



Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute of Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Assignment -3

Subject	OOP
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Problem Statement

Calculate area of triangle, square & circle using function overloading. Function parameter accept from user. Create Base Class **Shape** and Derived Classes **Triangle**, **Square**, **Circle** respectively. Implement **getInputs()** Method for accepting inputs, and Overload **setArea()** method for calculating area of respective shapes.

Use Class **Tester** for creating objects.

Sample Input and Output

Sample Input/Parameter for Triangle	Values	Expected Output
Height (H)	50	2500
Base (B)	100	

Sample Input/Parameter for Circle	Values	Expected Output
π (Pie)	3.14	7853.98
Radius (R)	50	

Sample Input/Parameter for Square	Values	Expected Output
Side (S)	15	225

```
import java.util.Scanner;

class Shape {
    public double calculateArea() {
        return 0;
    }
}

class Triangle extends Shape {
    double base;
    double height;

    public Triangle(double b, double h) {
        base = b;
        height = h;
    }

    @Override
    public double calculateArea() {
        return 0.5 * base * height;
    }
}

class Square extends Shape {
```

```

        double side;

        public Square(double s) {
            side = s;
        }

        @Override
        public double calculateArea() {
            return side * side;
        }
    }

    class Circle extends Shape {
        double radius;

        public Circle(double r) {
            radius = r;
        }

        @Override
        public double calculateArea() {
            return Math.PI * radius * radius;
        }
    }

    public class Area {
        public static void main(String[] args) {
            Scanner input = new Scanner(System.in);

            System.out.println("Enter the base and height of the triangle:");
            double base = input.nextDouble();
            double height = input.nextDouble();
            Triangle triangle = new Triangle(base, height);

            System.out.println("Enter the side of the square:");
            double side = input.nextDouble();
            Square square = new Square(side);

            System.out.println("Enter the radius of the circle:");
            double radius = input.nextDouble();
            Circle circle = new Circle(radius);

            System.out.println("The area of the triangle is " +
triangle.calculateArea());
            System.out.println("The area of the square is " +
square.calculateArea());
            System.out.println("The area of the circle is " +
circle.calculateArea());
        }
    }
}

```

The screenshot shows an IDE's Run console window. The title bar indicates the file being run is 'Area.java'. The console output shows the execution of a Java program that prompts for user input and calculates the areas of a triangle, a square, and a circle. The input values are 50 for the base of the triangle, 100 for the height of the triangle, 15 for the side of the square, and 50 for the radius of the circle. The calculated areas are 2500.0 for the triangle, 225.0 for the square, and 7853.981633974483 for the circle. The process finished with exit code 0.

```
C:\Users\Sarika\.jdk\openjdk-17\bin\java.exe "-javaagent:C:\...
Enter the base and height of the triangle:
50
100
Enter the side of the square:
15
Enter the radius of the circle:
50
The area of the triangle is 2500.0
The area of the square is 225.0
The area of the circle is 7853.981633974483

Process finished with exit code 0
```