Java Swing Event Handling - Step-by-Step Programs

Step 1: Basic Frame with Button

```
import javax.swing.*;

public class Step1_BasicFrame {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 1: Basic Frame");
        JButton button = new JButton("Click Me");

        button.setBounds(100, 100, 120, 40);

        frame.add(button);
        frame.setSize(300, 300);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 2: Button Click Event Handling

```
import javax.swing.*;
import java.awt.event.*;

public class Step2_ButtonClickEvent {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 2: Button Event");
        JButton button = new JButton("Click Me");

        button.setBounds(100, 100, 120, 40);

        button.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                JOptionPane.showMessageDialog(frame, "Button Clicked!");
            }
        });

        frame.add(button);
        frame.setSize(300, 300);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 3: Text Input Event Handling

```
import javax.swing.*;
import java.awt.event.*;
```

```
public class Step3_TextFieldEvent {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 3: Text Input");
        JTextField textField = new JTextField();
        JButton button = new JButton("Submit");

        textField.setBounds(50, 50, 200, 30);
        button.setBounds(100, 100, 100, 30);

        button.addActionListener(e -> {
            String name = textField.getText();
            JOptionPane.showMessageDialog(frame, "Hello, " + name);
        });

        frame.add(textField);
        frame.add(button);
        frame.setSize(300, 250);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 4: CheckBox and RadioButton

```
import javax.swing.*;
import java.awt.event.*;

public class Step4_CheckBoxRadioButton {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 4: CheckBox & Radio");

        JCheckBox cbJava = new JCheckBox("Java");
        JCheckBox cbPython = new JCheckBox("Python");

        JRadioButton rMale = new JRadioButton("Male");
        JRadioButton rFemale = new JRadioButton("Female");

        ButtonGroup genderGroup = new ButtonGroup();
        genderGroup.add(rMale);
        genderGroup.add(rFemale);

        JButton button = new JButton("Submit");

        cbJava.setBounds(50, 30, 100, 30);
        cbPython.setBounds(150, 30, 100, 30);
        rMale.setBounds(50, 70, 100, 30);
        rFemale.setBounds(150, 70, 100, 30);
        button.setBounds(100, 120, 100, 30);

        button.addActionListener(e -> {
            String skills = "Skills: ";
            if (cbJava.isSelected()) skills += "Java ";
            if (cbPython.isSelected()) skills += "Python ";
```

```
                String gender = rMale.isSelected() ? "Male" : (rFemale.isSelected() ?
"Female" : "Not selected");
            JOptionPane.showMessageDialog(frame, skills + "\nGender: " + gender);
        });

        frame.add(cbJava); frame.add(cbPython);
        frame.add(rMale); frame.add(rFemale);
        frame.add(button);
        frame.setSize(350, 230);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 5: ComboBox and JList

```
import javax.swing.*;
import java.awt.event.*;

public class Step5_ComboBoxList {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 5: ComboBox & List");

        String[] countries = {"India", "USA", "UK", "Germany"};
        String[] colors = {"Red", "Green", "Blue", "Yellow"};

        JComboBox<String> countryBox = new JComboBox<>(countries);
        JList<String> colorList = new JList<>(colors);
        JButton button = new JButton("Show Selection");

        countryBox.setBounds(50, 30, 150, 30);
        colorList.setBounds(50, 70, 100, 80);
        button.setBounds(50, 170, 150, 30);

        button.addActionListener(e -> {
            String country = (String) countryBox.getSelectedItem();
            String color = colorList.getSelectedValue();
              JOptionPane.showMessageDialog(frame, "Country: " + country + "\nColor: " +
color);
        });

        frame.add(countryBox);
        frame.add(colorList);
        frame.add(button);
        frame.setSize(300, 300);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 6: Mouse Events

```
import javax.swing.*;
import java.awt.event.*;

public class Step6_MouseEvents {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 6: Mouse Events");
        JLabel label = new JLabel("Click anywhere!");
        label.setBounds(80, 50, 200, 30);

        frame.addMouseListener(new MouseAdapter() {
            public void mouseClicked(MouseEvent e) {
                label.setText("Clicked at: " + e.getX() + ", " + e.getY());
            }
        });

        frame.add(label);
        frame.setSize(300, 200);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```

Step 7: Window Events

```
import javax.swing.*;
import java.awt.event.*;

public class Step7_WindowEvents {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Step 7: Window Events");
        JLabel label = new JLabel("Try minimizing or closing this window.");
        label.setBounds(30, 50, 300, 30);

        frame.addWindowListener(new WindowAdapter() {
            public void windowIconified(WindowEvent e) {
                System.out.println("Window Minimized");
            }

            public void windowDeiconified(WindowEvent e) {
                System.out.println("Window Restored");
            }

            public void windowClosing(WindowEvent e) {
                System.out.println("Window is closing...");
                JOptionPane.showMessageDialog(frame, "Closing App...");
                System.exit(0);
            }
        });

        frame.add(label);
        frame.setSize(350, 200);
```

```
        frame.setLayout(null);
        frame.setVisible(true);
    }
}
```

Mini-Project: Swing-Based Student Feedback Form

Description:

This project demonstrates a Swing-based GUI for student feedback collection. It integrates JTextField, JRadioButton, JComboBox, JList, JCheckBox, and event handling for buttons to dynamically display the user's input.

Complete Code:

```
import javax.swing.*;
import java.awt.event.*;

public class StudentFeedbackForm {
    public static void main(String[] args) {
        JFrame frame = new JFrame("Student Feedback Form");

        JLabel nameLabel = new JLabel("Name:");
        JTextField nameField = new JTextField();
        JLabel genderLabel = new JLabel("Gender:");
        JRadioButton male = new JRadioButton("Male");
        JRadioButton female = new JRadioButton("Female");
        ButtonGroup genderGroup = new ButtonGroup();

        JLabel courseLabel = new JLabel("Course:");
        String[] courses = {"Java", "Python", "C++"};
        JComboBox<String> courseBox = new JComboBox<>(courses);

        JLabel ratingLabel = new JLabel("Rate the course:");
            JList<String> ratingList = new JList<>(new String[]{"Excellent", "Good", "Average",
"Poor"});

        JCheckBox practical = new JCheckBox("Practical");
        JCheckBox theory = new JCheckBox("Theory");

        JButton submitButton = new JButton("Submit");

        JLabel outputLabel = new JLabel("");

        // Setting Bounds
        nameLabel.setBounds(30, 20, 100, 25);
        nameField.setBounds(140, 20, 150, 25);
        genderLabel.setBounds(30, 60, 100, 25);
        male.setBounds(140, 60, 70, 25);
        female.setBounds(210, 60, 80, 25);
        courseLabel.setBounds(30, 100, 100, 25);
        courseBox.setBounds(140, 100, 150, 25);
        ratingLabel.setBounds(30, 140, 120, 25);
        ratingList.setBounds(140, 140, 150, 60);
        practical.setBounds(30, 210, 100, 25);
        theory.setBounds(140, 210, 100, 25);
```

```
        submitButton.setBounds(100, 250, 120, 30);
        outputLabel.setBounds(30, 290, 300, 40);

        // Adding components
        genderGroup.add(male);
        genderGroup.add(female);

        frame.add(nameLabel);
        frame.add(nameField);
        frame.add(genderLabel);
        frame.add(male);
        frame.add(female);
        frame.add(courseLabel);
        frame.add(courseBox);
        frame.add(ratingLabel);
        frame.add(ratingList);
        frame.add(practical);
        frame.add(theory);
        frame.add(submitButton);
        frame.add(outputLabel);

        // Action Listener
        submitButton.addActionListener(e -> {
            String name = nameField.getText();
                 String gender = male.isSelected() ? "Male" : (female.isSelected() ? "Female" :
"Unspecified");
            String course = (String) courseBox.getSelectedItem();
            String rating = ratingList.getSelectedValue();
            String modules = "";
            if (practical.isSelected()) modules += "Practical ";
            if (theory.isSelected()) modules += "Theory";

            outputLabel.setText("<html>Name: " + name + "<br>Gender: " + gender +
                                "<br>Course: " + course + "<br>Rating: " + rating +
                                "<br>Modules: " + modules + "</html>");
        });

        frame.setSize(350, 400);
        frame.setLayout(null);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    }
}
```