OBJECT ORIENTED PROGRAMING LAB

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Batch : B

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Experiment No.: 15

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

```java
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);
```

```java
        }

    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));

    }
```

```java
}

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:
```

```java
                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
```