LAB211 Assignment

Type:	**Short Assignment**
Code:	**???**
LOC:	42
Slot(s):	**1**

Title

Create a program to calculate perimeter and area.

Background Context

Program Specifications

Create a program to calculate the perimeter and the area of a Circle, a Rectangle and a Triangle.

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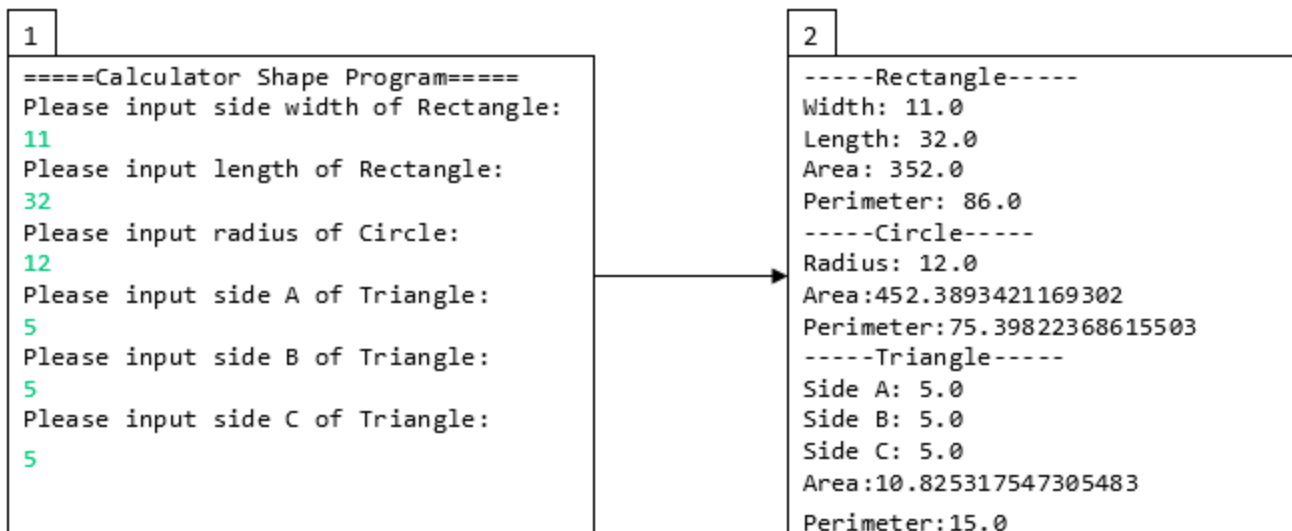
Function details:

Function 1: Display GUI And Input Data.

- Users run the program. The program prompts users for the input Data.
- Perform **Function 2**.

Function 2:

- The program calculates the area and the perimeter of the input circle, the rectangle and the triangle
- Display the information on the screen and Exit the program.

Expectation of User interface:

```
1
=====Calculator Shape Program=====
Please input side width of Rectangle:
11
Please input length of Rectangle:
32
Please input radius of Circle:
12
Please input side A of Triangle:
5
Please input side B of Triangle:
5
Please input side C of Triangle:
5
```

```
2
-----Rectangle-----
Width: 11.0
Length: 32.0
Area: 352.0
Perimeter: 86.0
-----Circle-----
Radius: 12.0
Area:452.3893421169302
Perimeter:75.39822368615503
-----Triangle-----
Side A: 5.0
Side B: 5.0
Side C: 5.0
Area:10.825317547305483
Perimeter:15.0
```

Hint:

- Create an abstract class Shape contains three methods printResult, getPerimeter and getArea.
- Create classes Triangle, Rectangle, Circle that extend from class Shape.

- Construct the shapes that consists the properties of a circle (radius), a rectangle (width, length), a triangle (sideA, sideB, sideC) and generate their getter and setter methods.
- Override the methods of the Shape class.
- Calculate the area of a triangle using the formula Heron:

$$S = \sqrt{p\,(p-a)\,(p-b)\,(p-c)}$$

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Use Math.sqrt()

- Calculate the area of a circle with Pi = Math.PI