How to create a JFrame?

JFrame(): This helps in creating a frame which is invisible.
JFrame(String Title): Helps in creating a frame with a title.
JFrame(GraphicsConfiguration gc): Creates a frame with blank title and the graphics configuration of screen.

Example:

```
JFrame F = new JFrame();
// Or overload the constructor and give it a title:
JFrame F1 = new JFrame("Red Alert!");
```

Example:

```java
import javax.swing.*;
import java.awt.*;
public class myWindowJFrame {
    public static void main(String[] args){
        JFrame f= new JFrame();
        f.setTitle("myWindow");
        f.setSize(640,480);
        //Container c= f.getContentPane();
        f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        JLabel label=new JLabel("label");
        f.add(label);
        f.setVisible(true);
    }
}
```

---------------------------------- -- --------------------------------- ------------------

a. **Jlabel**
b. **JTextField**
C. **JButton**

```java
import javax.swing.*;
class TextFieldExample
{
    public static void main(String args[])
    {
        JFrame f= new JFrame("TextField Example");
        JTextField t1,t2;
        t1=new JTextField("Text 1 Placehold.");
        t1.setBounds(150,50, 200,30);
        t2=new JTextField("Text 2 Placehold");
        t2.setBounds(150,100, 200,30);
        f.add(t1); f.add(t2);
//JButton
        JButton b=new JButton("Click Here");
        b.setBounds(50,200,95,30);
        f.add(b);
//JLabel
        JLabel l1,l2;
        l1=new JLabel("First Label.");
        l1.setBounds(50,50, 100,30);
        l2=new JLabel("Second Label.");
        l2.setBounds(50,100, 100,30);
        f.add(l1); f.add(l2);

        f.setSize(400,400);
        f.setLayout(null);
        f.setVisible(true);
    }
}
```

d. **Event Handling in Swing Applications**

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

public class EventHandelJButton {
    static JTextField t1,t2,t3;
     public static void  main  ( String[] args ) {
        JFrame f= new JFrame("TextField Example");

        t1=new JTextField("Text 1 Placehold.");
        t1.setBounds(150,50, 200,30);
        t2=new JTextField("Text 2 Placehold");
        t2.setBounds(150,100, 200,30);
        t3=new JTextField("Text 3 Placehold");
        t3.setBounds(150,200, 200,30);
        f.add(t1); f.add(t2);
        f.add(t3);

        //JLabel
        JLabel l1,l2;
        l1=new JLabel("First Label.");
        l1.setBounds(50,50, 100,30);
        l2=new JLabel("Second Label.");
        l2.setBounds(50,100, 100,30);
        f.add(l1); f.add(l2);
        //
        //JButton
        JButton b=new JButton("Click Here");
        b.setBounds(50,200,95,30);
        b.addActionListener(new ActionListener(){
            public void actionPerformed(ActionEvent e){
                int num1 = Integer.parseInt(t1.getText());
                int num2 = Integer.parseInt(t2.getText());
                int sum = num1 + num2;
                    String txt = Integer.toString(sum);
                t3.setText(txt);
            }
         });
         f.add(b);
        //
        f.setSize(400,400);
        f.setLayout(null);
```
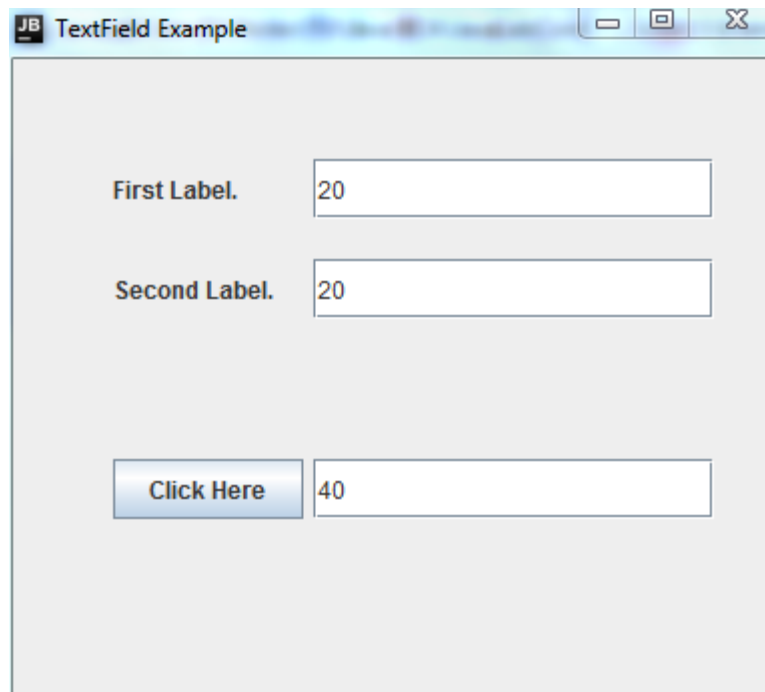
```
        f.setVisible(true);
    }
}
```


Example 2:

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

public class EventHandelButton extends Frame implements ActionListener {
    JTextField tf;
    JLabel l;
    JButton b;

    EventHandelButton () {
        tf = new JTextField();
        tf.setBounds(50, 50, 150, 20);
        l = new JLabel();
        l.setBounds(50, 100, 250, 20);
        b = new JButton("Find IP");
        b.setBounds(50, 150, 95, 30);
        b.addActionListener(this);
        add(b);
        add(tf);
        add(l);
        setSize(400, 400);
        setLayout(null);
        setVisible(true);
    }

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

```java
    public void actionPerformed ( ActionEvent e ) {
        try {
            String host = tf.getText();
            String ip = java.net.InetAddress.getByName(host).getHostAddress();
            l.setText("IP of " + host + " is: " + ip);
        } catch (Exception ex) {
            System.out.println(ex);
        }
    }
}
```


e.   **Layout Management using Flow Layout, Border Layout, Grid Layout,**

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

    public class FlowLayoutExample1
    {
        JFrame frameObj;

        // constructor
        FlowLayoutExample1()
        {
            // creating a frame object
            frameObj = new JFrame();
            // creating the buttons
            JButton b1 = new JButton("1");
            JButton b2 = new JButton("2");
            JButton b3 = new JButton("3");
            JButton b4 = new JButton("4");

            // adding the buttons to frame
            frameObj.add(b1); frameObj.add(b2); frameObj.add(b3); frameObj.add(b4);

            // parameterized constructor is used
            // where alignment is left
            // horizontal gap is 20 units and vertical gap is 25 units.
```

```java
        frameObj.setLayout(new FlowLayout(FlowLayout.LEFT, 20, 25));
        frameObj.setSize(300, 300);
        frameObj.setVisible(true);
    }
    // main method
    public static void main(String argvs[])
    {
        new FlowLayoutExample1();
    }
}
```

Java BorderLayout

```java
    // import statement
    import java.awt.*;
    import javax.swing.*;
    public class BorderLayoutExample
    {
        JFrame jframe;
        // constructor
        BorderLayoutExample()
        {
            // creating a Frame
            jframe = new JFrame();
            // create buttons
            JButton btn1 = new JButton("NORTH");
            JButton btn2 = new JButton("SOUTH");
            JButton btn3 = new JButton("EAST");
            JButton btn4 = new JButton("WEST");
            JButton btn5 = new JButton("CENTER");
            // creating an object of the BorderLayout class using
            // the parameterized constructor where the horizontal gap is 20
            // and vertical gap is 15. The gap will be evident when buttons are placed
            // in the frame
            jframe.setLayout(new BorderLayout(20, 15));
            jframe.add(btn1, BorderLayout.NORTH);
            jframe.add(btn2, BorderLayout.SOUTH);
            jframe.add(btn3, BorderLayout.EAST);
            jframe.add(btn4, BorderLayout.WEST);
            jframe.add(btn5, BorderLayout.CENTER);
            jframe.setSize(300,300);
            jframe.setVisible(true);
        }
        // main method
        public static void main(String argvs[])
        {
            new BorderLayoutExample();
        }
    }
```
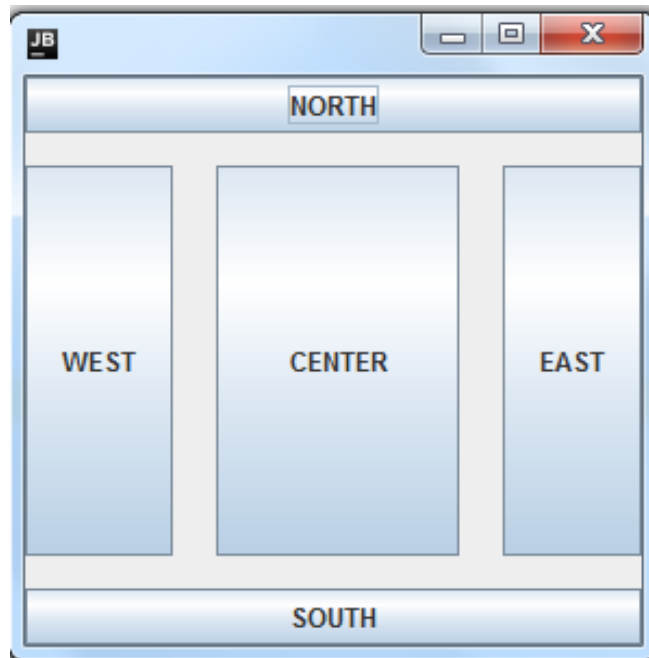
Java GridLayout

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

public class GridLayoutExample1
{

    JFrame frameObj;

    // constructor
    GridLayoutExample1()
    {
        frameObj = new JFrame();

// creating 9 buttons
        JButton btn1 = new JButton("1");
        JButton btn2 = new JButton("2");
        JButton btn3 = new JButton("3");
        JButton btn4 = new JButton("4");
        JButton btn5 = new JButton("5");
        JButton btn6 = new JButton("6");
        JButton btn7 = new JButton("7");
        JButton btn8 = new JButton("8");
        JButton btn9 = new JButton("9");

    // adding buttons to the frame
    // since, we are using the parameterless constructor, therefore;
    // the number of columns is equal to the number of buttons we
```

```
// are adding to the frame. The row count remains one.
        frameObj.add(btn1); frameObj.add(btn2); frameObj.add(btn3);
        frameObj.add(btn4); frameObj.add(btn5); frameObj.add(btn6);
        frameObj.add(btn7); frameObj.add(btn8); frameObj.add(btn9);
// setting the grid layout
// a 3 * 3 grid is created with the horizontal gap 20
// and vertical gap 25
        frameObj.setLayout(new GridLayout(3, 3, 20, 25));
        frameObj.setSize(300, 300);
        frameObj.setVisible(true);
    }
    // main method
    public static void main(String argvs[])
    {
        new GridLayoutExample1();
    }
}
```
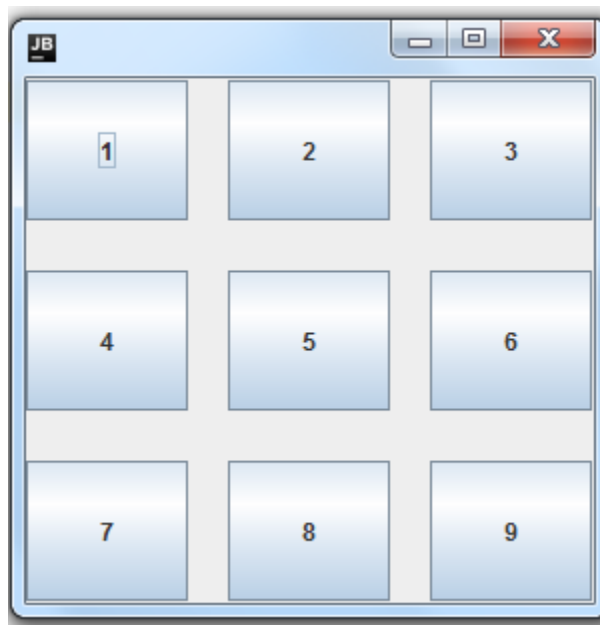
e. Using JPanel,

```java
JPanel
import java.awt.*;
import javax.swing.*;
public class PanelExample {
    PanelExample()
    {
        JFrame f= new JFrame("Panel Example");
        JPanel panel=new JPanel();
        panel.setBounds(40,80,200,200);
        panel.setBackground(Color.gray);
        JButton b1=new JButton("Button 1");
        b1.setBounds(50,100,80,30);
        b1.setBackground(Color.yellow);
        JButton b2=new JButton("Button 2");
        b2.setBounds(100,100,80,30);
        b2.setBackground(Color.green);
        panel.add(b1); panel.add(b2);
        f.add(panel);
        f.setSize(400,400);
        f.setLayout(null);
        f.setVisible(true);
    }
    public static void main(String args[])
    {
        new PanelExample();
    }
}
```

f.   Choice Components like JCheckBox, JRadioButton, Borders Components,

```java
// JcheckBox

import javax.swing.*;
import java.awt.event.*;
public class CheckBoxExample
{
    CheckBoxExample(){
        JFrame f= new JFrame("CheckBox Example");
        final JLabel label = new JLabel();
        label.setHorizontalAlignment(JLabel.CENTER);
        label.setSize(400,100);
        f.add(label);
        JCheckBox checkbox1 = new JCheckBox("C++");
        checkbox1.setBounds(150,100, 50,50);
        f.add(checkbox1);
        checkbox1.addItemListener(new ItemListener() {
            public void itemStateChanged(ItemEvent e) {
                label.setText("C++ Checkbox: "
                        + (e.getStateChange()==1?"checked":"unchecked"));
            }
        });

        f.setSize(400,400);
        f.setLayout(null);
        f.setVisible(true);
    }
    public static void main(String args[])
    {
        new CheckBoxExample();
    }
}
```

//JRadioButton

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

class RadioButtonExample extends JFrame implements ActionListener {
    JRadioButton rb1, rb2;
    JButton b;

    RadioButtonExample () {
        rb1 = new JRadioButton("Male");
        rb1.setBounds(100, 50, 100, 30);
        rb2 = new JRadioButton("Female");
        rb2.setBounds(100, 100, 100, 30);
        ButtonGroup bg = new ButtonGroup();
        bg.add(rb1);
        bg.add(rb2);
        b = new JButton("click");
        b.setBounds(100, 150, 80, 30);
        b.addActionListener(this);
        add(rb1);
        add(rb2);
        add(b);
        setSize(300, 300);
        setLayout(null);
        setVisible(true);
    }

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

    public void actionPerformed ( ActionEvent e ) {
        if (rb1.isSelected()) {
            JOptionPane.showMessageDialog(this, "You are Male.");
        }
        if (rb2.isSelected()) {
            JOptionPane.showMessageDialog(this, "You are Female.");
        }
    }
}
```

//Borders Components

// JComboBox & its events

```java
import javax.swing.*;
import java.awt.event.*;
public class ComboBoxExample {
    JFrame f;
    ComboBoxExample(){
        f=new JFrame("ComboBox Example");

        final JLabel label = new JLabel();
        label.setHorizontalAlignment(JLabel.CENTER);
        label.setSize(400,100);
        f.add(label);
        //

        //
        String country[]={"India","Aus","U.S.A","England","Newzealand"};
        JComboBox cb=new JComboBox(country);
        cb.setBounds(50, 50,90,20);
        cb.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                String data = "Country Selected: "
                        + cb.getItemAt(cb.getSelectedIndex());
                label.setText(data);
            }
        });

        f.add(cb);
        f.setLayout(null);
        f.setSize(400,500);
        f.setVisible(true);
    }
    public static void main(String[] args) {
        new ComboBoxExample();
    }
}
```

//JList & its events

```java
import javax.swing.*;
import java.awt.event.*;
public class ListExample {
    ListExample () {
        JFrame f = new JFrame();
        final JLabel label = new JLabel();
        label.setSize(500,100);
        JButton b=new JButton("Show");
        b.setBounds(200,150,80,30);

        DefaultListModel<String> l1 = new DefaultListModel<>();
        l1.addElement("Item1");
        l1.addElement("Item2");
        l1.addElement("Item3");
        l1.addElement("Item4");
        JList<String> list = new JList<>(l1);
        list.setBounds(100, 100, 75, 75);

        b.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                String data = "";
                if (list.getSelectedIndex() != -1) {
                    data = "Item Selected: " + list.getSelectedValue();
                    label.setText(data);
                }
                label.setText(data);
            }
        });

        f.add(list);
        f.add(label);
        f.add(b);

        f.setSize(400, 400);
        f.setLayout(null);
        f.setVisible(true);
    }

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

Java JMenuBar, JMenu and JMenuItem

// Menus in Swing

```java
import javax.swing.*;
import java.awt.event.*;
public class MenuExample2 implements ActionListener{
    JFrame f;
    JMenuBar mb;
    JMenu file,edit,help;
    JMenuItem cut,copy,paste,selectAll;
    JTextArea ta;
    MenuExample2(){
        f=new JFrame();
        cut=new JMenuItem("cut");
        copy=new JMenuItem("copy");
        paste=new JMenuItem("paste");
        selectAll=new JMenuItem("selectAll");
        cut.addActionListener(this);
        copy.addActionListener(this);
        paste.addActionListener(this);
        selectAll.addActionListener(this);
        mb=new JMenuBar();
        file=new JMenu("File");
        edit=new JMenu("Edit");
        help=new JMenu("Help");
        edit.add(cut);edit.add(copy);edit.add(paste);edit.add(selectAll);
        mb.add(file);mb.add(edit);mb.add(help);
        ta=new JTextArea();
        ta.setBounds(5,5,360,320);
        f.add(mb);f.add(ta);
        f.setJMenuBar(mb);
        f.setLayout(null);
        f.setSize(400,400);
        f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource()==cut)
            ta.cut();
        if(e.getSource()==paste)
            ta.paste();
        if(e.getSource()==copy)
            ta.copy();
        if(e.getSource()==selectAll)
            ta.selectAll();
    }
    public static void main(String[] args) {
        new MenuExample2();
    }
}
```

//JTextArea,

```java
import javax.swing.*;
import java.awt.event.*;
public class TextAreaExample implements ActionListener{
    JLabel l1,l2;
    JTextArea area;
    JButton b;
    TextAreaExample() {
        JFrame f= new JFrame();
        l1=new JLabel();
        l1.setBounds(50,25,100,30);
        l2=new JLabel();
        l2.setBounds(160,25,100,30);
        area=new JTextArea();
        area.setBounds(20,75,250,200);
        b=new JButton("Count Words");
        b.setBounds(100,300,120,30);
        b.addActionListener(this);
        f.add(l1);f.add(l2);f.add(area);f.add(b);
        f.setSize(450,450);
        f.setLayout(null);
        f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e){
        String text=area.getText();
        String words[]=text.split("\\s");
        l1.setText("Words: "+words.length);
        l2.setText("Characters: "+text.length());
    }
    public static void main(String[] args) {
        new TextAreaExample();
    }
}
```

//Dialog Boxes in Swing,

```java
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class DialogExample {
    private static JDialog d;
    DialogExample() {
        JFrame f= new JFrame();
        d = new JDialog(f , "Dialog Example", true);
        d.setLayout( new FlowLayout() );
        JButton b = new JButton ("OK");
        b.addActionListener ( new ActionListener()
        {
            public void actionPerformed( ActionEvent e )
            {
                DialogExample.d.setVisible(false);
            }
        });
        d.add( new JLabel ("Click button to continue."));
        d.add(b);
```

```java
        d.setSize(300,300);
        d.setVisible(true);
    }
    public static void main(String args[])
    {
        new DialogExample();
    }
}
```

//JTable for Displaying Data in Tabular form,

```java
import javax.swing.*;
public class TableExample {
    JFrame f;
    TableExample(){
        f=new JFrame();
        String data[][]={ {"101","Amit","670000"},
                {"102","Jai","780000"},
                {"101","Sachin","700000"}};
        String column[]={"ID","NAME","SALARY"};
        JTable jt=new JTable(data,column);
        jt.setBounds(30,40,200,300);
        JScrollPane sp=new JScrollPane(jt);
        f.add(sp);
        f.setSize(300,400);
        f.setVisible(true);
    }
    public static void main(String[] args) {
        new TableExample();
    }
}
```

MDI using JDesktop Pane & JInternalFrame

```java
import java.awt.BorderLayout;
import java.awt.Container;
import javax.swing.JDesktopPane;
import javax.swing.JFrame;
import javax.swing.JInternalFrame;
import javax.swing.JLabel;
public class JDPaneDemo extends JFrame
{
    public JDPaneDemo()
    {
        CustomDesktopPane desktopPane = new CustomDesktopPane();
        Container contentPane = getContentPane();
        contentPane.add(desktopPane, BorderLayout.CENTER);
        desktopPane.display(desktopPane);

        setTitle("JDesktopPane Example");
        setSize(300,350);
        setVisible(true);
    }
    public static void  main(String args[])
    {
        new JDPaneDemo();
    }
}
class CustomDesktopPane extends JDesktopPane
{
    int numFrames = 3,  x = 30, y = 30;
    public void display(CustomDesktopPane dp)
    {
        for(int  i = 0; i < numFrames ; ++i )
        {
            JInternalFrame jframe = new JInternalFrame("Internal Frame " + i ,  true, true,
true, true);

            jframe.setBounds(x, y, 250, 85);
            Container c1 = jframe.getContentPane( ) ;
            c1.add(new JLabel("I love my country"));
            dp.add( jframe );
            jframe.setVisible(true);
            y += 85;
        }
    }
}
```

Java Adapter Classes

```java
// importing the necessary libraries

import java.awt.*;
import java.awt.event.*;

// class which inherits the MouseMotionAdapter class
public class MouseMotionAdapterExample extends MouseMotionAdapter {
    // object of Frame class
    Frame f;

    // class constructor
    MouseMotionAdapterExample () {
// creating the frame with the title
        f = new Frame("Mouse Motion Adapter");
// adding MouseMotionListener to the Frame
        f.addMouseMotionListener(this);
        // setting the size, layout and visibility of the frame
        f.setSize(300, 300);
        f.setLayout(null);
        f.setVisible(true);
    }

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

    // overriding the mouseDragged() method
    public void mouseDragged ( MouseEvent e ) {
// creating the Graphics object and fetching them from the Frame object using getGraphics()
method
        Graphics g = f.getGraphics();
// setting the color of graphics object
        g.setColor(Color.ORANGE);
// setting the shape of graphics object
        g.fillOval(e.getX(), e.getY(), 20, 20);
    }
}
```