

**WT LAB**  
**ASSIGNMENT-04**

# JAVA PROGRAMMING

**Q1) Write a class file – box with three data members(length, width, height) and a method volume() . Also implement the application class Demo where an object of the box class is created with user entered dimensions and volume is printed.**

```
import java.util.Scanner;
class Box
{
    int length, width, height; //data members
    Box(int l,int b,int h)
    {
        length=l;
        width=b;
        height=h;
    }
    public void volume()
    {
        int v=length*width*height;
        System.out.println("Volume of the Box is "+v);
    }
}

public class q1_demo
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter length of the box :- ");
        int x= sc.nextInt();
        System.out.print("Enter width of the box :- ");
        int y= sc.nextInt();
        System.out.print("Enter height of the box :- ");
        int z= sc.nextInt();
        Box b=new Box(x,y,z);
        b.volume();
        sc.close();
    }
}
```

**Q2) Write a program in Java to define a class Rectangle having data member: length and breadth; to calculate the area and perimeter of the rectangle. Use member functions to read, calculate and display.**

```
import java.util.Scanner;
class Rectangle
{
    double length,breadth,area,perimeter;
    void read(int l,int b)
    {
        length = l;
        breadth = b;
    }
    void calculate()
    {
        area = length * breadth;
        perimeter = 2 * (length + breadth);
    }
    void Display()
    {
        System.out.println("Area of rectangle is : " +area);
        System.out.println("Perimeter of rectangle is : " +perimeter);
    }
}

public class q2
{
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        Rectangle r = new Rectangle();
        System.out.print("Enter the length of the rectangle :- ");
        int x= sc.nextInt();
        System.out.print("Enter the breadth of the rectangle :- ");
        int y= sc.nextInt();
        r.read(x,y);
        System.out.println("Length of the rectangle = " + r.length);
        System.out.println("Breadth of the rectangle = " + r.breadth);
        r.calculate();
        r.Display();
        sc.close();
    }
}
```

**Q3) Write a program in java to input and display the details of n number of students having roll, name and cgpa as data members. Also display the name of the student having lowest cgpa.**

```
import java.util.*;

public class q3
{
    String name;int roll;double cgpa;
    void get_info()
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter name: ");
        name = sc.nextLine();
        System.out.print("Enter roll: ");
        roll = sc.nextInt();
        System.out.print("Enter cgpa: ");
        cgpa = sc.nextDouble();
    }
    void display()
    {
        System.out.println("Name of the student is :- "+name);
        System.out.println("Roll of the student is :- "+roll);
        System.out.println("CGPA of the student is :- "+cgpa);
    }
    public static void main(String args[])
    {
        System.out.print("Enter number of students: ");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        q3 st[] = new q3[n]; //array of objects
        for (int i = 0; i < n; i++)
            st[i] = new q3();
        for (int i = 0; i < n; i++)
            st[i].get_info(); //takes input of all the details
        for (int i = 0; i < n; i++)
            st[i].display(); //displays the detail
        double min = st[0].cgpa; //store the value of first student then compare
        int temp = 0;
        for (int i = 1; i < n; i++)
        {
            if (st[i].cgpa < min)
                temp = i; //store the i to display the corresponding name
        }
        System.out.println("Student with the lowest cgpa is: " +st[temp].name);
        System.out.println("The lowest cgpa is: " +st[temp].cgpa);
        sc.close();
    }
}
```

**Q4) Write a program to calculate area according to user input, whether it is circle, square or triangle (Menu Driven).**

```
import java.util.*;

public class q4
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Press 1 to find Area of Square.");
        System.out.println("Press 2 to find Area of a Triangle.");
        System.out.println("Press 3 to find Area of a circle.");
        System.out.print("\nEnter your choice: ");
        int inp=sc.nextInt();

        switch(inp)
        {
            case 1:
                System.out.print("Enter the length of edge of the square: ");
                double s=sc.nextDouble();
                System.out.println("Area of the Square is: "+s*s);
                break;
            case 2:
                System.out.print("Enter the base of the Triangle: ");
                double b=sc.nextDouble();
                System.out.print("Enter the height of the Triangle: ");
                double h=sc.nextDouble();
                System.out.println("Area of the Triangle is: "+0.5*h*b);
                break;
            case 3:
                System.out.print("Enter the radius of the circle: ");
                double rad=sc.nextDouble();
                System.out.println("Area of the circle is: "+Math.PI*rad*rad);
                break;
            default: System.out.println("Invalid Choice.");
        }
        sc.close();
    }
}
```

**Q5) Write a program in Java to define a class Number with appropriate data members and member functions to input n number of integers and swap the biggest and smallest elements. Use member functions read(), swap() and display().**

```
import java.util.*;
class Number
{
    int a[]=new int[100];
    void read(int n)
    {
        Scanner sc = new Scanner(System.in);
        for(int i=0; i<n; i++)
        {
            this.a[i]=sc.nextInt();
        }
        sc.close();
    }
    void swap(int n)
    {
        int max = a[0];int x=0;
        for(int i=1; i<n; i++)
        {
            if (a[i] > max)
            {
                max = a[i];x=i;
            }
        }
        int min = a[0];int y=0;
        for(int i=1; i<n; i++)
        {
            if (a[i] < min)
            {
                min = a[i];y=i;
            }
        }
        int temp=a[x];
        a[x]=a[y];
        a[y]=temp;
    }
    void display(int n)
    {
        for(int i=0;i<n;i++)
        {
            System.out.print(" "+a[i]);
        }
    }
}
```

```
public class q5
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of inputs :- ");
        int n = sc.nextInt();
        Number obj = new Number();
        System.out.println("Enter the numbers :- ");
        obj.read(n);
        System.out.println("Before swapping :- ");
        obj.display(n);
        obj.swap(n);
        System.out.println("");
        System.out.println("After swapping :- ");
        obj.display(n);
        sc.close();
    }
}
```





