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- Unit : Unit V
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Java™

Applet and Graphics

APPLET

- An applet is a Java program that runs in a Web browser.
- An applet is embedded in an HTML page using the APPLET or OBJECT tag and hosted on a web server.
- All applets are sub-classes (either directly or indirectly) of java.applet.Applet class.

- They run within either a web browser or an applet viewer.

- JDK provides a standard applet viewer tool called applet viewer.

- Execution of an applet does not begin at main() method.

- Output of an applet window is not performed by System.out.println ().

- Rather it is handled with various AWT methods, such as drawString().

Working with Applet

- Applets can be executed in two ways:

  from Browser or from Appletviewer.

- The JDK provides the Appletviewer utility.

- Browsers allow many applets on a single page.

- Applet viewers show the applets in separate windows.

- Appletviewer is a program which provides a Java run-time environment for applets.

- It accepts a HTMLfile as the input and executes the <applet> reference, ignoring the HTML statements.
- Usually, AppletViewer is used to test Java applets.
- To execute any applet program using AppletViewer the applet tag should be added in the comment lines of the program.
- The command AppletViewer <appletfile.java> is used to view the applet.
- To execute Program, we can invoke the same as follows:

```
c:\>appletviewer SampleApplet.java
```

HTML APPLET TAG

- The <applet> tag in HTML was used to embed Java applets into any HTML document.
- The <applet> tag takes a number of attributes, with one of the most important being the code attribute.
- This code attribute is used to link a Java applet to the concerned HTML document.
- It specifies the file name of the Java applet.

Some of the Attributes

align: Specifies the alignment of an applet.

alt: Specifies an alternate text for an applet.

border: Specifies the border around the applet panel.

height: Specifies the height of an applet.

hspace: Defines the horizontal spacing around an applet.

name: Defines the name for an applet (to use in scripts)

vspace: Defines the vertical spacing around an applet.

width: Specifies the width of an applet

JAVA APPLET PACKAGE

- java.applet - Provides the classes necessary to create an applet and the classes an applet uses to communicate with its applet context.

Class and Description

1. Applet - An applet is a small program that is intended not to be run on its own, but rather to be embedded inside another application.

2. AppletContext - This interface corresponds to an applet's environment.

3. AudioClip - The AudioClip interface is used for playing a sound clip.

LIFE CYCLE OF AN APPLET

- When an applet begins, the following methods are called, in this sequence:

  init( )

  start( )

  paint( )

- When an applet is terminated, the following sequence of method calls takes place:

  stop( )

  destroy( )

1. init()

- This method is intended for whatever initialization is needed for your applet.

2. start()

- This method is automatically called after the browser calls the init method.

- It is also called whenever the user returns to the page containing the applet after having gone off to other pages.

3. paint()

- Invoked immediately after the start() method.

- The paint() method is actually inherited from the java.awt.

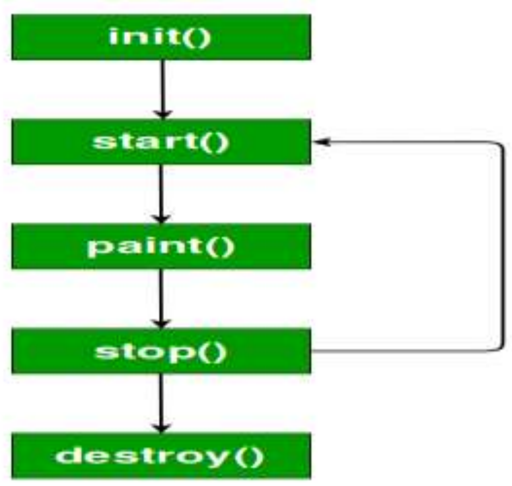
4. stop()

- This method is automatically called when the user moves off the page on which the applet sits.

- It can, therefore, be called repeatedly in the same applet.

5. destroy()

- This method is only called when the browser shuts down normally.



GRAPHICS

- java.awt.Graphics class provides many methods for graphics programming.

Some common Method used in Graphics

1. public abstract void drawString(String str, int x, int y)

   used to draw the specified string.

2. public void drawRect(int x, int y, int width, int height)

   draws a rectangle with the specified width and height.

3. public abstract void fillRect(int x, int y, int width, int height)

   used to fill rectangle with the default color and specified width and height.

4. public abstract void drawOval(int x, int y, int width, int height)

used to draw oval with the specified width and height.

5. public abstract void fillOval(int x, int y, int width, int height)

used to fill oval with the default color and specified width and height.

6. public abstract void drawLine(int x1, int y1, int x2, int y2)

used to draw line between the points(x1, y1) and (x2, y2).

Java™

JAVA AWT AND EVENT HANDLER

Java AWT Components

Container

- The Container is a component in AWT that can contain another components like buttons, textfields, labels etc.
- The classes that extends Container class are known as container such as Frame, Dialog and Panel.

Window

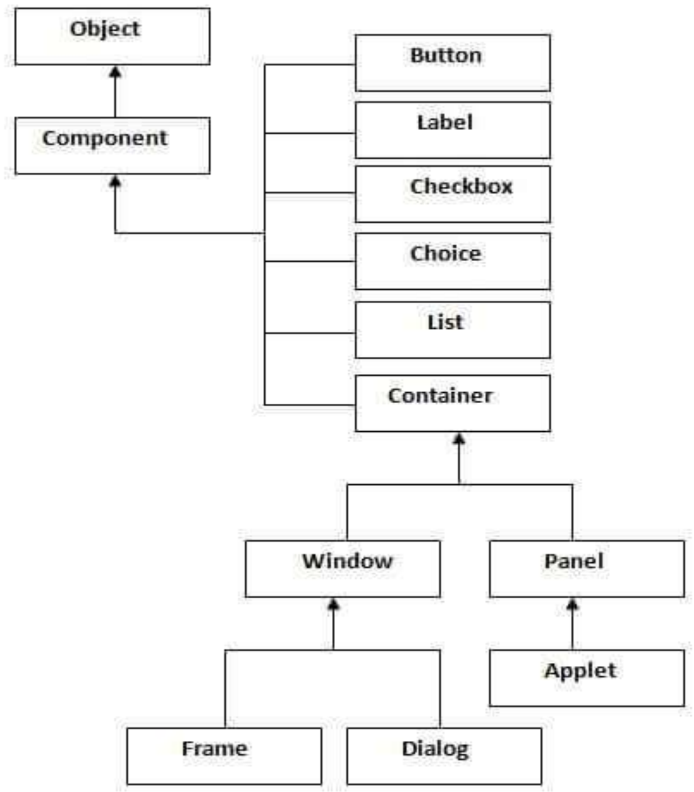
- The window is the container that have no borders and menu bars.
-

Panel

- The Panel is the container that doesn't contain title bar and menu bars.
- It can have other components like button, textfield etc.

Frame

- The Frame is the container that contain title bar and can have menu bars.
- It can have other components like button, textfield etc



AWT CONTROLS

Some of the basic AWT controls are:

1. Label

A Label object is a component for placing text in a container.

2. Button

This class creates a labeled button.

3. Check Box

A check box is a graphical component that can be in either an on (true) or off (false) state.

4. List

The List component presents the user with a scrolling list of text items.

5. Text Field

A TextField object is a text component that allows for the editing of a single line of text.

6. Text Area

A TextArea object is a text component that allows for the editing of a multiple lines of text.

7. Image

An Image control is superclass for all image classes representing graphical images.

8. Scroll Bar

A Scrollbar control represents a scroll bar component in order to enable user to select from range of values.

EVENT HANDLERS

- Changing the state of an object is known as an event.
- For example, click on button, dragging mouse etc.
- The java.awt.event package provides many event classes and Listener interfaces for event handling.

Event Classes

1. AWTEvent

It is the root event class for all AWT events.

This class and its subclasses supersede the original java.awt.Event class.

2. ActionEvent

The ActionEvent is generated when button is clicked or the item of a list is double clicked.

3. InputEvent

The InputEvent class is root event class for all component-level input events.

4. KeyEvent

On entering the character the Key event is generated.

5. MouseEvent

This event indicates a mouse action occurred in a component.

6. TextEvent

The object of this class represents the text events.

7. WindowEvent

The object of this class represents the change in state of a window.

8. Adjustment Event

The object of this class represents the adjustment event emitted by Adjustable objects.

9. ComponentEvent

The object of this class represents the change in state of a window.

10. ContainerEvent

The object of this class represents the change in state of a window.

11. MouseMotionEvent

The object of this class represents the change in state of a window.

12. PaintEvent

The object of this class represents the change in state of a window.