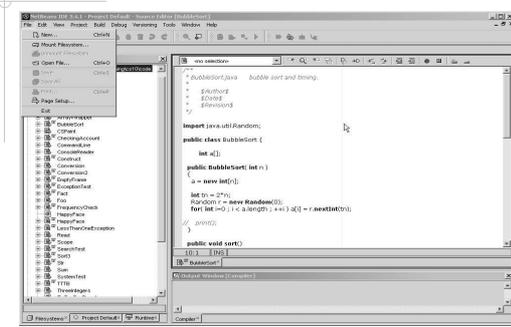


## CS201 Introduction to Java Programming Introduction to GUI Programming

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## GUI



## Swing GUI Components

- ◆ A Visual Index to the Swing Component
  - <http://java.sun.com/docs/books/tutorial/uiswing/components/components.html>

## GUI Programming

- ◆ Create a container
- ◆ Create components
- ◆ Add components to the container
  - Layouts
- ◆ Handle events

## GUI Programming in This Lecture

- ◆ Container – JApplet
- ◆ Components – JTextField, JTextArea, JLabel, and JButton
- ◆ Layouts – BorderLayout, GridLayout
- ◆ Events – ActionEvent

## Create a Container

```
import java.awt.*;  
import javax.swing.*;  
  
public class GUIApplet extends JApplet {  
  
}
```

## Buttons and Labels

- ◆ JButton
  - JButton( String s )
- ◆ JLabel
  - JLabel( String s )

```
JButton b = new JButton ("Click me");
```

```
JLabel l = new JLabel ("Don't click me");
```

## Text Field and Text Area

- ◆ JTextField is for single-line text input
- ◆ JTextArea is for multi-line text input
- ◆ Constructor
  - JTextField()
  - JTextArea()
- ◆ Methods
  - getText(), setText( String s )

```
JTextField tf = new JTextField();  
JTextArea ta = new JTextArea();
```

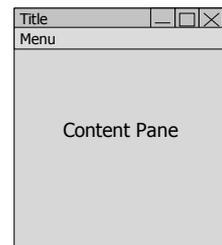
## Create Some Components

```
JLabel l;  
JButton b;  
JTextField tf;  
JTextArea ta;  
  
public void init()  
{  
    l = new JLabel( "Don't click me" );  
    b = new JButton( "Click me" );  
    tf = new JTextField();  
    ta = new JTextArea();  
}
```

## Adding Component

- ◆ All components must be added to the content pane, except the menu bar
- ◆ getContentPane()

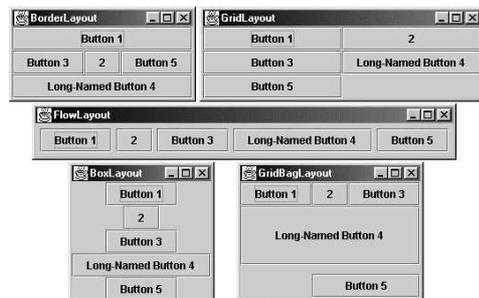
```
Container cp = getContentPane();  
cp.add( some_component );
```



## Add the Components

```
public void init()  
{  
    l = new JLabel( "Don't click me" );  
    b = new JButton( "Click me" );  
    tf = new JTextField();  
    ta = new JTextArea();  
  
    Container cp = getContentPane();  
    cp.add(l);  
    cp.add(b);  
    cp.add(tf);  
    cp.add(ta);  
}
```

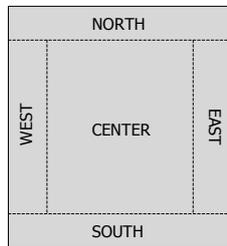
## Layouts



## Border Layout

- ◆ *Default* layout for applet, content pane, and dialog box

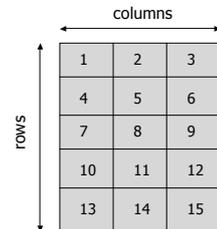
```
cp = getContentPane();
JButton b1 = new JButton("Button1");
JButton b2 = new JButton("Button2");
cp.add( b1, BorderLayout.NORTH );
cp.add( b2, BorderLayout.CENTER );
```



## Grid Layout

- ◆ Either rows or cols can be zero
- ◆ All components are of equal size

```
cp = getContentPane();
cp.setLayout( new GridLayout(2,3) );
JButton b1 = new JButton("Button1");
JButton b2 = new JButton("Button2");
cp.add( b1 );
cp.add( b2 );
```



## Add the Components (Retry)

```
public void init()
{
    l = new JLabel( "Don't click me" );
    b = new JButton( "Click me" );
    tf = new JTextField();
    ta = new JTextArea();

    Container cp = getContentPane();
    cp.add(l, BorderLayout.WEST);
    cp.add(b, BorderLayout.SOUTH);
    cp.add(tf, BorderLayout.NORTH);
    cp.add(ta, BorderLayout.CENTER);
}
```

## Handling Action Events

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

public class GUIApplet extends JApplet implements ActionListener
{
    public void init()
    {
        b.addActionListener( this );
    }

    public void actionPerformed( ActionEvent e )
    {
        // code that handling action events
    }
}
```

## ActionEvent

- ◆Object getSource()
- ◆String getActionCommand()

## What Happened to paint()?

```
public void paint( Graphics g )
{
    super.paint(g);

    g.drawString( "Welcome to GUI Programming", 25, 25 );
}
```