Testing

○ Black box vs White box Testing
○ Unit vs Integration Testing
○ Automated Regression Testing
○ Testing Documents and Coverage

Black box testing means choosing test cases only from the specification, not the implementation of the method.
White box testing (also called glass box testing means choosing test cases with knowledge of how the method is actually implemented.

Coverage

One way to judge a test suite is to ask how thoroughly it exercises the program, this notion is called ***coverage***.

There are three common kinds of coverage:
○ ***Statement coverage***: is every statement run by some test?
○ ***Branch coverage***: for every if or while statement in the program, are both the true and the false direction taken by some test case?
○ ***Path coverage***: is every possible combination of branches every path through the program taken by some test case?

path coverage > branch coverage > statement coverage

Unit Testing and Integration Testing

A test that tests an individual module, in isolation if possible, is called a ***unit test***.
The opposite of a unit test is an ***integration test***, which tests a combination of modules, or even the entire program.

stub (or mock object): set up a simulated environment for testing.

Automated Testing

Automated testing means running the tests and checking their results automatically.

Regression Testing

Running all your tests after every change is called ***regression testing***.

In-class Quiz

- Which of the following are good times to re-run all your JUnit tests?
- Select one or more:
  - ❑ after rewriting a correct method to make it faster
  - ❑ when using a code coverage tool
  - ❑ after an attempt to fix a bug
  - ❑ before submitting your code to LM Autograder