

CPSC 1181 - Lab 1 [35 marks]

Objectives:

- Follow step-by-step how programming instructions are executed when several methods are involved
- Develop a working knowledge of the Eclipse Debugger
- Familiarize yourself with the creation of unit tests and good Java documentation

Instructions:

- When you download a zip file with java files, extract all of the java files.
- Create a new project in Eclipse: File -> New -> Java Project. Name the project Lab1 and select finish.
- *Import the java files by clicking and dragging them into the **SRC** directory in your Lab1 Eclipse Project.* You will be asked if you wish to copy or link these files, *select copy.*
- Complete the exercises described below.

Submission

- Submit a zip file containing **only** Calculator.java and TestCalculator.java to D2L prior to the **due date set in D2L**.
- Submissions that are less than 24 hours late receive a 1% per hour late penalty. Submission that are more than 24 hours late will not be accepted.
- Submissions that are unzipped or that contain .class or other unneeded files will be penalized.

Exercise 1 [12 marks]

On D2L download the file Calculator.zip. Extract the file and import Calculator.java into Eclipse. Notice that the provided class has almost no documentation. Write the appropriate JavaDoc style documentation describing the purpose, input, and output of each method. **All files must contain the @author information for the class.** The TestCalculator and other test classes do not need method documentation.

Exercise 2 [23 marks]

In this exercise, you will write the unit tests to ensure that all of the methods of the class work correctly. Right click on your project and go down to Build Path -> Add Libraries. Select JUnit and hit Next. Make sure JUnit 4 or 5 is selected and hit Finish.

Open up the file TestCalculator.java. You will see a series of empty test cases. Each test case should be used to test one method from Calculator.java. You will see that testAdd has been started for you. Right click on TestCalculator -> Run As -> JUnit Test. You will see that currently these tests all pass.

Fill in the remaining test cases to ensure that all of the provided methods work as expected for different test cases. If your testing is done correctly, it should help you identify any methods that are incorrectly implemented.

Marks will be assigned as follows:

+2 marks each for testing subtract, multiply, divide, remainder

+3 marks each for testing average, standard deviation, median, min, max

Exercise 3 [10 marks]

- Fix the broken method(s) in the Calculator class. [5 marks]
- Ensure Calculator.java and TestCalculator.java have followed good coding style and conventions (see the style guidelines document in D2L and Appendix E at the back of the textbook). [5 marks]