**CSE470: SOFTWARE EMGINEERING**

**ASSIGNMENT 01**

**SIMPLE WEB BROWSER IN JAVA**

import java.awt.\*; import java.awt.event.\*;

import java.util.\*;

import java.net.\*;

import java.io.\*;

import javax.swing.\*;

import javax.swing.event.\*;

public class WebBrowser

{

public static void main(String [] args)

{

JFrame frame = new EditorPaneFrame();

frame.show();

}

}

class EditorPaneFrame extends JFrame

{

private JTextField url;

private JCheckBox editable;

private JButton loadButton;

private JButton backButton;

private JEditorPane editorPane;

private Stack urlStack = new Stack();

public EditorPaneFrame()

{

setTitle("Java Web Browser");

setSize(600,400);

addWindowListener(new WindowAdapter()

{

public void windowClosing(WindowEvent e)

{

System.exit(0);

}

} );

// set up text field and load button for typing in URL

url = new JTextField(30);

loadButton = new JButton("Load");

loadButton.addActionListener(new ActionListener()

{

public void actionPerformed(ActionEvent event)

{

try

{

// remember URL for back button

urlStack.push(url.getText());

editorPane.setPage(url.getText());

}

catch(Exception e)

{

editorPane.setText("Error: " +e);

}

}

});

// set up back button and button action

backButton = new JButton("Back");

backButton.addActionListener(new ActionListener()

{

public void actionPerformed(ActionEvent event)

{

if(urlStack.size()<=1) return;

try

{

urlStack.pop();

String urlString = (String)urlStack.peek();

url.setText(urlString);

editorPane.setPage(urlString);

}

catch(IOException e)

{

editorPane.setText("Error : " +e);

}

}

});

editorPane = new JEditorPane();

editorPane.setEditable(false);

editorPane.addHyperlinkListener(new HyperlinkListener()

{

public void hyperlinkUpdate(HyperlinkEvent event)

{

if(event.getEventType() == HyperlinkEvent.EventType.ACTIVATED)

{

try

{

urlStack.push(event.getURL().toString());

url.setText(event.getURL().toString());

editorPane.setPage(event.getURL());

}

catch(IOException e)

{

editorPane.setText("Error: " + e);

}

}

}

});

editable = new JCheckBox();

editable.addActionListener(new ActionListener()

{

public void actionPerformed(ActionEvent event)

{

editorPane.setEditable(editable.isSelected());

}

});

Container contentPane = getContentPane();

contentPane.add(new JScrollPane(editorPane), "Center");

JPanel panel = new JPanel();

panel.add(new JLabel("URL"));

panel.add(url);

panel.add(loadButton);

panel.add(backButton);

panel.add(new JLabel("Editable"));

panel.add(editable);

contentPane.add(panel,"South");

}

}

**BRIEF REPORT ON ‘WEB BROWSER’**

This simple web browser in java enables the simplest functionalities of big search engines like Chrome or Firefox. After compiling the source code and running it, a java web browser window opened up which had a search bar for entering URL at the bottom along with load, back and editable options as well.

If the user tries simple searches by just typing ‘apple’ or ‘cake’ the compiler output yields the ‘invalid url’ message. After closing the browser window the interactions pane was terminated by a call to system.exit(0). The interactions window is then restarted. In order to get more valid search results the user must type, for example, <http://apple.com>. This loads all the latest information regarding apple products and the fruit apple itself. Although the presentation/ design of the browser was quite crude it did successfully help the user find the information they needed.

The java code makes use of javax.swing library among others. Java Swing is a lightweight Java graphical user interface (GUI) widget toolkit that includes a rich set of widgets. It is part of the Java Foundation Classes (JFC) and includes several packages for developing rich desktop applications in Java. Swing includes built-in controls such as trees, image buttons, tabbed panes, sliders, toolbars, color choosers, tables, and text areas to display HTTP or rich text format (RTF). Swing components are written entirely in Java and thus are platform-independent. The code here in particular makes use of swing components to include text-areas to display HTTP or RTF. The code also implements frame which is used as an instance of the JFrame class. It is essentially a window that has decorations such as border, a title and supports button components that close/iconify the window. These tasks have all been methodically completed in the EditorPaneFrame subclass. So inside the EditorPaneFrame constructor the code uses various methods for setting the title of the browser window, the size of the frame so that all its contents are at their preferred sizes. Further down the line, the user includes methods (example: loadButton.addActionListener(newActionListener()) for including load button then back button for back action. Notably in the main method of the java code the show method is used to make the frame appear onscreen.

**Example of Documentation for this code retrieved from javadoc**

**Class EditorPaneFrame (Part of javadoc detailing all aspects of this class)**

java.lang.Object

java.awt.Component

java.awt.Container

java.awt.Window

java.awt.Frame

javax.swing.JFrame

EditorPaneFrame

* **All Implemented Interfaces:**

java.awt.image.ImageObserver, java.awt.MenuContainer, java.io.Serializable, javax.accessibility.Accessible, javax.swing.RootPaneContainer, javax.swing.WindowConstants

class **EditorPaneFrame**

extends javax.swing.JFrame

### *Nested Class Summary*

### Nested classes/interfaces inherited from class javax.swing.JFrame

javax.swing.JFrame.AccessibleJFrame

### Nested classes/interfaces inherited from class java.awt.Frame

java.awt.Frame.AccessibleAWTFrame

### Nested classes/interfaces inherited from class java.awt.Window

java.awt.Window.AccessibleAWTWindow, java.awt.Window.Type

### Nested classes/interfaces inherited from class java.awt.Container

java.awt.Container.AccessibleAWTContainer

### Nested classes/interfaces inherited from class java.awt.Component

java.awt.Component.AccessibleAWTComponent, java.awt.Component.BaselineResizeBehavior, java.awt.Component.BltBufferStrategy, java.awt.Component.FlipBufferStrategy

### *Field Summary*

### Fields inherited from class javax.swing.JFrame

accessibleContext, EXIT\_ON\_CLOSE, rootPane, rootPaneCheckingEnabled

### Fields inherited from class java.awt.Frame

CROSSHAIR\_CURSOR, DEFAULT\_CURSOR, E\_RESIZE\_CURSOR, HAND\_CURSOR, ICONIFIED, MAXIMIZED\_BOTH, MAXIMIZED\_HORIZ, MAXIMIZED\_VERT, MOVE\_CURSOR, N\_RESIZE\_CURSOR, NE\_RESIZE\_CURSOR, NORMAL, NW\_RESIZE\_CURSOR, S\_RESIZE\_CURSOR, SE\_RESIZE\_CURSOR, SW\_RESIZE\_CURSOR, TEXT\_CURSOR, W\_RESIZE\_CURSOR, WAIT\_CURSOR

### Fields inherited from class java.awt.Component

BOTTOM\_ALIGNMENT, CENTER\_ALIGNMENT, LEFT\_ALIGNMENT, RIGHT\_ALIGNMENT, TOP\_ALIGNMENT

### Fields inherited from interface javax.swing.WindowConstants

DISPOSE\_ON\_CLOSE, DO\_NOTHING\_ON\_CLOSE, HIDE\_ON\_CLOSE

### Fields inherited from interface java.awt.image.ImageObserver

ABORT, ALLBITS, ERROR, FRAMEBITS, HEIGHT, PROPERTIES, SOMEBITS, WIDTH

### *Constructor Summary*

|  |
| --- |
| **Constructors** |
| **Constructor and Description** |
| [**EditorPaneFrame**](file:///D:\Personal%20Study\Fortran\doc\EditorPaneFrame.html#EditorPaneFrame--)() |

### 

### *Method Summary*

### Methods inherited from class javax.swing.JFrame

addImpl, createRootPane, frameInit, getAccessibleContext, getContentPane, getDefaultCloseOperation, getGlassPane, getGraphics, getJMenuBar, getLayeredPane, getRootPane, getTransferHandler, isDefaultLookAndFeelDecorated, isRootPaneCheckingEnabled, paramString, processWindowEvent, remove, repaint, setContentPane, setDefaultCloseOperation, setDefaultLookAndFeelDecorated, setGlassPane, setIconImage, setJMenuBar, setLayeredPane, setLayout, setRootPane, setRootPaneCheckingEnabled, setTransferHandler, update

### Methods inherited from class java.awt.Frame

addNotify, getCursorType, getExtendedState, getFrames, getIconImage, getMaximizedBounds, getMenuBar, getState, getTitle, isResizable, isUndecorated, remove, removeNotify, setBackground, setCursor, setExtendedState, setMaximizedBounds, setMenuBar, setOpacity, setResizable, setShape, setState, setTitle, setUndecorated

### Methods inherited from class java.awt.Window

addPropertyChangeListener, addPropertyChangeListener, addWindowFocusListener, addWindowListener, addWindowStateListener, applyResourceBundle, applyResourceBundle, createBufferStrategy, createBufferStrategy, dispose, getBackground, getBufferStrategy, getFocusableWindowState, getFocusCycleRootAncestor, getFocusOwner, getFocusTraversalKeys, getIconImages, getInputContext, getListeners, getLocale, getModalExclusionType, getMostRecentFocusOwner, getOpacity, getOwnedWindows, getOwner, getOwnerlessWindows, getShape, getToolkit, getType, getWarningString, getWindowFocusListeners, getWindowListeners, getWindows, getWindowStateListeners, hide, isActive, isAlwaysOnTop, isAlwaysOnTopSupported, isAutoRequestFocus, isFocusableWindow, isFocusCycleRoot, isFocused, isLocationByPlatform, isOpaque, isShowing, isValidateRoot, pack, paint, postEvent, processEvent, processWindowFocusEvent, processWindowStateEvent, removeWindowFocusListener, removeWindowListener, removeWindowStateListener, reshape, setAlwaysOnTop, setAutoRequestFocus, setBounds, setBounds, setCursor, setFocusableWindowState, setFocusCycleRoot, setIconImages, setLocation, setLocation, setLocationByPlatform, setLocationRelativeTo, setMinimumSize, setModalExclusionType, setSize, setSize, setType, setVisible, show, toBack, toFront

### Methods inherited from class java.awt.Container

add, add, add, add, add, addContainerListener, applyComponentOrientation, areFocusTraversalKeysSet, countComponents, deliverEvent, doLayout, findComponentAt, findComponentAt, getAlignmentX, getAlignmentY, getComponent, getComponentAt, getComponentAt, getComponentCount, getComponents, getComponentZOrder, getContainerListeners, getFocusTraversalPolicy, getInsets, getLayout, getMaximumSize, getMinimumSize, getMousePosition, getPreferredSize, insets, invalidate, isAncestorOf, isFocusCycleRoot, isFocusTraversalPolicyProvider, isFocusTraversalPolicySet, layout, list, list, locate, minimumSize, paintComponents, preferredSize, print, printComponents, processContainerEvent, remove, removeAll, removeContainerListener, setComponentZOrder, setFocusTraversalKeys, setFocusTraversalPolicy, setFocusTraversalPolicyProvider, setFont, transferFocusDownCycle, validate, validateTree

### Methods inherited from class java.awt.Component

action, add, addComponentListener, addFocusListener, addHierarchyBoundsListener, addHierarchyListener, addInputMethodListener, addKeyListener, addMouseListener, addMouseMotionListener, addMouseWheelListener, bounds, checkImage, checkImage, coalesceEvents, contains, contains, createImage, createImage, createVolatileImage, createVolatileImage, disable, disableEvents, dispatchEvent, enable, enable, enableEvents, enableInputMethods, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, firePropertyChange, getBaseline, getBaselineResizeBehavior, getBounds, getBounds, getColorModel, getComponentListeners, getComponentOrientation, getCursor, getDropTarget, getFocusListeners, getFocusTraversalKeysEnabled, getFont, getFontMetrics, getForeground, getGraphicsConfiguration, getHeight, getHierarchyBoundsListeners, getHierarchyListeners, getIgnoreRepaint, getInputMethodListeners, getInputMethodRequests, getKeyListeners, getLocation, getLocation, getLocationOnScreen, getMouseListeners, getMouseMotionListeners, getMousePosition, getMouseWheelListeners, getName, getParent, getPeer, getPropertyChangeListeners, getPropertyChangeListeners, getSize, getSize, getTreeLock, getWidth, getX, getY, gotFocus, handleEvent, hasFocus, imageUpdate, inside, isBackgroundSet, isCursorSet, isDisplayable, isDoubleBuffered, isEnabled, isFocusable, isFocusOwner, isFocusTraversable, isFontSet, isForegroundSet, isLightweight, isMaximumSizeSet, isMinimumSizeSet, isPreferredSizeSet, isValid, isVisible, keyDown, keyUp, list, list, list, location, lostFocus, mouseDown, mouseDrag, mouseEnter, mouseExit, mouseMove, mouseUp, move, nextFocus, paintAll, prepareImage, prepareImage, printAll, processComponentEvent, processFocusEvent, processHierarchyBoundsEvent, processHierarchyEvent, processInputMethodEvent, processKeyEvent, processMouseEvent, processMouseMotionEvent, processMouseWheelEvent, removeComponentListener, removeFocusListener, removeHierarchyBoundsListener, removeHierarchyListener, removeInputMethodListener, removeKeyListener, removeMouseListener, removeMouseMotionListener, removeMouseWheelListener, removePropertyChangeListener, removePropertyChangeListener, repaint, repaint, repaint, requestFocus, requestFocus, requestFocusInWindow, requestFocusInWindow, resize, resize, revalidate, setComponentOrientation, setDropTarget, setEnabled, setFocusable, setFocusTraversalKeysEnabled, setForeground, setIgnoreRepaint, setLocale, setMaximumSize, setName, setPreferredSize, show, size, toString, transferFocus, transferFocusBackward, transferFocusUpCycle

### Methods inherited from class java.lang.Object

clone, equals, finalize, getClass, hashCode, notify, notifyAll, wait, wait, wait

### Methods inherited from interface java.awt.MenuContainer

getFont, postEvent

### *Constructor Detail*

#### EditorPaneFrame

public EditorPaneFrame()

**Submitted by:**

**Samara Chaudhury**

**ID: 15305022**

**CSE470 (Section 01)**