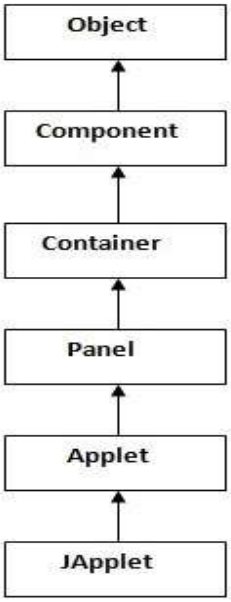
JAVA Applet

By :

Subodh Sharma

Applet



Applet is a special type of program that is embedded in the webpage to generate the dynamic content. It runs inside the browser and works at client side.
An applet is a window-based program. (different from console base program). It is event driven and user initiates interaction with it using GUI.
All applets are sub classes of **Applet**. Applet class is contained in the **java.applet** package.

Applet provides all necessary support for applet execution, such as starting and stopping. It also provides methods that load and display images and play audio clips.

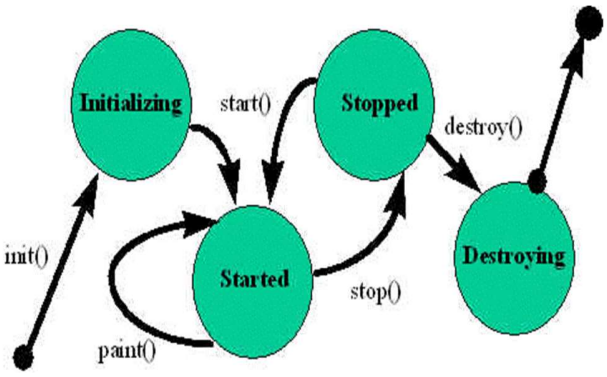
Applet extends the AWT class Panel. In turn, Panel extends Container, witch extends Component.
There are many **advantages** of applet. They are as follows:

- It works at client side so less response time.
- Secured
- It can be executed by browsers running under many plateforms, including Linux, Windows, Mac Os etc.

Drawback of Applet: Plugin is required at client browser to execute applet.

Life Cycle of Java Applet : Applet

1. Applet is initialized.
2. Applet is started.
3. Applet is painted.
4. Applet is stopped.
5. Applet is destroyed



Applet Initialisation and Termination :
When an applet begins, the AWT calls the following methods in this sequence :

1. **public void init():** is used to initialized the Applet. It is invoked only once.
2. **public void start():** is invoked after the init() method or browser is maximized. It is used to start the Applet.
3. **public void paint(Graphics g):** is used to paint the Applet. It provides Graphics class object that can be used for drawing oval, rectangle, arc etc. paint() is called each time that the applet must redisplay its output.

When applet is terminated the following sequence of method calls take place :

1. **public void stop():** is used to stop the Applet. It is invoked when Applet is stop or browser is minimized.
2. **public void destroy():** is used to destroy the Applet. It is invoked only once.

Features of Applets over HTML

- Displaying dynamic web pages of a web application.
- Playing sound files.
- Displaying documents
- Playing animations

Restrictions imposed on Java applets

Due to security reasons , the following restrictions are imposed on Java applets:

1. An applet cannot load libraries or define native methods.
2. An applet cannot ordinarily read or write files on the execution host.
3. An applet cannot read certain system properties.
4. An applet cannot make network connections except to the host that it came from.
5. An applet cannot start any program on the host that's executing it.

```
//First.java
import java.applet.Applet;
import java.awt.Graphics;
public class First extends Applet{
        public void paint(Graphics g)
                {
                g.drawString("welcome",150,150);
                }
}
```

```
<applet code="myApplet" width=200 height=60>
</applet>
```

Inside paint(), **drawString(String,int,int)** which is a member of the **Graphics class.**

Override update() :

In some situations, applet may need to override another method defined by AWT, called update(). This method is called when your applet has requested that a portion of its window be redrawn.

Update() first fills an applet with background color and then calls paint();

Component class function :

setBackground(Color.red);
setForeground(color.white);

Passing Parameter to Applets :

We can get any information from the HTML file as a parameter. For this purpose, Applet class provides a method named getParameter().

public String getParameter(String parameterName)

Java allows users to pass user-defined parameters to an applet with the help of <PARAM>tags. The <PARAM>tag has a NAME attribute which defines the name of the parameter and a VALUE attribute which specifies the value of the parameter. In the applet source code, the applet can refer to the parameter by its NAME to find its value. The syntax of the <PARAM>tag is:

```
<applet code="demo" width=300 height=100>
   <param name=fontName value=courier>
   <param name=fontSize value=20>
</applet>
```

```
Public void start()
{
  String fontName, strsize;
  int fontSize;
    Str=getParameter("fontName");
    strsize= getParameter("fontSize");
   fontSize= Integer.parseInt(strsize);
}
```

AppletContext and showDocument() :

An applet running within a browser can ask the browser to do things :

- Fetch an audio clip
- Show a short message in the status line
- Show a different web page

To communicate with browser , an applet calls the

java.applet.Applet.getAppletContext()

method, which returns an object that implements an interface of type **java.applet.AppletContext.**
This gives path between applet and browser. And provides following methods :

Void showStatus(String msg)
Enumeration getApplets()
Applet getApplet(String name)
Void showDocument(URL)
AudioClip getAudioClip(URL url)
Image getImage(URL url)

Commonly used methods of Graphics class:

1. **public abstract void drawString(String str, int x, int y):** is 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):** is used to fill rectangle with the default color and specified width and height.
4. **public abstract void drawLine(int x1, int y1, int x2, int y2):** is used to draw line between the points(x1, y1) and (x2, y2).
5. **public abstract boolean drawImage(Image img, int x, int y, ImageObserver observer):** is used draw the specified image.
6. **public abstract void drawArc(int x, int y, int width, int height, int startAngle, int arcAngle):** is used draw a circular or elliptical arc.
7. **public abstract void fillArc(int x, int y, int width, int height, int startAngle, int arcAngle):** is used to fill a circular or elliptical arc.
8. **public abstract void setColor(Color c):** is used to set the graphics current color to the specified color.
9. **public abstract void setFont(Font font):** is used to set the graphics current font to the specified font.