Java Unit IV Cheat Sheet: AWT & Swing with Event Handling

1. AWT Basics

- Component: Base for all GUI elements

- Container: Holds components (Panel, Frame)

- Window: Top-level container without borders

- Frame: Window with title and borders

- Panel: Generic container

Common AWT Controls:

- Label, Button, Checkbox, CheckboxGroup, TextField, TextArea

2. Layout Managers:

- FlowLayout: Left to right

- BorderLayout: N, S, E, W, Center

- GridLayout: Grid of rows x cols

- GridBagLayout: Flexible grid

- MenuBar/Menu/FileDialog

3. Swing Overview:

- Lightweight, pluggable Look & Feel, more powerful than AWT

AWT vs Swing:

- AWT: Heavyweight, native look

- Swing: Lightweight, Java-based, customizable

4. Swing Components:

- JLabel, JTextField, JComboBox, JButton, JCheckBox, JRadioButton

5. Advanced Swing Components:

- JTabbedPane, JScrollPane, JTree, JTable, JProgressBar, ToolTips

6. Event Handling:

- Delegation Event Model: Event Source + Listener

- Event Source: Components (Button, etc.)

- Event Listener: Handles event (ActionListener, etc.)

7. Event Classes:

- ActionEvent, ItemEvent, KeyEvent, MouseEvent, TextEvent

8. Listener Interfaces:

- ActionListener, ItemListener, KeyListener, MouseListener, MouseMotionListener, TextListener

Example (AWT Button):

```java
Button b = new Button("Click Me");
b.addActionListener(new ActionListener() {
   public void actionPerformed(ActionEvent e) {
      System.out.println("Clicked!");
   }
});
```


Example (Swing Button):

```java
JButton btn = new JButton("Submit");
btn.addActionListener(e -> JOptionPane.showMessageDialog(null, "Submitted!"));
```