OBJECT ORIENTED PROGRAMING LAB

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Experiment No.: 23

Aim

Create an interface having prototypes of functions area() and perimeter(). Create two classes Circle and Rectangle which implements the above interface. Create a menu driven program to find area and perimeter of objects.

Source Code

```
import java.util.*;
import java.lang.*;


interface Shape {
    float pi = 3.14F;
    float area();
    float perimeter();
}


class Circle implements Shape {
    Scanner sc = new Scanner(System.in);
    int r;


    public float area() {
        System.out.print("Enter the radius : ");
        r = Integer.parseInt(sc.nextLine());
        return (pi * r * r);
```

```
    }

    public float perimeter() {
        System.out.print("Enter the radius : ");
        r = Integer.parseInt(sc.nextLine());
        return (2 * pi * r);
    }

}

class Rectangle implements Shape {
    Scanner sc = new Scanner(System.in);
    int l, b;

    public float area() {
        System.out.print("Enter the Length : ");
        l = Integer.parseInt(sc.nextLine());
        System.out.print("Enter the breadth : ");
        b = Integer.parseInt(sc.nextLine());
        return (l * b);

    }

    public float perimeter() {
        System.out.print("Enter the Length : ");
        l = Integer.parseInt(sc.nextLine());
        System.out.print("Enter the breadth : ");
        b = Integer.parseInt(sc.nextLine());
        return (2 * (l + b));

    }
```

```
}

class Prototype {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        Circle c = new Circle();
        Rectangle r = new Rectangle();
        int ch;
        while (true) {
            System.out.println("1:Area of Circle");
            System.out.println("2:Perimeter of Circle");
            System.out.println("3:Area of Rectangle");
            System.out.println("4:Perimter of Rectangle");
            System.out.println("5:EXIT");
            System.out.println("enter choice ");
            ch = Integer.parseInt(sc.nextLine());
            switch (ch) {
                case 1:
                    float ar = c.area();
                    System.out.println("Area  :" + ar);
                    break;
                case 2:
                    float pr = c.perimeter();
                    System.out.println(pr);
                    break;
                case 3:
                    float a = r.area();
                    System.out.println("Area :" + a);
                    break;
                case 4:
```

```
                float pr1 = r.perimeter();
                System.out.println(pr1);
               break;
            case 5:
               System.out.println("Exiting the Program");
               System.exit(0);
            default:
               System.out.println("invalid!");

         }
      }

   }
}
```

Output Screenshot

```
C:\Users\Student\Documents\Java>javac Prototype.java

C:\Users\Student\Documents\Java>java Prototype
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
1
Enter the radius : 5
Area  :78.5
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
2
Enter the radius : 5
31.400002
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
3
Enter the Length : 4
Enter the breadth : 5
Area :20.0
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
4
Enter the Length : 4
Enter the breadth : 5
18.0
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
5
Exiting the Program
```