**Fall 2018 – CS 203 Object Oriented Design**

**Lab 03**

**Objective:**

* Learn how to use the Java Debugger.
* Learn concept of class and objects using Area class.

**Provided: Complex Class**

The Complex Class is provided that takes in the real and imaginary part of a complex number. The class contains methods for all the operations that can be done on a complex numbers like (assume n1= a + ib, n2 = c + id):

1. n1.add(n2) => (a + c) + i(b + d)
2. n1.subtract(n2) => (a – c) + i(b – d)
3. n1.multiply(n2) => (a \* c – b \* d) + i( a \* d + b \* c)
4. n1.divide(n2) => ((a\*c + b\*d)/(a\*a + b \* b)) + i((b\*c – a\*d)/(a\*a + b\*b))
5. abs(n1) => sqrt(a\*a + b\*b)

So, the expected output of the class for the following input n1 = 2 + i3, n2 = 2.001 + i3 are:

1. n1 + n2 = 4.001 + 6.000i
2. n1 – n2 = -0.001 + 0.000i
3. n1 \* n2 = -4.998 + 12.003i
4. n1 / n2 = 1.000 + 0.000i
5. abs(n1) = 3.606
6. c1 == c2 true for tolerance 0.001

But, the program doesn't seem to provide the correct output.

Please use the Eclipse debugger to trace the errors. Let the lab instructor know when you have finished.

**Provided: Area Class**

The Area Class is provided that takes in the dimentions part of different shapes. The class contains methods for calculate all the shapes like (Circle, Triangle, Square, Rectangle):

Methods:

* circleArea(double r) => Returns area of Circle
* triangleArea(…) => Returns area of Triangle
* squareArea(…) => Returns area of Square
* reatangleArea(…) => Returns area of Rectangle

The program doesn't seem to provide all math.

**Provided: AreaTester Class**

The AreaTester Class is provided that ask you to select shape. The class contains switch…case statements to give options of all the shapes like (Circle, Triangle, Square, Rectangle) and Exit:

This class also contains “while” loop to keep continue the program until user select “Exit” option.

The program doesn't seem to provide all objects.

And you are welcome to use debugger!!!