Test Code Coverage

CSE 2311 - Software Development Project

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When is testing done?

- Short answer: Never!

- A bit longer answer: When all features of the system have been tested with all possible inputs that could make a difference

- In practice, this is hard to determine

- Metrics such as code coverage can be used to give an idea of how sufficient the testing is

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Statement Code Coverage

- Observe the system as it is running

- Keep track of how many of the statements in the code were executed at least once

- Divide by the total number of statements in the system

- A comprehensive test suite is important

- Typically, it is hard to get high coverage. Anything above 70% is pretty good for a large system

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Problems with statement coverage

- A statement must be executed with different values for the relevant variables to be fully tested

- Loop bodies may need to be iterated many times to reveal issues

- Not all statements are equally important

- Only the true branch of an if statement may be executed but coverage may be 90% for the statement if the false branch is one tenth of the size

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Other kinds of coverage

- Segment coverage

- Branch coverage

- Multicondition coverage

- Loop coverage

- McCabe basis path coverage

- Dataflow coverage

- More in CSE 4313

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Software engineering guideline

- Low code coverage indicates that more testing must be done

- High code coverage gives little information about the quality of the testing

Let's see a demo (EclEmma)…

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