List of AWT Components with Details

Java AWT provides various GUI components to build user interfaces. Below is a **complete list** of AWT components along with their descriptions and usage.

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1 Top-Level Containers (Main Window Components)

These are the **main windows** that hold all other components.

Component	Description	Example Usage
Frame	A **resizable window** with a title bar and close button.	Frame f = new Frame("My App");
Dialog	A **popup window** used for messages, warnings, or input.	Dialog d = new Dialog(f, "Message", true);
Panel	A container inside a frame used for grouping components.	Panel p = new Panel();

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2 Basic UI Components (Input & Display)

These are the most commonly used GUI elements.

Component	Description	Example Usage
Button	Clickable button	Button b = new Button("Click Me");
Label	Displays **static text**	Label l = new Label("Hello, User!");
TextField	Single-line **input box**	TextField tf = new TextField(20);
TextArea	Multi-line text input	TextArea ta = new TextArea(5, 30);

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3 Selection Components (User Choices)

These components allow users to select **options** from a list.

Component	Description	Example Usage
Checkbox	A **checkbox** for enabling/disabling options	Checkbox cb = new Checkbox("I agree");
CheckboxGroup	A **group of checkboxes** where only one can be selected (radio button-like)	CheckboxGroup group = new CheckboxGroup();
Choice	A **dropdown menu** (ComboBox)	Choice c = new Choice();
List	A **list of items** (single/multiple selection)	List l = new List(4, false);

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4 Menus and Navigation

These components are used for **menu bars and navigation options**.

Component	Description	Example Usage
MenuBar	A **menu bar** at the top of the window	MenuBar mb = new MenuBar();
Menu	A **menu item** inside a menu bar	Menu m = new Menu("File");
MenuItem	An **option inside a menu**	MenuItem mi = new MenuItem("Open");

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5 Layout Managers (Component Arrangement)

These are **not components** but control how components are arranged inside a container.

Layout Manager	Description	Example Usage
FlowLayout	Arranges components **left to right**	setLayout(new FlowLayout());
BorderLayout	Divides window into **5 regions**: NORTH, SOUTH, EAST, WEST, CENTER	setLayout(new BorderLayout());
GridLayout	Arranges components in a **grid (rows & columns)**	setLayout(new GridLayout(2, 3));
CardLayout	Stacks components like **cards** (only one visible at a time)	setLayout(new CardLayout());

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6 Advanced Components (Special Functions)

These provide **special functionality** like scrolling, canvases, and progress bars.

Component	Description	Example Usage
Scrollbar	Scroll bar for **horizontal or vertical scrolling**	Scrollbar sb = new Scrollbar();
Canvas	Used for **drawing graphics**	Canvas c = new Canvas();
ProgressBar (No AWT equivalent)	Requires Swing (JProgressBar)	JProgressBar pb = new JProgressBar();

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7 Event Handling (User Interaction)

To handle **button clicks, key presses, etc.**, AWT uses **event listeners**.

Listener Interface	Description	Example Usage
ActionListener	Handles **button clicks**	btn.addActionListener(this);
KeyListener	Handles **keyboard input**	tf.addKeyListener(this);
MouseListener	Detects **mouse clicks & movements**	panel.addMouseListener(this);
WindowListener	Handles **window close events**	frame.addWindowListener(this);

Example: Using Multiple AWT Components

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

public class AWTExample extends Frame implements ActionListener {
   TextField tf;
   Button btn;
   Checkbox cb;
   Choice dropdown;

   AWTExample() {
      setTitle("AWT Components Example");
      setSize(400, 300);
      setLayout(new FlowLayout());

      Label label = new Label("Enter your name:");
      tf = new TextField(20);
      btn = new Button("Submit");

      cb = new Checkbox("I agree");
      dropdown = new Choice();
      dropdown.add("Option 1");
      dropdown.add("Option 2");

      btn.addActionListener(this);  // Event handling

      add(label);
      add(tf);
      add(btn);
      add(cb);
      add(dropdown);

      // Window closing event
      addWindowListener(new WindowAdapter() {
         public void windowClosing(WindowEvent e) {
            dispose();
         }
      });

      setVisible(true);
   }

   public void actionPerformed(ActionEvent e) {
      System.out.println("Button Clicked! Name: " + tf.getText());
   }
```

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

✔ Uses Label, TextField, Button, Checkbox, Choice, and Event Handling.
✔ Shows how to **handle button clicks**.

Conclusion

✅ **AWT Components**: Buttons, TextFields, Checkboxes, Menus, etc.
✅ **Layout Managers**: FlowLayout, GridLayout, BorderLayout, etc.
✅ **Event Handling**: Button Clicks, Keyboard Input, Window Closing