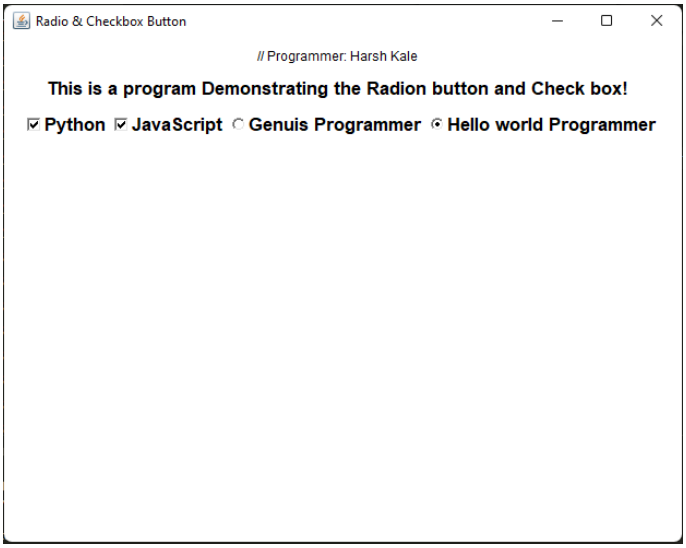
(Practical 1)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Design an application to demonstrate the Radio Button and Check box.
import java.awt.*;
class PracticalNo_1Q1 extends Frame{
   public PracticalNo_1Q1(){
      Frame myFrame = new Frame("Radion Button & Checkbox");
      myFrame.setLayout(new FlowLayout());
      myFrame.setTitle("Radio & Checkbox Button");
      myFrame.setSize(500, 500);
      myFrame.setVisible(true);
      myFrame.setResizable(true);
      Label infoOfProgrammer = new Label("// Programmer: Harsh Kale");
      Font myFont = new Font("Lucida Console", Font.BOLD, 17);
      Font myNewFont = new Font("Arial", Font.BOLD, 17);
      Label myLable = new Label("This is a program Demonstrating the Radion button and Check box!");
      myLable.setFont(myFont);
      Checkbox myCheckboxOne = new Checkbox("Python", true);
      myCheckboxOne.setFont(myNewFont);
      Checkbox myCheckboxTwo = new Checkbox("JavaScript", true);
      myCheckboxTwo.setFont(myNewFont);
      CheckboxGroup myCheckboxGroup = new CheckboxGroup();
      Checkbox radioBtnOne = new Checkbox("Genuis Programmer", true, myCheckboxGroup);
      radioBtnOne.setFont(myNewFont);
      Checkbox radioBtnTwo = new Checkbox("Hello world Programmer", true, myCheckboxGroup);
      radioBtnTwo.setFont(myNewFont);       Component[] myObjects = {infoOfProgrammer, myLable,
myCheckboxOne, myCheckboxTwo, radioBtnOne, radioBtnTwo};
      for(int i = 0; i < myObjects.length; i++){
```

```
            myFrame.add(myObjects[i]);
        }
    }

    public static void main(String[] args) {
        new PracticalNo_1Q1();
    }
}
```

Output:

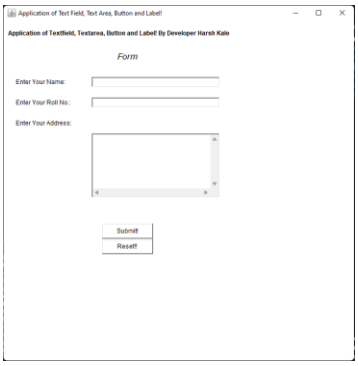


(Practical 1)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Design an application to create a form with the use of text field, text area, button and label.
import java.awt.*;
public class PracticalNo_1Q2 extends Frame {
   public PracticalNo_1Q2(){
      setLayout(new FlowLayout());
      setTitle("Application of Text Field, Text Area, Button and Label!");
      setSize(700, 700);
      setVisible(true);
      Font ff1 = new Font("Times New Roman", Font.BOLD, 12);
      Font ff2 = new Font("Arial", Font.ITALIC, 17);
      Label label1 = new Label("Application of Textfield, Textarea, Button and Label! By Developer Harsh
Kale");
      label1.setFont(ff1);
      label1.setBounds(15, 40, 450, 30);
      Label label2 = new Label("Form", Label.CENTER);
      label2.setFont(ff2);
      label2.setBounds(210, 90, 80, 20);
      Label ln = new Label("Enter Your Name: ", Label.LEFT);
      TextField tfn = new TextField();
      ln.setBounds(30, 140, 110, 20);
      tfn.setBounds(180, 140, 250, 20);
      Label rollno = new Label("Enter Your Roll No.: ", Label.LEFT);
      TextField tfrn = new TextField();
      rollno.setBounds(30, 180, 150, 20);
      tfrn.setBounds(180, 180, 250, 20);
      Label addrs = new Label("Enter Your Address: ", Label.LEFT);
```

```
        TextArea taddress = new TextArea();
        addrs.setBounds(30, 220, 170, 20);
        taddress.setBounds(180, 250, 250, 125);
        Button submit = new Button("Submit!");
        Button reset = new Button("Reset!!");
        submit.setBounds(200, 425, 100, 30);
        reset.setBounds(200, 455, 100, 30);
        add(label1);
        add(label2);
        add(ln);
        add(rollno);
        add(tfn);
        add(tfrn);
        add(addrs);
        add(taddress);
        add(submit);
        add(reset);
    }
    public static void main(String[] args) {
        System.out.println("Hello, world Programmer! Harsh Moreshwar Kale");
        new PracticalNo_1Q2();
    }
}
```

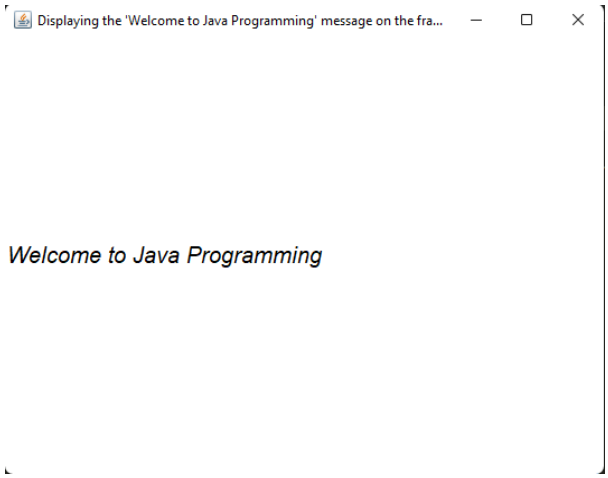
Output:



(Practical 1)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 3:
// Develop a program using Label to display the message "Welcome to Java Programming".
import java.awt.*;
public class PracticalNo_1Q3 extends Frame {
   public PracticalNo_1Q3(){
      setTitle("Displaying the \'Welcome to Java Programming\' message on the frame!");
      setSize(700, 700);
      setVisible(true);
      Font ff = new Font("Arial", Font.ITALIC, 20);
      Label l = new Label("Welcome to Java Programming", Label.LEFT);
      l.setFont(ff);
      add(l);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_1Q3();
   }
}
```

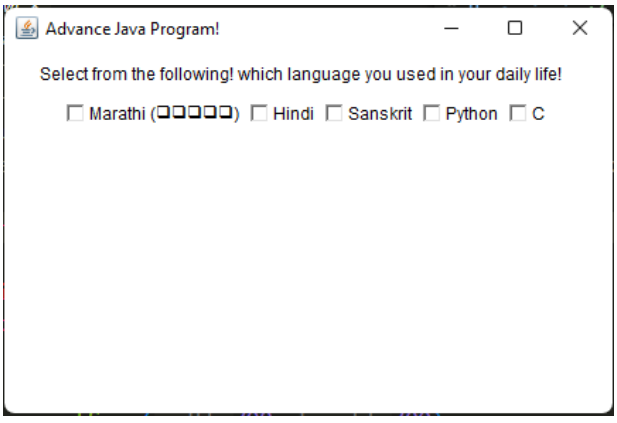
Output:



(Practical 1)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 4:
// Develop a Program to Select Multiple Languages known to User.
import java.awt.*;
public class PracticalNo_1Q4 extends Frame{
   public PracticalNo_1Q4(){
      setLayout(new FlowLayout());
      setTitle("Advance Java Program!");
      setSize(700, 700);       setVisible(true);
      Label l = new Label("Select from the following! which language you used in your daily life!");
      Checkbox cmr = new Checkbox("Marathi (मराठी)");
      Checkbox chi = new Checkbox("Hindi");
      Checkbox csk = new Checkbox("Sanskrit");
      Checkbox cpy = new Checkbox("Python");
      Checkbox cc = new Checkbox("C");
      add(l);       add(cmr);       add(chi);       add(csk);       add(cpy);       add(cc);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      new PracticalNo_1Q4();    }}
```

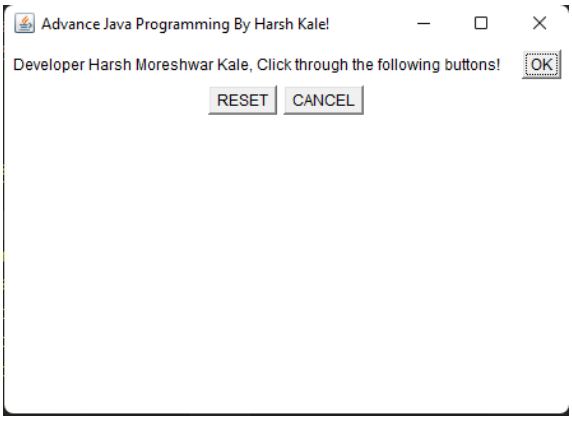
Output:



(Practical 1)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 5:
// Develop a Program to Create 3 buttons with caption ok, reset, cancel.
import java.awt.*;
public class PracticalNo_1Q5 extends Frame{
   public PracticalNo_1Q5(){
      setLayout(new FlowLayout());
      setTitle("Advance Java Programming By Harsh Kale!");
      setSize(700, 700);
      setVisible(true);
      Label l = new Label("Developer Harsh Moreshwar Kale, Click through the following buttons!");
      Button ok = new Button("OK");
      Button reset = new Button("RESET");
      Button cancel = new Button("CANCEL");
      add(l);      add(ok);      add(reset);      add(cancel);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_1Q5();
   }}
```

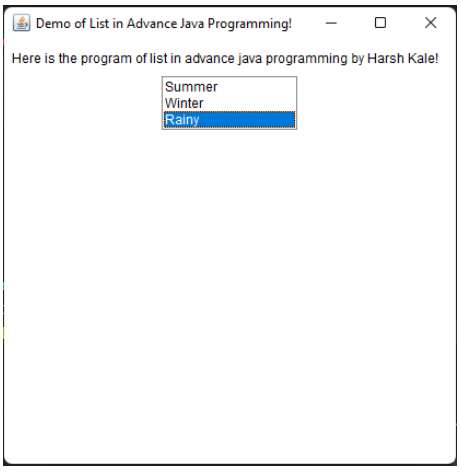
Output:



(Practical 2)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write a java program to show following output in list!
import java.awt.*;
public class PracticalNo_2Q1 extends Frame {
   public PracticalNo_2Q1(){
      setLayout(new FlowLayout());
      setTitle("Demo of List in Advance Java Programming!");
      setSize(700, 700);
      setVisible(true);
      Label l = new Label("Here is the program of list in advance java programming by Harsh Kale!");
      List list = new List(3, false);
      list.add("Summer");
      list.add("Winter");
      list.add("Rainy");       add(l);       add(list);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_2Q1();    }}
```

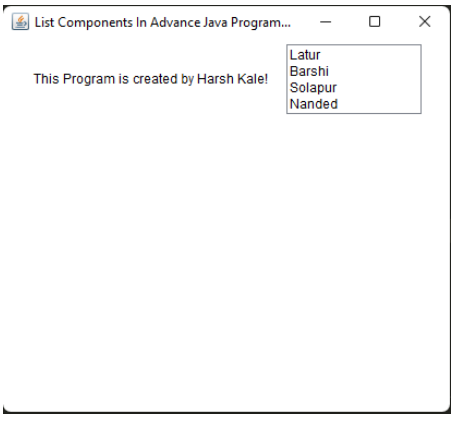
Output:



(Practical 2)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Develop an application using list components to add names of 10 different cities.abstract
import java.awt.*;
public class PracticalNo_2Q2 extends Frame {
   public PracticalNo_2Q2(){
      setLayout(new FlowLayout());
      setTitle("List Components In Advance Java Programming");
      setSize(700, 700);
      setVisible(true);
      Label l = new Label("This Program is created by Harsh Kale!");
      List list = new List(4, false);
      list.add("Latur");      list.add("Barshi");      list.add("Solapur");      list.add("Nanded");
      add(l);
      add(list);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      new PracticalNo_2Q2();    }   }
```

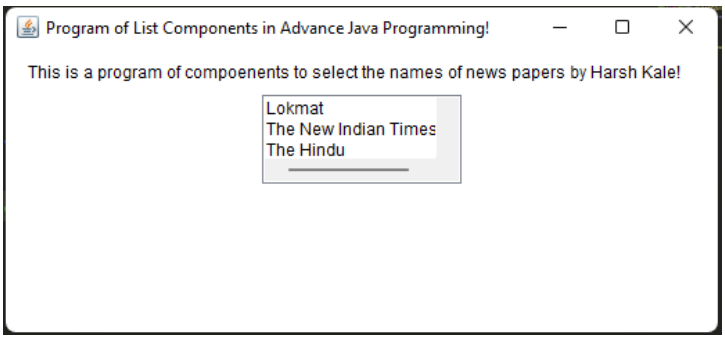
Output:



(Practical 2)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 3:
// Develop an application select multiple names of news paper.
import java.awt.*;
public class PracticalNo_2Q3 extends Frame {
   public PracticalNo_2Q3(){
      setLayout(new FlowLayout());
      setTitle("Program of List Components in Advance Java Programming!");
      setSize(700, 700);
      setVisible(true);
      Label l = new Label("This is a program of compoenents to select the names of news papers by Harsh Kale!");
      List list = new List(4, true);
      list.add("Lokmat");
      list.add("The New Indian Times");
      list.add("The Hindu");      list.add("Dyandeep");      list.add("Maradhi Paper");      add(l);
add(list);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      new PracticalNo_2Q3();    }}
```

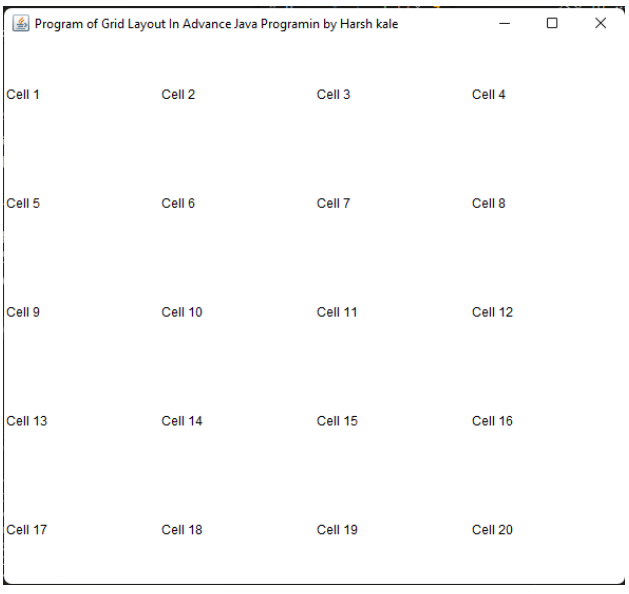
Output:



(Practical 3)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write a java program to demonstrate the use of grid layout of 5 * 5
import java.awt.*;
public class PracticalNo_3Q1 extends Frame {
   PracticalNo_3Q1(){
      setLayout(new GridLayout(5, 5));
      setTitle("Program of Grid Layout In Advance Java Programin by Harsh kale");
      setSize(700, 700);
      setVisible(true);
      for(int i = 1; i <= 20; i++){
         add(new Label("Cell " + i));
      }
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      new PracticalNo_3Q1();    }}
```

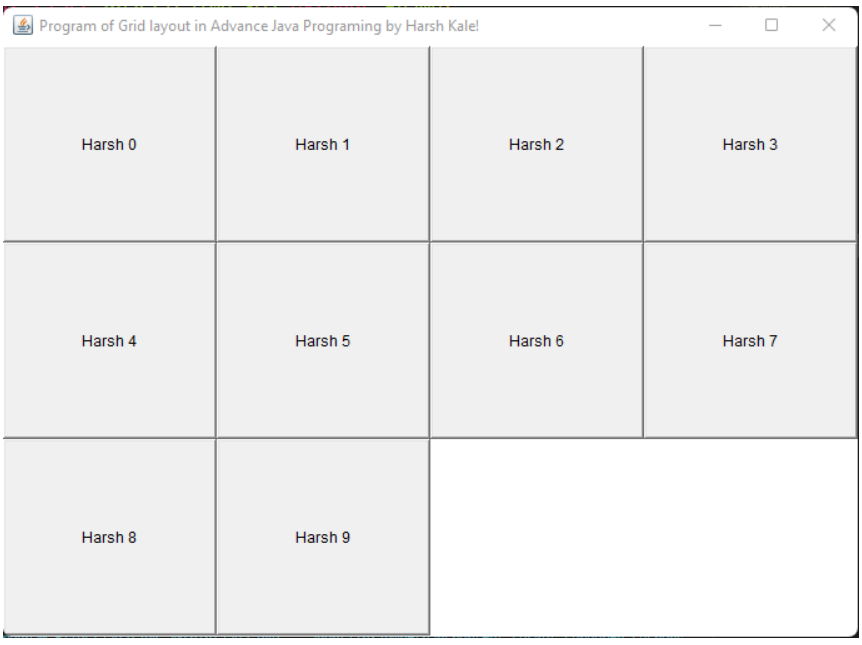
Output:



(Practical 3)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Write a java program to display the No. of buttons from 0 to 0.
import java.awt.*;
public class PracticalNo_3Q2 extends Frame{
   PracticalNo_3Q2(){
      setLayout(new GridLayout(3, 3));
      setTitle("Program of Grid layout in Advance Java Programing by Harsh Kale!");
      setSize(700, 700);       setVisible(true);
      for(int i = 0; i <= 9; i++){
         add(new Button("Harsh " + i));
      }
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_3Q2();    }}
```

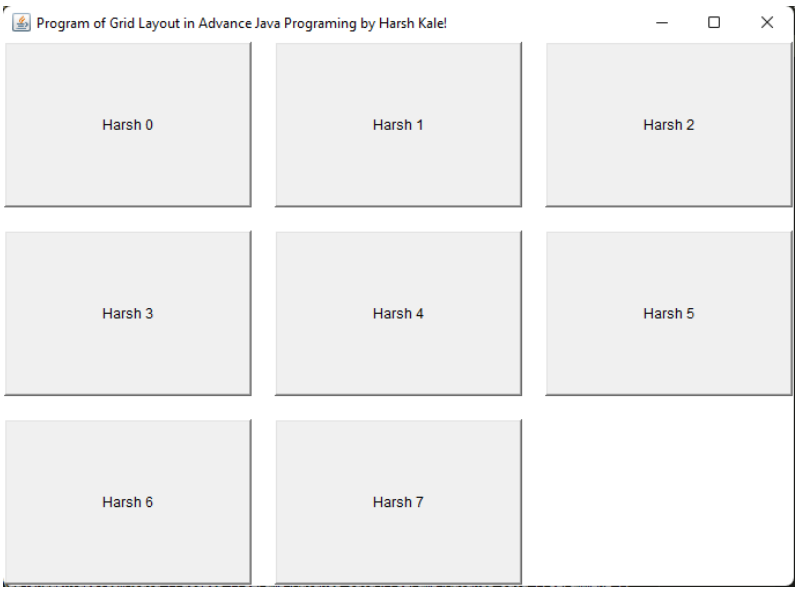
Output:



(Practical 3)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 3:
// Write a java program to display the No. of buttons from 0 to 0.
import java.awt.*;
public class PracticalNo_3Q3 extends Frame{
   PracticalNo_3Q3(){
      setLayout(new GridLayout(3, 2, 20, 20));
      setTitle("Program of Grid Layout in Advance Java Programing by Harsh Kale!");
      setSize(700, 700);
      setVisible(true);
      for(int i = 0; i <= 7; i++){
         Button btn = new Button("Harsh " + i);          add(btn);
      }
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_3Q3();    }    }
```

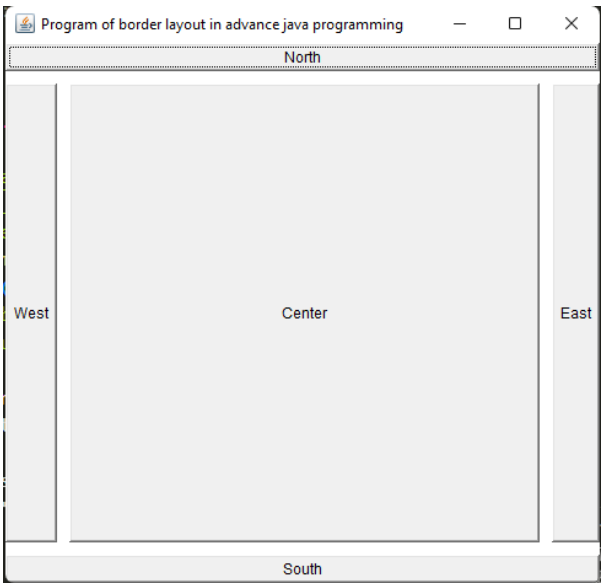
Output:



(Practical 3)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 4: // Write a java program to display the use of border layout.!
import java.awt.*;
public class PracticalNo_3Q4 extends Frame{
   PracticalNo_3Q4(){
      setTitle("Program of border layout in advance java programming");
      setSize(700, 700);       setVisible(true);
      setLayout(new BorderLayout(10, 10));
      Button northButton = new Button("North");       add(northButton, BorderLayout.NORTH);
      Button southButton = new Button("South");       add(southButton, BorderLayout.SOUTH);
      Button eastButton = new Button("East");       add(eastButton, BorderLayout.EAST);
      Button wesButton = new Button("West");       add(wesButton, BorderLayout.WEST);
      Button centerButton = new Button("Center");       add(centerButton, BorderLayout.CENTER);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      new PracticalNo_3Q4();    }}
```

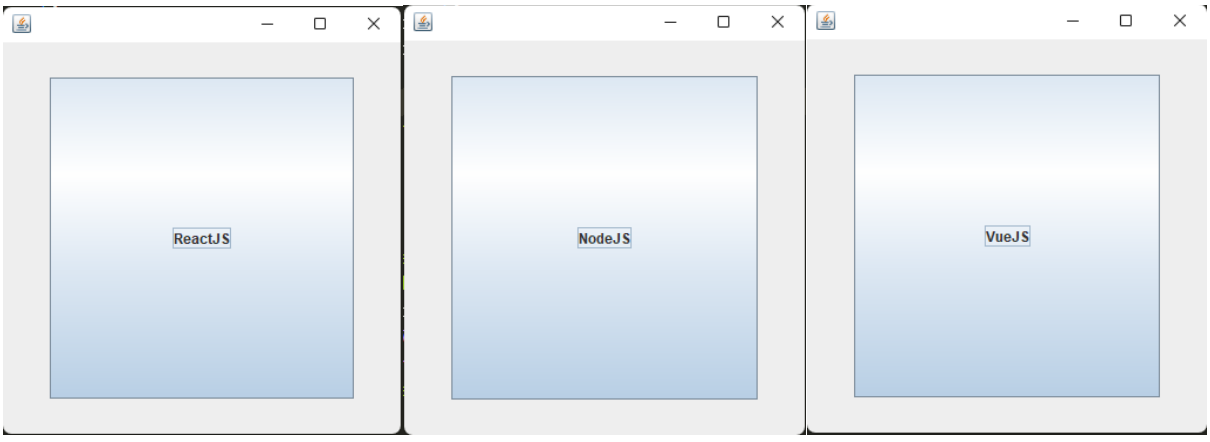
Output:



(Practical 4)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write the Output of the following program!
import java.awt.*; import java.awt.event.*; import javax.swing.*;
public class PracticalNo_4Q1 extends JFrame implements ActionListener{
   CardLayout card;    JButton btn1, btn2, btn3;    Container c;
   PracticalNo_4Q1(){
      c = getContentPane();       card = new CardLayout(40, 30);       c.setLayout(card);
      btn1 = new JButton("ReactJS");       btn2 = new JButton("NodeJS");
      btn3 = new JButton("VueJS");       btn1.addActionListener(this);
      btn2.addActionListener(this);       btn3.addActionListener(this);
      c.add("A", btn1);       c.add("B", btn2);       c.add("C", btn3);
   }
   public void actionPerformed(ActionEvent e){       card.next(c);    }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale!");
      PracticalNo_4Q1 p = new PracticalNo_4Q1();
      p.setSize(700, 700);       p.setVisible(true);       p.setDefaultCloseOperation(EXIT_ON_CLOSE);    }}
```

Output:

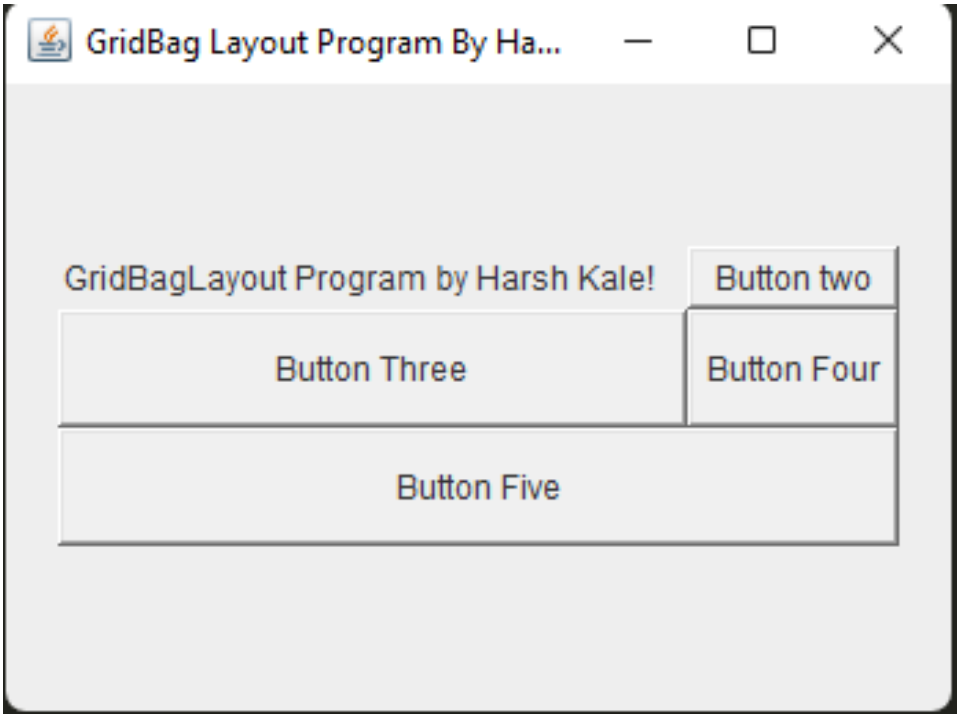


(Practical 4)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Write a java program to display the output of the following code.
import java.awt.*;
import javax.swing.*;
public class PracticalNo_4Q2 extends JFrame {
   PracticalNo_4Q2() {
      Label l = new Label("GridBagLayout Program by Harsh Kale!");
      add(l);
      GridBagLayout grid = new GridBagLayout();       GridBagConstraints gbc = new GridBagConstraints();
      setLayout(grid);
      setTitle("GridBag Layout Program By Harsh Kale");
      GridBagLayout layout = new GridBagLayout();
      this.setLayout(layout);
      gbc.fill = GridBagConstraints.HORIZONTAL;
      gbc.gridx = 0;
      gbc.gridy = 0;
      this.add(new Button("Button One"), gbc);
      gbc.gridx = 1;
      gbc.gridy = 0;
      this.add(new Button("Button two"), gbc);
      gbc.fill = GridBagConstraints.HORIZONTAL;
      gbc.ipady = 20;
      gbc.gridx = 0;
      gbc.gridy = 1;
      this.add(new Button("Button Three"), gbc);
      gbc.gridx = 1;
      gbc.gridy = 1;
```

```
        this.add(new Button("Button Four"), gbc);
        gbc.gridx = 0;
        gbc.gridy = 2;
        gbc.fill = GridBagConstraints.HORIZONTAL;
        gbc.gridwidth = 2;
        this.add(new Button("Button Five"), gbc);
        setSize(700, 700);
        setPreferredSize(getSize());
        setVisible(true);
        setDefaultCloseOperation(EXIT_ON_CLOSE);
    }

    public static void main(String[] args) {
        System.out.println("Developer Harsh MOreshwar Kale!");
        new PracticalNo_4Q2();    }}
```

Output:

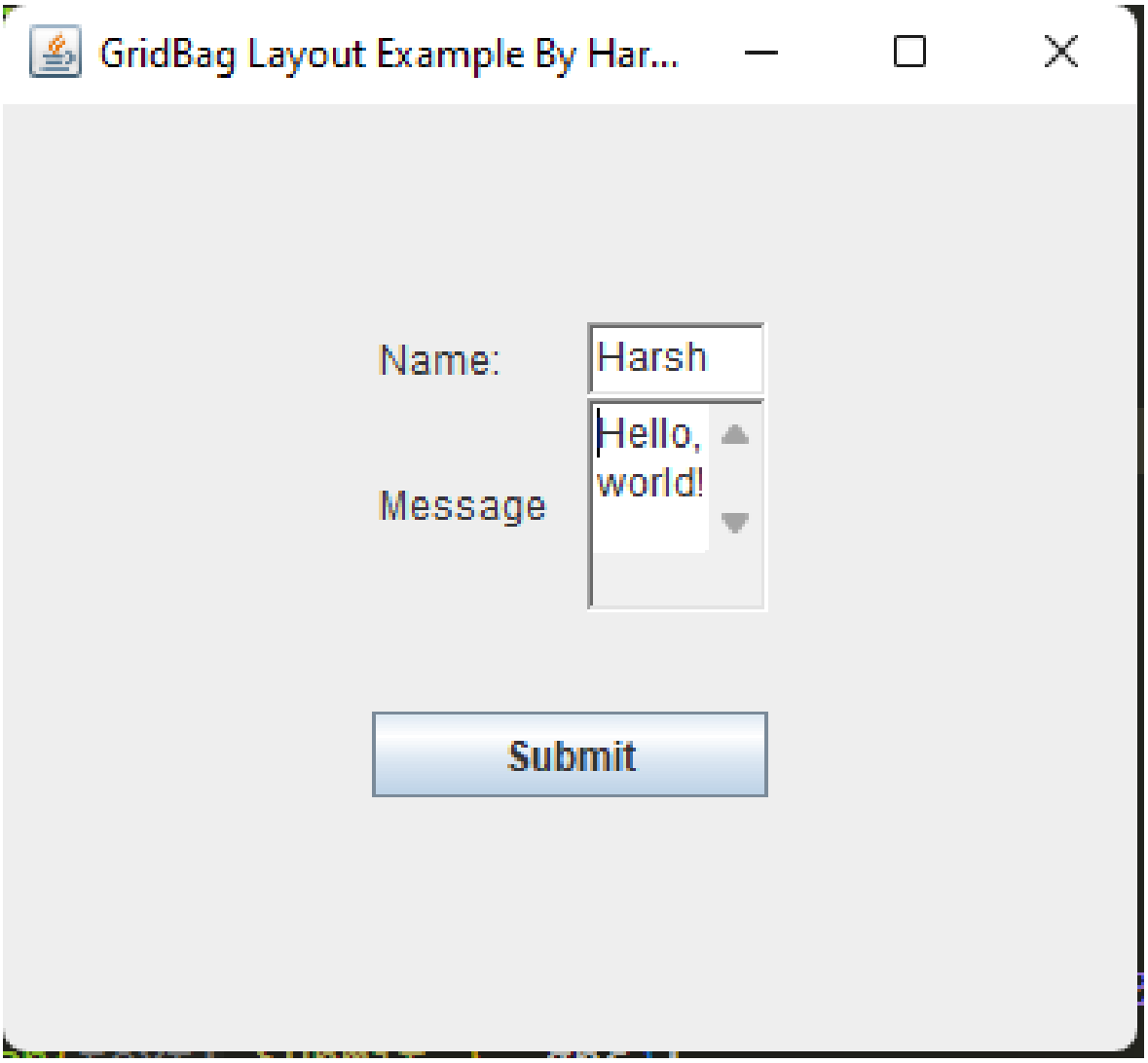


(Practical 4)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 3:
// Write a java program to display following output of GridBagLayout.
import java.awt.*;
import javax.swing.*;
public class PracticalNo_4Q3 extends JFrame {
   PracticalNo_4Q3(){
      setSize(700, 700);
      setPreferredSize(getSize());
      setVisible(true);
      setDefaultCloseOperation(EXIT_ON_CLOSE);
      GridBagLayout grid = new GridBagLayout();
      GridBagConstraints gbc = new GridBagConstraints();
      setLayout(grid);
      setTitle("GridBag Layout Example By Harsh Kale");
      gbc.fill = GridBagConstraints.HORIZONTAL;
      gbc.gridx = 0;        gbc.gridy = 0;       this.add(new Label("Name: "), gbc);
      gbc.gridx = 1;
      gbc.gridy =  0;
      this.add(new TextField("Harsh", 1), gbc);
      gbc.fill = GridBagConstraints.HORIZONTAL;
      gbc.gridx = 0;
      gbc.gridy = 1;
      gbc.weightx=0;
      gbc.weighty=0;
      this.add(new Label("Message"), gbc);
      gbc.gridx = 1; gbc.gridy = 1;
      this.add(new TextArea(3, 5), gbc);       gbc.gridx = 0;       gbc.gridy = 2;
```

```
        gbc.fill = GridBagConstraints.HORIZONTAL;
        gbc.gridwidth = 2;
        gbc.gridheight=1;
        gbc.insets= new Insets (30, 0, 10, 0); this.add(new JButton("Submit"), gbc);
    }
    public static void main(String[] args) {
        System.out.println("Developer Harsh Moreshwar Kale!");
        new PracticalNo_4Q3();
    }
}
```

Output:



(Practical 5)

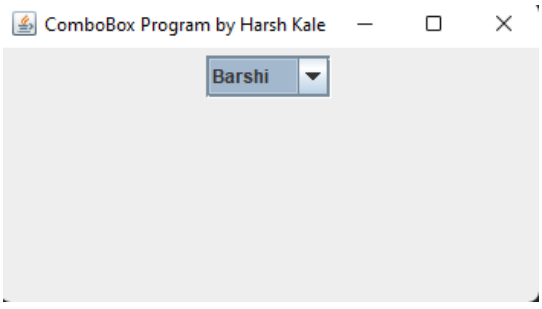
```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write a java program to create menu of different colors and disable menu item for Black Color.
import java.awt.*;
public class PracticalNo_5Q1 extends Frame{
   MenuBar mb;    Menu colorNameMenu;
   MenuItem redItem, orangItem, blueItem, blackItem;
   PracticalNo_5Q1(){
      setTitle("Advane Java Menu Program By Harsh Kale");
      setSize(700, 700);       mb = new MenuBar();
      colorNameMenu = new Menu("Colors");
      redItem = new MenuItem("Red");
      orangItem = new MenuItem("Orange");
      blueItem = new MenuItem("Blue");
      blackItem = new MenuItem("Black");
      blackItem.setEnabled(false);       colorNameMenu.add(redItem);
      colorNameMenu.add(orangItem);       colorNameMenu.add(blueItem);
      colorNameMenu.add(blackItem);       mb.add(colorNameMenu);
      setMenuBar(mb);       setVisible(true);
   }
   public static void main(String[] args) { System.out.println("Developer Harsh Moreshwar Kale");
new PracticalNo_5Q1();    }}
```

Output:

(Practical 5)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Find an error and correct it also display the output after corrections.
import java.awt.*;
import java.awt.event.KeyEvent;
public class PracticalNo_5Q2 extends Frame{
   MenuBar mb;    MenuItem m1, m2, m3;    Menu mn;
   MenuShortcut ms;
   PracticalNo_5Q2(){
      setTitle("Menubar Program By Harsh Kale!");
      setSize(700, 700);       setLayout(null);
      ms = new MenuShortcut(KeyEvent.VK_X);
      mn = new Menu("File");       mb = new MenuBar();
      m1 = new MenuItem("Open with VS Code");
      m2 = new MenuItem("Auto Save");
      m3 = new MenuItem("Harsh Kale");
      mn.add(m1);       mn.add(m2);       mn.addSeparator();       mn.add(m3);
      mb.add(mn);       setMenuBar(mb);       setVisible(true);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      new PracticalNo_5Q2();          }}
```

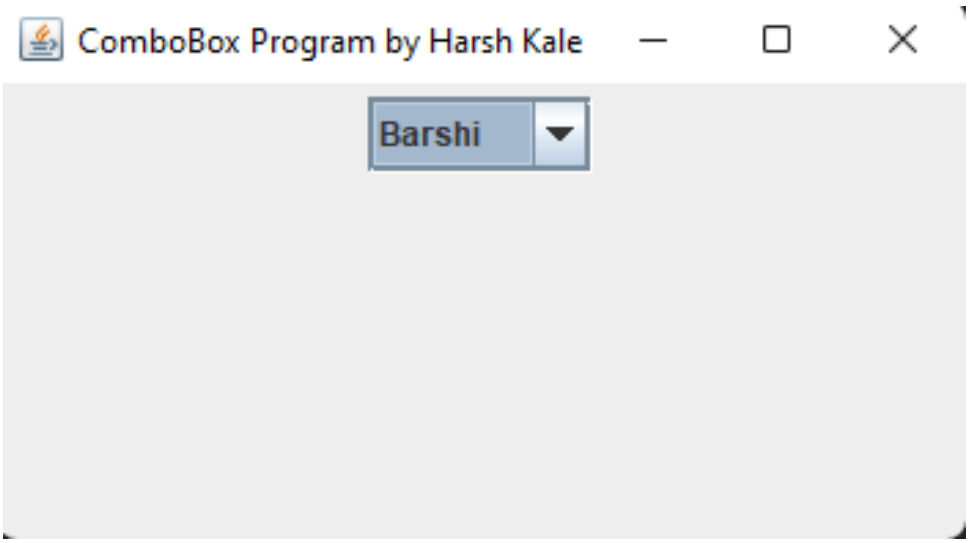
Output:



(Practical 6)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write a Program for Following output!
import java.awt.FlowLayout; import javax.swing.*;
public class PracticalNo_6Q1 extends JFrame {
   PracticalNo_6Q1(){
      super("ComboBox Program by Harsh Kale");       setSize(700, 700);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      String cities[] = {"Solapur", "Barshi", "Latur", "Banglore"};
      JComboBox<String> comboBox = new JComboBox<>(cities);
      JScrollPane scrollPane = new JScrollPane(comboBox);
      add(scrollPane);       setVisible(true);
      setLayout(new FlowLayout());
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Kale");
      new PracticalNo_6Q1();    }}
```

Output:



(Practical 6)

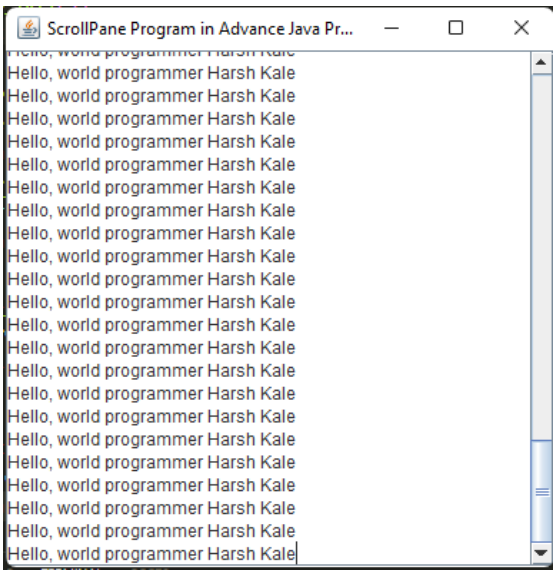
```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Program using JComboBox to select different states of India or programming languages.
import java.awt.*; import javax.swing.JComboBox; import javax.swing.JFrame;
import javax.swing.JScrollPane;
public class PracticalNo_6Q2 extends JFrame{
   PracticalNo_6Q2(){
      super("ComboBox Program by Harsh Kale");       setSize(700, 700);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      String cities[] = {"C", "C++", "C#", "Java", "Python", "R"};
      JComboBox<String> comboBox = new JComboBox<>(cities);
      JScrollPane scrollPane = new JScrollPane(comboBox);
      add(scrollPane);       setVisible(true);       setLayout(new FlowLayout());
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Kale");
      new PracticalNo_6Q2();    }}
```

Output:

(Practical 6)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 3:
// Program using JScrollPane in Advance Java Programming.
import javax.swing.*; import java.awt.*;
public class PracticalNo_6Q3 extends JFrame {
   PracticalNo_6Q3(){
      super("ScrollPane Program in Advance Java Programming By Harsh Kale!");
      setLayout(new BorderLayout());       setSize(400, 400);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      JTextArea t = new JTextArea();
      for(int i = 0; i < 100; i++){          t.append("Hello, world programmer Harsh Kale \n");       }
      JScrollPane scrollPane = new JScrollPane(t);
      add(scrollPane, BorderLayout.CENTER);       setVisible(true);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Kale");       new PracticalNo_6Q3();
   }}
```

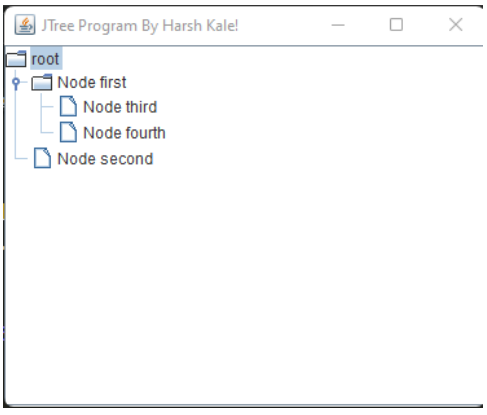
Output:



(Practical 7)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1:
// Write a Program for JTree Component!
import javax.swing.*; import javax.swing.tree.*;
public class PracticalNo_7Q1 extends JFrame{
   PracticalNo_7Q1(){
      setTitle("JTree Program By Harsh Kale!");       setVisible(true);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      DefaultMutableTreeNode root = new DefaultMutableTreeNode("root");
      DefaultMutableTreeNode n1 = new DefaultMutableTreeNode("Node first");
      DefaultMutableTreeNode n2 = new DefaultMutableTreeNode("Node second");
      DefaultMutableTreeNode n3 = new DefaultMutableTreeNode("Node third");
      DefaultMutableTreeNode n4 = new DefaultMutableTreeNode("Node fourth");
      n1.add(n3);       n1.add(n4);
      root.add(n1);       root.add(n2);
      JTree tree = new JTree(root);       JScrollPane scrollPane = new JScrollPane(tree);
      getContentPane().add(scrollPane);       pack();       setSize(700, 700);
   }
   public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");       new PracticalNo_7Q1();    }}
```

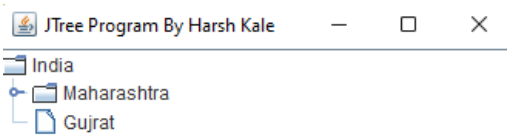
Output:



(Practical 7)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 1: Write a Program for Following output.
import javax.swing.*; import javax.swing.tree.*;
public class PracticalNo_7Q2 extends JFrame {
   PracticalNo_7Q2() {       setTitle("JTree Program By Harsh Kale");       setVisible(true);
      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      DefaultMutableTreeNode rootNode = new DefaultMutableTreeNode("India");
      DefaultMutableTreeNode node1 = new DefaultMutableTreeNode("Maharashtra");
      DefaultMutableTreeNode node2 = new DefaultMutableTreeNode("Gujrat");
      DefaultMutableTreeNode node11 = new DefaultMutableTreeNode("Mumbai");
      DefaultMutableTreeNode node12 = new DefaultMutableTreeNode("Pune");
      DefaultMutableTreeNode node13 = new DefaultMutableTreeNode("Nashik");
      DefaultMutableTreeNode node14 = new DefaultMutableTreeNode("Nagpur");
      DefaultMutableTreeNode node15 = new DefaultMutableTreeNode("Latur");
      node1.add(node11);       node1.add(node12);       node1.add(node13);       node1.add(node14);
      node1.add(node15);       rootNode.add(node1);       rootNode.add(node2);
      JTree tree = new JTree(rootNode);    JScrollPane scrollPane = new JScrollPane(tree);
      getContentPane().add(scrollPane);       pack();
   }
   public static void main(String[] args) {  System.out.println("Developer Harsh Kale!");  new
PracticalNo_7Q2();    }}
```

Output:



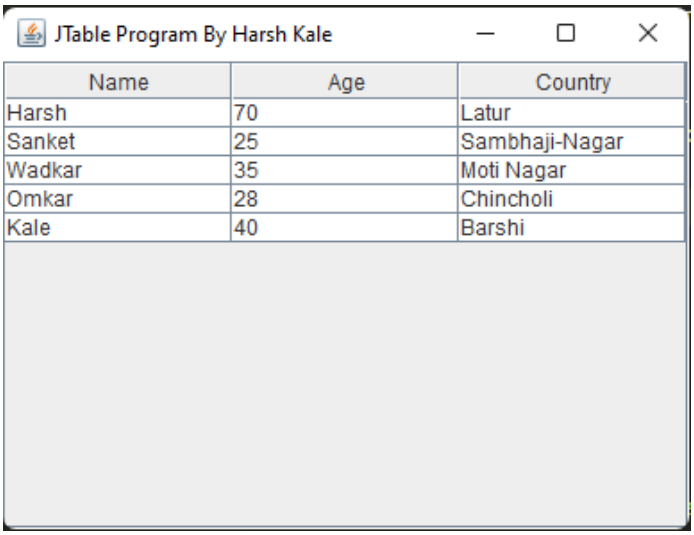
(Practical 7)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 3: Program to show root directory and its sub folder of your system.
import java.awt.*; import java.io.*; import javax.swing.*; import javax.swing.tree.*;
public class PracticalNo_7Q3 {
   public static void main(String[] args) {
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("JTree Program");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         File rootDir = new File("D:/");
         DefaultMutableTreeNode root = new DefaultMutableTreeNode(rootDir);
         DefaultTreeModel treeModel = new DefaultTreeModel(root);          addSubfolders(root, rootDir);
         JTree tree = new JTree(treeModel);
         tree.setPreferredSize(new Dimension(300, 200));
         frame.add(tree, BorderLayout.CENTER);
         frame.pack(); // Use pack() to set the frame size based on its contents
         frame.setVisible(true);
      });   }
   private static void addSubfolders(DefaultMutableTreeNode parent, File dir) {
      File[] subDirs = dir.listFiles();
      if (subDirs != null) {
         for (File subDir : subDirs) {
            if (subDir.isDirectory()) {
               DefaultMutableTreeNode child = new DefaultMutableTreeNode(subDir);
               parent.add(child);
               addSubfolders(child, subDir);
            }      }      }   }}
```

(Practical 8)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 1: Develop a program to demonstrate the use of JTable.
import javax.swing.*; import javax.swing.table.DefaultTableModel; import java.awt.*;
public class PracticalNo_8Q1 {
    public static void main(String[] args) {
        SwingUtilities.invokeLater(() -> {
            JFrame frame = new JFrame("JTable Program By Harsh Kale");
            frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
            String[] columnNames = {"Name", "Age", "Country"};
            Object[][] data = {
                {"Harsh", 70, "Latur"},
                {"Sanket", 25, "Sambhaji-Nagar"},
                {"Wadkar", 35, "Moti Nagar"},
                {"Omkar", 28, "Chincholi"},
                {"Kale", 40, "Barshi"}        };
            DefaultTableModel model = new DefaultTableModel(data, columnNames);
            JTable table = new JTable(model);          JScrollPane scrollPane = new JScrollPane(table);
            frame.add(scrollPane, BorderLayout.CENTER);
            frame.pack();          frame.setSize(400, 300);          frame.setVisible(true);       });    }}
```

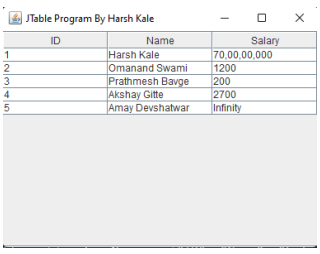
Output:



(Practical 8)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 2:  Program to show root directory and its sub folder of your system.
import javax.swing.JFrame; import javax.swing.JScrollPane;
import javax.swing.JTable; import javax.swing.SwingUtilities;
import javax.swing.table.DefaultTableModel; import java.awt.*;
public class PracticalNo_8Q2 {    public static void main(String[] args) {
      System.out.println("Developer Harsh Moreshwar Kale");
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("JTable Program By Harsh Kale");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         // Create sample data for the table
         String[] columnNames = {"ID", "Name", "Salary"};
         Object[][] data = {
            {1, "Harsh Kale", "70,00,00,000"},
            {2, "Omanand Swami", "1200"},
            {3, "Prathmesh Bavge", "200"},
            {4, "Akshay Gitte", "2700"},
            {5, "Amay Devshatwar", "Infinity"}          };
         // Create a DefaultTableModel
         DefaultTableModel model = new DefaultTableModel(data, columnNames);
         JTable table = new JTable(model);          JScrollPane scrollPane = new JScrollPane(table);
         frame.add(scrollPane, BorderLayout.CENTER);          frame.pack();
         frame.setSize(400, 300);          frame.setVisible(true);
      });   }}
```

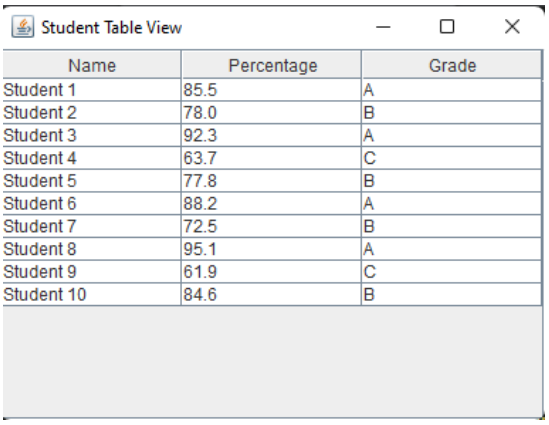
Output:



(Practical 8)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 3:  Program to show table view of 10 students. (Name, Percentage, Grade).
import javax.swing.*; import javax.swing.table.DefaultTableModel; import java.awt.*;
public class PracticalNo_8Q3 {
   public static void main(String[] args) {
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("Student Table View");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         // Define column names
         String[] columnNames = {"Name", "Percentage", "Grade"};
         // Create sample data for 10 students
         Object[][] data = {
            {"Student 1", 85.5, "A"},          {"Student 2", 78.0, "B"},          {"Student 3", 92.3, "A"},
            {"Student 4", 63.7, "C"},          {"Student 5", 77.8, "B"},          {"Student 6", 88.2, "A"},
            {"Student 7", 72.5, "B"},          {"Student 8", 95.1, "A"},          {"Student 9", 61.9, "C"},
            {"Student 10", 84.6, "B"}         };
         DefaultTableModel model = new DefaultTableModel(data, columnNames);
         JTable table = new JTable(model);          JScrollPane scrollPane = new JScrollPane(table);
         frame.add(scrollPane, BorderLayout.CENTER);          frame.pack();
         frame.setSize(400, 300);          frame.setVisible(true);       });    }}
```

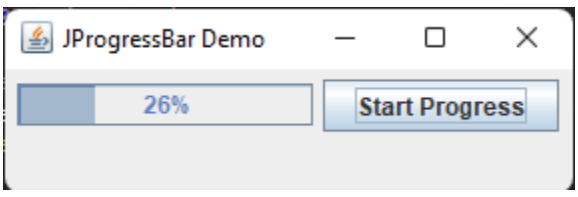
Output:



(Practical 9)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 1:  Write a program to launch a JProgressBar.
import javax.swing.*; import java.awt.event.ActionEvent; import java.awt.event.ActionListener;
public class PracticalNo_9Q1 {     public static void main(String[] args) {
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("JProgressBar By Harsh Kale!");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         frame.setSize(300, 100);          JProgressBar progressBar = new JProgressBar(0, 100);
         progressBar.setStringPainted(true);          JButton startButton = new JButton("Start Progress");
         startButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
               Thread taskThread = new Thread(new Runnable() {
                  public void run() {
                     for (int i = 0; i <= 100; i++) {
                        final int progressValue = i;
                        SwingUtilities.invokeLater(new Runnable() {
                           public void run() {
                              progressBar.setValue(progressValue);                        }        });
                        try {
                           Thread.sleep(100); // Simulate some work
                        } catch (InterruptedException ex) {
                           ex.printStackTrace();    }   }   });              taskThread.start();             }         });
         JPanel panel = new JPanel();          panel.add(progressBar);
         panel.add(startButton);          frame.add(panel);          frame.setVisible(true);
      });    }}
```

Output:

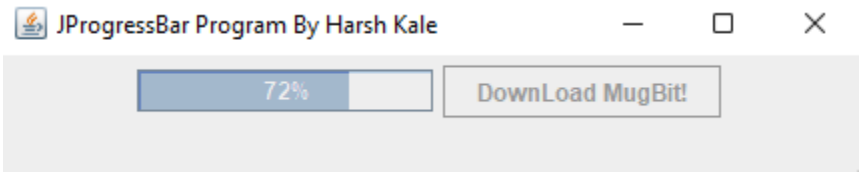


(Practical 9)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 13/09/2023
// Question 2:
// Develop a Program to Demonstrate the use of JProgressBar.
import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
public class PracticalNo_9Q2 {
   private static JProgressBar progressBar;
   private static JButton startButton;
   public static void main(String[] args) {
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("JProgressBar Program By Harsh Kale");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         frame.setSize(300, 100);
         progressBar = new JProgressBar(0, 100);
         progressBar.setStringPainted(true);
         startButton = new JButton("DownLoad MugBit!");
         startButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
               startProgress();              }          });
         JPanel panel = new JPanel();
         panel.add(progressBar);          panel.add(startButton);
         frame.add(panel);          frame.setVisible(true);       });    }
   private static void startProgress() {
      startButton.setEnabled(false); // Disable the button while the task is running
      SwingWorker<Void, Integer> worker = new SwingWorker<Void, Integer>() {
         @Override          protected Void doInBackground() throws Exception {
            for (int i = 0; i <= 100; i++) {
```

```
        Thread.sleep(100); // Simulate work (100 milliseconds)   publish(i); // Publish progress
    }             return null;          }
@Override
protected void process(java.util.List<Integer> chunks) {
    int latestProgress = chunks.get(chunks.size() - 1);
    progressBar.setValue(latestProgress); // Update progress bar          }
@Override          protected void done() {              progressBar.setValue(0); // Reset progress bar
    startButton.setEnabled(true); // Enable the button after the task is done
}      };      worker.execute();    }}
```

Output:

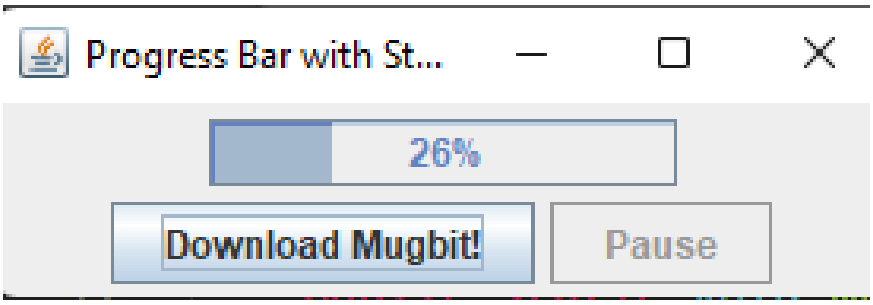


(Practical 9)

```
// Programmer: Harsh Moreshwar Kale Created Date: 13/09/2023
// Question 3:  Write a program using JProgressBar to show the progress of progressbar when user clicks on JButton.
import javax.swing.*; import java.awt.event.ActionEvent; import java.awt.event.ActionListener;
public class PracticalNo_9Q3 {
   private static JProgressBar progressBar;     private static JButton startButton;
   private static JButton pauseButton;    private static SwingWorker<Void, Integer> worker;
   public static void main(String[] args) {
      SwingUtilities.invokeLater(() -> {
         JFrame frame = new JFrame("Progress Bar with Start and Pause By Harsh Kale!");
         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
         frame.setSize(300, 100);           progressBar = new JProgressBar(0, 100);
         progressBar.setStringPainted(true);           startButton = new JButton("Download Mugbit!");
         startButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {                 startProgress();              }          });
         pauseButton = new JButton("Pause");
         pauseButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {                 pauseProgress();              }          });
         JPanel panel = new JPanel();
         panel.add(progressBar);           panel.add(startButton);           panel.add(pauseButton);
         frame.add(panel);           frame.setVisible(true);       });    }
   private static void startProgress() {
      startButton.setEnabled(false); // Disable the "Start" button while the task is running
      pauseButton.setEnabled(true); // Enable the "Pause" button
      worker = new SwingWorker<Void, Integer>() {
         @Override
         protected Void doInBackground() throws Exception {
            for (int i = 0; i <= 100; i++) {
               if (isCancelled()) {                    break;                 }
```

```
            Thread.sleep(100); publish(i);              }              return null;          }
        @Override
        protected void process(java.util.List<Integer> chunks) {
            int latestProgress = chunks.get(chunks.size() - 1);
            progressBar.setValue(latestProgress); // Update progress bar
        }

        @Override
        protected void done() {
            progressBar.setValue(0); // Reset progress bar
            startButton.setEnabled(true); // Enable the "Start" button
            pauseButton.setEnabled(false); // Disable the "Pause" button
        }
    };
    worker.execute();
  }
  private static void pauseProgress() {       if (worker != null) {
        worker.cancel(true); // Cancel the task
        startButton.setEnabled(true); // Enable the "Start" button
        pauseButton.setEnabled(false); // Disable the "Pause" button
    }
  }}
```

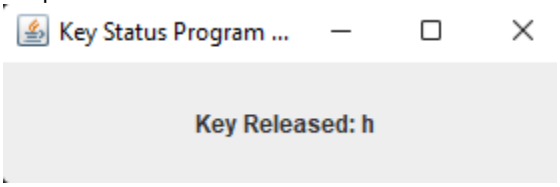
Output:



(Practical 10)

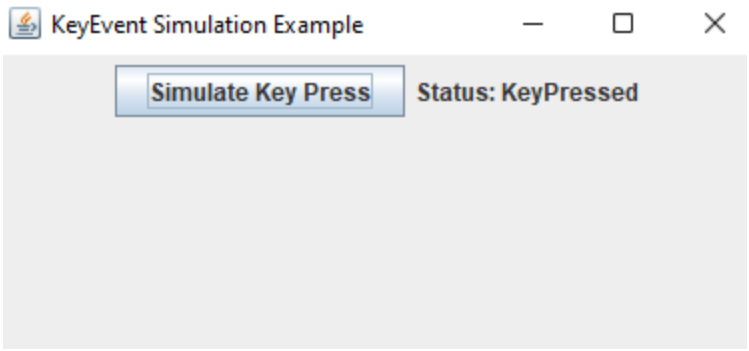
```
// Programmer: Harsh Moreshwar Kale Created Date: 22/09/2023
// Question 1: Write a Program to demonstrate status of key on Applet Window such as
KeyPressed, KeyReleased, KeyUp, KeyDown.

import javax.swing.*; import java.awt.event.*;
public class PracticalNo_10Q1 extends JFrame implements KeyListener {
    private JLabel keyStatusLabel;
    public PracticalNo_10Q1() {
        setTitle("Key Status Program in Advance Java by Harsh Kale");
        setSize(300, 100);        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        keyStatusLabel = new JLabel("Key Status: ");
        keyStatusLabel.setHorizontalAlignment(JLabel.CENTER);
        getContentPane().add(keyStatusLabel);        addKeyListener(this);
    }
    public void keyTyped(KeyEvent e) {
        keyStatusLabel.setText("Key Typed: " + e.getKeyChar());
    }
    public void keyPressed(KeyEvent e) {
        keyStatusLabel.setText("Key Pressed: " + e.getKeyChar());
    }
    public void keyReleased(KeyEvent e) {
        keyStatusLabel.setText("Key Released: " + e.getKeyChar());
    }
    public static void main(String[] args) {
        SwingUtilities.invokeLater(new Runnable() {
            public void run() { System.out.println("Developer Harsh Kale");
                PracticalNo_10Q1 app = new PracticalNo_10Q1();
                app.setVisible(true); } }); }}
```

Output:



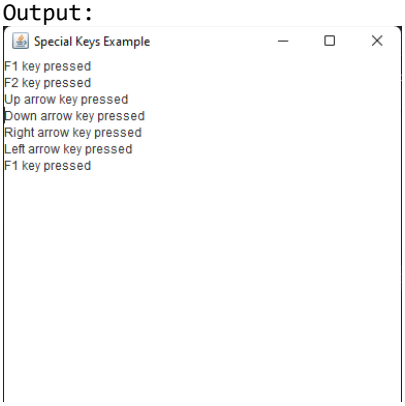
```
(Practical 10)
// Programmer: Harsh Moreshwar Kale Created Date: 22/09/2023
// Question 2: Write a program to generate KeyEvent when a key is pressed and display
"KeyPressed" message.
import javax.swing.*; import java.awt.*; import java.awt.event.*;
public class PracticalNo_10Q2 {
    public static void main(String[] args) {
        JFrame frame = new JFrame("KeyEvent Simulation Example");
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setSize(400, 200);
        JPanel panel = new JPanel();        frame.add(panel);
        JButton simulateButton = new JButton("Simulate Key Press");
        panel.add(simulateButton);
        JLabel statusLabel = new JLabel("Status: ");
        panel.add(statusLabel);
        frame.setVisible(true);
        simulateButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                try {
                    System.out.println("Developer Harsh Kale");
                    Robot robot = new Robot();
                    // Press the space key to trigger event!!
                    robot.keyPress(KeyEvent.VK_A);
                    robot.keyRelease(KeyEvent.VK_A);
                    statusLabel.setText("Status: KeyPressed");
                } catch (AWTException ex) {
                    ex.printStackTrace(); }}   });   }}
```

Output:



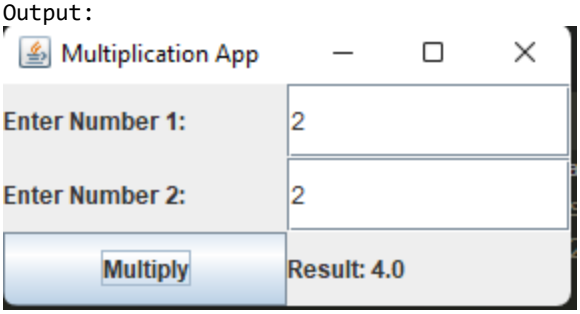
```
(Practical 10)
// Programmer: Harsh Moreshwar Kale Created Date: 22/09/2023
// Question 3: Develop a program which will implement special keys such as function keys and
arrow keys.
import javax.swing.*; import java.awt.event.*;
public class PracticalNo_10Q3 extends JFrame implements KeyListener {
    private JTextArea textArea;
    public PracticalNo_10Q3() {
        setTitle("Special Keys Example");        setSize(400, 400);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        textArea = new JTextArea();        textArea.addKeyListener(this);
        getContentPane().add(textArea);    }
    public void keyPressed(KeyEvent e) {
        int keyCode = e.getKeyCode();
        if (keyCode == KeyEvent.VK_F1) {
            textArea.append("F1 key pressed\n");
        } else if (keyCode == KeyEvent.VK_F2) {
            textArea.append("F2 key pressed\n");
        } else if (keyCode == KeyEvent.VK_UP) {
            textArea.append("Up arrow key pressed\n");
        } else if (keyCode == KeyEvent.VK_DOWN) {
            textArea.append("Down arrow key pressed\n");
        } else if (keyCode == KeyEvent.VK_LEFT) {
            textArea.append("Left arrow key pressed\n");
        } else if (keyCode == KeyEvent.VK_RIGHT) {
            textArea.append("Right arrow key pressed\n");
        }    }
    public void keyReleased(KeyEvent e) {
        // Handle keyReleased event (not used in this example)    }
    public static void main(String[] args) {
        SwingUtilities.invokeLater(new Runnable() {
            public void run() {
                System.out.println("Developer Harsh Kale");
                PracticalNo_10Q3 example = new PracticalNo_10Q3();
                example.setVisible(true);
            }        });    }
    @Override
    public void keyTyped(KeyEvent e) {
        // TODO Auto-generated method stub
        throw new UnsupportedOperationException("Unimplemented method 'keyTyped' done by harsh
kale in future!");    }}
```

Output:



```
(Practical 10)
// Programmer: Harsh Moreshwar Kale Created Date: 22/09/2023
// Question 4: Develop a program to accept two numbers and display product of two numbers when
user pressed "Multiply" Button.
import javax.swing.*; import java.awt.*; import java.awt.event.*;
public class PracticalNo_10Q4 extends JFrame {
    private JTextField num1Field;    private JTextField num2Field;
    private JButton multiplyButton;    private JLabel resultLabel;
    public PracticalNo_10Q4() {
        setTitle("Multiplication App By Harsh Kale");
        setSize(300, 150);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        JPanel panel = new JPanel();
        panel.setLayout(new GridLayout(3, 2));
        JLabel num1Label = new JLabel("Enter Number 1:");        num1Field = new
JTextField(10);
        JLabel num2Label = new JLabel("Enter Number 2:");        num2Field = new
JTextField(10);
        resultLabel = new JLabel("Result: ");
        multiplyButton = new JButton("Multiply");
        multiplyButton.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) { calculateProduct();}  });
        panel.add(num1Label);        panel.add(num1Field);        panel.add(num2Label);
        panel.add(num2Field);        panel.add(multiplyButton);
        panel.add(resultLabel);
        getContentPane().add(panel);    }
    private void calculateProduct() {
        try {
            double num1 = Double.parseDouble(num1Field.getText());
            double num2 = Double.parseDouble(num2Field.getText());
            double product = num1 * num2;
            resultLabel.setText("Result: " + product);
        } catch (NumberFormatException ex) {
            resultLabel.setText("Result: Invalid input");
        }
    }
    public static void main(String[] args) {
        SwingUtilities.invokeLater(new Runnable() {
            public void run() {
                System.out.println("Developer Harsh Kale!");
                PracticalNo_10Q4 app = new PracticalNo_10Q4();
                app.setVisible(true);            }        });    }}
```

Output:

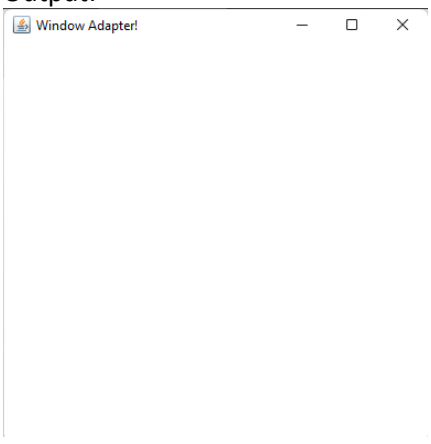


(Practical 13)

// Debug the following code and write the output of following code.

```
import java.awt.*;
import java.awt.event.*;
public class PracticalNo_13Q1 {
   Frame f;
   PracticalNo_13Q1() {
      f = new Frame("Window Adapter!");
      f.addWindowListener(new WindowAdapter() {
         public void windowClosing(WindowEvent e) {
            f.dispose();
            System.exit(0);
         }
      });
      f.setSize(400, 400);
      f.setLayout(null);
      f.setVisible(true);
   }
   public static void main(String[] args) {
      new PracticalNo_13Q1();
   }
}
```

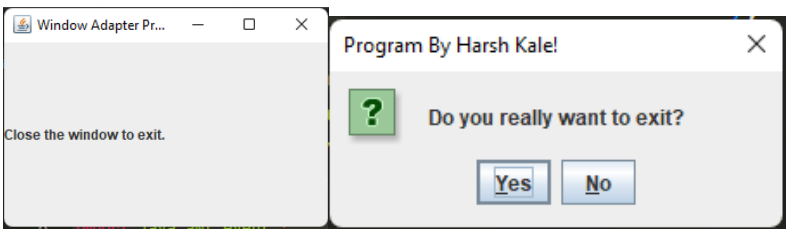
Output:



(Practical 13)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 22/09/2023
// Question 2:
// Write a program to demonstrate the use of WindowAdapter class
import javax.swing.*;
import java.awt.event.*;
public class PracticalNo_13Q2 {
   public static void main(String[] args) {
      JFrame frame = new JFrame("Window Adapter Program By Harsh Kale!!");
      JLabel label = new JLabel("Close the window to exit.");
      frame.add(label);
      frame.setSize(300, 200);
      frame.setDefaultCloseOperation(JFrame.DO_NOTHING_ON_CLOSE);
      frame.addWindowListener(new MyWindowAdapter());
      frame.setVisible(true);
   }
}
class MyWindowAdapter extends WindowAdapter {
   @Override
   public void windowClosing(WindowEvent e) {
      int option = JOptionPane.showConfirmDialog(null, "Do you really want to exit?", "Program By Harsh Kale!", JOptionPane.YES_NO_OPTION);
      if (option == JOptionPane.YES_OPTION) {
         System.exit(0);      }   }}
```

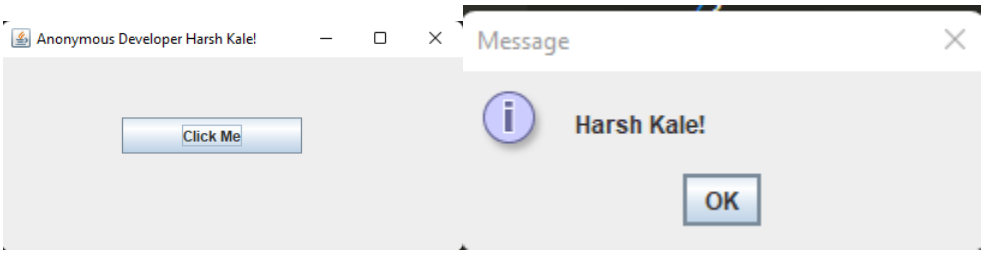
Output:



(Practical 13)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 22/09/2023
// Question 3: Write a program to demonstrate the use of anonymous inner class!
import javax.swing.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
public class PracticalNo_13Q3 {
   public static void main(String[] args) {
      JFrame frame = new JFrame("Anonymous Developer Harsh Kale!");
      JButton button = new JButton("Click Me");
      button.setBounds(100, 50, 150, 30);
      button.addActionListener(new ActionListener() {
         @Override          public void actionPerformed(ActionEvent e) {
            JOptionPane.showMessageDialog(null, "Harsh Kale!");
         }
      });
      frame.add(button);       frame.setSize(400, 200);
      frame.setLayout(null);       frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.setVisible(true);
   }
}
```

Output:

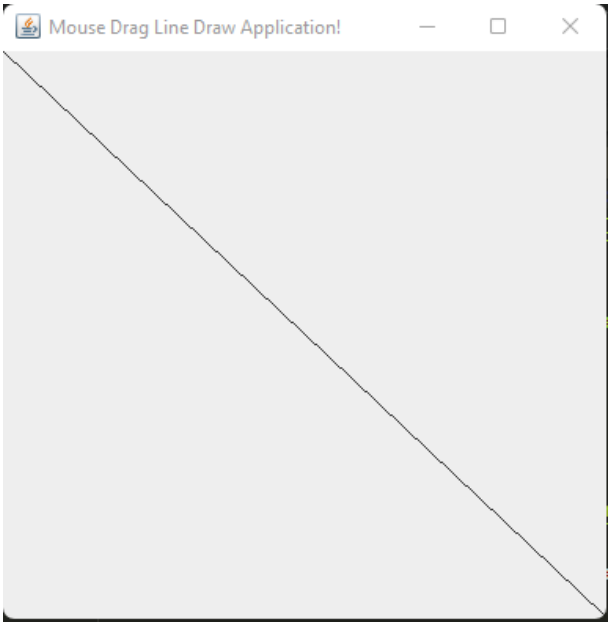


(Practical 13)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 22/09/2023
// Question 4:  Write a program using MouseMotionAdapter class to implement only one method mouseDragged().
import javax.swing.*; import java.awt.*;
import java.awt.event.MouseAdapter; import java.awt.event.MouseEvent;
public class PracticalNo_13Q4 {
   private JFrame frame;
   private int startX, startY, endX, endY;
   public PracticalNo_13Q4() {
      frame = new JFrame("Mouse Drag Line Draw Application!");
      frame.setSize(400, 400);       frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      DrawingPanel drawingPanel = new DrawingPanel();
      frame.add(drawingPanel);
      drawingPanel.addMouseMotionListener(new MyMouseMotionAdapter());
      frame.setVisible(true);
   }
   class DrawingPanel extends JPanel {
      @Override
      protected void paintComponent(Graphics g) {
         super.paintComponent(g);
         g.drawLine(startX, startY, endX, endY);
      }
   }
   class MyMouseMotionAdapter extends MouseAdapter {
      @Override
      public void mouseDragged(MouseEvent e) {
         endX = e.getX();
         endY = e.getY();
```

```
            frame.repaint();
        }
    }
    public static void main(String[] args) {
        SwingUtilities.invokeLater(() -> {
            System.out.println("Developer Harsh Moreshwar Kale!");
            new PracticalNo_13Q4();
        });
    }
}
```

Output:



(Practical No. 14)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 1:
// Execute the following code and write the output.
import java.net.*;

public class PracticalNo_14Q1 {
   public static void main(String[] args) {
      try{
         InetAddress ip = InetAddress.getByName("localhost");
         System.out.println("Host Name: " + ip.getHostName());
         System.out.println("IP Address: " + ip.getHostAddress());
      }catch(Exception e){
         System.out.println(e);
      }
   }
}
```

Output:

```
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Advance Java\Programs\Advance Java Programming Programs>  & 'C:\Pr
ogram Files\Java\jdk-20\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:64444' '--ena
ble-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Hp\AppData\Roaming\Code\User\workspaceStorage\3f1bf22
ac899d1fdb3e582ddbc14d5bd\redhat.java\jdt_ws\Advance Java Programming Programs_ac5a62e6\bin' 'PracticalNo_14Q1'
Host Name: localhost
IP Address: 127.0.0.1
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Advance Java\Programs\Advance Java Programming Programs>
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 2:

// Develop a program using InetAddress class to retrieve IP address of computer when hostname is entered by the user.

import java.io.IOException; import java.net.*; import java.util.Scanner;

public class PracticalNo_14Q2 {
   public static void main(String[] args) throws IOException {
      System.out.println("Enter any hostname: ");
      try (Scanner sc = new Scanner(System.in)) {
         String hostname = sc.nextLine();
         try {
            InetAddress address = InetAddress.getByName(hostname);
            if(address.isReachable(3000)){
               System.out.println("IP Address: " + address.getHostAddress());
            }else{
               System.out.println("Host Not Found!");
            }
         } catch (UnknownHostException e) {
            System.out.println("Unknown Host: " + hostname);
         }catch(Exception e){
            System.out.println("An error occurred: " + e.getMessage());
         }
      }
   }
}
```

Output:

```
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Advance Java\Programs\Advance Java Programming Programs>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Hp\AppData\Roaming\Code\User\workspaceStorage\3f1bf22ac899d1fdb3e582ddbc14d5bd\redhat.java\jdt_ws\Advance Java Programming Programs_ac5a62e6\bin' 'PracticalNo_14Q2'
Enter any hostname:
localhost
IP Address: 127.0.0.1
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Advance Java\Programs\Advance Java Programming Programs>
```

(Practical 15)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 1:
// Execute the following code and write the output.
import java.net.*;
public class PracticalNo_15Q1 {
    public static void main(String[] args) throws MalformedURLException {
        // URL url = new URL("https://github.com/Harshk133/Advance-Java-Practical-Programs/blob/main/Advance%20Java%20Programming%20Programs/PracticalNo_14Q2.java");
        URL url = new URL("https://www.javatpoint.com/javafx-tutorial");
        System.out.println("Protocol: " + url.getProtocol());
        System.out.println("Port: " + url.getPort());
        System.out.println("Host: " + url.getHost());
        System.out.println("File: " + url.getFile());
        System.out.println("External form: " + url.toExternalForm());
    }
}
```

Output:

```
Protocol: https
Port: -1
Host: www.javatpoint.com
File: /javafx-tutorial
External form: https://www.javatpoint.com/javafx-tutorial
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 2:

// Write a program using URL class to retrieve the host, protocol port and file of URL
http://www.msbte.org.in

import java.net.*;

public class PracticalNo_15Q2 {

   public static void main(String[] args) throws MalformedURLException {

      URL url = new URL("http://www.msbte.org.in");

      System.out.println("Protocol: " + url.getProtocol());

      System.out.println("Port: " + url.getPort());

      System.out.println("Host: " + url.getHost());

      System.out.println("File: " + url.getFile());

      System.out.println("External form: " + url.toExternalForm());

   }

}
```

Output:

```
Protocol: http
Port: -1
Host: www.msbte.org.in
File:
External form: http://www.msbte.org.in
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 3:  Write a program using URL and URLConnection class to retrieve the date, content type, content length information of any entered URL

import java.net.*;

import java.util.Scanner;

import java.util.Date;

public class PracticalNo_15Q3 {

    public static void main(String[] args) {

        System.out.println("Enter any URL: ");

        Scanner sc = new Scanner(System.in);

        String urlStr = sc.nextLine();

        try {

            URL url = new URL(urlStr);

            URLConnection connection = url.openConnection();

            long date = connection.getDate();

            Date todayDate = new Date(date);

            System.out.println("Date: " + todayDate);

            String contentType = connection.getContentType();

            System.out.println("Content Type: " + contentType);

            int contentLength = connection.getContentLength();

            System.out.println("Content length: " + contentLength);

        } catch (Exception e) {

            System.out.println("ERROR: " + e.getMessage());

        }

    }

}
```

Output:

```
Enter any URL:
https://github.com
Date: Wed Oct 25 20:38:44 IST 2023
Content Type: text/html; charset=utf-8
Content length: -1
```

(Practical No. 16)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 1:
// Write a program to check credentials of users (Client will send user id and password to server and server will authenticate the client using equals())
// Server-side Program!
import java.io.*;
import java.net.*;
public class PracticalNo_16Q1_Server {
   public static void main(String[] args) {
      try {
         ServerSocket serverSocket = new ServerSocket(1234);
         System.out.println("Server started. Waiting for client connection...");
         Socket clientSocket = serverSocket.accept();
         System.out.println("Client connected!");
         BufferedReader in = new BufferedReader(new InputStreamReader(clientSocket.getInputStream()));
         PrintWriter out = new PrintWriter(clientSocket.getOutputStream(), true);
         String userId = in.readLine();
         String password = in.readLine();
         boolean isAuthenticated = authenticate(userId, password);
         out.println(isAuthenticated);
         in.close();
         out.close();
         clientSocket.close();
         serverSocket.close();
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
   private static boolean authenticate(String userId, String password) {
      return userId.equals("harsh") && password.equals("helloworldprogrammer");
   }
}
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 1:

// Write a program to check credentials of users (Client will send user id and password to server and server will authenticate the client using equals())

// Client-side Program!

import java.io.*;

import java.net.*;

public class PracticalNo_16Q1_Client {

   public static void main(String[] args) {

      try {

         Socket clientSocket = new Socket("localhost", 1234);

         System.out.println("Connected to server!!");

         BufferedReader in = new BufferedReader(new InputStreamReader(clientSocket.getInputStream()));

         PrintWriter out = new PrintWriter(clientSocket.getOutputStream(), true);

         BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));

         System.out.print("Enter user ID: ");

         String userId = userInput.readLine();

         System.out.print("Enter password: ");

         String password = userInput.readLine();

         out.println(userId);

         out.println(password);

         boolean isAuthenticated = Boolean.parseBoolean(in.readLine());

         if (isAuthenticated) {

            System.out.println("Authentication is successfull!!");

         } else {

            System.out.println("Authentication is failed, Try Again!");

         }

         in.close();

         out.close();

         userInput.close();

         clientSocket.close();

      } catch (IOException e) {

         e.printStackTrace();

      }

   }

}
```

Output:

Server

```
Server started. Waiting for client connection...
Client connected!
```

Client

```
Connected to server!!
Enter user ID: harsh
Enter password: helloworldprogrammer
Authentication is successfull!!
```

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 2:
// Write a program using Socket & ServerSocket to create chat application.
// Server-side Program!
import java.io.*;
import java.net.*;
public class PracticalNo_16Q2ServerChat {
   public static void main(String[] args) {
      try {
         ServerSocket serverSocket = new ServerSocket(1234);
         System.out.println("Server started. Waiting for clients...");
         Socket clientSocket1 = serverSocket.accept();
         System.out.println("Client 1 connected.");
         Socket clientSocket2 = serverSocket.accept();
         System.out.println("Client 2 connected.");
         BufferedReader in1 = new BufferedReader(new InputStreamReader(clientSocket1.getInputStream()));
         PrintWriter out1 = new PrintWriter(clientSocket1.getOutputStream(), true);
         BufferedReader in2 = new BufferedReader(new InputStreamReader(clientSocket2.getInputStream()));
         PrintWriter out2 = new PrintWriter(clientSocket2.getOutputStream(), true);
         Thread thread1 = new Thread(new ClientHandler(in1, out2));
         Thread thread2 = new Thread(new ClientHandler(in2, out1));
         thread1.start();
         thread2.start();
         serverSocket.close();
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
}
class ClientHandler implements Runnable {
   private BufferedReader in;
   private PrintWriter out;
   public ClientHandler(BufferedReader in, PrintWriter out) {
      this.in = in;
      this.out = out;
   }
   @Override
   public void run() {
      try {
         String message;
         while ((message = in.readLine()) != null) {
            System.out.println("Received message: " + message);
            out.println(message);
         }
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
}
```

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 2:
// Write a program using Socket & ServerSocket to create chat application.
// Client-side Program!
import java.io.*;
import java.net.*;
import java.util.Scanner;
public class PracticalNo_16Q2ClientChat {
   public static void main(String[] args) {
      try {
         try (Socket clientSocket = new Socket("localhost", 1234)) {
            System.out.println("Connected to server.");
            BufferedReader in = new BufferedReader(new InputStreamReader(clientSocket.getInputStream()));
            PrintWriter out = new PrintWriter(clientSocket.getOutputStream(), true);
            Thread thread = new Thread(new ServerResponseHandler(in));
            thread.start();
            try (Scanner scanner = new Scanner(System.in)) {
               String message;
               while (true) {
                  message = scanner.nextLine();
                  out.println(message);
               }
            }
         }
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
}
class ServerResponseHandler implements Runnable {
   private BufferedReader in;
   public ServerResponseHandler(BufferedReader in) {
      this.in = in;
   }
   @Override
   public void run() {
      try {
         String message;
         while ((message = in.readLine()) != null) {
            System.out.println("Received from server: " + message);
         }
      } catch (IOException e) {
         e.printStackTrace();
      }
   }
}
```

Output:

```
.\PracticalNo_16Q2ServerChat.java
Server started. Waiting for clients...
Client 1 connected.
Client 2 connected.
Received message: Hello I am Hello world programmer!!
Received message: Hello, world! My Name is Harsh :)
```

```
 PracticalNo_16Q2ClientChat.java
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Adv
PracticalNo_16Q2ClientChat.java
Connected to server.
Hello I am Hello world programmer!!
Received from server: Hello, world! My Name is Harsh :)
```

```
PS D:\MyPrograms\aajchaabhyass.com\Java Practice Programs\Advance
PracticalNo_16Q2ClientChat
Connected to server.
Received from server: Hello I am Hello world programmer!!
Hello, world! My Name is Harsh :)
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 3:

// Write a program to develop prime number server (Client will send any number to server, Server will send the response the number is prime or not!).

// Server-side Program

import java.io.*;

import java.net.*;

public class PracticalNo_16Q3Server {

   public static void main(String[] args) {

      try {

         try (ServerSocket serverSocket = new ServerSocket(1234)) {

            System.out.println("Server started. Waiting for client connection...");

            while (true) {

               Socket socket = serverSocket.accept();

               System.out.println("Client connected: " + socket);

               BufferedReader in = new BufferedReader(new InputStreamReader(socket.getInputStream()));

               PrintWriter out = new PrintWriter(socket.getOutputStream(), true);

               int number = Integer.parseInt(in.readLine());

               System.out.println("Number received from client: " + number);

               boolean isPrime = checkPrime(number);

               if (isPrime) {

                  out.println(number + " is a prime number");

               } else {

                  out.println(number + " is not a prime number");

               }

               socket.close();

               System.out.println("Client disconnected");

            }

         } catch (NumberFormatException e) {

            e.printStackTrace();

         }

      } catch (IOException e) {

         e.printStackTrace();

      }

   }

   private static boolean checkPrime(int number) {

      if (number <= 1) {

         return false;

      }

      for (int i = 2; i <= Math.sqrt(number); i++) {

         if (number % i == 0) {

            return false;

         }

      }

      return true;

   }

}
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 3:

// Write a program to develop prime number server (Client will send any number to server, Server will send the response the number is prime or not!).

// Client-side Program

import java.io.*;

import java.net.*;

public class PracticalNo_16Q3Client {

   public static void main(String[] args) {

      try {

         Socket socket = new Socket("localhost", 1234);

         BufferedReader in = new BufferedReader(new InputStreamReader(socket.getInputStream()));

         PrintWriter out = new PrintWriter(socket.getOutputStream(), true);

         BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));

         System.out.print("Enter a number: ");

         int number = Integer.parseInt(userInput.readLine());

         out.println(number);

         String response = in.readLine();

         System.out.println("Response from server: " + response);

         socket.close();

      } catch (IOException e) {

         e.printStackTrace();

      }

   }

}
```

Output:

```
Server started. Waiting for client connection...
Client connected: Socket[addr=/127.0.0.1,port=64936,local
port=1234]
Number received from client: 0
Client disconnected
Client connected: Socket[addr=/127.0.0.1,port=64958,local
port=1234]
Number received from client: 1
Client disconnected
Client connected: Socket[addr=/127.0.0.1,port=64964,local
port=1234]
Number received from client: 7
Client disconnected
```

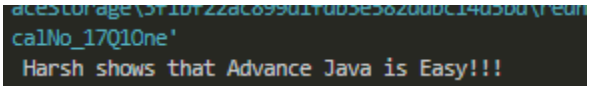
```
calNo_16Q3Client'
Enter a number: 7
Response from server: 7 is a prime number
```

```
aceStorage\3f1bf22ac899d1fdb3e582ddbc14d5bd\redhat.java\jdt_ws
calNo_16Q3Client'
Enter a number: 0
Response from server: 0 is not a prime number
```

(Practical No. 17)

```
// Programmer: Harsh Moreshwar Kale Created Date: 25/10/2023
// Question 1: Execute the following Program and write the output.  One.java
import java.net.*;
public class PracticalNo_17Q1One {
   public static void main(String[] args) throws Exception {
      DatagramSocket ds = new DatagramSocket(3000);
      byte[] buf = new byte[1024];
      DatagramPacket dp = new DatagramPacket(buf, 1024);
      ds.receive(dp);
      String str = new String(dp.getData(), 0, dp.getLength());
      System.out.println(str);
      ds.close();    }}
// Programmer: Harsh Moreshwar Kale Created Date: 25/10/2023
// Question 1: Execute the following Program and write the output. Two.java
import java.net.*;
public class PracticalNo_17Q1Two {
   public static void main(String[] args) throws Exception {
      DatagramSocket ds = new DatagramSocket();
      String str = "Harsh shows that Advance Java is Easy!!!";
      InetAddress ip = InetAddress.getByName("127.0.0.1");
      DatagramPacket dp = new DatagramPacket(str.getBytes(), str.length(), ip, 3000);
      ds.send(dp);
      ds.close();    }}
```

Output:



```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 2:

// Write a program using DatagramPacket and DatagramSocket to create chat application.

// Server.java

import java.io.*;

import java.net.*;

public class PracticalNo_17Q2Server {

   public static void main(String[] args) {

      try {

         try (DatagramSocket serverSocket = new DatagramSocket(1234)) {

            System.out.println("Server Listening & Waiting for client messages...");

            while (true) {

               byte[] receiveData = new byte[1024];

               DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);

               serverSocket.receive(receivePacket);

               String clientMessage = new String(receivePacket.getData(), 0, receivePacket.getLength());

               System.out.println("Client: " + clientMessage);

               String responseMessage = "Server received: " + clientMessage;

               byte[] sendData = responseMessage.getBytes();

               InetAddress clientAddress = receivePacket.getAddress();

               int clientPort = receivePacket.getPort();

               DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, clientAddress, clientPort);

               serverSocket.send(sendPacket);

            }

         }

      } catch (IOException e) {

         e.printStackTrace();

      }

   }

}
```

```
import java.io.*; import java.net.*;

public class PracticalNo_17Q2Client {

   public static void main(String[] args) {

      try {

         try (DatagramSocket clientSocket = new DatagramSocket()) {

            InetAddress serverAddress = InetAddress.getByName("localhost");

            int serverPort = 1234;

            BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));

            while (true) {

               System.out.print("You: ");

               String message = userInput.readLine();

               byte[] sendData = message.getBytes();

               DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, serverAddress, serverPort);
```

```
            clientSocket.send(sendPacket);
byte[] receiveData = new byte[1024];

            DatagramPacket receivePacket =
new DatagramPacket(receiveData,
receiveData.length);

            clientSocket.receive(receivePacket);

            String serverResponse = new
String(receivePacket.getData(), 0,
receivePacket.getLength());
```

```
            System.out.println("Server: " +
serverResponse);

        }       }

    } catch (IOException e) {

        e.printStackTrace();     }   }}
```

Output:

```
aceStorage\3f1bf22ac899d1fdb3e582ddbc14d5bd\redhat.java\jdt_ws\Ad
calNo_17Q2Server'
Server Listening & Waiting for client messages...
Client: Hello, India by Harsh Kale!
Client: I hope server got the above message!!
```

```
Server Listening & Waiting for client messages...
Client: Hello, India by Harsh Kale!
Client: I hope server got the above message!!
```

```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 3:

// Write a program using DatagramPacket and DatagramSocket to copy the contents of one file into other.

// Server.java

import java.io.*;

import java.net.*;

public class PracticalNo_17Q3FileServer {

   public static void main(String[] args) {

      try {

         DatagramSocket serverSocket = new DatagramSocket(1234);

         System.out.println("Server started. Waiting for client...");

         byte[] receiveData = new byte[1024];

         DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);

         serverSocket.receive(receivePacket);

         String fileName = new String(receivePacket.getData(), 0, receivePacket.getLength());

         File inputFile = new File(fileName);

         File outputFile = new File("copy-" + fileName);

         FileInputStream fis = new FileInputStream(inputFile);

         FileOutputStream fos = new FileOutputStream(outputFile);

         byte[] buffer = new byte[1024];

         int bytesRead;

         System.out.println("Copying file...");

         while ((bytesRead = fis.read(buffer)) != -1) {

            DatagramPacket sendPacket = new DatagramPacket(buffer, bytesRead, receivePacket.getAddress(), receivePacket.getPort());

            serverSocket.send(sendPacket);

            fos.write(buffer, 0, bytesRead);

         }

         fis.close();

         fos.close();

         serverSocket.close();

         System.out.println("File copied successfully.");

      } catch (IOException e) {

         e.printStackTrace();

      }

   }

}
```

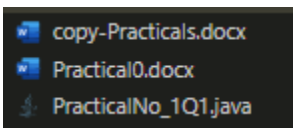
```
// Programmer: Harsh Moreshwar Kale

// Created Date: 25/10/2023

// Question 3:

// Write a program using DatagramPacket and DatagramSocket to copy the contents of one file into other.

// Client.java

import java.io.*;

import java.net.*;

public class PracticalNo_17Q3FileClient {

   public static void main(String[] args) {
```

```
    try {
        DatagramSocket clientSocket = new DatagramSocket();
        InetAddress serverAddress = InetAddress.getByName("localhost");
        int serverPort = 1234;
        BufferedReader userInput = new BufferedReader(new InputStreamReader(System.in));
        System.out.print("Enter the file name to copy: ");
        String fileName = userInput.readLine();
        byte[] sendData = fileName.getBytes();
        DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, serverAddress, serverPort);
        clientSocket.send(sendPacket);
        FileOutputStream fos = new FileOutputStream("copy-" + fileName);
        byte[] buffer = new byte[1024];
        System.out.println("Receiving file!!");
        while (true) {
            DatagramPacket receivePacket = new DatagramPacket(buffer, buffer.length);
            clientSocket.receive(receivePacket);
            int bytesRead = receivePacket.getLength();
            if (bytesRead == 0) {
                break;
            }
            fos.write(buffer, 0, bytesRead);
        }
        fos.close();
        clientSocket.close();
        System.out.println("File received successfully.");
    } catch (IOException e) {
        e.printStackTrace();
    }
  }
}
```

Output:

```
Server started. Waiting for client...
Copying file...
File copied successfully.
```

```
Enter the file name to copy: Practicals.docx
Receiving file!!
```

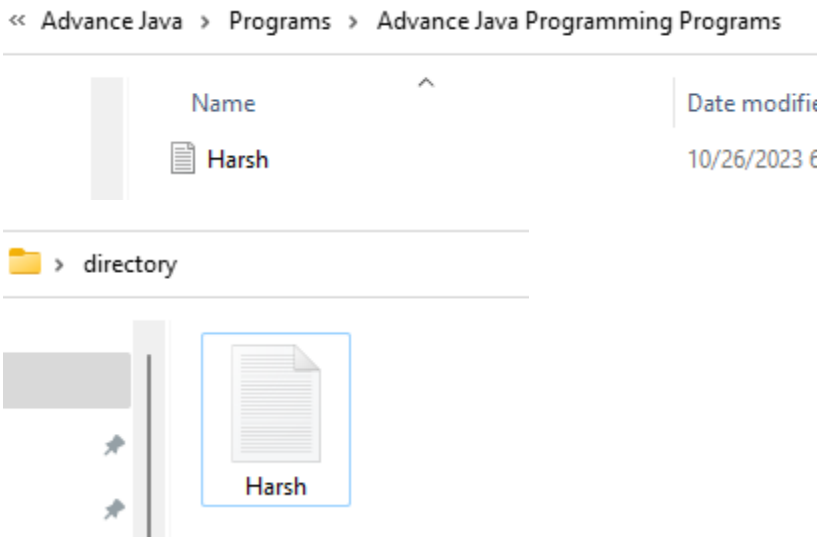


```
// Programmer: Harsh Moreshwar Kale Created Date: 25/10/2023

// Question 4: Write a program using DatagramPacket and DatagramSocket to transfer the file from one location to another.

import java.io.File; import java.io.FileInputStream;

import java.io.FileOutputStream; import java.net.DatagramPacket;

import java.net.DatagramSocket; import java.net.InetAddress;

public class PracticalNo_17Q4 {

   public static void main(String[] args) {

      String sourceFile = "D:\\MyPrograms\\aajchaabhyass.com\\Java Practice Programs\\Advance Java\\Programs\\Advance Java Programming Programs\\Harsh.txt";

      String destinationFolder = "C:\\Users\\Hp\\Desktop\\directory\\";

      String destinationFile = destinationFolder + "Harsh.txt";

      String serverIP = "127.0.0.1";       int serverPort = 12345;       int bufferSize = 1024;

      try {

         FileInputStream fileInputStream = new FileInputStream(sourceFile);

         File file = new File(sourceFile);

         long fileSize = file.length();

         DatagramSocket socket = new DatagramSocket();

         InetAddress serverAddress = InetAddress.getByName(serverIP);

         byte[] buffer = new byte[bufferSize];

         int bytesRead;

         int totalBytesSent = 0;

         while ((bytesRead = fileInputStream.read(buffer)) != -1) {

            DatagramPacket packet = new DatagramPacket(buffer, bytesRead, serverAddress, serverPort);

            socket.send(packet);

            totalBytesSent += bytesRead;

            System.out.println("Sent " + totalBytesSent + " bytes out of " + fileSize + " bytes");

            System.out.println("Transfer complete and successful");

         }

         socket.close();

         fileInputStream.close();
```

```
        FileOutputStream fileOutputStream = new FileOutputStream(destinationFile);
        byte[] receiveBuffer = new byte[bufferSize];
        DatagramPacket receivePacket = new DatagramPacket(receiveBuffer, bufferSize);
        while (true) {            socket.receive(receivePacket);            byte[] data =
receivePacket.getData();
            fileOutputStream.write(data);
            if (receivePacket.getLength() < bufferSize) {
              break;          }        }        fileOutputStream.close();        System.out.println("File
transfer completed.");
    } catch (Exception e) {
        e.printStackTrace();      }  }}
```

Output:

```
Sent 55 bytes out of 55 bytes
Transfer complete and successful
java.net.SocketException: Socket closed
        at java.base/sun.nio.ch.DatagramSocketAdaptor.receive(DatagramSocketAdaptor.java:264)
        at java.base/java.net.DatagramSocket.receive(DatagramSocket.java:714)
        at PracticalNo_17Q4.main(PracticalNo_17Q4.java:41)
Caused by: java.nio.channels.ClosedChannelException
        at java.base/sun.nio.ch.DatagramChannelImpl.ensureOpen(DatagramChannelImpl.java:280)
        at java.base/sun.nio.ch.DatagramChannelImpl.blockingReceive(DatagramChannelImpl.java:656)
        at java.base/sun.nio.ch.DatagramSocketAdaptor.receive(DatagramSocketAdaptor.java:241)
        ... 2 more
```



(Practical 18)

```
// Programmer: Harsh Moreshwar Kale
// Created Date: 25/10/2023
// Question 1:
// Write a program to create a student table in databse and insert a record in a Student table.
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;
public class PracticalNo_18Q1 {
   static final String DB_URL = "jdbc:mysql://localhost:3306/mydb";
   static final String USER = "root";
   static final String PASS = "_h@rshmk123";
   public static void main(String[] args) {
      Connection conn = null;
      Statement stmt = null;
      try {
         System.out.println("Connecting to database...");
         conn = DriverManager.getConnection(DB_URL, USER, PASS);
         System.out.println("Creating Student table...");
         stmt = conn.createStatement();
         String sql = "CREATE TABLE Student " +
               "(id INTEGER not NULL, " +
               " name VARCHAR(255), " +
               " age INTEGER, " +
               " PRIMARY KEY ( id ))";
         stmt.executeUpdate(sql);
         System.out.println("Student table created successfully.");
         System.out.println("Inserting a record into the Student table...");
         sql = "INSERT INTO Student (id, name, age) VALUES (1, 'Harsh Kale', 19)";
```

```
            stmt.executeUpdate(sql);
            System.out.println("Record inserted successfully.");
            stmt.close();
            conn.close();
        } catch (SQLException se) {
            se.printStackTrace();
        } catch (Exception e) {
            e.printStackTrace();
        } finally {
            try {
                if (stmt != null)
                    stmt.close();
            } catch (SQLException se2) {}
            try {
                if (conn != null)
                    conn.close();
            } catch (SQLException se) {
                se.printStackTrace();
            }       }
        System.out.println("Program completed.");    }}
```

Output:

```
Connecting to database...
Creating Student table...
Student table created successfully.
Inserting a record into the Student table...
Record inserted successfully.
Program completed.
```

Result Grid | Filter Rows:

	id	name	age
▶	1	Harsh Kale	19
*	NULL	NULL	NULL