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JAVA
ASSIGNMENT - 2
SOLUTIONS

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Q1 What is an Applet. Discuss types of Applets. What is the difference between an Application & an Applet. Give two realtime examples of Applets.

Ans An applet is a small software program or application that runs within a larger program or platform. Here are the types of applets:

1. Java Applets :- written in Java, they run within a web-browser & provide interactive content on websites.
2. Desktop Applets :- Also known as desktop widgets or gadgets, they run on the user's desktop environment & offer quick access to specific functions or information.
3. Mobile Applets :- Lightweight applications, accessible from the home screen or a dedicated launcher
4. Web Applets :- Small programs or scripts to enhance webpage
5. Embedded System Applets :- Used in specific computer systems to provide functions or control device operations.

	Applications	Applets
Definition	Standalone programs installed on a device & run independently.	Small software programs running within a larger system.
Execution	Run directly on the device's OS	Run within another program or platform
User Interface	Typically have their own user interface	Can have their own UI or integrate with the host system.

Resource Access	Have direct access to system resources & functionalities	Have limited access to system resources
Deployment	Installed on device or distributed as standalone executables	Embedded within a webpage, desktop environment, or specific platform
Security	May have broad control over device requiring proper permissions	Often run in a sandboxed environment with restricted access to enhance security.
Examples:	① Microsoft Word - provide word processing capabilities ② Adobe Photoshop :- used for image editing and manipulation	① Java applet for interactive charts :- embedded in a web page for dynamic data ② Weather widget in phone/desktop :- displays realtime info.

Q2 WAP program to Draw a CAT using Applets.

Ans
```
Import java.applet.Applet;
Import java.awt.Color;
Import java.awt.Graphics;

<applet code = "CatApplet.class" width = "400" height = "600">
</applet>

public class CatApplet extends Applet {
    public void paint (Graphics g) {
        // Draw the head
        g.setColor (Color.gray);
        g.fillOval (100, 100, 200, 200);

        // Draw the ears
        g.setColor (Color.gray);
        g.fillOval (70, 70, 80, 120);
        g.fillOval (250, 70, 80, 120);
```

```
// Draw the eyes
g.setColor(Color.yellow);
g.fillOval(140, 160, 50, 50);
g.fillOval(220, 160, 50, 50);

// Draw the nose
g.setColor(Color.black);
g.fillOval(180, 210, 40, 40);

// Draw the mouth
g.setColor(Color.black);
g.fillArc(140, 200, 130, 100, 180, 180);

// Draw the body
g.setColor(Color.gray);
g.fillOval(90, 250, 220, 200);

// Draw the legs
g.setColor(Color.gray);
g.fillRect(140, 450, 30, 100);
g.fillRect(230, 450, 30, 100);

// Draw the tail
g.setColor(Color.gray);
g.fillPolygon(new int[] {320, 400, 400},
              new int[] {400, 340, 460}, 3);
    }
}
```

Q3 WAP to show Implementation of AWT with Event handling.

Ans
```
import java.awt.*;
import java.awt.event.*;

public class AWTEventHandlingExample extends Frame implements
ActionListener {

    private Label label;
    private TextField textField;
    private Button button;
```

```
public AWTEventHandlingExample() {
    // Create components
    label = new Label("Enter your name: ");
    textField = new TextField(20);
    button = new Button("Submit");

    // Set layout
    setLayout(new FlowLayout());
    // Add components to the frame
    add(label);
    add(textField);
    add(button);
    // Register the button for event handling
    button.addActionListener(this);

    // Set frame properties
    setTitle("AWT Event Handling Example");
    setSize(300, 150);
    setVisible(true);
}

// Event handling method
public void actionPerformed(ActionEvent e) {
    if (e.getSource() == button) {
        String name = textField.getText();
        if (!name.isEmpty()) {
            label.setText("Hello, " + name + "!");
        } else {
            label.setText("Enter your name!");
        }
    }
}

public static void main(String[] args) {
    new AWTEventHandlingExample();
}
}
```

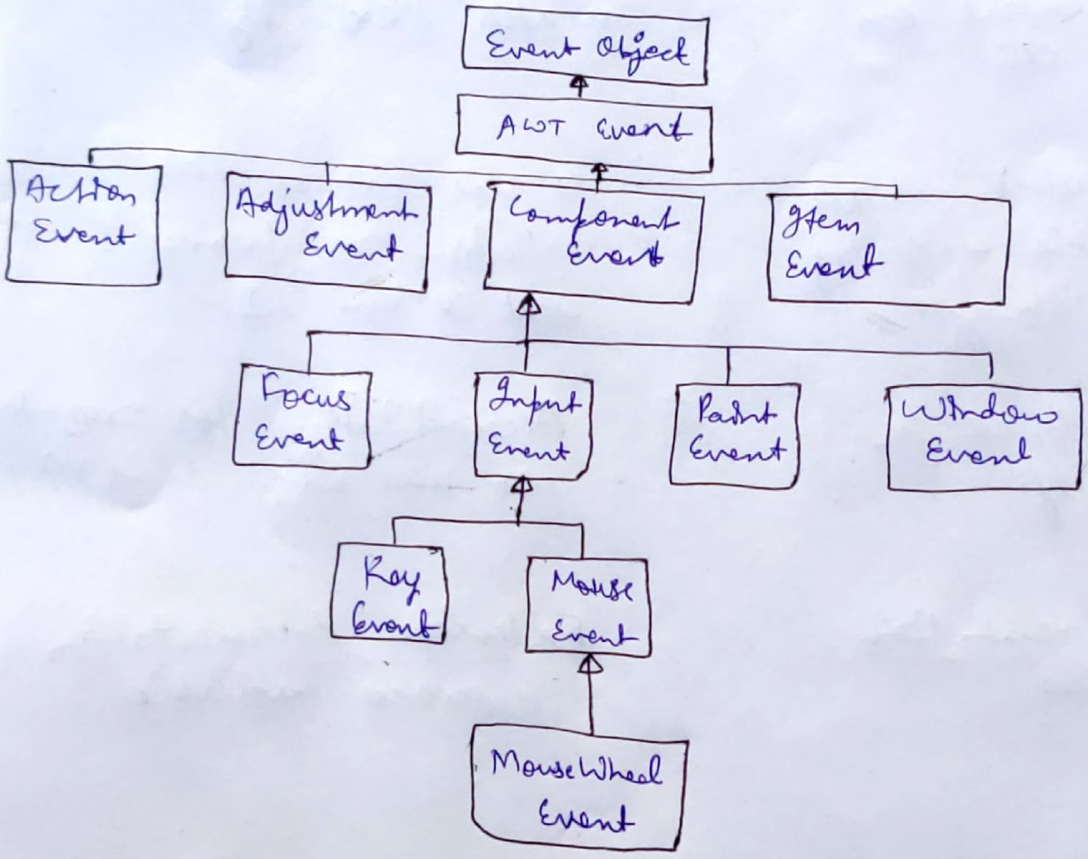
Note: AWT (Abstract Window Toolkit) is used for making a simple GUI Application

Q4 Discuss Event Class Hierarchy.

Ans • The Event class hierarchy in Java is a tree-like structure with the (java.awt.EventObject) class at the top. This class is the abstract superclass to all event classes in AWT event model.

• The (AWTEvent) class has a number of methods & a no. of subclasses for specific events like getID(), getSource() & getWhen().

Some of common event subclasses are :-



• It provides a convenient way for programmers to handle events in their java programs

For ex:- The 'MouseEvent' class represents an event that occurs when a user interacts with a graphical component using the mouse.

Q5 Compare Java AWT & Java Swings

Ans

JAVA AWT	JAVA SWING
AWT is the original GUI toolkit provided by Java.	Swing is a more advanced & feature-rich GUI toolkit built on top of AWT.
It provides basic set of GUI components	It offers extensive set of GUI components including add'l components.
AWT components are heavyweight, meaning they're dependent on underlying OS	Swing components are lightweight for better performance & greater flexibility.
It lacks certain features like double buffering & transparency	It has features like double buffering, transparency & custom UI
Limited support for accessibility	Accessibility for ease-to-use for users with disabilities
Less documentation & resources	Extensive documentation & resources available.