Testing

1. Unit testing
   - Testing at the method level
   - Every method tested for correctness
   - In theory all methods tested
   - In practice ignore getters and setters
   - One part of regression testing

2. Role of Unit Testing in Extreme Programming (XP)
   - Write the tests before writing code
   - Makes refactoring trivial when done well (why?)

Unit Testing with JUnit

1. www.junit.org
   - Built into Eclipse with basic install
   - Related xunit packages for other languages
     • Cppunit and others
   - Developed by Kent Beck and Erich Gamma

2. Automate unit testing
   - Setup and teardown methods
   - Testing class methods to “go green”
   - Also meta tools to help write tests (see web)

Black box and White box testing: QA

1. Higher level than unit testing
2. Augment Unit Testing, can be both at class level, module level, ...
3. For black box testing
   - Based on specifications and requirements, not on knowledge of implementation
4. For white box testing
   - Knowledge of code and logic, can test code coverage: all paths, all code, ...

More Testing

1. Integration testing
   - When modules are combined, test integration
   - More system level than unit level

2. Performance testing
   - Synthetic and real workloads

3. Load/Stress tests
   - Average and high loads, stress system

4. Regression testing in general
   - Tests re-run after changes (see jUnit)