Web Technology 16
AWT

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AWT
AWT Controls
Label
Button
Checkbox
Radio Button
TextField

AWT

- AWT (Abstract Window Toolkit) represents a class library to develop applications using GUI
- *java.awt* package contains all classes used for creating GUI, painting graphics, images, colors and fonts
- A user interface element such as a button is called a *Component*. The Component class is the super class of all AWT components. These components fire events when users interact with these components
- A *Container* is one which contains components and other containers. A container has a layout manager that determines the visual placement of components in the container

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AWT...

Commonly used AWT Classes

AWTEvent	GridLayout
BorderLayout	Image
Button	Label
Canvas	List
Checkbox	Menu
Choice	Panel
Color	Point
Component	Polygon
Container	Rectangle
Cursor	Scrollbar
Dialog	TextArea
Dimension	TextComponent
FlowLayout	TextField
Font	Toolkit
Frame	Window
Graphics	

AWT Controls

AWT Controls

- AWT supports the following types of controls:
  - Label
  - Button
  - Checkbox
  - RadioButton
  - Choice
  - List
  - TextComponent
  - ScrollBar
- **Adding/Removing Controls**
  Component add (Component compObj)
  void remove(Component compObj)
- **HeadlessException**: The constructors of AWT controls can throw a HeadlessException when an attempt is made to instantiate a GUI component in a non-interactive environment

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Label

Label

- It contains a string, which is a passive control that doesn't support any user interaction
- **Label()**
  Label(String str)
  Label(String str, int align)
  align may be Label.LEFT or Label.RIGHT or Label.CENTER
  Label lbl=new Label("Hello");
- **lbl.setText (New Text");**
  String txt=lbl.getText();
- **lbl.setAlignment(Label.RIGHT);**
  int algn=lbl.getAlignment();

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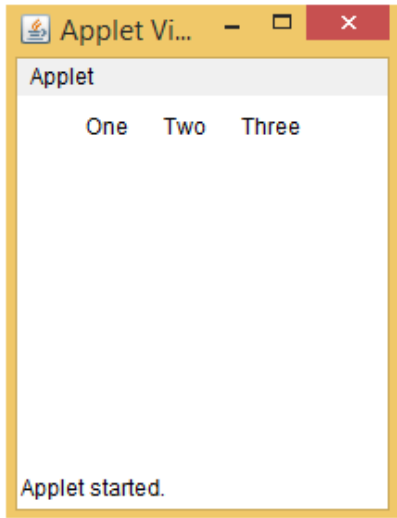
Label...

Label...

```
import java.applet.*;
import java.awt.*;
/*
<APPLET CODE="Test" WIDTH=200 HEIGHT=200>
</APPLET>
*/
public class Test extends Applet{
public void init(){
        Label one=new Label("One");
        Label two=new Label("Two");
        Label three=new Label("Three");
        add(one);
        add(two);
        add(three);
        }
}
```



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Button

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AWT Controls

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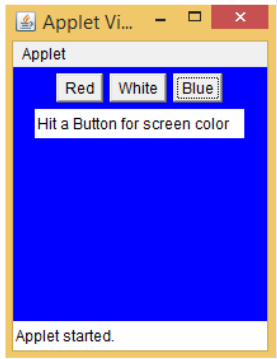
Button

- It is a component that contains a label and that generates an event when it is pressed
- **Button()**
  Button(String str)
  Button btn=new Button("Hello");
- **btn.setLabel(New Text");**
  String txt=btn.getLabel();

Button...

```
import java.applet.*;
import java.awt.*;
import java.awt.event.*;
/*
<APPLET CODE="Test" WIDTH=200 HEIGHT=200>
</APPLET>
*/
public class Test extends Applet implements ActionListener{
Button red, white, blue;
Label hit;
public void init(){
        red=new Button("Red");
        white=new Button("White");
        blue=new Button("Blue");
        hit=new Label("Hit a Button for screen color");
        add(red);
        add(white);
        add(blue);
        add(hit);
        red.addActionListener(this);
        white.addActionListener(this);
        blue.addActionListener(this);
        }
public void actionPerformed(ActionEvent ae){
        String str=ae.getActionCommand();
        if(str.equals("Red"))
                setBackground(Color.red);
        else if(str.equals("White"))
                setBackground(Color.white);
        else if(str.equals("Blue"))
                setBackground(Color.blue);
        repaint();
        }
}
```



Checkbox

Checkbox

- It is used to turn an option on or off
- **Checkbox()**
  Checkbox(String str)
  Checkbox(String str, boolean state)
  Checkbox name=new Checkbox(Names", null, false);

- **boolean st=name.getState();**
  name.setState(boolean state);
  String str=name.getLabel();
  name.setLabel(New Text");

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Checkbox...

Checkbox...

```
import java.applet.*;
import java.awt.*;
import java.awt.event.*;
/*
<APPLET CODE="Test" WIDTH=200 HEIGHT=200>
</APPLET>
*/
public class Test extends Applet implements ActionListener{
Button sub;
Checkbox name1, name2, name3;
public void init(){
        name1=new Checkbox("Ram");
        name2=new Checkbox("Shyam");
        name3=new Checkbox("Ramesh");
        sub=new Button("Submit");
        add(name1);
        add(name2);
        add(name3);
        add(sub);
        sub.addActionListener(this);
        }
public void actionPerformed(ActionEvent e){
        String str=e.getActionCommand();
        if(str.equals("Submit"))
                repaint();
        }
```


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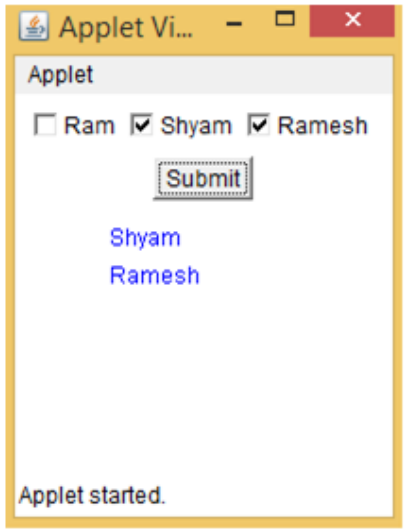
Checkbox...

Checkbox...

```
public void paint(Graphics g){
        g.setColor(Color.blue);
        if(name1.getState())
                g.drawString("Ram", 50,60);
        if(name2.getState())
                g.drawString("Shyam",50,80);
        if(name3.getState())
                g.drawString("Ramesh",50,100);
        }
}
```



AWT

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Radio Button

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Radio Button

- These are a special kind of checkboxes. *CheckboxGroup* class is used to group together a set of checkboxes

- **CheckboxGroup fruits=new CheckboxGroup();**
  add(new Checkbox(Mango",fruits, false);
  add(new Checkbox(Äpple",fruits,false);

Radio Button...

```
import java.applet.*;
import java.awt.*;
import java.awt.event.*;
/*
<APPLET CODE="Test" WIDTH=200 HEIGHT=200>
</APPLET>
*/
public class Test extends Applet implements ItemListener{
Checkbox red,green,blue;
CheckboxGroup cbg;
public void init(){
        Label lbl=new Label("CLick the option for color change");
        cbg=new CheckboxGroup();
        red=new Checkbox("Red",cbg,false);
        green=new Checkbox("Green",cbg,false);
        blue=new Checkbox("Blue",cbg,false);
        add(lbl);
        add(red);
        add(green);
        add(blue);
        red.addItemListener(this);
        green.addItemListener(this);
        blue.addItemListener(this);
        }
public void itemStateChanged(ItemEvent e){
        String str=(String) e.getItem();
        if(str.equals("Red"))
                setBackground(Color.red);
        else if(str.equals("Green"))
                setBackground(Color.green);
        else if(str.equals("Blue"))
                setBackground(Color.blue);
        repaint();
        }
}
```

TextField

- It handles single line of text
- **TextField()**
  TextField(int noChars)
  TextField(String str)
  TextField(String str, int noChars)
- **String getText()**
  void setText(String str)
- **String getSelectedText()**
  void select(int startIndex, int endIndex)
- **boolean isEditable()**
  void setEditable(boolean isedit)
- **void setEchoChar(char ch)**

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import java.applet.*;
import java.awt.*;
import java.awt.event.*;
/*
<APPLET CODE="Test" WIDTH=200 HEIGHT=200>
</APPLET>
*/
public class Test extends Applet implements ActionListener{
TextField name,pass;
public void init(){
        Label lname=new Label("Name: ", Label.RIGHT);
        Label lpass=new Label("Password: ", Label.RIGHT);
        name=new TextField(20);
        pass=new TextField(10);
        pass.setEchoChar('*');
        add(lname);
        add(name);
        add(lpass);
        add(pass);
        name.addActionListener(this);
        pass.addActionListener(this);
        }
public void actionPerformed(ActionEvent e){
        repaint();
        }
public void paint(Graphics g){
        g.drawString("Name: "+name.getText(),10,60);
        g.drawString("Selected Text: "+name.getSelectedText(),10,80);
        g.drawString("Password: "+pass.getText(),10,100);
        }
}
```


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