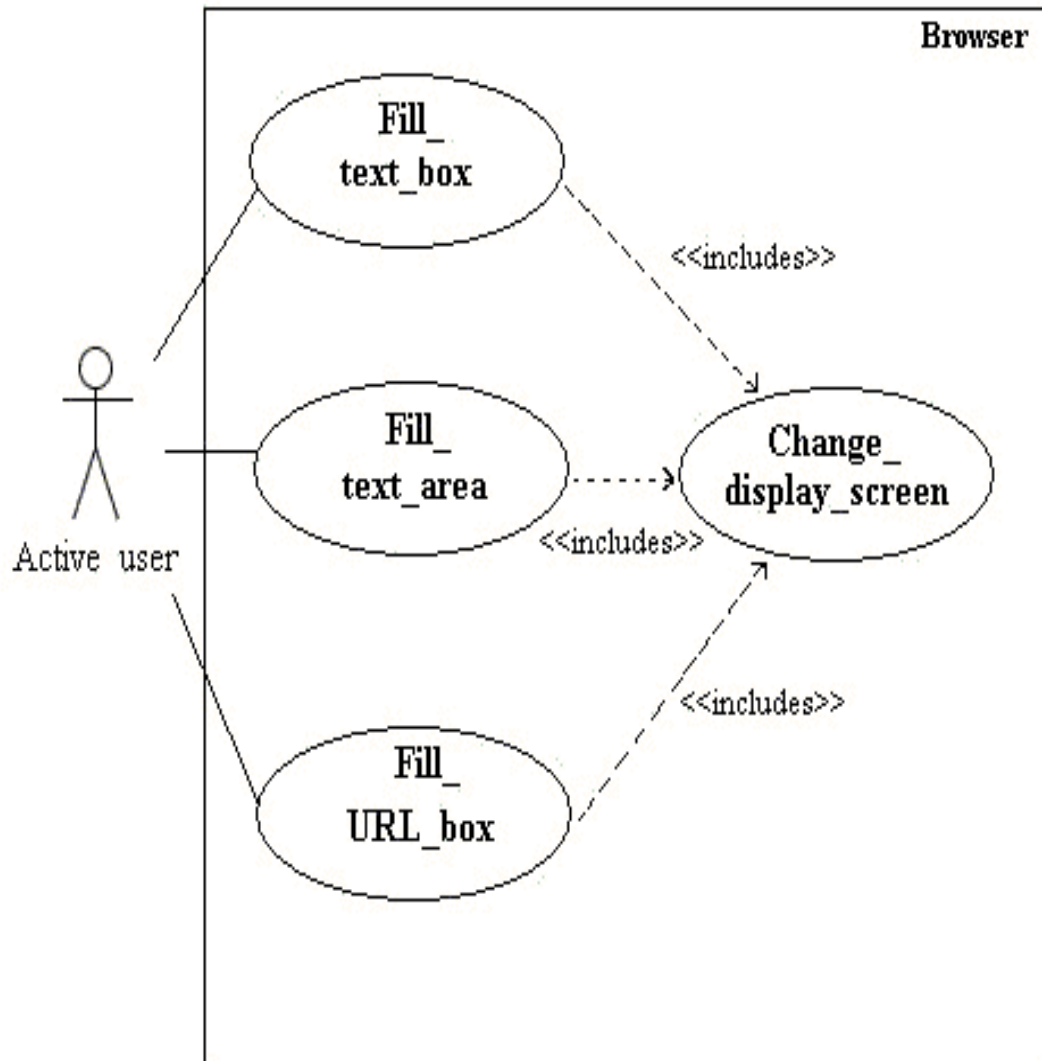


Figure 5 Tertiary Level Use Case Diagram 2

**Use case number** : Twelve

**Use case name** : Fill\_text\_box

**UCD** : Tertiary Use Case Diagram 2

**Parent use case** : Text\_input

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To fill a text box with text on a web page

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Appropriate text box is selected and accessed.

**Post condition** : Text is echoed in the appropriate text box.

**Trigger** : Not applicable

**Main success scenarios** : 1. Text is echoed in the appropriate text box.  
2. Text data reaches appropriate component.

**Failure end conditions** : 1. Text is not echoed.  
2. Text data does not reaches appropriate component.

**Description** : 1. User selects a text box.  
2. Generates keystrokes.

SP: Enter key is not applicable.



**Use case number** : Thirteen

**Use case name** : Fill\_text\_area

**UCD** : Tertiary Use Case Diagram 2

**Parent use case** : Text\_input

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To fill a text area with text on a web page

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Appropriate text area is selected and accessed.

**Post condition** : Text is echoed in the appropriate text area.

**Trigger** : Not applicable

**Main success scenarios** : 1. Text is echoed in the appropriate text area.  
2. Text data reaches appropriate component.

**Failure end conditions** : 1. Text is not echoed.  
2. Text data does not reaches appropriate component.

**Description** : 1. User selects a text area.  
2. Generates keystrokes.

SP: Enter key generates new line.

**Use case number** : Fourteen

**Use case name** : Fill\_URL\_box

**UCD** : Tertiary Use Case Diagram 2

**Parent use case** : Text\_input

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To fill a URL box with text on a web page

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : URL box is selected and accessed.

**Post condition** : Text is echoed in the appropriate URL box.

**Trigger** : Not applicable

**Main success scenario** : web request is sent

**Failure end conditions** : 1. Text is not echoed.  
2. Text data does not reaches appropriate component.  
3. Web request is not sent.

**Description** : 1. User generates specific keystroke to select URL entry box.  
2. User types in the URL and presses the enter key

SP: Enter key generates trigger for web request to be sent.

6.

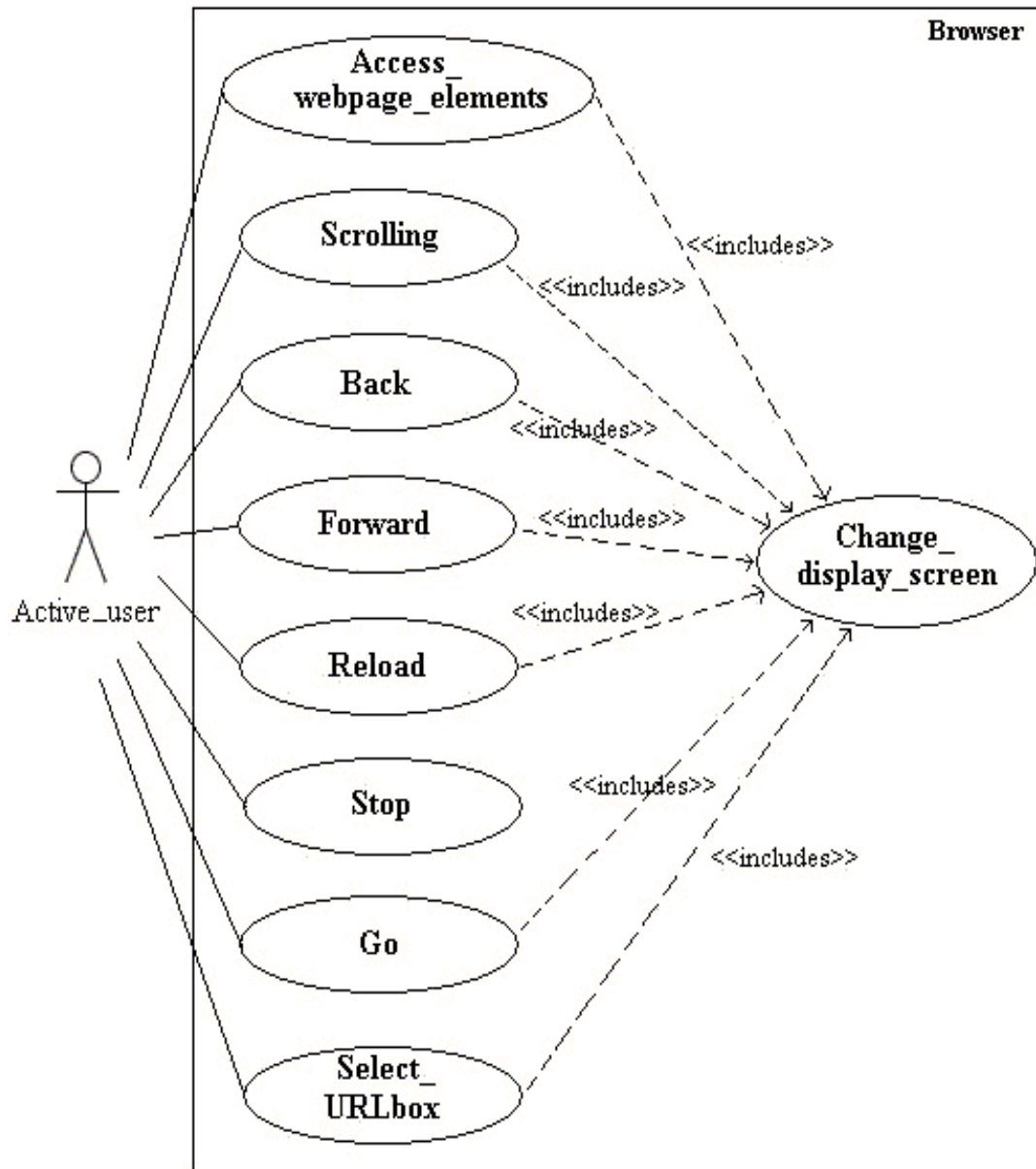


Figure 6 Tertiary Level Use Case Diagram 3

**Use case number** : Fifteen

**Use case name** : Access\_webpage\_elements

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To select a particular web page element.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. Web page loaded/loading.  
2. Browser is in accepting state.

**Post conditions** : 1. Selection is echoed.  
2. Web page element is selected.

**Trigger** : User generates element selection keystrokes.

**Main success scenarios** : 1. Selection is echoed.  
2. Web page element is selected.

**Failure end conditions** : 1. Selection is not echoed.  
2. Web page element is not selected.

**Description** : 1. User presses selection keys.  
2. Corresponding ( next, previous etc ) elements are selected.

**Use case number** : Sixteen

**Use case name** : Scrolling.

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : Scroll along the length of the displayed page.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Length of the page should be greater than that of the screen.

**Post condition** : Different portion of the web page is displayed

**Trigger** : User generates scroll specific keystrokes.

**Main success scenario** : Contents of the display screen are displayed according to scroll direction.

**Failure end condition** : Contents of the display screen are not according to the scroll direction.

**Description** : 1.Web page requested is greater in length than that of the display screen  
2. User generates scrolling specific keystrokes.  
3. Contents of the screen are refreshed according to keystrokes.

**Use case number** : Seventeen

**Use case name** : Back

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To view the previously displayed web page.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Some web page must have been displayed previously.

**Post condition** : Immediately preceding web page is displayed.

**Trigger** : 'BACK' action specific keystrokes.

**Main success scenario** : Immediately preceding web page is displayed.

**Failure end condition** : Immediately preceding web page is not displayed.

**Description** :  
1. User wishes to view a previously displayed web page.  
2. User generates specific keystrokes.  
3. Immediately preceding web page is displayed.

**Use case number** : Eighteen

**Use case name** : Forward

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To view a immediately following web page in the list of previously viewed web pages.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : 'BACK' action must have initiated and completed at least once.

**Post condition** : Immediately following page in the list of previously viewed web pages is displayed.

**Trigger** : 'FORWARD' action specific keystrokes.

**Main success scenario** : Immediately following page in the list of previously viewed web pages is displayed.

**Failure end condition** : Immediately following page in the list of previously viewed web pages is not displayed.

**Description** :  
1. User has committed a 'BACK' action at least once.  
2. User wishes to view the immediately following web page from the list of previously viewed web pages.  
3. User generates specific keystrokes.  
4. Immediately following web page is displayed.

<b>Use case number</b>	: Nineteen
<b>Use case name</b>	: Reload
<b>UCD</b>	: Tertiary Use Case Diagram 3
<b>Parent use case</b>	: Use_browser_controls
<b>Note</b>	: includes Change_display_screen
<b>Primary actor</b>	: Active_user
<b>Secondary actor</b>	: none
<b>Goal in context</b>	: To reload the currently displayed web page.
<b>Scope</b>	: Browser
<b>Level</b>	: Tertiary
<b>Pre condition</b>	: Some web page is loaded or is in the process of loading.
<b>Post conditions</b>	: 1. A fresh request for the web page/resource is sent to the remote server. 2. The web page is reloaded.
<b>Trigger</b>	: 'RELOAD' action specific keystrokes.
<b>Main success scenarios</b>	: 1. A fresh web request is sent. 2. Response is received.
<b>Failure end conditions</b>	: 1. A fresh web request is not sent. 2. Response is not received. 3. Web page is not loaded.
<b>Description</b>	: 1. User wishes to upload currently loaded web page. 2. User generates specific keystrokes. 3. The web page is reloaded.



**Use case number** : Twenty

**Use case name** : Stop

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To abort a web request.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Some previously issued web request is still being processed.

**Post conditions** : 1. The web request is aborted.  
2. If any portion response has been received before aborting, it is displayed.

**Trigger** : 'STOP' action specific keystrokes.

**Main success scenario** : Web request is aborted.

**Failure end condition** : Web request continues as unaffected.

**Description** : 1. User issues a web request  
2. User wishes to cancel it some time later while it is being processed.  
3. Generates appropriate keystrokes.  
4. Web request is aborted.  
5. Current display of web page is frozen.

**Use case number** : Twenty-one

**Use case name** : Go

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To submit a web request.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : URL must have been typed in the URL box.

**Post condition** : Request for the URL is sent.

**Trigger** : 'GO' action specific keystrokes.

**Main success scenario** : A valid web request is sent.

**Failure end condition** : Either none or an invalid web request is sent.

**Description** : 1. User types a URL in the URL box.  
2. Generates 'GO' action specific keystrokes.  
3. Host name is resolved.  
4. A valid web request is sent.

**Use case number** : Twenty-two

**Use case name** : Select\_URLbox

**UCD** : Tertiary Use Case Diagram 3

**Parent use case** : Use\_browser\_controls

**Note** : includes Change\_display\_screen

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To enter a URL.

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : URL box is in accepting state.

**Post condition** : URL box is selected and ready to accept input.

**Trigger** : URL box selection specific keystrokes.

**Main success scenario** : URL box is selected and ready to accept input.

**Failure end conditions** : 1. URL box is not selected.  
2. URL box is not ready to accept input.

**Description** : 1. User wishes to enter URL.  
2. Generates appropriate keystrokes for selecting the URL box.  
3. URL box is selected and is ready to accept input.

7.

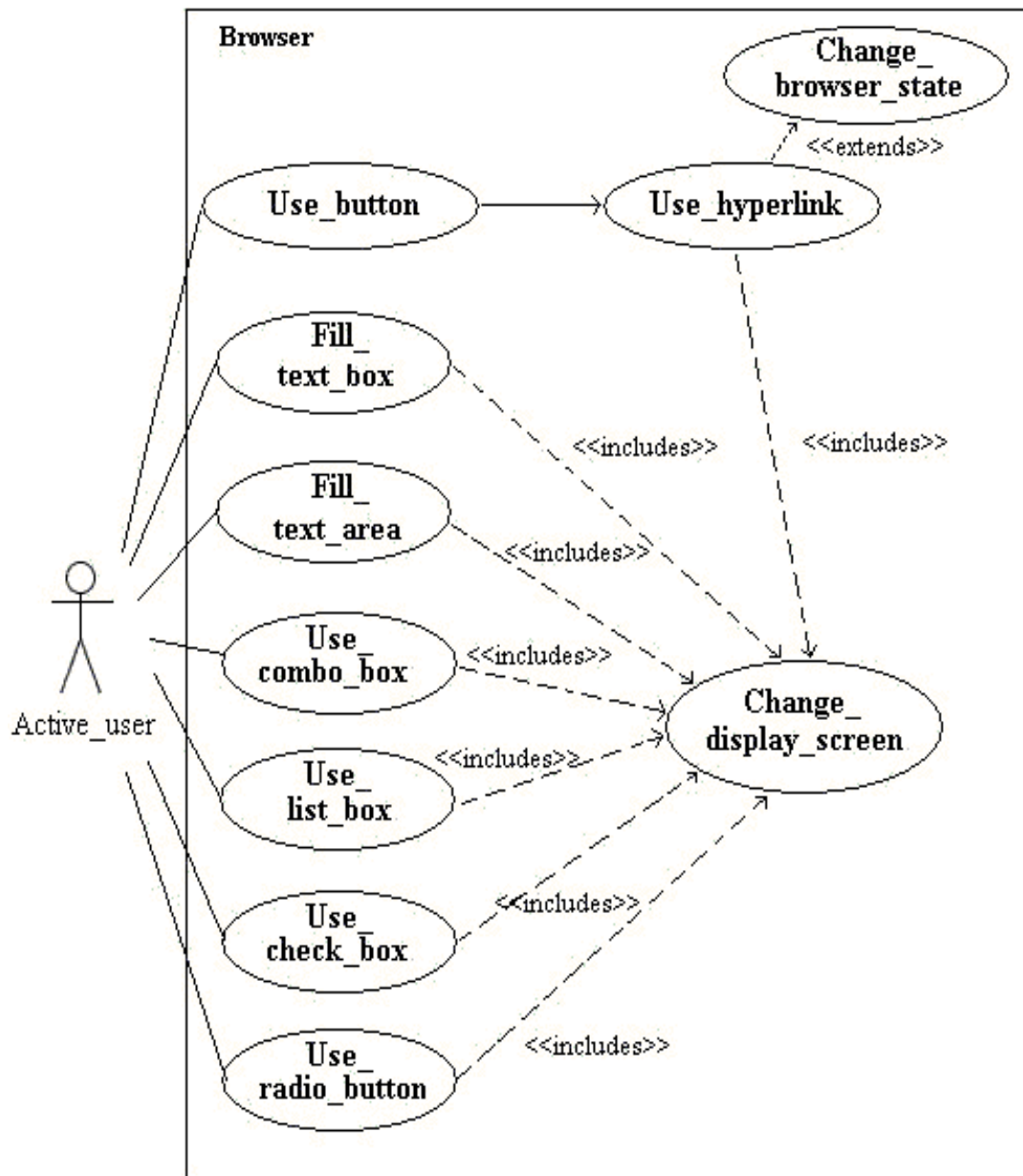


Figure 7 Tertiary Level Use Case Diagram 4

**Use case number** : Twenty-three

**Use case name** : Use\_button

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : generalized by Use\_hyperlink

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To use a button available on currently displayed web page.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one button must be available on the currently displayed web page.  
2. Button is selected.

**Post condition** : Action associated with the selected button is initiated.

**Trigger** : An appropriate keystroke.

**Main success scenario** : Action associated with the selected button is initiated.

**Failure end condition** : Action associated with the selected button is not initiated.

**Description** : 1. User selects a button available on currently displayed web page.  
2. User generates appropriate keystrokes.

**Use case number** : Twenty-four

**Use case name** : Use\_hyperlink

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : generalizes Use\_button.  
includes Change\_display\_screen.  
includes Change\_browser\_state

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To view a connected or a linked document.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one Hyperlink must be available on the currently displayed web page.  
2. Hyperlink is selected.

**Post condition** : Either a new web request is sent  
Or a different portion of the currently displayed web page becomes visible.

**Trigger** : 'hyperlink' specific keystroke.

**Main success scenario** : Either a new web request is sent  
Or a different portion of the currently displayed web page becomes visible.

**Failure end conditions** : Neither a new web request is sent  
Nor a different portion of the currently displayed web page becomes visible.

**Description** : 1. User selects a Hyperlink.  
2. User generates appropriate keystrokes.  
3. Either a new web request is sent  
Or a different portion of the currently displayed web page becomes visible.

**Use case number** : Twenty-five

**Use case name** : Fill\_text\_box

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To fill a text box with text on a web page

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Appropriate text box is selected and accessed.

**Post condition** : Text is echoed in the appropriate text box.

**Trigger** : Not applicable

**Main success scenario** : 1. Text is echoed in the appropriate text box.  
2. Text data reaches appropriate component.

**Failure end condition** : 1. Text is not echoed.  
2. Text data does not reaches appropriate component.

**Description** : 1. User selects a text box.  
2. Generates keystrokes.

SP: Enter key is not applicable.

**Use case number** : Twenty-six

**Use case name** : Fill\_text\_area

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To fill a text area with text on a web page

**Scope** : Browser

**Level** : Tertiary

**Pre condition** : Appropriate text area is selected and accessed.

**Post condition** : Text is echoed in the appropriate text area.

**Trigger** : Not applicable

**Main success scenarios** : 1. Text is echoed in the appropriate text area.  
2. Text data reaches appropriate component.

**Failure end conditions** : 1. Text is not echoed.  
2. Text data does not reaches appropriate component.

**Description** : 1. User selects a text area.  
2. Generates keystrokes.

SP: Enter key generates new line.



**Use case number** : Twenty-seven

**Use case name** : Use\_combo\_box

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To set the value of a given combo box.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one combo box must be available on the currently displayed web page.  
2. Combo box is selected.

**Post condition** : Value of the combo box is set.

**Trigger** : Specific keystrokes

**Main success scenario** : Value of the combo box is set.

**Failure end conditions** : 1. User is not able to view the alternative values.  
2. User is not able to set the desired value.

**Description** : 1. User selects the desired combo box.  
2. Generates selection keystrokes to set the value of the combo box.

**Use case number** : Twenty-eight

**Use case name** : Use\_list\_box

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To set the value of a given list box.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one list box must be available on the currently displayed web page.  
2. List box is selected.

**Post condition** : Value of the list box is set.

**Trigger** : Specific keystrokes

**Main success scenario** : Value of the list box is set.

**Failure end conditions** : 1. User is not able to view the alternative values.  
2. User is not able to set the desired value.

**Description** : 1. User selects the desired list box.  
2. generates selection keystrokes to set the value of the list box.

**Use case number** : Twenty-nine

**Use case name** : Use\_check\_box

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To set or reset the value of a check box

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one check box must be available on the currently displayed web page.  
2 Check-box is selected.

**Post condition** : Value of the check-box is set or reset.

**Trigger** : Specific keystrokes

**Main success scenario** : Value of the check box is set or reset.

**Failure end condition** : User is not able to set the desired value of the check box

**Description** : 1. User selects the desired check box.  
2. Generates keystrokes to set/reset the value of the check box.

**Use case number** : Thirty

**Use case name** : Use\_radio\_button

**UCD** : Tertiary Level Use Case Diagram 4

**Parent use case** : Use\_Hypertext\_controls

**Note** : includes Change\_display\_screen.

**Primary actor** : Active\_user

**Secondary actor** : none

**Goal in context** : To set or reset the value of a radio-button.

**Scope** : Browser

**Level** : Tertiary

**Pre conditions** : 1. At least one radio-button must be available on the currently displayed web page.  
2. Radio-button is selected.

**Post condition** : Value of the radio-button is set or reset.

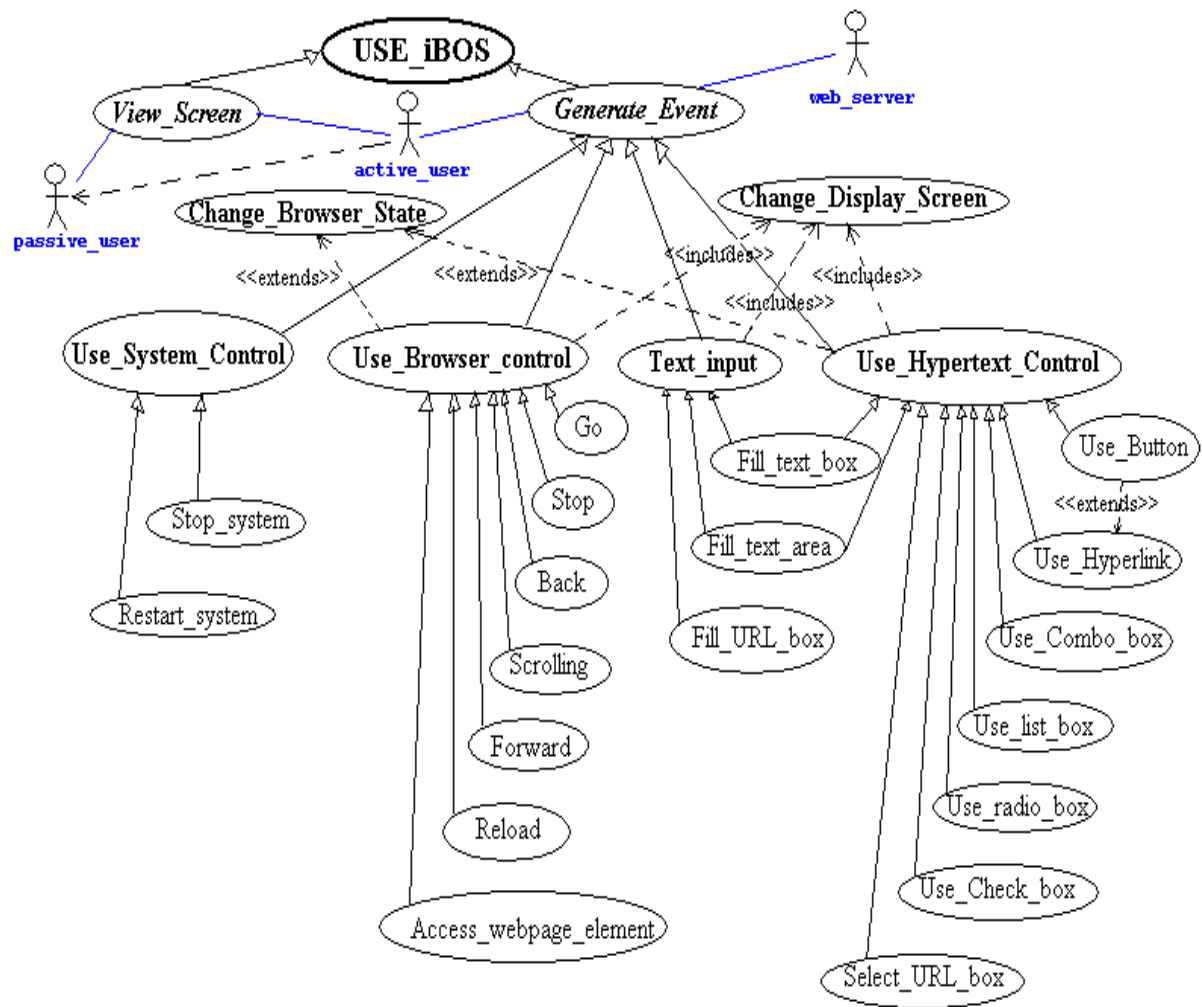
**Trigger** : Specific keystrokes

**Main success scenario** : Value of the radio-button is set or reset.

**Failure end condition** : User is not able to set the desired value of the radio-button

**Description** : 1. User selects the desired radio-button.  
2. Generates keystrokes to set/reset the value of the radio-button.

## Integrated Use Diagram



**Figure 8 Integrated Use Case diagram**