

Programming in Java

CBCS BHCS03

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Chapter 25

Introducing the AWT:
Working with Windows,
Graphics, and Text

Reference: Book prescribed as per the syllabus

Creating a Frame Window in an Applet

- Creating a new frame window from within an applet is actually quite easy
 - create a subclass of **Frame**
 - override any of the standard applet methods, such as **init()**, **start()**, and **stop()**, to show or hide the frame as needed
 - implement the **windowClosing()** method of the **WindowListener** interface, calling **setVisible(false)** when the window is closed.
- Once you have defined a **Frame** subclass, you can create an object of that class
- This causes a frame window to come into existence, but it will not be initially visible
- You make it visible by calling **setVisible()**
- When created, the window is given a default height and width. You can set the size of the window explicitly by calling the **setSize()** method

Creating a Frame Window in an Applet

- The following applet program creates a subclass of **Frame** called **SampleFrame**
- A window of this subclass is instantiated within the **init()** method of **AppletFrame**
- Notice that **SampleFrame** calls **Frame**'s constructor which causes a standard frame window to be created with the title passed in **title**
- This example overrides the applet's **start()** and **stop()** methods so that they show and hide the child window, respectively
- This causes the window to be removed automatically when you terminate the applet, when you close the window, or, if using a browser, when you move to another page
- It also causes the child window to be shown when the browser returns to the applet.

Creating a Frame Window in an Applet

```
// Create a child frame window from within an applet.
import java.awt.*;
import java.awt.event.*;
import java.applet.*;
/*
   <applet code="AppletFrame" width=300 height=50>
   </applet>
*/
// Create a subclass of Frame.
class SampleFrame extends Frame {
    SampleFrame(String title) {
        super(title);

        // create an object to handle window events
        MyWindowAdapter adapter = new MyWindowAdapter(this);

        // register it to receive those events
        addWindowListener(adapter);
    }

    public void paint(Graphics g) {
        g.drawString("This is in frame window", 10, 40);
    }
}
```

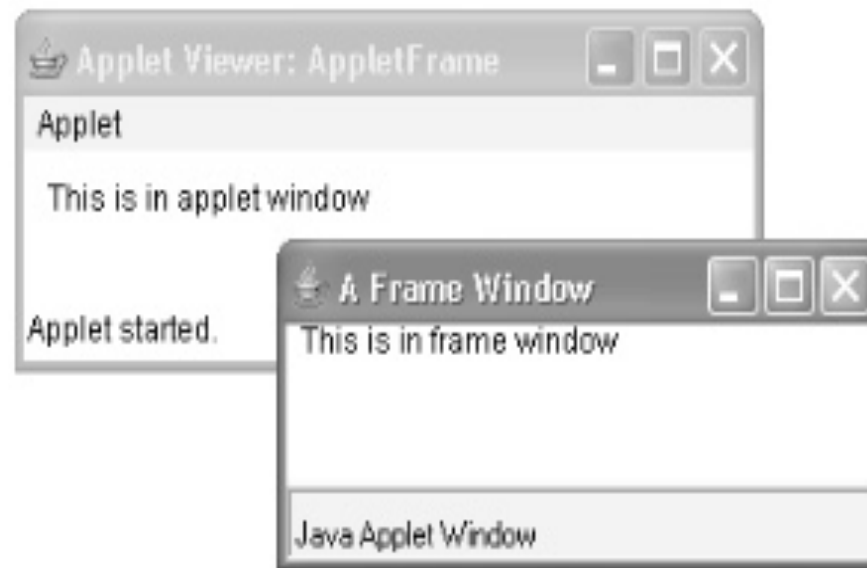
Creating a Frame Window in an Applet

```
class MyWindowAdapter extends WindowAdapter {
    SampleFrame sampleFrame;
    public MyWindowAdapter(SampleFrame sampleFrame) {
        this.sampleFrame = sampleFrame;
    }
    public void windowClosing(WindowEvent we) {
        sampleFrame.setVisible(false);
    } }

// Create frame window.
public class AppletFrame extends Applet {
    Frame f;
    public void init() {
        f = new SampleFrame("A Frame Window");
        f.setSize(250, 250);
        f.setVisible(true);
    }
    public void start() {
        f.setVisible(true);
    }
    public void stop() {
        f.setVisible(false);
    }
    public void paint(Graphics g) {
        g.drawString("This is in applet window", 10, 20);
    } }
}
```

Creating a Frame Window in an Applet

Sample output from this program is shown here:



Applet Architecture

- 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()**
- Let's look more closely at these methods.

Applet Architecture

- **init()**
 - The **init()** method is the first method to be called.
 - This is where you should initialize variables
 - This method is called only **once** during the run time of your applet
- **start()**
 - The **start()** method is called after **init()**
 - It is also called to restart an applet after it has been stopped
 - **start()** is called each time an applet's HTML document is displayed onscreen. So, if a user leaves a web page and comes back, the applet resumes execution at **start()**.

Applet Architecture

- **paint()**
 - The **paint()** method is called each time your applet's output must be redrawn
 - For example, the window in which the applet is running may be overwritten by another window and then uncovered
 - Or the applet window may be minimized and then restored
 - **paint()** is also called when the applet begins execution.
 - Whenever the applet must redraw its output, **paint()** is called.
 - The **paint()** method has one parameter of type **Graphics**
 - This parameter will contain the graphics context, which describes the graphics environment in which the applet is running
 - This context is used whenever output to the applet is required.
- **stop()**
 - The **stop()** method is called when a web browser leaves the HTML document containing the applet
 - You should use **stop()** to suspend threads that don't need to run when the applet is not visible