

Object Oriented Programming Lab 7

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ME-A Batch 3

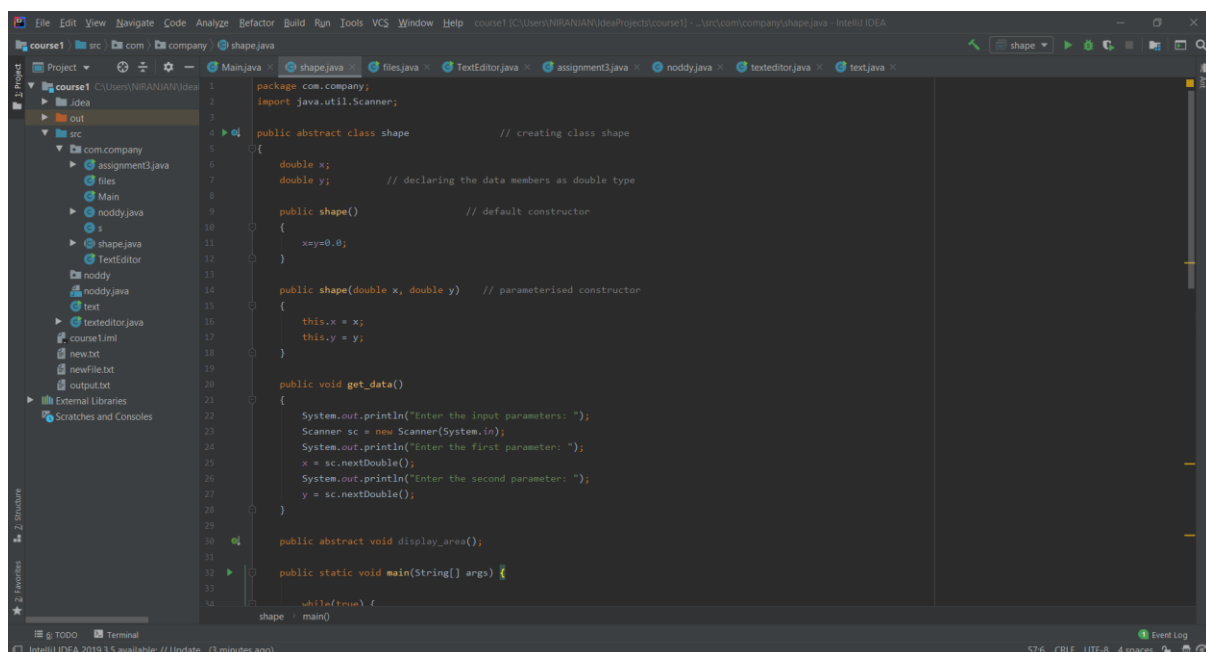
Problem Statement ->

Implement a base class Shape. Use this class to store two double type variables that could be used to compute the area of the figures. Derive two specific class function get_data to initialize the base class members and another member function display_area to compute and display the area of the figures. Using these three classes to design a program that will compute the area for the triangle or the rectangle by taking user inputs.

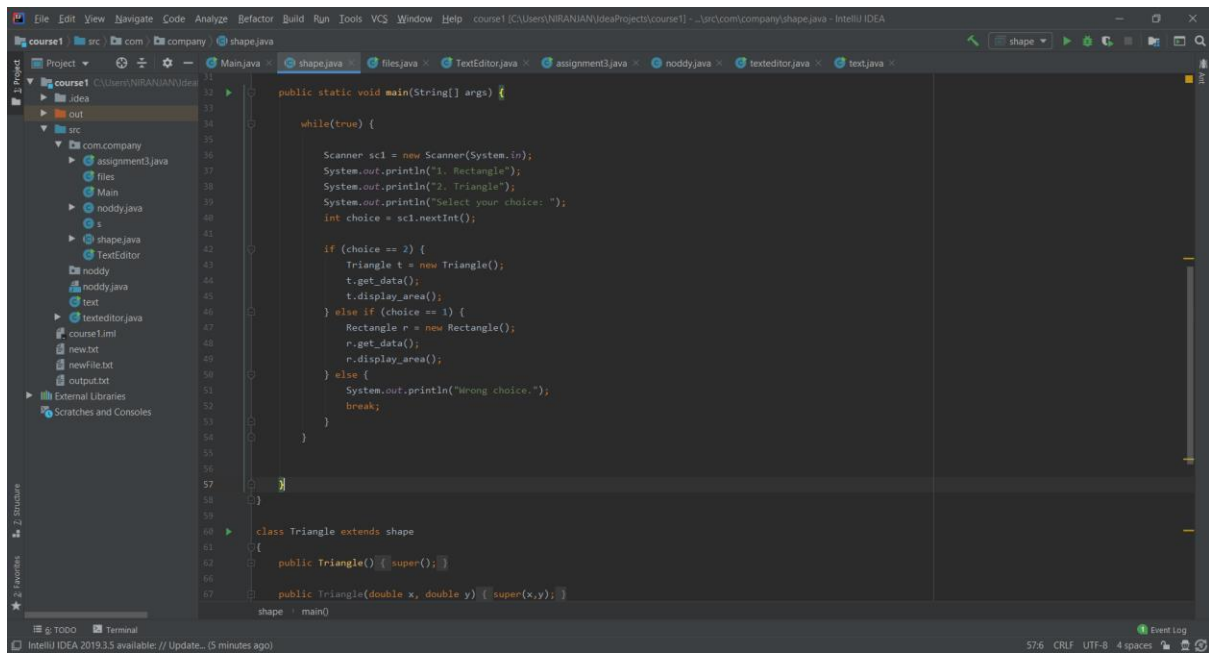
First user input x = [length for rectangle, base for triangle]

y = [breadth for rectangle, height for triangle]

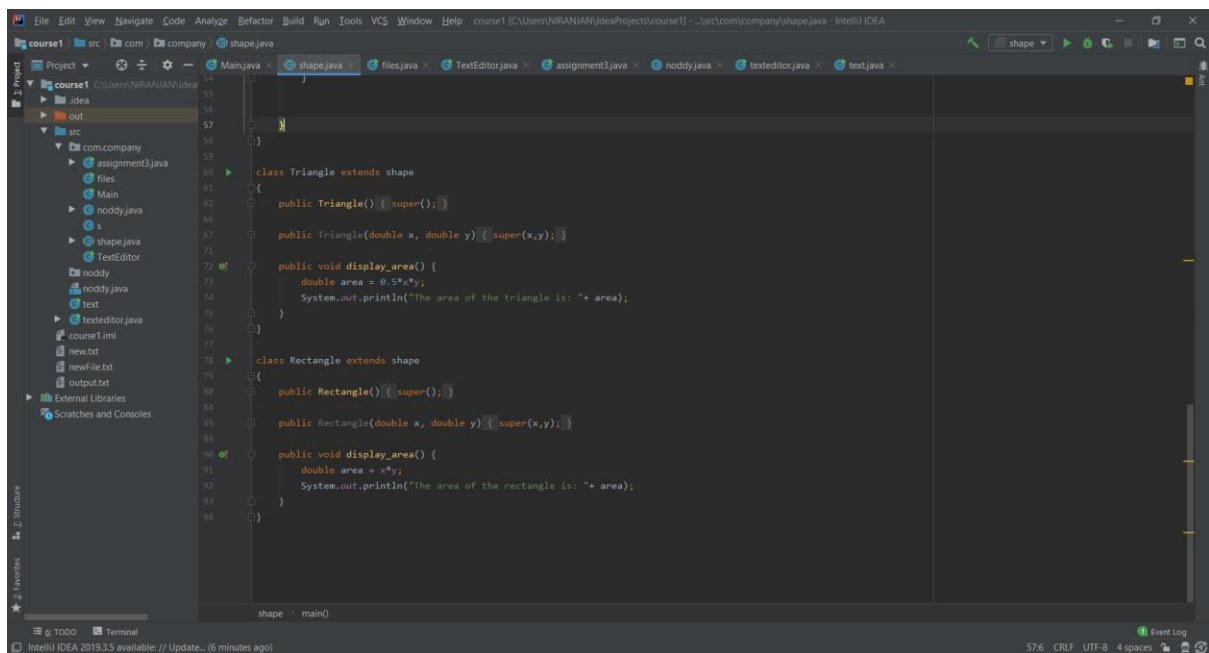
Code ->

A screenshot of an IDE window showing the code for Shape.java. The code defines an abstract class Shape with two double variables x and y. It includes a default constructor, a parameterized constructor, an abstract method display_area(), and a static main method that prompts the user for input and calls the get_data method. The IDE interface includes a project explorer on the left, a code editor in the center, and a terminal at the bottom.

```
1 package com.company;
2 import java.util.Scanner;
3
4 public abstract class shape // creating class shape
5 {
6     double x;
7     double y; // declaring the data members as double type
8
9     public shape() // default constructor
10    {
11        x=y=0.0;
12    }
13
14    public shape(double x, double y) // parameterised constructor
15    {
16        this.x = x;
17        this.y = y;
18    }
19
20    public void get_data()
21    {
22        System.out.println("Enter the input parameters: ");
23        Scanner sc = new Scanner(System.in);
24        System.out.println("Enter the first parameter: ");
25        x = sc.nextDouble();
26        System.out.println("Enter the second parameter: ");
27        y = sc.nextDouble();
28    }
29
30    public abstract void display_area();
31
32    public static void main(String[] args) {
33        while(true) {
34            shape main() {
35                // ...
36            }
37        }
38    }
39 }
```



```
public static void main(String[] args) {  
    while(true) {  
        Scanner sc1 = new Scanner(System.in);  
        System.out.println("1. Rectangle");  
        System.out.println("2. Triangle");  
        System.out.println("Select your choice: ");  
        int choice = sc1.nextInt();  
  
        if (choice == 2) {  
            Triangle t = new Triangle();  
            t.get_data();  
            t.display_area();  
        } else if (choice == 1) {  
            Rectangle r = new Rectangle();  
            r.get_data();  
            r.display_area();  
        } else {  
            System.out.println("Wrong choice.");  
            break;  
        }  
    }  
}  
  
class Triangle extends shape  
{  
    public Triangle() { super(); }  
    public Triangle(double x, double y) { super(x,y); }  
}
```



```
public void display_area() {  
    double area = 0.5*x*y;  
    System.out.println("The area of the triangle is: "+ area);  
}  
  
class Rectangle extends shape  
{  
    public Rectangle() { super(); }  
    public Rectangle(double x, double y) { super(x,y); }  
  
    public void display_area() {  
        double area = x*y;  
        System.out.println("The area of the rectangle is: "+ area);  
    }  
}
```

Output of the Following Program ->

1. Area of the Rectangle ->

```
Run: shape x
"C:\Program Files\Java\jdk-11.0.6\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ
1. Rectangle
2. Triangle
Select your choice:
1
Enter the input parameters:
Enter the first parameter:
12
Enter the second parameter:
13.45
The area of the rectangle is: 161.39999999999998
```

2. Area of Triangle ->

```
1. Rectangle
2. Triangle
Select your choice:
2
Enter the input parameters:
Enter the first parameter:
6.64
Enter the second parameter:
12.54
The area of the triangle is: 41.632799999999996
1. Rectangle
2. Triangle
Select your choice:
|
```