

AP Computer Science Homework 16

Due date: Thursday, March 10, 2016

Instructor: Mr. Alwin Tareen

Part A: Calculating the Areas of Various Shapes

- A set of classes is used to calculate the area of various geometric shapes. The `Rectangle` class calculates the area of a rectangle and the `Circle` class calculates the area of a circle. To provide a standard functionality between the two classes, both classes implement the `Shape` interface.
- Write the complete class declaration for the class `Rectangle`.
 - Create an instance variable of type `double` named `length`.
 - Create an instance variable of type `double` named `width`.
 - Implement a constructor that takes two parameters that indicate the length and width of the rectangle.
 - Implement the method `getArea` using the following mathematical formula:

$$\text{area} = \text{length} \times \text{width}$$

- The complete implementation of the `Circle` class has been provided for you. I encourage you to read through this class to gain some valuable hints on how best to solve this assignment.
- When you run `CalculateAreaTest`, the output should look like the following:

```
Area of Rectangle = 200.0
Area of Circle = 78.53981633974483
```

- You are provided with the files `Shape.java`, `Rectangle.java`, `Circle.java`, `CalculateAreaTest.java` and `CalculateAreaJUnitTest.java` to develop this program.
- Write your solution in the `Rectangle.java` file. Do not alter any of the other files.
- Write your code in the areas indicated by `// YOUR CODE HERE`.
- Make sure to click the `Compile` button on the main project window, to compile all of the classes.
- On your BlueJ project window, you should see a button labelled `Run Tests`. Press this button to run the `JUnit` tests.
- You should see a `BlueJ: Test Results` window pop up. If everything is correct, you should see a green bar that indicates that your code has passed the `JUnit` tests. If your program is incorrect, you will see a red bar. You can click on the method name to get more information about the problem. Otherwise, just click on the `Close` button, and you can go ahead and upload this program to Web-CAT.

Part B: Submission

- Submit your Java program `Rectangle.java` by uploading them to the Web-CAT automated grading platform.