CSc 210: Software Development
Section 7: JUnit
October 16th, 2017

At the beginning of section, you heard your section leader discuss JUnit. We will now practice using JUnit via the terminal and an IDE called eclipse.

It is required you have JUnit installed on your computer to complete this section. The lab computers already have this software installed.

If you wish to use your own computer, you must install Junit. This requires downloading the package file and adding it to your classpath. A tutorial can be found here.

Running JUnit via the command line

1. First, we will use JUnit to test programs through the command line. Download the files Counter.java, CounterTest.java, junit.jar, and hamcrest.jar from the sections page on the course web site and place them in the same directory somewhere you can access on your computer. Open up the CounterTest.java file and familiarize yourself with the code. Try to figure out what it is doing.

2. Now, we will need to compile both the class file and the test file. To do this, run a command like so:

   ```
   javac -cp .:./junit.jar:./hamcrest.jar Counter.java CounterTest.java
   ```

   The -cp option on our compilation command is specifying the classpath to our Junit package which we need to compile. Note: this is assuming the two jar files you downloaded are in your current directory you are compiling in.

3. To actually run the JUnit tests found in the CounterTest file, we can now run the command

```
java -cp .:./junit.jar:./hamcrest.jar org.junit.runner.JUnitCore CounterTest
```

   This assumes the CounterTest.java file was successfully compiled and created a .class file in the last step.

This command should produce some output. There is an error in the Counter.java file causing it to fail one of the tests. Find and fix this error such that our program passes all JUnit tests.

4. Once you get this part working, implement a getCount() method in the Counter class that returns the current value of the counter. Additionally, write a JUnit test in CounterTest that makes sure it behaves as expected.

5. You have successfully run JUnit from the command line!

Running JUnit via Eclipse

1. We will now create and run some JUnit tests using the Eclipse IDE. If you are using a lab machine, go ahead and open eclipse. If not, install Eclipse IDE for java developers on your machine and open it.

2. Open eclipse and create a new project. You can do this by clicking File->New->Java Project. It will pop up a window and ask you for a project name. Call it "Section7" or something relevant. While inside of this project, create a new class file by clicking File->New->Class. A window will pop up and ask for a name. Call the class "MyQueue". This class implements a Queue, familiarize yourself with the code.

3. Next, you will create a test file. Click File->New->JUnit Test Case. Implement tests to confirm the functionality of the Queue class. When you are ready to run, click the Run JUnit Test button found close to the regular run button in eclipse.

4. Fix code accordingly to pass all JUnit tests. Once you have completed this, you are done.