Assignment 4

EECS 4313 3.0 Software Engineering Testing, Winter 2015

Due: Monday, April 6, 11:59pm.

Format: In groups of two.

Data Flow and Slice-Based Testing

The purpose of this assignment is to give you experience applying data flow and slice-based testing approaches. Your task will be to create a test suite in JUnit, produce bug reports (if any), and submit a written report describing your testing.

What to do

Using the development environment you created for Assignments 2 and 3, complete the following tasks:

1. Perform data flow analysis for one of the methods that you have tested. Calculate the value of the following coverage criteria:

   - All-Defs

   - All-Uses

   - All-P-Uses / Some-C-Uses

   - All-C-Uses / Some-P-Uses

   If necessary, add test cases to bring these values as close to 100% as possible.

2. Derive the slices for all A-defs and P-uses in the method. Calculate the percentage of slices that your testing covers. If necessary, add test cases to bring the percentage as close to 100% as possible.

3. If you believe that the additional test cases have revealed new bugs, create bug reports.

What to Submit

Before the deadline, submit electronically the test code package you created. To submit, navigate to the directory that contains the working directory (i.e. `eecs4313a4`), and give a command like the following:

`submit 4313 a4 eecs4313a4`

You also need to submit a written report. This report must include:

- The data flow analysis you performed and the calculation of the coverage metrics. You must show which test cases are responsible for which dc-paths.

- A description of the test cases you added to improve coverage. If your coverage was already high, discuss how your testing was able to achieve this.

- The slices that you identified and the percentage of slices that your testing covers. You must show which test cases are responsible for which slices.

- A description of the test cases you added to improve slice coverage. If your coverage was already high, discuss how your testing was able to achieve this.

- The bug reports you created.

- An appendix with the specification of the methods you are testing (copied from Assignment 2)

To submit your written report, give:

`submit 4313 a4 a4.pdf`

where `a4.pdf` is your report.

Presenting your thought processes in English is an important skill for a software professional. If you have trouble writing English, have somebody proof-read and correct your prose. You might find the services offered by The English as a Second Language Open Learning Centre useful: `http://www.yorku.ca/eslolc`