

Web Engineering Lab

Lab 03**Marks 100****Instructions**

Work on this quiz/lab individually.

You are **NOT** allowed to use internet, mobile phone.

You are **NOT** allowed to borrow anything from your peer student.

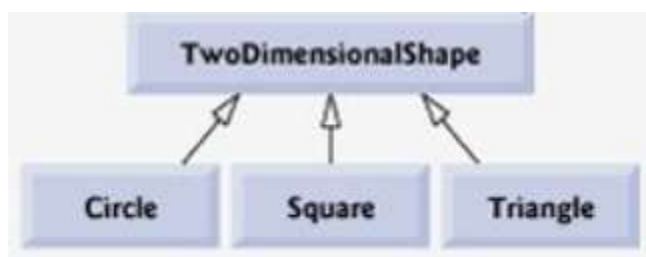
What you have to do

Program the following tasks. The name of your files will be according to the task given in this lab.

Lab timing: 02:00PM – 04:30PM

Task 1**[100]**

Implement the TwoDimensionalShape hierarchy as shown in the following figure.



Each TwoDimensionalShape should contain method `getArea` to calculate the area of the two-dimensional shape.

Write a `Driver` class that uses an **array of TwoDimensionalShape** references to objects of each concrete class in the hierarchy. The program should print a text description of the object to which each array element refers. Also, in the loop that processes all the shapes in the array, determine whether each shape is a `Circle`, `Square` or `Triangle`. Make a call to `area`, polymorphically.

Instructions:

- Area of a Circle: πr^2
- Area of a Square: a^2 (a is the side length of a square)
- Area of a Triangle: $\frac{1}{2} (\text{base} * \text{height})$
- You can use `instanceof` operator to determine the type of object e.g., `if(obj instanceof -----){}`
- You can override `String toString()` method in your respective class to print the text description of the object. This method will be invoked whenever you will print the object of that class. e.g., `System.out.println(obj);`
- Take input for all the required parameters (i.e., radius, side-length, etc.).

😊😊😊 **BEST OF LUCK** 😊😊😊