

CS239

Nathan Sprague

September 23, 2013

Testing Happens at Multiple Levels

- Unit Testing - Test individual classes in isolation.
 - Focus is on making sure that each method works according to specification.
- Integration Testing - Test the interaction between classes.
- Validation Testing - Test the entire system in context.

Different Perspectives

- Black-box testing
 - Develop tests on the basis of class specifications and documentation.
- White-box testing
 - Develop tests on the basis of implementation.
 - Aim for high “code coverage”.

Test-Driven Development

- Write tests first.
 - Helps clarify specifications.
 - Helps avoid mistakes in development.

Developing Test Cases

- To *guarantee* correctness, test every possible sequence of method calls, with every possible input value.
 - Usually not possible.
- Instead, look for boundary conditions
 - Test at the boundary and on either side.
- Also test erroneous inputs
- Let's think about an example...

Regression Testing

- Testing is not a one-time process.
- Ideally, unit tests are maintained along with the code.
- This makes it easier to change the code:
 - All tests can be run after every change.