CS2401 – Week 3

With this lab assignment, we are going to practice testing. This lab is designed in such a way that you should not need to spend much time (if any) outside the lab to complete it. We hope you enjoy this lab. Let's get started!

What is the goal of this lab?

We expect that, by the time you complete this lab you will be able to:

- Articulate why testing is important;
- Design and run tests from a main method, and report on the results; and
- Design and run tests using JUnit testing, and report on the results.

What do you have to do? You are given three tasks, described as follow:

Task 1. In a word document that you will name **YourLastName-YourFirstName-Week3.docx**, explain in 5 sentences max what testing code is about and why it is important.
Note that we will pay attention to the content (the ideas you share with us) and the form (spelling and grammar).

Task 2. You are given a java file, called TestWithMain.java, which contains two methods that need to be tested. You have to do the following:
1/ In your word document (see Task 1 for naming of this file), clearly describe the test suite (series of test cases) you design for each of the methods in TestWithMain.java (one test suite per method). Each test suite should contain at least 5 test cases. Each test case has to be justified: Why did you pick this test case and not another one? Imagine that you are limited by time and money about the number of test cases you can pick and run. Why would you run the test cases you propose? You have to be convincing. In particular, you have to address: WHAT each test case aims to test, and HOW you expect the method to run on this test case (what output do you expect?).
2/ In your file TestWithMain.java, write a main method that runs all test cases you have described in your word file.
3/ Run your test cases and report the results in your word document. In particular, you have to report whether the method behaves as expected or not on each test case, and propose an explanation in case the method does not behave as expected.

Task 3. You are given a java file, called TestWithJUnit.java, which contains two methods that need to be tested. You have to do the following:
1/ In your word document (see Task 1 for naming of this file), clearly describe the test suite (series of test cases) you design for each of the methods in TestWithJUnit.java (one test suite per method). Each test suite should contain at least 5 test cases. Each test case has to be justified: Why did you pick this test case and not another one? Imagine

you are limited by time and money about the number of test cases you can pick and run. Why would you make run the test cases you propose? You have to be convincing. In particular, you have to address: WHAT each test case aims to test, and HOW you expect the method to run on this test case (what output do you expect?).
2/ In a new java file, that you will call TestWithJUnitTester.java, write a JUnit test for each of the test cases you have described in your word file.
3/ Run your test cases and report the results in your word document. In particular, you have to report whether the method behaves as expected or not on each test case, and propose an explanation in case the method does not behave as expected.

Note: your test cases cannot include the examples given within the code.
Advice: when designing test cases, think:
1/ regular functionality test: does the code perform as expected under normal/expected circumstances?
2/ edge case: does the code still perform when under stress of its expected conditions?
You need to have at least one of the first type (maybe two depending on how complex the code is), and 3 or 4 of the second type.

What should you turn in?

You should submit 1/ your word document, 2/ TestWIthMain.java that you have completed, 3/ TestWithJUnit.java that you may or may not have modified, and 4/ the new file you created to run your JUnit tests: TestWithJUnitTester.java.

How should you submit your work?

You should follow the specific submission instructions and guidelines given by your own TA in lab.
Failing to follow submission instructions and guidelines given by your respective TA will result in up to 15 points off your overall grade in this lab. So please pay attention.
Additionally, your word file is expected to be neat and clear. Failing to do so will result in up to 15 points off. On the other hand, extra neat and clear work will be rewarded by up to 10 extra points.

By when should you submit your work?

Due date: Friday September 13 at 11:59pm
Lateness rule: -10 pts for 1 day of lateness / - 20 pts for 2 days of lateness / 0 after that, but you still have to turn in your work

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Grading:

10 pts Task 1
45 pts Task 2
20 pts Test suites
2 pts per well-motivated test case = 10 pts per test suite

20 pts Main method
Correct test cases: 2 pts per test case
5 pts Results report and analysis
45 pts Task 3
20 pts Test suites
2 pts per well-motivated and implemented test case = 10 pts per test suite
20 pts JUnit test cases
Correct test cases: 2 pts per test case
5 pts Results report and analysis