**Assignment No. 3**

**GRN: 12310120**

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**Batch: 2**

**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 |

|  |
| --- |
| **Add your code here**  **import java.util.\*;**  **class Shape {**  **void getInputs() {**  **}**  **void setArea() {**  **}**  **}**  **class Triangle extends Shape {**  **private double base, height;**  **void getInputs() {**  **Scanner sc = new Scanner(System.in);**  **System.out.print("Enter base of triangle: ");**  **base = sc.nextDouble();**  **System.out.print("Enter height of triangle: ");**  **height = sc.nextDouble();**  **}**  **void setArea() {**  **double area = 0.5 \* base \* height;**  **System.out.println("Area of triangle: " + area);**  **}**  **}**  **class Square extends Shape {**  **private double side;**  **void getInputs() {**  **Scanner sc = new Scanner(System.in);**  **System.out.print("Enter side of square: ");**  **side = sc.nextDouble();**  **}**  **void setArea() {**  **double area = side \* side;**  **System.out.println("Area of square: " + area);**  **}**  **}**  **class Circle extends Shape {**  **private double radius;**  **void getInputs() {**  **Scanner sc = new Scanner(System.in);**  **System.out.print("Enter radius of circle: ");**  **radius = sc.nextDouble();**  **}**  **void setArea() {**  **double area = 3.14159 \* radius \* radius;**  **System.out.printf("Area of circle: %.2f\n", area);**  **}**  **}**  **public class area {**  **public static void main(String[] args) {**  **Triangle triangle = new Triangle();**  **Square square = new Square();**  **Circle circle = new Circle();**  **System.out.println("1. Triangle");**  **System.out.println("2. Square");**  **System.out.println("3. Circle");**  **Scanner sc = new Scanner(System.in);**  **System.out.print("Enter your choice: ");**  **int choice = sc.nextInt();**  **switch (choice) {**  **case 1:**  **triangle.getInputs();**  **triangle.setArea();**  **break;**  **case 2:**  **square.getInputs();**  **square.setArea();**  **break;**  **case 3:**  **circle.getInputs();**  **circle.setArea();**  **break;**  **default:**  **System.out.println("Invalid choice");**  **}**  **}**  **}**  **Expected Output:** |