1)Calculate area of rectangle, triangle using method overloading.

Definition : Method overloading in Java means having two or more methods (or functions) in a class with the same name and different arguments (or parameters).

Syntax

```
public class ClassName {
   // Method with a different number of parameters
   returnType methodName(parameterType1 param1) {
      // Method implementation
   }

   returnType methodName(parameterType1 param1, parameterType2 param2) {
      // Method implementation
   }

   // Method with a different data type of parameters
   returnType methodName(parameterType1 param1) {
      // Method implementation
   }

   returnType methodName(parameterType2 param2) {
      // Method implementation
   }

   // Method with a different order of parameters
   returnType methodName(parameterType1 param1, parameterType2 param2) {
      // Method implementation
   }

   returnType methodName(parameterType2 param2, parameterType1 param1) {
      // Method implementation
```

```
  }
}
```

Code:

```
public class pr1{


    public double calcluateArea(double length,double width){
        return length*width;


    }
    public double calcluateArea(double length,double width,double base,double
height){
        return 0.5*base*height;

    }
    public static void main(String args[]){
        pr1 calulator=new pr1();
        double rectangle=calulator.calcluateArea(50,40);
        System.out.println("area of the rectangle is:"+rectangle);

        double traingle=calulator.calcluateArea(50,40,10,5);
        System.out.println("area of traingle is:"+traingle);
    }
}
```

2) Calculate area of circle, square using method overloading.

```
class OverloadDemo
{
    void area(float x)
    {
        System.out.println("the area of the square is "+Math.pow(x, 2)+" sq
units");
    }

    void area(double x)
    {
        double z = 3.14 * x * x;
        System.out.println("the area of the circle is "+z+" sq units");
    }
}
class pr2
{
```

```
     public static void main(String args[])
    {
       OverloadDemo ob = new OverloadDemo();
       ob.area(5);

       ob.area(2.5);
        }
}
```

3) Write a Program to perform Matrix Multiplication using 2D array

```
public class pr3 {
    public static void main(String args[]){
        int a[][]={{1,1,1},{2,2,2},{3,3,3}};
        int b[][]={{2,3,4},{4,4,4},{4,5,6}};
int c[][]=new int[3][3];
for(int i=0;i<3;i++){
    for(int j=0;j<3;j++){
        c[i][j]=0;
        for(int k=0;k<3;k++){
            c[i][j]+=a[i][k]*b[k][j];

        }
        System.out.println(c[i][j]+"");
    }
    System.out.println();
}
    }
}
```

4) Write a Program to check entered string is palindrome or not by using different methods of String class.

Without using string method:

```
public class pr4 {
public static void main (String args[]){
    String str="hhhh";
String rev="";
    for(int i=str.length()-1;i>=0;i--){
rev=rev+str.charAt(i);
    }
    if (str.equals(rev)) {
        System.out.println("its plalindrome");
    }
else {
```

```
    System.out.println("its not plalindrome");
}

}

}
```

5) Program to display the result of 5 students using multilevel inheritance.

```
 class t1 {
    String name;
    int rollno;
    public t1(String name,int rollno){
        this.name=name;
        this.rollno=rollno;
    }
    public void displayinfo(){
        System.out.println("student name"+name);
        System.out.println("student roll no"+rollno);
    }
}

class exam extends t1{
    double marks;
    public exam(String name,int rollno,double marks){
        super(name,rollno);
        this.marks=marks;
    }
    public void displayexaminfo(){
        System.out.println("marks obtained"+marks);

    }
}
    class result extends exam{
        public result(String name,int rollno,double marks){
            super( name,rollno,marks);
        }
        public void displayresult(){
            displayinfo();
            displayexaminfo();

        }
```

```
    }


public class pr5{
public static void main(String args[]){
result[] st1=new result[5];
st1[0]=new result("garv",5,50);
st1[1]=new result("veer",2,50);
st1[2]=new result("vee2",22,50);
st1[3]=new result("veer243",23,50);
st1[4]=new result("veer21",212,50);
for(int i=0;i<st1.length;i++){
    st1[i].displayresult();
}
}
}
```

6) WAP to calculate the area of circle using interface.

```
interface area{
    double pi=3.14;
    double cal(double x,double y);
}
class circ implements area{
    public double cal(double x,double y){
        return pi*x*x;
    }
}

public class pr6 {
    public static void main(String args[]){
        area a;
        circ c1=new circ();
        a=c1;
        System.out.println("area of cirlce is "+a.cal(15,15));

    }
}
```

7) Write a Program to draw Smiley Face using applet.

```
import java.applet.Applet;
import java.awt.Graphics;

public class pr7   {
    public void paint(Graphics g){
```

```
        g.setColor(java.awt.Color.yellow);
        g.fillOval(50,50,200,200);
         g.setColor(java.awt.Color.white);
         g.fillOval(100,100,40,40);
         g.fillOval(160,100,40,40);
         g.setColor(java.awt.Color.red);
         g.drawArc(100,120,100,60,0,-180);
    }

}
```

8) Write a Program to display

1

1 1

1 2 1

1 3 3 1

```
public class PR8 {
    public static void main(String args[]){
        int row=4;
        for(int i=0;i<row;i++){
int number=1;
for(int j=0;j<=i;j++){
    System.out.println(number+" ");
    number=number*(i-j)/(j+1);
}
System.out.println();
        }
    }
}
```

9)Write program to add elements Ram,Shyam,Sita,Geeta in list using vector.

```
import java.util.*;
public class pr9 {
    public static void main(String args[]){
        Vector<String> vect=new Vector<String>();
        vect.add("garv");
         vect.add("garv2");
         System.out.println("elements in vector"+vect);
    }
}
```

10)WAP to calculate volume of cylinder ,cube and cuboid using constructor.

```
class cyclinder{
    double radius;
    double height;
    public  cyclinder(double radius,double height){
        this.radius=radius;
        this.height=height;
    }
    public double display(){
        return 3.14*radius*height;

    }


}
class cube{
    double side;
     public  cube(double side){
        this.side=side;

    }
    public double display(){
        return side*side*side;

    }

}
class cubiod{
    double length;
    double height;
    double width;
    public cubiod(double length,double height,double width){
        this.length=length;
        this.height=height;
        this.width=width;


    }
    public double display(){
        return length*height*width;

    }
}
```

```java
public class PR10 {
    public static void main(String args[]){
cube c1=new cube(4.0);
cyclinder c2=new cyclinder(20,20);
cubiod c3=new cubiod(10,20,20);
double cubere=c1.display();
double cyclindere=c2.display();
double cubiodre=c3.display();
System.out.println("cube is "+cubere);
System.out.println(" "+cyclindere);
System.out.println("cubiod is "+cubiodre);


    }
}
```