

Course Experimentation

课程实验

Course Project (30%)

The way to learn software engineering is to go out there and do software engineering. --Fred Brooks

- A project: choose a real-world program and analyze/test it
 - Option 1: Choose a real-world program by yourself
 - Option 2: Choose the program from the course (grep)
- Work in a team (standard: ≤ 5 people) and need a team leader.
- Go through the whole project process
 - Program Selection
 - Implementation & Experimentation
 - Report writing
 - Project demo

Course Project (30%)

- Project outcomes
 - **Program (source) code**, test suite, testing script, etc.
 - **Project report.**
 - Intro of the project, design of test plan, implementation of your test plan, test coverage (statement coverage, branch coverage and beyond) and test results (the number of passing or failing test cases), etc.
 - **Project demo**
 - If this semester opens, face to face demo at the last experimental class;
 - Otherwise, demo video required.

Option 2: Choosing Project From Course

- Schedule
 - Download: QQ course group. More details can refer to <https://sir.csc.ncsu.edu/portal/index.php>.
 - Run all test cases already provided in grep
 - Compute the coverage of all test cases: statement coverage (mandatory but not enough for a good score), branch coverage (optional but beneficial for score evaluation) and more if you team is willing and awesome.

Option 2: Choosing Project From Course

- How to conduct the experiments
 - Step 1: Compile the source code with Gcov into the executable program.
e.g. `gcc -fprofile-arcs -ftest-coverage`
 - Step 2: Run all test cases and use Gcov to collect coverage.
e.g. `gcov source.c`
 - Step 3: Compare the output of a faulty version with that of the correct version to get the test results (passing or failing).
e.g. use `diff` command
- All the above steps can be written as a test script (a Shell file) to automatically run the test cases.