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WT LAB4

1. 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.*;
class box{
   double length,height,width;
   double volume()
   {
      return (length*width*height);
   }
}

class demo
{
   public static void main(String[] args)
   {
      box b=new box();
      Scanner sc=new Scanner(System.in);
      System.out.println("Enter the dimensions of the box");
      System.out.println("Enter the length of the box");
      b.length=sc.nextDouble();
      System.out.println("Enter the width of the box");
      b.width=sc.nextDouble();
      System.out.println("Enter the height of the box");
      b.height=sc.nextDouble();
      System.out.println("Volume of the box is "+b.volume());
      sc.close();
   }
}
```

```
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5> java demo
Enter the dimensions of the box
Enter the length of the box
6
Enter the width of the box
2
Enter the height of the box
8
Volume of the box is 96.0
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5>
```

2.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.*;

class cal {

   public static void read() {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the length");
      int l = sc.nextInt();
      System.out.println("Enter the width");
      int b = sc.nextInt();
      calculate(l, b);
   }

   public static void calculate(int l, int b) {
      int area = l * b;
      int peri = 2 * (l + b);
      display(area, peri);
```

```
    }

    public static void display(int area, int peri) {
        System.out.println("Area = " + area + "\nPerimeter = " + peri);
    }

}

public class rectangle {

    public static void main(String[] args) {
        cal ob = new cal();
        ob.read();
    }

}
```

```
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5> java rectangle
Enter the length
4
Enter the width
2
Area = 8
Perimeter = 12
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5>
```

3. 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 student {
    String name;
    int roll;
    double cgpa;

    void input() {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter name: ");
        name = new Scanner(System.in).nextLine();
        System.out.print("Enter roll: ");
        roll = sc.nextInt();
        System.out.print("Enter cgpa: ");
        cgpa = sc.nextDouble();
    }

    void display() {
        System.out.println("Name: " + name + "\nRoll: " + roll + "\nCGPA: " + cgpa);
    }

    public static void main(String args[]) {

        System.out.print("Enter number of students: ");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        student ob[] = new student[n];
        for (int i = 0; i < n; i++)
            ob[i] = new student();
        for (int i = 0; i < n; i++)
            ob[i].input();
        for (int i = 0; i < n; i++)
            ob[i].display();
        double min = ob[0].cgpa;
```

```
        int p = 0;
        for (int i = 1; i < n; i++) {
            if (ob[i].cgpa < min)
                p = i;
        }
        System.out.println("Student with lowest cgpa is: " + ob[p].name);
        sc.close();
    }
}
```

```
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5> java student
Enter number of students: 3
Enter name: name1
Enter roll: 1
Enter cgpa: 9
Enter name: name2
Enter roll: 98
Enter cgpa: 6.98
Enter name: name3
Enter roll: 3
Enter cgpa: 7.1
Name: name1
Roll: 1
CGPA: 9.0
Name: name2
Roll: 98
CGPA: 6.98
Name: name3
Roll: 3
CGPA: 7.1
Student with lowest cgpa is: name3
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5>
```

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

```
import java.util.Scanner;

public class area
{
    public static void main(String args[]) {

        Scanner in = new Scanner(System.in);

        System.out.println("Enter your choice: ");
        System.out.println("c - to calculate area of circle");
        System.out.println("s - to calculate area of square");
        System.out.println("r - to calculate area of rectangle");
        char choice = in.next().charAt(0);

        switch(choice) {
            case 'c':
                System.out.println("Enter the radius of circle: ");
                double r = in.nextDouble();
                double ca = (22 / 7.0) * r * r;
                System.out.println("Area of circle = " + ca);
                break;

            case 's':
                System.out.print("Enter the side of square: ");
                double side = in.nextDouble();
                double sa = side * side;
                System.out.println("Area of square = " + sa);
                break;
```

```
        case 'r':
            System.out.print("Enter length of rectangle: ");
            double l = in.nextDouble();
            System.out.print("Enter breadth of rectangle: ");
            double b = in.nextDouble();
            double ra = l * b;
            System.out.println("Area of rectangle = " + ra);
            break;

        default:
            System.out.println("Wrong choice!");
    }
  }
}
```

```
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5> java area
Enter your choice:
c - to calculate area of circle
s - to calculate area of square
r - to calculate area of rectangle
s
Enter the side of square: 4
Area of square = 16.0
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5>
```

5. 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.*;

public class Number {
   int n;
   int a[];

   void input() {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter size of array: ");
      n = sc.nextInt();
      a = new int[n];
      System.out.print("Enter elements: ");
      for (int i = 0; i < n; i++)
         a[i] = sc.nextInt();
      sc.close();
   }

   void swap() {
      int p1 = 0, p2 = 0, max = a[0], min = a[0];
      for (int i = 0; i < n; i++) {
         if (a[i] > max) {
            p1 = i;
            max = a[i];
         }
         if (a[i] < min) {
            p2 = i;
            min = a[i];
         }
      }
      a[p1] = min;
      a[p2] = max;
```

```
    }

    void display() {
        for (int i = 0; i < n; i++)
            System.out.print(a[i] + " ");
        System.out.println();
    }

    public static void main(String args[]) {
        Number ob = new Number();
        ob.input();
        System.out.println("Before swapping");
        ob.display();
        ob.swap();
        System.out.println("After swapping");
        ob.display();
    }
}
```

```
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5> java Number
Enter size of array: 5
Enter elements: 2
0
-1
7
3
Before swapping
2 0 -1 7 3
After swapping
2 0 7 -1 3
PS D:\KIIT_NOTES\2nd year sem_4\WT LAB\Day5>
```