**/\***

**Write a program that has an abstract class Polygon. Derive two classes Rectangle and Triangle**

**from Polygon and write methods to get details of their dimensions hence calculate the area.**

**\*/**

**package** java\_Examples;

**import** java.util.Scanner;

**abstract** **class** Polygon {

**abstract** **void** getDimensions();

**abstract** **double** calculateArea();

}

**class** Rectangle **extends** Polygon {

**private** **double** length, breadth;

@Override

**void** getDimensions() {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter the length of the rectangle: ");

length = scanner.nextDouble();

System.***out***.print("Enter the breadth of the rectangle: ");

breadth = scanner.nextDouble();

}

@Override

**double** calculateArea() {

**return** length \* breadth;

}

}

**class** Triangle **extends** Polygon {

**private** **double** base, height;

@Override

**void** getDimensions() {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter the base of the triangle: ");

base = scanner.nextDouble();

System.***out***.print("Enter the height of the triangle: ");

height = scanner.nextDouble();

}

@Override

**double** calculateArea() {

**return** 0.5 \* base \* height;

}

}

**public** **class** polyTest {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.println("Choose a shape: 1. Rectangle 2. Triangle");

**int** choice = scanner.nextInt();

Polygon polygon;

**if** (choice == 1) {

polygon = **new** Rectangle();

} **else** **if** (choice == 2) {

polygon = **new** Triangle();

} **else** {

System.***out***.println("Invalid choice! Please enter 1 or 2.");

**return**;

}

polygon.getDimensions();

System.***out***.println("Area: " + polygon.calculateArea());

}

}

Output:

Choose a shape: 1. Rectangle 2. Triangle

2

Enter the base of the triangle: 10

Enter the height of the triangle: 10

Area: 50.0

Choose a shape: 1. Rectangle 2. Triangle

1

Enter the length of the rectangle: 5

Enter the breadth of the rectangle: 2

Area: 10.0