

GUI Containers - Panels

panel – a container used to organize other components

- must be added to another container (eg, frame or other panel) to be displayed

a lightweight container:

- managed by the Java program itself

Nested Panels

```

//*****
// Authority.java Author: Lewis/Loftus
// Demonstrates the use of frames, panels, and labels.
//*****
import java.awt.*;
import javax.swing.*;

public class Authority
{
    // Displays some words of wisdom.
    // *****
    public static void main (String[] args)
    {
        JFrame frame = new JFrame ("Authority");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);

        JPanel primary = new JPanel();
        primary.setBackground (Color.yellow);
        primary.setPreferredSize (new Dimension(250, 75));
        JLabel label1 = new JLabel ("Question authority,");
        JLabel label2 = new JLabel ("but raise your hand first.");

        primary.add (label1);
        primary.add (label2);

        frame.getContentPane().add(primary);
        frame.pack();
        frame.setVisible(true);
    }
}
    
```



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Other components: Labels

label – a GUI component that displays a line of text and/or an image

- See [Authority.java](#)

```

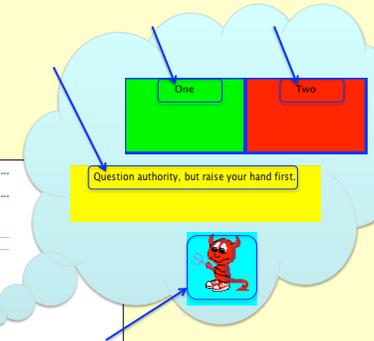
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Example: [Authority.java](#)

```

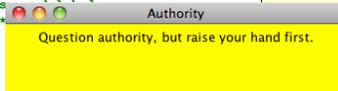
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        primary.add (label1);
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        frame.getContentPane().add(primary);
        frame.pack();
        frame.setVisible(true);
    }
}
    
```



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Example: Nested panels [NestedPanels.java](#)

```

//*****
// NestedPanels.java Author: Lewis/Loftus
// Demonstrates a basic component hierarchy.
//*****
import java.awt.*;
import javax.swing.*;

public class NestedPanels
{
    //-----
    // Presents two colored panels nested within a third.
    //-----
    public static void main (String[] args)
    {
        JFrame frame = new JFrame ("Nested Panels");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);

        // Set up first subpanel
        JPanel subPanel1 = new JPanel();
        subPanel1.setPreferredSize (new Dimension(150, 100));
        subPanel1.setBackground (Color.green);
        JLabel label1 = new JLabel ("One");
        subPanel1.add (label1);
    }
}
    
```

continued

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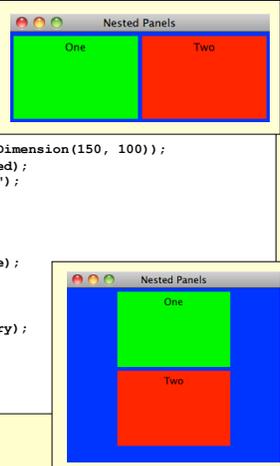
```

continued

// Set up second subpanel
JPanel subPanel2 = new JPanel();
subPanel2.setPreferredSize (new Dimension(150, 100));
subPanel2.setBackground (Color.red);
JLabel label2 = new JLabel ("Two");
subPanel2.add (label2);

// Set up primary panel
JPanel primary = new JPanel();
primary.setBackground (Color.blue);
primary.add (subPanel1);
primary.add (subPanel2);

frame.getContentPane().add(primary);
frame.pack();
frame.setVisible(true);
}
    
```



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Example: [LabelDemo.java](#)

```

//*****
// LabelDemo.java Author: Lewis/Loftus
//
// Demonstrates the use of image icons in labels.
//*****

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

public class LabelDemo
{
    //-----
    // Creates and displays the primary application frame.
    //-----
    public static void main (String[] args)
    {
        JFrame frame = new JFrame ("Label Demo");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);

        ImageIcon icon = new ImageIcon ("devil.gif");

        JLabel label1, label2, label3;

        label1 = new JLabel ("Devil Left", icon, SwingConstants.CENTER);

continued
    }
}
    
```

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```

continued

label2 = new JLabel ("Devil Right", icon, SwingConstants.CENTER);
label2.setHorizontalTextPosition (SwingConstants.LEFT);
label2.setVerticalTextPosition (SwingConstants.BOTTOM);

label3 = new JLabel ("Devil Above", icon, SwingConstants.CENTER);
label3.setHorizontalTextPosition (SwingConstants.CENTER);
label3.setVerticalTextPosition (SwingConstants.BOTTOM);

JPanel panel = new JPanel();
panel.setBackground (Color.cyan);
panel.setPreferredSize (new Dimension (200, 250));
panel.add (label1);
panel.add (label2);
panel.add (label3);

frame.getContentPane().add(panel);
frame.pack();
frame.setVisible(true);
}
    
```



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Custom JPanel

- The next example shows how to draw your own Graphics on a panel

Example: SmilingFacePanel
[SmilingFacePanel.java](#) (custom JPanel with smiling face)

[SmilingFace.java](#) (program that uses SmilingFacePanel – driver class)



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```

//*****
// SmilingFace.java      Author: Lewis/Loftus
//
// Demonstrates the use of a separate panel class.
//*****

import javax.swing.JFrame;

public class SmilingFace
{
    //-----
    // Creates the main frame of the program.
    //-----
    public static void main (String[] args)
    {
        JFrame frame = new JFrame ("Smiling Face");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);

        SmilingFacePanel panel = new SmilingFacePanel();

        frame.getContentPane().add(panel);

        frame.pack();
        frame.setVisible(true);
    }
}
    
```

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```

//*****
// SmilingFacePanel.java  Author: Lewis/Loftus
//
// Demonstrates the use of a separate panel class.
//*****

import javax.swing.JPanel;
import java.awt.*;

public class SmilingFacePanel extends JPanel
{
    private final int BASEX = 120, BASEY = 60; // base point for head

    //-----
    // Constructor: Sets up the main characteristics of this panel.
    //-----
    public SmilingFacePanel ()
    {
        setBackground (Color.blue);
        setPreferredSize (new Dimension(320, 200));
        setFont (new Font("Arial", Font.BOLD, 16));
    }

    continue
    
```

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```

continue
//-----
// Draws a face.
//-----
public void paintComponent (Graphics page)
{
    super.paintComponent (page);

    page.setColor (Color.yellow);
    page.fillOval (BASEX, BASEY, 80, 80); // head
    page.fillOval (BASEX-5, BASEY+20, 90, 40); // ears

    page.setColor (Color.black);
    page.drawOval (BASEX+20, BASEY+30, 15, 7); // eyes
    page.drawOval (BASEX+45, BASEY+30, 15, 7);

    page.fillOval (BASEX+25, BASEY+31, 5, 5); // pupils
    page.fillOval (BASEX+50, BASEY+31, 5, 5);

    page.drawArc (BASEX+20, BASEY+25, 15, 7, 0, 180); // eyebrows
    page.drawArc (BASEX+45, BASEY+25, 15, 7, 0, 180);

    page.drawArc (BASEX+35, BASEY+40, 15, 10, 180, 180); // nose
    page.drawArc (BASEX+20, BASEY+50, 40, 15, 180, 180); // mouth
    page.setColor (Color.white);
    page.drawString ("Always remember that you are unique!",
        BASEX-105, BASEY-15);
    page.drawString ("Just like everyone else.", BASEX-45, BASEY+105);
}
}
    
```