

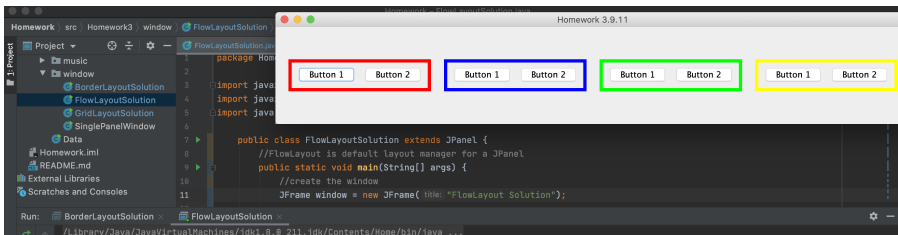
a. Flow Layout:

```

package Homework3.window;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.*;

public class FlowLayoutSolution extends JPanel {
    //FlowLayout is default layout manager for a JPanel
    public static void main(String[] args) {
        //create the window
        JFrame window = new JFrame("FlowLayout Solution");
        //panel will arrange components in one column with giving spacing
        JPanel panel = new JPanel(new FlowLayout(FlowLayout.LEFT, 20, 50));
        window.add(panel);
        //create buttons (two for each panel)
        JButton button1 = new JButton("Button 1");
        JButton button2 = new JButton("Button 2");
        JButton button3 = new JButton("Button 1");
        JButton button4 = new JButton("Button 2");
        JButton button5 = new JButton("Button 1");
        JButton button6 = new JButton("Button 2");
        JButton button7 = new JButton("Button 1");
        JButton button8 = new JButton("Button 2");
        JPanel panel1, panel2, panel3, panel4;
        //create the panel
        panel1 = new JPanel();
        panel1.setLayout(new FlowLayout());
        //add buttons to the panel
        panel1.add(button1, "West");
        panel1.add(button2, "East");
        //creating a red border and set border to the panel
        Border red = BorderFactory.createLineBorder(Color.red, 5);
        panel1.setBorder(red);
        //creating a pane and set the panel as the content pane of the window
        panel.add(panel1);
        panel2 = new JPanel();
        panel2.setLayout(new FlowLayout());
        panel2.add(button3, "West");
        panel2.add(button4, "East");
        Border blue = BorderFactory.createLineBorder(Color.blue, 5);
        panel2.setBorder(blue);
        panel.add(panel2);
        panel3 = new JPanel();
        panel3.setLayout(new FlowLayout());
        panel3.add(button5, "West");
        panel3.add(button6, "East");
        Border green = BorderFactory.createLineBorder(Color.green, 5);
        panel3.setBorder(green);
        panel.add(panel3);
        panel4 = new JPanel();
        panel4.setLayout(new FlowLayout());
        panel4.add(button7, "West");
        panel4.add(button8, "East");
        Border yellow = BorderFactory.createLineBorder(Color.yellow, 5);
        panel4.setBorder(yellow);
        panel.add(panel4);
        //when window is closed, terminate the program as well
        window.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //set window title
        window.setTitle("Homework 3.9.11");
        //set window size
        window.pack();
        //make window visible
        window.setVisible(true);
    }
}

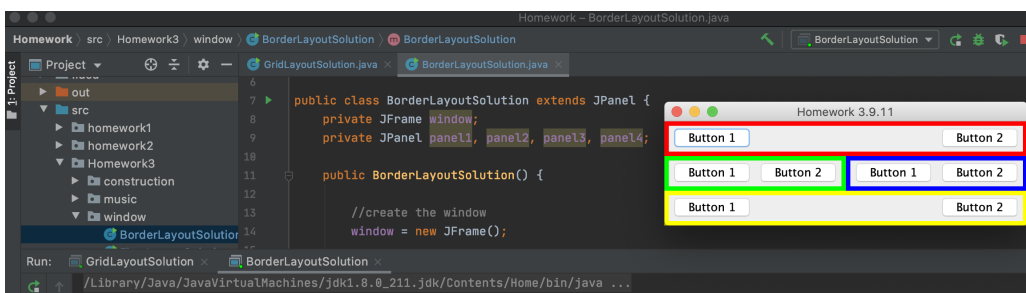
```



b. Border Layout:

```
package Homework3.window;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.*;

public class BorderLayoutSolution extends JPanel {
    private JFrame window;
    private JPanel panel1, panel2, panel3, panel4;
    public BorderLayoutSolution() {
        //create the window
        window = new JFrame();
        //create buttons (two for each panel)
        JButton button1 = new JButton("Button 1");
        JButton button2 = new JButton("Button 2");
        JButton button3 = new JButton("Button 1");
        JButton button4 = new JButton("Button 2");
        JButton button5 = new JButton("Button 1");
        JButton button6 = new JButton("Button 2");
        JButton button7 = new JButton("Button 1");
        JButton button8 = new JButton("Button 2");
        //create the panel
        panel1 = new JPanel();
        panel1.setLayout(new BorderLayout());
        //add buttons to the panel
        panel1.add(button1, "West");
        panel1.add(button2, "East");
        //creating a red border and set border to the panel
        Border red = BorderFactory.createLineBorder(Color.red, 5);
        panel1.setBorder(red);
        //creating a pane and set the panel as the content pane of the window
        window.getContentPane().add(panel1, "North");
        panel2 = new JPanel();
        panel2.setLayout(new BorderLayout());
        panel2.add(button3, "West");
        panel2.add(button4, "East");
        Border blue = BorderFactory.createLineBorder(Color.blue, 5);
        panel2.setBorder(blue);
        window.getContentPane().add(panel2, "East");
        panel3 = new JPanel();
        panel3.setLayout(new BorderLayout());
        panel3.add(button5, "West");
        panel3.add(button6, "East");
        Border green = BorderFactory.createLineBorder(Color.green, 5);
        panel3.setBorder(green);
        window.getContentPane().add(panel3, "West");
        panel4 = new JPanel();
        panel4.setLayout(new BorderLayout());
        panel4.add(button7, "West");
        panel4.add(button8, "East");
        Border yellow = BorderFactory.createLineBorder(Color.yellow, 5);
        panel4.setBorder(yellow);
        window.getContentPane().add(panel4, "South");
        //when window is closed, terminate the program as well
        window.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //set window title
        window.setTitle("Homework 3.9.11");
        //set window size
        window.pack();
        //make window visible
        window.setVisible(true);
    }
    public static void main(String[] args) {
        new BorderLayoutSolution();
    }
}
```



c. Grid Layout with one column:

```
package Homework3.window;
import javax.swing.*;
import javax.swing.border.*;
import java.awt.*;
public class GridLayoutSolution extends JPanel {
    public static void main(String[] args) {
        //create the window
        JFrame window = new JFrame("GridLayout Solution");
        //panel will arrange components in one column with giving spacing
        JPanel panel = new JPanel(new GridLayout(4, 3, 5, 5));
        window.add(panel);
        //create buttons (two for each panel)
        JButton button1 = new JButton("Button 1");
        JButton button2 = new JButton("Button 2");
        JButton button3 = new JButton("Button 1");
        JButton button4 = new JButton("Button 2");
        JButton button5 = new JButton("Button 1");
        JButton button6 = new JButton("Button 2");
        JButton button7 = new JButton("Button 1");
        JButton button8 = new JButton("Button 2");
        JPanel panel1, panel2, panel3, panel4;
        //create the panel
        panel1 = new JPanel();
        panel1.setLayout(new GridLayout());
        //add buttons to the panel
        panel1.add(button1, "West");
        panel1.add(button2, "East");
        //creating a red border and set border to the panel
        Border red = BorderFactory.createLineBorder(Color.red, 5);
        panel1.setBorder(red);
        //creating a pane and set the panel as the content pane of the window
        panel.add(panel1);
        panel2 = new JPanel();
        panel2.setLayout(new GridLayout());
        panel2.add(button3, "West");
        panel2.add(button4, "East");
        Border blue = BorderFactory.createLineBorder(Color.blue, 5);
        panel2.setBorder(blue);
        panel.add(panel2);
        panel3 = new JPanel();
        panel3.setLayout(new GridLayout());
        panel3.add(button5, "West");
        panel3.add(button6, "East");
        Border green = BorderFactory.createLineBorder(Color.green, 5);
        panel3.setBorder(green);
        panel.add(panel3);
        panel4 = new JPanel();
        panel4.setLayout(new GridLayout());
        panel4.add(button7, "West");
        panel4.add(button8, "East");
        Border yellow = BorderFactory.createLineBorder(Color.yellow, 5);
        panel4.setBorder(yellow);
        panel.add(panel4);
        //when window is closed, terminate the program as well
        window.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        //set window title
        window.setTitle("Homework 3.9.11");
        //set window size
        window.pack();
        //make window visible
        window.setVisible(true);
    }
}
```

