**Assignment No. 3**

**GRN: 12010664**

**Name of the Student: Vedant Gokhale**

**Roll No.: 37**

**Class: SY**

**Division: AI-A**

**Batch: B2**

**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 |

**CODE**

public class Shape {  
 public void setArea(){  
 System.*out*.println("Set Area Method of Base Class");  
 }  
}

public class Circle extends Shape{  
 private double radius;  
 public Circle(){  
 getInputs();  
 System.*out*.println("Area of Circle : "+setArea(getRadius()));  
 }  
 public void getInputs(){  
 Scanner input = new Scanner(System.*in*);  
 System.*out*.print("Enter radius of circle : ");  
 this.radius = input.nextDouble();  
 }  
 public double setArea(double radius){  
 return 3.14\*radius\*radius;  
 }  
  
 public void setRadius(double radius) {  
 this.radius = radius;  
 }  
  
 public double getRadius() {  
 return radius;  
 }  
}

public class Square extends Shape{  
 private double side;  
 public Square(){  
 getInputs();  
 System.*out*.println("Area of Square : "+setArea(getSide()));  
 }  
 public void getInputs(){  
 Scanner input = new Scanner(System.*in*);  
 System.*out*.print("Enter length of side of square : ");  
 this.side = input.nextDouble();  
 }  
 public double setArea(double side){  
 return side\*side;  
 }  
  
 public double getSide() {  
 return side;  
 }  
  
 public void setSide(double side) {  
 this.side = side;  
 }  
}

public class Triangle extends Shape {  
 private double base;  
 private double height;  
  
 public Triangle(){  
 getInputs();  
 System.*out*.println("Area of Triangle : "+setArea(getBase(),getHeight()));  
 }  
 public void getInputs(){  
 Scanner input = new Scanner(System.*in*);  
 System.*out*.print("Enter Base of Triangle : ");  
 this.base = input.nextDouble();  
 System.*out*.print("Enter Height of Triangle : ");  
 this.height = input.nextDouble();  
 }  
 public double setArea(double base,double height){  
 return 0.5\*base\*height;  
 }  
  
 public double getBase() {  
 return base;  
 }  
  
 public double getHeight() {  
 return height;  
 }  
  
 public void setBase(double base) {  
 this.base = base;  
 }  
  
 public void setHeight(double height) {  
 this.height = height;  
 }  
}

public class Tester {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.*in*);  
 int num=0;  
 while(num!=4){  
 System.*out*.println("Enter 1 for Triangle");  
 System.*out*.println("Enter 2 for Square");  
 System.*out*.println("Enter 3 for Circle");  
 System.*out*.println("Enter 4 to exit");  
 num = input.nextInt();  
 switch (num) {  
 case 1:  
 Triangle T = new Triangle();  
 break;  
 case 2:  
 Square S = new Square();  
 break;  
 case 3:  
 Circle C = new Circle();  
 break;  
 default:  
 System.*out*.println("Loop Terminated");  
 }  
 }  
 }  
}

OUTPUT

