

Test Code Coverage

EECS 2311 - Software Development Project

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Second level

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F

Fifth level

Tuesday, March 7, 2017

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

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

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

Other kinds of coverage

- Segment coverage
- Branch coverage
- Multi-condition coverage
- Dataflow coverage
- More in EECS 4313

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)...

Lab Task

- Install EclEmma and calculate the coverage of your testing for the Player app
- Demonstrate your ability to calculate coverage in the lab
- Your final submission must discuss test code coverage (Testing document)

Our project

- The selected Player app and its file format will be available early next week
- In the meantime, we can start working on the Authoring app
- This is a desktop app that allows educators to create and save scenarios
- Its GUI must allow the user to customize the scenario as they see fit

To get started

- The Authoring must allow the user to specify audio files to be part of the scenario
- You will need to support two options
 1. Incorporate audio files that have been created with other apps
 2. Provide facility to record audio using the computer's built-in microphone

Next week I will expect...

- A first version of the Authoring app
- It should be able to record audio clips and store them on the disk
- It should have a GUI that allows the user to specify the different paths that the scenario will take