CSIS 658
Bowring
Spring 2016

Group Project and Final

1. Select a class with 5 to 10 methods from the Java code base to be your test subject.

2. Your goal is to develop, present, implement, evaluate, and report the results of a test plan that uses the various testing approaches and testing criteria that we have studied this semester to develop a set of test suites for the selected methods of the test subject including at least:

a. cfg node coverage
b. cfg edge coverage
c. cfg edge-pair coverage
d. cfg prime-path coverage
e. all-defs coverage
f. all-uses coverage
g. all-du-paths coverage
h. branch coverage

These tools will be helpful:
https://cs.gmu.edu:8443/offutt/coverage/GraphCoverage
https://cs.gmu.edu:8443/offutt/coverage/DFGraphCoverage1
http://codecover.org/index.html
http://cobertura.sourceforge.net/
Microsoft Visio for CFGs (see Dreamspark)
OR:https://www.maketecheasier.com/5-best-free-alternatives-to-microsoft-visio/

3. For each method, develop a test suite (set of test cases) that satisfies the criterion. If full coverage is infeasible, explain why. Instrument the program to demonstrate the coverage by your test suite in each case. Your program output should refer to the test case and show the coverage achieved by each test case. Illustrate your work with an appropriate graph. In addition, you should tabulate and present your results in the narrative. The reader should be able to easily determine the coverage provided by each test case and test suite.

4. Compare and contrast all the test suites. Discuss and explain the differences and similarities.

5. Propose and defend a minimal test suite that satisfies all the criteria.

6. In class report **Thursday, 28 April 2016 7:30-10:30PM**: demonstrate your work in class and summarize your results: 25-30 minutes. Be sure to be prepared for the hardware setup in the classroom.

7. Written report - this is your final. The report should be assembled in a professional manner with the bells and whistles of title, table of contents, references, software used, conclusions, etc. I expect a narrative explaining the assignment and the rationales for each of your decisions, including your choice of class and methods. Describe how you achieved coverage in each case as well as your successes and problems. Report the full results in easy-to-read formats. You may find faults in the code: if so, report and discuss.

Supply all instrumented code and test suites via a public GitHub.com repository so that I may run and evaluate them.

There will be many pages of details that should appear in appendices and then be referenced, summarized, and discussed in the text. I expect you to expand on these requirements in the interest of doing a complete job.

In addition to the team discussion and conclusions:

Each person will also supply a discussion and conclusions section that includes your personal lessons learned and your thoughts about how you will use your new skills in your career.

I request (optionally) that each person include a postscript describing how you would advise me to change this course in the future.

Deliverables:

Email one PDF named [lastname]_[lastname]_[lastname]_project.PDF to bowringj@cofc.edu, subject CSIS658 FINAL.

Deposit your instrumented code and test suites along with instructions into a public GitHub repository and send me the link.

Due date: Thursday, 28 April 2016 at 8:00 AM.