Experiment NO-1

1. Java program on Hello World.

```
public class FirstProgram
{
  public static void main(String[] args)
  {
          System.out.println("Hello World”);
  }
```

Output: Hello World

Experiment NO-2

1. Java program on addition of two numbers.

```
import java.util.Scanner;
public class Addition
{
  public static void main(String[] args)
  {
    Scanner sc=new Scanner(System.in);
          int a,b,c;
          System.out.println("Enter value for A:-");
          a=sc.nextInt();
          System.out.println("Enter value for B:-");
          b=sc.nextInt();
          c=a+b;
          System.out.println("Addition is:-"+c);
  }
}
```

Output:

```
Enter value for A:
2
Enter value for B:
3
Addition is:- 5
```

2. Java program to swap values without temporary variable.

```
import java.util.*;
class Swap
{
        public static void main(String a[])
   {
      System.out.println("Enter the value of x and y");
      Scanner sc = new Scanner(System.in);
      /*Define variables*/
      int x = sc.nextInt();
      int y = sc.nextInt();
      System.out.println("before swapping numbers: "+x +" "+ y);
     /*Swapping*/
      x = x + y;
      y = x - y;
      x = x - y;
      System.out.println("After swapping: "+x +"  " + y);
   }
}
```

Output:

```
Enter the value of x and y
23  43
before swapping numbers: 23  43
After swapping:  43  23
```

3. Java program to find entered number is even or odd.

```
import java.util.*;
public class EvenOdd {
   public static void main(String[] args)
          {
      Scanner reader = new Scanner(System.in);
      System.out.print("Enter a number: ");
      int num = reader.nextInt();
      if(num % 2 == 0){
         System.out.println(num + " is even");
       }
      else{
         System.out.println(num + " is odd");
       }
   }
}
```

Output:

```
Enter a number:
13
13 is odd
```

4. Java program to print a table.

```
import java.util.*;
class A {
int a;
void display(int s) {
a=s;
for(int i=1;i<=10;i++) {
System.out.println(a*i);
}       }       }
public class tablesdisplay {
public static void main(String[] args) {
// TODO Auto-generated method stub
A A1=new A();
int x;
Scanner ac= new Scanner(System.in);
System.out.print("Enter the number whose table you want= ");
x=ac.nextInt();
A1.display(x);
}       }
```

Output :

```
Enter the number whose table you want= 3
3
6
9
12
15
18
21
24
27
30
```

Experiment No-3

1. **Java program to perform array operation on 2D Array.**

```
import java.util.Scanner;
public class Transpose{
        public static void main(String[] args){
                int a[][]={{1,4,7},{2,5,8},{3,6,9}};
                int i,j;
                System.out.println("Array before transposing:-");
                for(i=0;i<=2;i++) {
                        for(j=0;j<=2;j++)   {
                                System.out.print(a[i][j]+" ");
                        }
                   System.out.println("\n");
                }
                System.out.println("Array after transposing:-");
                for(i=0;i<=2;i++){
                        for(j=0;j<=2;j++){
                                System.out.print(a[j][i]+" ");      }
                   System.out.print("\n");          }      }   }
```

Output:

Array before transposing:-

1 4 7

2 5 8

3 6 9

Array after transposing:-

1 2 3

4 5 6

7 8 9

2. Java program to perform to identify vowels character in a string.

```
public class Vowels{
   public static void main(String[] args) {
      char a[]={'m','r','a','j','e','i'};
      int i;
      for(i=0;i<a.length;i++)
      {
         if(a[i]=='a'|a[i]=='e'|a[i]=='i'|a[i]=='o'|a[i]=='u')
         {System.out.println("Vowels ="+a[i]);
         }
      }
   }
}
```

Output:

Vowels =a

Vowels =e

Vowels =i

3. Java program to display string in reverse order.

```
import java.util.*;
class B {
public static String reverseString(String str) {
char ch[]=str.toCharArray();
String rev="";
for(int i=ch.length-1;i>=0;i--) {
rev+=ch[i]; } return rev;
} }
public class Stringreverse {
public static void main(String[] args) {
stub String str;
Scanner pc=new Scanner(System.in);
System.out.println("Please enter string= ");
str=pc.nextLine();
System.out.println(B.reverseString(str));
} }
```

Output=

Please enter string=

Kiran

nariK

Experiment No-4

1. **Write a java program to display employ details with initialization of following constraints(e_name, e_age, e_dept, e_salary) through constructor.**

```
public class Student {
        int id;
        String name;
        void getData() {
                id=101;
                name="Aarya";
        }
        void putData() {
                System.out.println("ID:"+id);
                System.out.println("Name:"+name);
        }
        public static void main(String[] args) {
                Student s1=new Student();
                System.out.print("Student Details= ");
                s1.getData();
                s1.putData();
        }       }
```

Output: Student Details = ID:101

Name:Aarya

2. Write a java program to display students details with initialization of following constraints(s_name, s_rollno, s_dept, s_div) through user defined methods.

```
public class Employee {
        String name,dept;
        int age;
        double salary;
        Employee(String name,int age,String dept,double salary{
                this.name=name;
                this.age=age;
                this.dept=dept;
                this.salary=salary;
        }
        void display(){
        System.out.println(this.name+"\t"+this.age+"\t"+this.dept+"\t"+this.salary);
        }
        public static void main(String[] args) {
                Employee e1=new Employee("Ram",28,"Sales",20000);
                Employee e2=new Employee("Sham",30,"Finance",30000);
                System.out.println("Employee details: ");
                System.out.println("Name\tAge\tDepartment\tSalary");
                e1.display();
                e2.display();
        }       }
```

Output:

Employee details:

Name	Age	Department	Salary
Ram	28	Sales	20000.0
Sham	30	Finance	30000.

Experiment NO-5

1. Write a java program to display the different mathematical operations using "this" keyword.

```
public class This_Keyword{
        public static void main(String[] args){
                Add a1=new Add(22,13);
                Sub s1=new Sub(22,13);
                Mul m1=new Mul(22,13);
                Div d1=new Div(22,13);
        }       }
class Add{
        int a,b,sum;
        Add(int a, int b){
                this.a=a;
                this.b=b;
                sum=a+b;
                System.out.println("Addition is ="+sum);
        }       }
class Sub{
        int a,b,sub;
        Sub(int a, int b){
                this.a=a;  this.b=b;
                sub=a-b;
                System.out.println("Substraction is ="+sub);
        }       }
class Mul{
        int a,b,mul;
        Mul(int a, int b){
                this.a=a;
                this.b=b;
                mul=a*b;
```

```
                System.out.println("Multiplication is ="+mul);
        }       }
class Div{
        int a,b,div;
        Div(int a, int b){
                this.a=a;
                this.b=b;
                div=a/b;
                System.out.println("Division is ="+div);
        }       }
```

Output:

Addition is = 35

Substraction is = 9

Multiplication is = 286

Division is = 1

2. Write a java program using "this" keyword to display the area of: a)circle b)square c)rectangle d)triangle.

```
public class Pr_5_2{
    public static void main(String[] args){
            circle a1=new circle(5);
            square a2=new square(13);
            rectangle a3=new rectangle(22,13);
            triangle a4=new triangle(22,13);
    }
}
class circle{
    int r;
    double p=3.14,area;
    circle(int r){
            this.r=r;
            area=p*r*r;
            System.out.println("Area of Circle ="+area);
    }
}
class square{
    int s;
    double area;
    square(int s){
            this.s=s;
            area=s*s;
            System.out.println("Area of Square ="+area);
    }
}
class rectangle{
    int l,b;
```

```
        double area;
        rectangle(int l, int b){
                this.l=l;
                this.b=b;
                area=l*b;
                System.out.println("Area of Rectangle ="+area);
        }
    }
    class triangle{
        float base,height;
        double area;
        triangle(float base,float height){
                this.base=base;
                this.height=height;
                area=(base*height)/2;
                System.out.println("Area of Triangle ="+area);
        }
    }
```

Output:

```
Area of Circle =78.5
Area of Square =169.0
Area of Rectangle =286.0
Area of Triangle =143.0
```

3. Write a java program using “static” keyword

```
class Student{
  int rollno;
  String name;
  static String college ="Sveri";
  Student(int r, String n){
  rollno=r;
  name=n;
  }
  void display (){
            System.out.println(rollno+" "+name+" "+college);
 }        }
public class Static{
 public static void main(String args[]){
 Student s1 = new Student(73,"Mrunal");
 Student s2 = new Student(7,"Ankita");
 s1.display();
 s2.display();
 }        }
```

Output :

73 Mrunal Sveri

7 Ankita Sveri

Experiment NO-06

1. **Implement a Java program for Interface of the following specification: Client(Interface)->input,output()**
   Developer->implements client

```
package inter;
interface client
{
	void input();
	void output();
}

class Deve implements client
{
	int id;
	String sname;
	public void input()
	{
		id=101;
		sname="calculator";
	}
	public void output()
	{
		System.out.println("ID of the software is= "+id);
		System.out.println("Name of the software is= "+sname);
	}
}
final class client1 {
	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Deve d1=new Deve();
```

```
            d1.input();
            d1.output();
        }
}
```

Output :

```
ID of the software is= 101
Name of the software is= calculator
```

2. **Write a java program using interface called 'Area ' with two different classes Rectangle and circle.**

```
import java.util.*;
interface Polygon{
	void area();
}
class Cir1 implements Polygon
{
	public void area()
	{
		float r;
		Scanner ac=new Scanner(System.in);
		r=ac.nextFloat();
		System.out.println("Area of circle is= "+3.14*r*r);
	}	}
class Rec1 implements Polygon{
	public void area(){
		int l,b;
		Scanner pc=new Scanner(System.in);
		l=pc.nextInt();
		b=pc.nextInt();
		System.out.println("Area of reactangle is= "+l*b);
	}	}
public class inter1 {
	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Polygon p1=new Cir1();
		Polygon p2=new Cir1();
		p1.area();
		p2.area();
```

```
        }
}
```

Output :

```
        2
        Area of circle is= 12.56
        2
        3
        Area of reactangle is= 6
```

3. Write a Program for Single Inheritance

```
public class Simple_inheri{
    public static void main(String[] args)    {
                B c1=new B();
                c1.B1();
                c1.A1();
    }       }
class A{
    void A1(){
            System.out.println("Hii from Class A");
    }       }
class B extends A
{
    void B1()
    {
            System.out.println("Hii from Class B");
    }
}
```

Output:

```
Hii from Class B
Hii from Class A
```

4. Write a Program for Multi-Level Inheritance

```
public class Multilevel_inheri{
    public static void main(String[] args){
                C d1=new C();
                d1.B1();
                d1.A1();
                d1.C1();        }       }
class A{
    void A1(){
        System.out.println("Hii from Class A");
    }       }
class B extends A{
    void B1()       {
        System.out.println("Hii from Class B");
    }       }
class C extends B{
    void C1(){
        System.out.println("Hii from Class C");
    }       }
```

Output:

```
Hii from Class B
Hii from Class A
Hii from Class
```

5. Write a Program for Hierarchical Inheritance

```
public class Hierarchical_inheri1{
	public static void main(String[] args){
			B e1=new B();
			e1.A1();
			e1.B1();
			C f1=new C();
			f1.A1();
			f1.C1();
			D g1=new D();
			g1.A1();
			g1.D1();
	}	}
class A{
	void A1(){
		System.out.println("Hii from Class A");
	}	}
class B extends A{
	void B1()	{
		System.out.println("Hii from Class B");
	}
}

class C extends A
{
	void C1()
	{
		System.out.println("Hii from Class C");
	}
}
```

```
class D extends A
{
	void D1()
	{
		System.out.println("Hii from Class D");
	}
}
```

Output:

```
Hii from Class A
Hii from Class B
Hii from Class A
Hii from Class C
Hii from Class A
Hii from Class D
```

Experiment NO-07

1. Write a java program using “this” keyword

```
public class This_Keyword{
	public static void main(String[] args){
		Add a1=new Add(22,13);
	}
}
class Add{
	int a,b,sum;
	Add(int a, int b){
		this.a=a;
		this.b=b;
		sum=a+b;
		System.out.println("Addition is ="+sum);
	}
}
```

Output:

```
Addition is =35
```

2. Package to package program.

```
package inter;
public class Taking {
	int a=12, b=5;
	public void area1()
	{
		System.out.println("Recatangle area is= "+a*b);
	}
}
```

```
package inter2;
import inter.Taking;

public abstract class takeit {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Taking t1=new Taking();
		t1.area1();
	}
}
```

Output:

```
Recatangle area is= 60
```

Experiment NO-08

Implement a Java program for handling arithmetic build-in exception.

```
public class Multiple_Excep{
public static void main(String[]args){
try{
System.out.println(3/0);
}
catch(Exception e)
{
System.out.println(e);
}
finally{
System.out.println("Finally Block Executed");
}
System.out.println("Successfull");
}
}
```

Output :

java.lang.ArithmeticException: / by zero

Finally Block Executed

Successful

Experiment NO-09

Implement a Java program for handling an user defined exception for valid age for voter.

```
class underageException extends Exception{
	underageException(){
		System.out.println("You are under 18 age");
	}	}
class exception123{
	public static void main(String[] args) {
		int age=17;
		try {
			if(age<18) {
				throw new underageException();
			}	}
		catch(Exception e) {
			System.out.println("\n"+e);
		}
		System.out.println("rest of the code");
	}	}
```

Output:

```
You are under 18 age
underageException
rest of the code
```

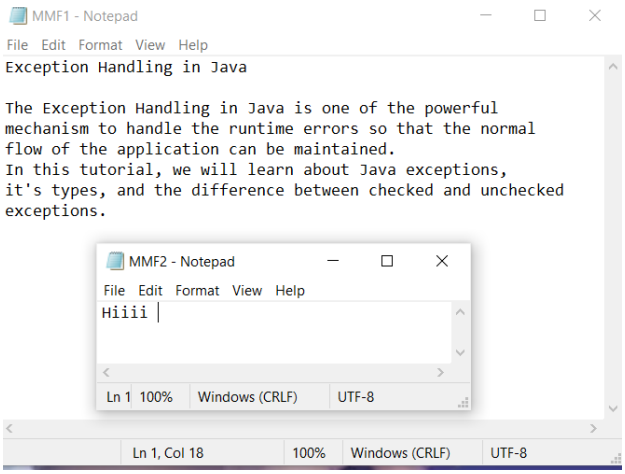
Experiment NO-10

Write a java program to read data from a file and copy it into another file.

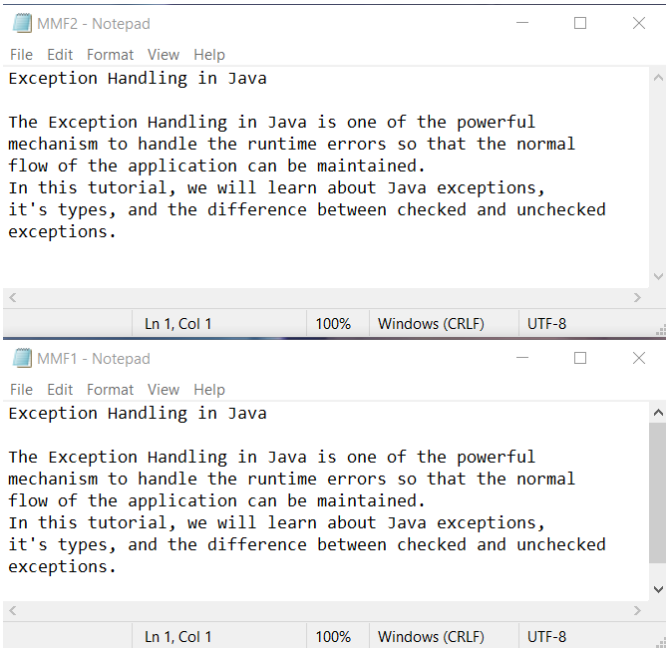
```
import java.io.*;
class CopyOperation {
public static void main(String arg[]) {
try {
FileInputStream fin=new FileInputStream("MMF1.txt");
FileOutputStream fout=new FileOutputStream("MMF2.txt");
int i=0;
while((i=fin.read())!=-1){
fout.write(i);
}
fin.close();
fout.close();
}
catch(Exception e) {
System.out.print(e);
}
}
}
```

Output :

1. *Before Compilation*



2. *After Compilation*



Write a java program to read and write data from a file

Read File

```
Package com.mypkg;
Import java.io.FileReader;
Public class FileReaderExample {
   Public static void main(String args[])throws Exception{
        FileReader fr=new FileReader("D:\\testout.txt");
        Int I;
        While((i=fr.read())!=-1)
        System.out.print((char)i);
        Fr.close();
   }
}
```

Welcome to File.

O/P : Welcome to File.

Write File

```
Package com.mypkg;
Import java.io.*;
Public class BufferedWriterExample {
Public static void main(String[] args) throws Exception {
   FileWriter writer = new FileWriter("D:\\testout.txt");
   BufferedWriter buffer = new BufferedWriter(writer);
   Buffer.write("Welcome to File.");
   Buffer.close();
   System.out.println("Success");
   }
}
```

O/P : success

Testout.txt:

Welcome to File.

Experiment NO-11

1. Program to implement ArrayListIterator()

```
import java.util.*;
public class AL
{
        public static void main(String[] args)
         {
                ArrayList <Integer> l1=new ArrayList<>();
                l1.add(2);
                l1.add(3);
                l1.add(1,4);
                System.out.println(l1);
                int ele=l1.get(0);
                System.out.println(ele);
                System.out.println("Length of the list is= "+l1.size());
                l1.set(1,6);
                System.out.println("List elements are=");
                for(int i=0;i<=l1.size();i++)
                 {
                System.out.println(l1.get(i));
                }       }       }
```

Output:

```
[2, 4, 3]
2
Length of the list is= 3
List elements are=      2       6       3
```

2. Program to implement ListIterator()

```
import java.util.*;
public class ListIteratorDemo {
        public static void main(String[] args) {
        List<String> names = new LinkedList<>();
    names.add("Welcome");
    names.add("To");
    names.add("Gfg");
    ListIterator<String> namesIterator
      = names.listIterator();
    while (namesIterator.hasNext()) {
      System.out.println(namesIterator.next());
    }
    for (String s : names) {
      System.out.println(s);
        }       }       }
```

Output:

```
Welcome
To
Gfg
Welcome
To
Gfg
```

Experiment NO- 12

1. Program to implement set

```
Import java.util.*;
Public class setExample{
   Public static void main(String[] args)
   {
      // creating LinkedHashSet using the Set
      Set<String> data = new LinkedHashSet<String>();
data.add(“java”);
data.add(“Set”);
data.add(“Example”);
data.add(“Set”);

System.out.println(data);
   }
}
```

OUTPUT :

[java,set, example]

2. Program to implement map

```
Import java.util.*;
Class MapExample6{
 Public static void main(String args[]){
Map<Integer,String> map=new HashMap<Integer,String>();
Map.put(100,”Amit”);
Map.put(101,”Vijay”);
Map.put(102,”Rahul”);
System.out.println(Map.entrySet());
For(map Entry m:map entryset())
{
      System.out.println(m.getkey()+”” +m.getvalue());
}
}
```

OUTPUT :

101 Vijay

102 Rahul

100 Amit

Experiment NO- 14

1. Program to implement GUI using Swing (Login App)

```
Import javax.swing.JButton;
Import javax.swing.JFrame;
Import javax.swing.JLabel;
Import javax.swing.JPanel;
Import javax.swing.JPasswordField;
Import javax.swing.JTextField;
Public class SwingFirstExample {
   Public static void main(String[] args) {
      // Creating instance of JFrame
JFrame frame = new JFrame("My First Swing Example");
      // Setting the width and height of frame
Frame.setSize(350, 200);
Frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      /* Creating panel. This is same as a div tag in HTML
       * We can create several panels and add them to specific
       * positions in a JFrame. Inside panels we can add text
       * fields, buttons and other components.
       */
JPanel panel = new JPanel();
      // adding panel to frame
Frame.add(panel);
      /* calling user defined method for adding components
       * to the panel.
       */
placeComponents(panel);
      // Setting the frame visibility to true
Frame.setVisible(true);
   }
```

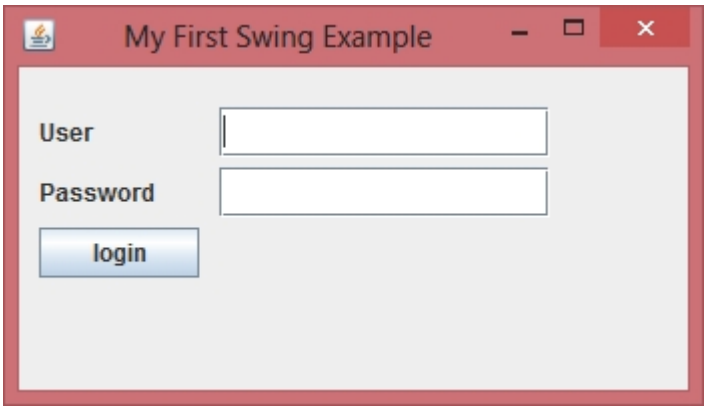
```
   Private static void placeComponents(JPanel panel) {
      /* We will discuss about layouts in the later sections
       * of this tutorial. For now we are setting the layout
       * to null
       */
Panel.setLayout(null);
      // Creating JLabel
JLabeluserLabel = new JLabel("User");
      /* This method specifies the location and size
       * of component. setBounds(x, y, width, height)
       * here (x,y) are cordinates from the top left
       * corner and remaining two arguments are the width
       * and height of the component.
       */
userLabel.setBounds(10,20,80,25);
panel.add(userLabel);

      /* Creating text field where user is supposed to
       * enter user name.
       */
JTextFielduserText = new JTextField(20);
userText.setBounds(100,20,165,25);
panel.add(userText);
      // Same process for password label and text field.
JLabelpasswordLabel = new JLabel("Password");
passwordLabel.setBounds(10,50,80,25);
panel.add(passwordLabel);

      /*This is similar to text field but it hides the user
```

```
        * entered data and displays dots instead to protect
        * the password like we normally see on login screens.
        */
JPasswordFieldpasswordText = new JPasswordField(20);
passwordText.setBounds(100,50,165,25);
panel.add(passwordText);
        // Creating login button
JButtonloginButton = new JButton("login");
loginButton.setBounds(10, 80, 80, 25);
panel.add(loginButton);
    }
}
```

O/P :



2. Program to implement GUI using Swing (Calculator)

```
import java.awt.EventQueue;
import javax.swing.JFrame;
import javax.swing.JButton;
import javax.swing.JTextField;
import javax.swing.JCheckBox;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
public class Calc1 {
	private JFrame frame;
	private JTextField textField;
	double first;
	double second;
	double result;
	String operation;
	public static void main(String[] args) {
		EventQueue.invokeLater(new Runnable() {
			public void run() {
				try {
					Calc1 window = new Calc1();
					window.frame.setVisible(true);
				} catch (Exception e) {
					e.printStackTrace();
				}
			}
		});
	}
	public Calc1() {
		initialize();
	}
```

```
private void initialize() {
	frame = new JFrame();
	frame.setBounds(100, 100, 450, 300);
	frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
	frame.getContentPane().setLayout(null);

	JButton btnNewButton = new JButton("1");
	btnNewButton.addActionListener(new ActionListener() {
		public void actionPerformed(ActionEvent e) {
			String number = textField.getText()+btnNewButton.getText();
			textField.setText(number);
		}
	});
	btnNewButton.setBounds(50, 59, 43, 23);
	frame.getContentPane().add(btnNewButton);

	JButton btnNewButton_1 = new JButton("2");
	btnNewButton_1.addActionListener(new ActionListener() {
		public void actionPerformed(ActionEvent e) {
			String number = textField.getText()+btnNewButton_1.getText();
			textField.setText(number);
		}
	});
	btnNewButton_1.setBounds(126, 59, 43, 23);
	frame.getContentPane().add(btnNewButton_1);

	JButton btnNewButton_2 = new JButton("3");
	btnNewButton_2.addActionListener(new ActionListener() {
		public void actionPerformed(ActionEvent e) {
			String number = textField.getText()+btnNewButton_2.getText();
```

```
                textField.setText(number);
        }
});
btnNewButton_2.setBounds(196, 59, 57, 23);
frame.getContentPane().add(btnNewButton_2);

JButton btnNewButton_3 = new JButton("4");
btnNewButton_3.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_3.getText();
                textField.setText(number);
        }
});
btnNewButton_3.setBounds(50, 104, 43, 23);
frame.getContentPane().add(btnNewButton_3);

JButton btnNewButton_4 = new JButton("5");
btnNewButton_4.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_4.getText();
                textField.setText(number);
        }
});
btnNewButton_4.setBounds(126, 104, 43, 23);
frame.getContentPane().add(btnNewButton_4);

JButton btnNewButton_5 = new JButton("6");
btnNewButton_5.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_5.getText();
```

```
                textField.setText(number);
        }
});
btnNewButton_5.setBounds(196, 104, 57, 23);
frame.getContentPane().add(btnNewButton_5);

JButton btnNewButton_6 = new JButton("7");
btnNewButton_6.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_6.getText();
                textField.setText(number);
        }
});
btnNewButton_6.setBounds(50, 145, 43, 23);
frame.getContentPane().add(btnNewButton_6);

JButton btnNewButton_7 = new JButton("8");
btnNewButton_7.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_7.getText();
                textField.setText(number);
        }
});
btnNewButton_7.setBounds(126, 145, 43, 23);
frame.getContentPane().add(btnNewButton_7);

JButton btnNewButton_8 = new JButton("9");
btnNewButton_8.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_8.getText();
```

```
                textField.setText(number);
        }
});
btnNewButton_8.setBounds(196, 145, 57, 23);
frame.getContentPane().add(btnNewButton_8);

JButton btnNewButton_9 = new JButton("clc");
btnNewButton_9.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                textField.setText(null);
        }
});
btnNewButton_9.setBounds(50, 194, 66, 23);
frame.getContentPane().add(btnNewButton_9);

JButton btnNewButton_10 = new JButton("0");
btnNewButton_10.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String number = textField.getText()+btnNewButton_10.getText();
                textField.setText(number);
        }
});
btnNewButton_10.setBounds(126, 194, 43, 23);
frame.getContentPane().add(btnNewButton_10);

JButton btnNewButton_11 = new JButton("=");
btnNewButton_11.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
                String ans;
                //String opration;
```

```
                second = Double.parseDouble(textField.getText());
                if(operation=="+") {
                        result=first+second;
                        ans=String.format("%.2f", result);
                        textField.setText(ans);
                }

                if(operation=="-") {
                        result=first-second;
                        ans=String.format("%.2f", result);
                        textField.setText(ans);
                }

                if(operation=="*") {
                        result=first*second;
                        ans=String.format("%.2f", result);
                        textField.setText(ans);
                }

                if(operation=="/") {
                        result=first/second;
                        ans=String.format("%.2f", result);
                        textField.setText(ans);
                }
        }
});
btnNewButton_11.setBounds(196, 194, 57, 23);
frame.getContentPane().add(btnNewButton_11);

JButton btnNewButton_12 = new JButton("+");
```

```
btnNewButton_12.addActionListener(new ActionListener() {
	public void actionPerformed(ActionEvent e) {
		first=Double.parseDouble(textField.getText());
		textField.setText(" ");
		operation="+";
	}
});
btnNewButton_12.setBounds(283, 59, 89, 23);
frame.getContentPane().add(btnNewButton_12);

JButton btnNewButton_13 = new JButton("-");
btnNewButton_13.addActionListener(new ActionListener() {
	public void actionPerformed(ActionEvent e) {
		first=Double.parseDouble(textField.getText());
		textField.setText(" ");
		operation="-";
	}
});
btnNewButton_13.setBounds(283, 104, 89, 23);
frame.getContentPane().add(btnNewButton_13);

JButton btnNewButton_14 = new JButton("*");
btnNewButton_14.addActionListener(new ActionListener() {
	public void actionPerformed(ActionEvent e) {
		first=Double.parseDouble(textField.getText());
		textField.setText(" ");
		operation="*";
	}
});
btnNewButton_14.setBounds(283, 145, 89, 23);
```

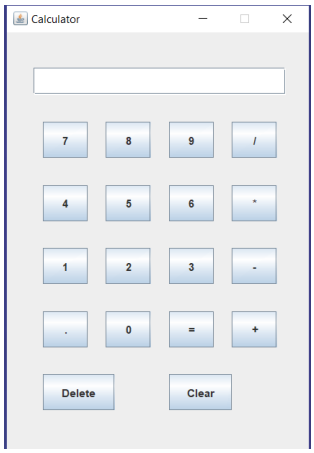
```
        frame.getContentPane().add(btnNewButton_14);

        JButton btnNewButton_15 = new JButton("/");
        btnNewButton_15.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                first=Double.parseDouble(textField.getText());
                textField.setText(" ");
                operation="/";
            }       });
        btnNewButton_15.setBounds(283, 194, 89, 23);
        frame.getContentPane().add(btnNewButton_15);

        JButton btnNewButton_16 = new JButton("EXIT");
        btnNewButton_16.addActionListener(new ActionListener() {
            public void actionPerformed(ActionEvent e) {
                System.exit(0);
            }
        });
        btnNewButton_16.setBounds(335, 10, 89, 23);
        frame.getContentPane().add(btnNewButton_16);

        textField = new JTextField();
        textField.setBounds(50, 11, 275, 20);
        frame.getContentPane().add(textField);
        textField.setColumns(10);
    }       }
```

OUTPUT :



3. Program to implement GUI using Swing (CheckBox)

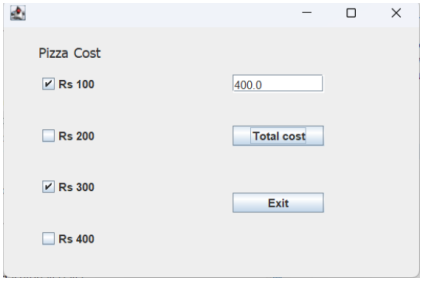
```
import java.awt.EventQueue;
import javax.swing.JFrame;
import javax.swing.JButton;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import javax.swing.JLabel;
import java.awt.Font;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
public class Dropdown {
private JFrame frame;
private JTextField textField;
private JTextField textField_1;
/**
* Launch the application.
*/
public static void main(String[] args) {
EventQueue.invokeLater(new Runnable() {
public void run() {
try {
Dropdown window = new Dropdown();
window.frame.setVisible(true);
} catch (Exception e) {
e.printStackTrace();
}
}
});
}
/**
```

```
* Create the application.
*/
public Dropdown() {
initialize();
}
/**
* Initialize the contents of the frame.
*/
private void initialize() {
frame = new JFrame();
frame.setBounds(100, 100, 450, 300);
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
frame.getContentPane().setLayout(null);
JComboBox comboBox = new JComboBox();
comboBox.setBounds(191, 151, 162, 21);
frame.getContentPane().add(comboBox);
JButton btnNewButton = new JButton("Select");
btnNewButton.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
String name=textField.getText();
comboBox.addItem("F.Y. B.Tech.");
comboBox.addItem("S.Y. B.Tech.");
comboBox.addItem("T.Y. B.Tech.");
comboBox.addItem("B.E. B.Tech.");
textField_1.setText(name+" of "+ comboBox.getSelectedItem());
}
});
btnNewButton.setBounds(10, 98, 85, 21);
frame.getContentPane().add(btnNewButton);
JButton btnNewButton_1 = new JButton("Clear");
```

```
btnNewButton_1.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
textField.setText("");
textField_1.setText("");
comboBox.removeItem("F.Y. B.Tech.");
}
});
btnNewButton_1.setBounds(10, 151, 85, 21);
frame.getContentPane().add(btnNewButton_1);
JButton btnNewButton_2 = new JButton("Exit");
btnNewButton_2.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
System.exit(0);
}
});
btnNewButton_2.setBounds(10, 208, 85, 21);
frame.getContentPane().add(btnNewButton_2);
textField = new JTextField();
textField.setBounds(191, 99, 96, 19);
frame.getContentPane().add(textField);
textField.setColumns(10);
textField_1 = new JTextField();
textField_1.setBounds(191, 209, 162, 19);
frame.getContentPane().add(textField_1);
textField_1.setColumns(10);
JLabel lblNewLabel = new JLabel("Student");
lblNewLabel.setFont(new Font("Tahoma", Font.PLAIN, 15));
lblNewLabel.setBounds(169, 38, 105, 27);
frame.getContentPane().add(lblNewLabel);
}
```

}

OUTPUT :



4. Program to implement GUI using Swing (ComboBox)

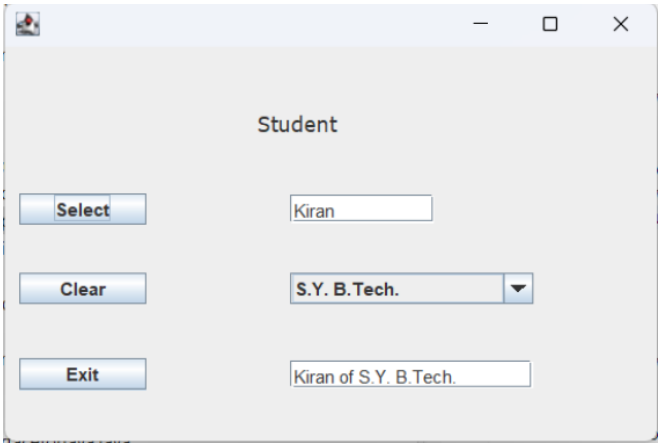
```
import java.awt.EventQueue;
import javax.swing.JFrame;
import javax.swing.JButton;
import javax.swing.JComboBox;
import javax.swing.JTextField;
import javax.swing.JLabel;
import java.awt.Font;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;
public class Dropdown {
private JFrame frame;
private JTextField textField;
private JTextField textField_1;
/**
* Launch the application.
*/
public static void main(String[] args) {
EventQueue.invokeLater(new Runnable() {
public void run() {
try {
Dropdown window = new Dropdown();
window.frame.setVisible(true);
} catch (Exception e) {
e.printStackTrace();
}
}
});
}
/**
```

```
* Create the application.
*/
public Dropdown() {
initialize();
}
/**
* Initialize the contents of the frame.
*/
private void initialize() {
frame = new JFrame();
frame.setBounds(100, 100, 450, 300);
frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
frame.getContentPane().setLayout(null);
JComboBox comboBox = new JComboBox();
comboBox.setBounds(191, 151, 162, 21);
frame.getContentPane().add(comboBox);
JButton btnNewButton = new JButton("Select");
btnNewButton.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
String name=textField.getText();
comboBox.addItem("F.Y. B.Tech.");
comboBox.addItem("S.Y. B.Tech.");
comboBox.addItem("T.Y. B.Tech.");
comboBox.addItem("B.E. B.Tech.");
textField_1.setText(name+" of "+ comboBox.getSelectedItem());
}
});
btnNewButton.setBounds(10, 98, 85, 21);
frame.getContentPane().add(btnNewButton);
JButton btnNewButton_1 = new JButton("Clear");
```

```
btnNewButton_1.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
textField.setText("");
textField_1.setText("");
comboBox.removeItem("F.Y. B.Tech.");
}
});
btnNewButton_1.setBounds(10, 151, 85, 21);
frame.getContentPane().add(btnNewButton_1);
JButton btnNewButton_2 = new JButton("Exit");
btnNewButton_2.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {
System.exit(0);
}
});
btnNewButton_2.setBounds(10, 208, 85, 21);
frame.getContentPane().add(btnNewButton_2);
textField = new JTextField();
textField.setBounds(191, 99, 96, 19);
frame.getContentPane().add(textField);
textField.setColumns(10);
textField_1 = new JTextField();
textField_1.setBounds(191, 209, 162, 19);
frame.getContentPane().add(textField_1);
textField_1.setColumns(10);
JLabel lblNewLabel = new JLabel("Student");
lblNewLabel.setFont(new Font("Tahoma", Font.PLAIN, 15));
lblNewLabel.setBounds(169, 38, 105, 27);
frame.getContentPane().add(lblNewLabel);
}
```

}

output:



Experiment NO- 15

Program to implement client Server Architecture

MyServer.java

```
Import java.io.*;
Import java.net.*;
Public class MyServer {
Public static void main(String[] args){
Try{
ServerSocketss=new ServerSocket(6666);
Socket s=ss.accept();//establishes connection
DataInputStream dis=new DataInputStream(s.getInputStream());
String  str=(String)dis.readUTF();
System.out.println("message= "+str);
ss.close();
}catch(Exception e){System.out.println€;}
}  }
```

MyClient.java

```
Import java.io.*;
Import java.net.*;
Public class MyClient {
Public static void main(String[] args) {
Try{
Socket s=new Socket("localhost",6666);
DataOutputStreamdout=new DataOutputStream(s.getOutputStream());
Dout.writeUTF("Hello Server");
Dout.flush();
Dout.close();
s.close();
```

```
}catch(Exception e){System.out.println€;}
} }
```

output:

```
Microsoft Windows [Version 10.0.19044.2846]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Project Lab>cd..
C:\Users>cd..
C:\>cd C:\Users\Public\java
C:\Users\Public\java>javac Client.java
C:\Users\Public\java>java Client
hello
Server says: How are you??
fine
Server says: stop
stop
```