

Practical Sheet

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Title: Implementation of different layouts.

Introduction:

i) Flow Layout:

The Java flow layout is used to arrange the components in a line, one after another (in a flow).

ii) Border Layout:

A border layout places components in upto five areas: top, bottom, left, right and center.

iii) Grid Layout:

Grid layout simply makes a bunch of components equal in size and displays them in the requested number of rows & columns.

iv) Grid bag layout:

GridBagLayout is a sophisticated, flexible layout manager. It aligns components to span more than one cell.

v) Group Layout:

GroupLayout is a layout manager that was developed for use by GUI builder tools. It works with the horizontal and vertical layouts separately.

What happens when no layout is used?

⇒ If we don't use any layout manager and simply add components to a container without specifying a layout, the default layout manager for most containers is the FlowLayout. To set the layout without a layout we can use null keyword in the setLayout method of the frame.

```
frame.getContentPane().setLayout(null);
```

Flow Layout Code:

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

public class FlowLayoutExample
{
    JFrame frameObj;

    FlowLayoutExample()
    {
        frameObj = new JFrame();

        JButton b0 = new JButton("This is newly added");
        JButton b1 = new JButton("1");
        JButton b2 = new JButton("2");
        JButton b3 = new JButton("3");
        JButton b4 = new JButton("4");
        JButton b5 = new JButton("5");
        JButton b6 = new JButton("6");
        JButton b7 = new JButton("7");
        JButton b8 = new JButton("8");
        JButton b9 = new JButton("9");
        JButton b10 = new JButton("10");

        frameObj.add(b0); frameObj.add(b1); frameObj.add(b2);
        frameObj.add(b3); frameObj.add(b4); frameObj.add(b5);
        frameObj.add(b6); frameObj.add(b7); frameObj.add(b8);
        frameObj.add(b9); frameObj.add(b10);

        frameObj.setLayout(new FlowLayout());
        frameObj.setSize(300, 300);
        frameObj.setVisible(true);
    }

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



This is newly added 1 2 3 4 5 6 7 8 9 10

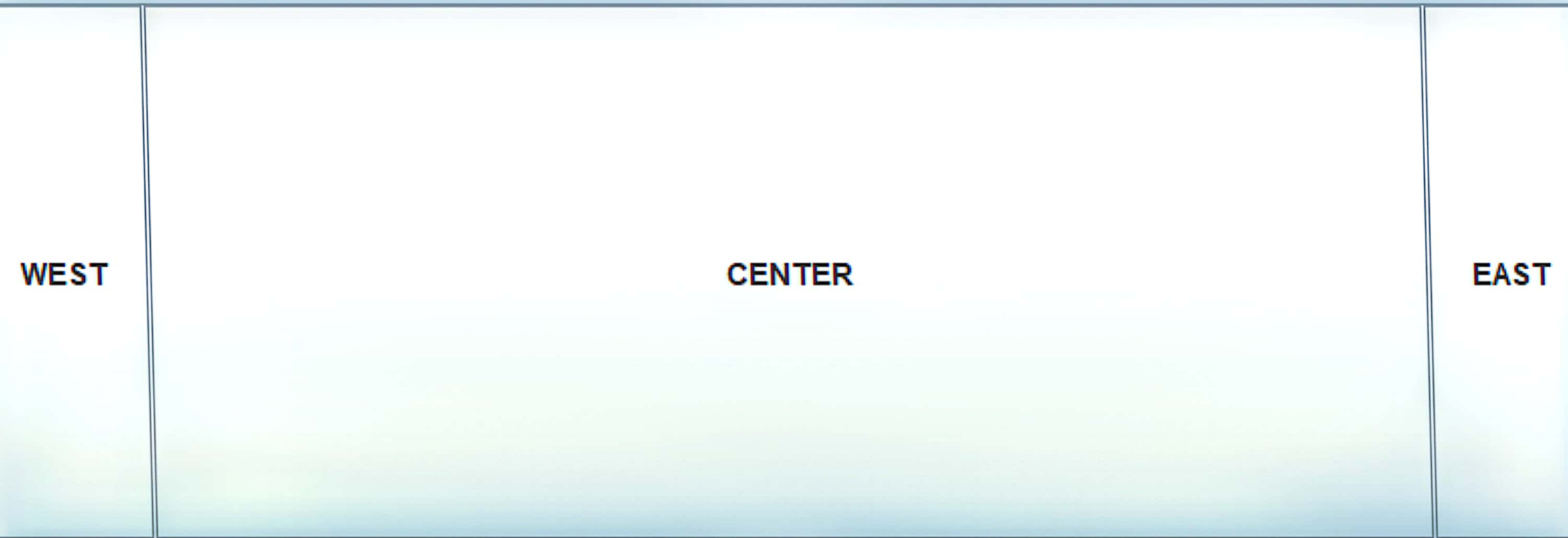
```
[Running] cd "d:\Utsav\Java\lab 2\" && javac FlowLayoutExample.java && java FlowLayoutExample
```

Border Layout Code:

```
import java.awt.*;  
import javax.swing.*;  
public class Border  
{  
    JFrame f;  
    Border()  
    {  
        f = new JFrame();  
        JButton b1 = new JButton("NORTH");  
        JButton b3 = new JButton("EAST");  
        JButton b4 = new JButton("WEST");  
        JButton b5 = new JButton("CENTER");  
        JButton b6 = new JButton("SOUTH");  
        f.add(b1, BorderLayout.NORTH);  
        f.add(b3, BorderLayout.WESTEAST);  
        f.add(b4, BorderLayout.EASTWEST);  
        f.add(b5, BorderLayout.CENTER);  
        f.add(b6, BorderLayout.SOUTH);  
        f.setSize(300, 300);  
        f.setVisible(true);  
    }  
    public static void main(String[] args){  
        new Border();  
    }  
}
```



NORTH



SOUTH

```
[Running] cd "d:\Utsav\Java\lab 2\" && javac Border.java && java Border
```


Grid Layout Code:

```
import java.awt.GridLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
public class GridLayoutDemo {
    public static void main (String[] args) {
        JFrame frame = new JFrame();
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);
        frame.setSize (500, 500);
        frame.setLayout (new GridLayout (3, 3, 0, 0));
        frame.add (new JButton ("1"));
        frame.add (new JButton ("2"));
        frame.add (new JButton ("3"));
        frame.add (new JButton ("4"));
        frame.add (new JButton ("5"));
        frame.add (new JButton ("6"));
        frame.add (new JButton ("7"));
        frame.add (new JButton ("8"));
        frame.add (new JButton ("9"));
        frame.add (new JButton ("10"));
        frame.setVisible (true);
    }
}
```

3 3



1	2	3	4
5	6	7	8
9	10		

```
[Running] cd "d:\Utsav\Java\lab 2\" && javac GridLayoutDemo.java && java GridLayoutDemo
```


GridBag Layout Code:

```
import java.awt.BorderLayout;
import java.awt.GridBagConstraints;
import java.awt.GridBagLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JPanel;

public class GridBagDemo {
    public static void main (String[] args) {
        createWindow();
    }

    private static void createWindow() {
        JFrame frame = new JFrame ("Swing Tester");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);
        createUI (frame);
        frame.setSize (360, 200);
        frame.setLocationRelativeTo (null);
        frame.setVisible (true);
    }

    private static void createUI (final JFrame frame) {
        JPanel panel = new JPanel();
        GridBagLayout layout = new GridBagLayout();
        panel.setLayout (layout);
        GridBagConstraints gbc = new GridBagConstraints();
        gbc.fill = GridBagConstraints.HORIZONTAL;
        gbc.gridx = 0;
        gbc.gridy = 0;
        panel.add (new JButton ("Button 1"), gbc);
        gbc.gridx = 1;
        gbc.gridy = 0;
        panel.add (new JButton ("Button 2"), gbc);
    }
}
```

```

gbc.fill = GridBagConstraints.HORIZONTAL;
gbc.ipady = 20;
gbc.gridx = 0;
gbc.gridy = 1;
panel.add(new JButton("Button 3"), gbc);
gbc.gridx = 1;
gbc.gridy = 1;
panel.add(new JButton("Button 4"), gbc);
gbc.gridx = 0;
gbc.gridy = 2;
panel.add(new JButton("Button 6"), gbc);
gbc.gridx = 1;
gbc.gridy = 2;
panel.add(new JButton("Button 7"), gbc);
gbc.gridx = 2;
gbc.gridy = 2;
panel.add(new JButton("Button 8"), gbc);
gbc.gridx = 0;
gbc.gridy = 3;
gbc.fill = GridBagConstraints.HORIZONTAL;
gbc.gridwidth = 2;
panel.add(new JButton("Button 5"), gbc);
frame.getContentPane().add(panel, BorderLayout.CENTER);
}
}

```

Swing Tester

Button 1	Button 2	
Button 3	Button 4	
Button 6	Button 7	Button 8
Button 5		

```
[Running] cd "d:\Utsav\Java\lab 2\" && javac GridBagDemo.java && java GridBagDemo
```

Group Layout Code:

```
import java.awt.Container;
import javax.swing.GroupLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
import static javax.swing.GroupLayout.Alignment.*;

public class GroupDemo {
    public static void main (String[] args) {
        JFrame frame = new JFrame ("Group Layout Example");
        frame.setDefaultCloseOperation (JFrame.EXIT_ON_CLOSE);
        Container myPanel = frame.getContentPane();
        GroupLayout groupLayout = new GroupLayout (myPanel);
        groupLayout.setAutoCreateGaps (true);
        groupLayout.setAutoCreateContainerGaps (true);
        myPanel.setLayout (groupLayout);


        JButton b1 = new JButton ("Button One");
        JButton b2 = new JButton ("Button Two");
        JButton b3 = new JButton ("Button Three");
        JButton b4 = new JButton ("Button Four");

        groupLayout.setHorizontalGroup (groupLayout.create
            SequentialGroup()
            .addGroup (groupLayout.create Parallel Group (LEADING)
            .addComponent (b1).addComponent (b3))
            .addGroup (groupLayout.create Parallel Group (TRAILING)
            .addComponent (b2).addComponent (b4)));
    }
}
```

```
groupLayout.setVerticalGroup(groupLayout.createSequentialGroup()
    .add Group(groupLayout.create Parallel Group(BASELINE).add
        Component(b1).add Component(b2)).
    .add Group(groupLayout.create Parallel Group(BASELINE)
        .add Component(b3).add Component(b4))));
frame.pack();
frame.setVisible(true);
```

3

3

 GroupLayoutExample

Button One

Button Two

Button Three

Button Four

```
[Running] cd "d:\Utsav\Java\lab 2\" && javac GroupDemo.java && java GroupDemo
```