OBJECT ORIENTED PROGRAMMING LAB

Experiment No: 15

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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.

Procedure:

```
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 : ");
```

```java
        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 Shapes1 {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        Circle c = new Circle();
        Rectangle r = new Rectangle();
```

```java
    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:
```

```java
                System.out.println("Exiting the Program");

                System.exit(0);

        default:

            System.out.println("invalid!");

        }

    }

  }

}
```

Output:

```
C:\Users\Student\Documents>java Shapes1
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
1
Enter the radius : 2
Area  :12.56
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
2
Enter the radius : 2
12.56
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
3
Enter the Length : 2
Enter the breadth : 3
Area :6.0
```

```
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
enter choice
4
Enter the Length : 2
Enter the breadth : 3
10.0
```