Experiment No. 10

Aim: Develop a Swing GUI based standard Calculator program

Problem Statement:

1. Develop a Swing GUI based standard Calculator program.
2. Develop a Swing GUI based application for student Registration form.

Theory:

- AWT (Abstract Window Toolkit) contains numerous classes and methods that allow you to create and manage window.
- AWT classes are contained in the java.awt.* package.
- An API used to develop GUI or window-based applications in java.
- AWT Components are platform-dependent.
- Displayed according to the view of operating system
- AWT is heavyweight. Components are using the resources of OS.
- The **java.awt** package provides classes for AWT API.
- TextField, Lable, TextArea, RadioButton, CheckBox, Choice, List etc.

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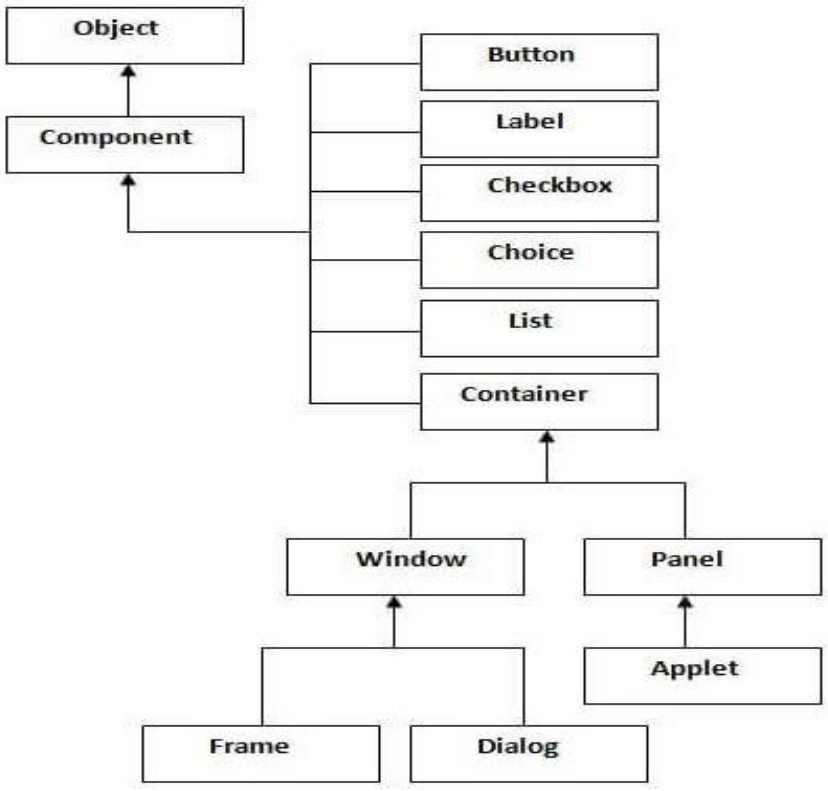
Java AWT Hierarchy



Swing

Swing API is a set of extensible GUI Components to ease the developer's life to create JAVA based Front End/GUI Applications. It is build on top of AWT API and acts as a replacement of AWT API, since it has almost every control corresponding to AWT controls. Swing component follows a Model-View-Controller architecture.

Addresses limitations & restrictions present in AWT. Swing introduced in 1997. It is a part of Java Foundation Classes (JFC). Set of GUI components which simplify the development of desktop applications. Used to develop GUI or window-based applications. Built on the top of AWT API Components entirely written in java. Provides platform-independent and Lightweight components.

The javax.swing package provides classes for swing.

- JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.

Swing Features

- Light Weight
- Rich Controls
- Highly Customizable.
- Pluggable-look-and-feel

Every SWING controls inherits properties from the following Component class hierarchy.

Sr.No	Class & Description
1	**Component** A Component is the abstract base class for the non menu user-interface controlsof SWING. Component represents an object with graphical representation
2	**Container** A Container is a component that can contain other SWING components
3	**JComponent** A JComponent is a base class for all SWING UI components. In order to use aSWING component that inherits from JComponent, the component must be in a containment hierarchy whose root is a top-level SWING container

SWING UI Elements

Following is the list of commonly used controls while designing GUI using SWING.

Sr.No	Class & Description
1	**JLabel** A JLabel object is a component for placing text in a container.
2	**JButton** This class creates a labeled button.
3	**JCheck Box** A JCheckBox is a graphical component that can be in either an **on**(true) or **off** (false) state.
4	**JRadioButton** The JRadioButton class is a graphical component that can be in either an **on** (true) or **off** (false) state. in a group.
6	**JList** A JList component presents the user with a scrolling list of text items.
7	**JComboBox** A JComboBox component presents the user with a to show up menu of choices.
8	**JTextField** A JTextField object is a text component that allows for the editing of a singleline of text.
9	**JPasswordField** A JPasswordField object is a text component specialized for password entry.
10	**JTextArea** A JTextArea object is a text component that allows editing of a multiple lines oftext.
11	**ImageIcon** A ImageIcon control is an implementation of the Icon interface that paints Iconsfrom Images
12	**JScrollbar** A Scrollbar control represents a scroll bar component in order to enable the user to select from range of values.

Conclusion:

Successfully designed the GUI based calculator using the swing components.