

## Homework 3, ECE 590 & CS320 Software Reliability

**Purpose:** To become familiar with the **coverage analysis tools**.

Select **a program** (maybe an assignment in ECE551) written with **a set of test cases** (test suite) that you had prepared/developed. It is better to choose a relatively large program.

Use the coverage analysis tools, to determine:

1. What fraction of all executable statements in your program is executed? (Statement coverage)
2. What fraction of all branches in your program are executed? (Branch coverage)
3. What fraction of all functions in your program are called? (Function coverage)

For 1, 2, and 3, if necessary, generate more test cases to have at least 90% coverage for each of the above metrics.

4. Identify parts of your code that are hard to cover and discuss why.

As for the coverage analysis tools:

If your program is in C/C++, please refer to “**gcov**”.

<https://gcc.gnu.org/onlinedocs/gcc/Gcov.html>

You may also try the “**lcov**” tool to visualize the “**gcov**” results.

<https://github.com/linux-test-project/lcov>

If your program is in python, please refer to “**Coverage.py**”.

<https://coverage.readthedocs.io/en/coverage-5.4/>

You may also choose other coverage analysis tools, but you must note down the reference to the tools and note down your test procedures.