Reasoning about code:

• Assertions
• Invariants
• Pre- and post-conditions
  – Forward and backward reasoning
  – Finding the weakest precondition
• Hoare triples
• Loop development
• ex0, hw1, hw2
Specifications (vs. implementation)

• When does an implementation satisfy a specification
  – proving where applicable
• Stronger vs weaker specs.
  – Effect on client/implementer
• Javadoc -- requires, effects, modifies, etc.
• hw4, hw5
JavaDoc

- Knowing when and how to use
- hw5
Abstract Data Types (ADT’s)

• Abstraction vs. implementation/representation
• Representation Invariant
• Abstraction function
• Mutation & Advantage of immutable data
• Representation exposure
• hw4, hw5
Interfaces & Classes

• Specification
• Classes & Types
  – Coupling/Cohesion
• hw5
Testing

• JUnit basics
• Unit testing vs. other kinds
• Black box vs. white box
• Implementation vs. specification
• Revealing subdomains
• Boundary cases
• Coverage
• hw3, hw5, hw6
Exceptions and assertions

• Rationale behind exceptions
• Basic Uses
• Exception vs. assertions
• Checked vs. unchecked exceptions
Identity & Equality

• Reference equality
• hashCode() and equals()
Subtypes & Subclasses

• Subtype Substitution principle
• Composition VS Subclassing
Midterm topics

• Reasoning
• Specifications
• JavaDoc
• ADT’s
• Interfaces
• Class design
• Testing
• Exceptions & assertions
• Identity and Equality
• Subtypes & Subclasses