Topics

- Java and OOP
  - classes
  - static variables and methods vs. instances variables and methods
  - public and private
  - references vs. objects
- Inheritance
  - method overloading and overriding
  - variables of type T can refer to any object that is a subclass of T

Topics

- Queues and stacks
  - minimal set of operations
  - generic ADTs used in everyday life
  - different implementations possible
  - first introduction to interfaces
- Memory model
  - runtime stack, object space, static space
  - following local pointers and referencing the correct answer

Topics

- Linked data structures
  - a different use of references
  - linked list insert, delete
- interfaces, abstract classes and ADTs
  - Comparable, Iterator
  - difference between interface and abstract class
  - what is an ADT?
  - using interfaces to define an ADT

Topics

- Comments
  - general
  - preconditions
  - representation invariants
  - javadoc
- Exceptions
  - objects in Java
  - throws
  - throw, try, catch
- Trees
  - terminology
  - BST algorithms
- Recursion
• Proofs
  – Basic proof structures
  – Using induction to prove methods correct
• Complexity (Big O)
  – definition
  – Relationship between functions
  – How to analyze iterative code, and method calls.
• Merge Sort

About the Exam
• You may bring one 8.5x11 sheet, handwritten on both sides.
• Types of questions:
  – short answer: one word or a sentence or two
  – true/false (not too many)
  – Writing code
  – Tracing code (maybe with a memory model)
  – Writing a proof (or filling in a proof)
  – Designing a class or classes
  – Writing comments, preconditions, representation invariants, test cases

Exam strategy
• Studying:
  – practice rather than read
  – do old exams without looking at the solutions
  – go over assignments and labs
• Get a good night’s sleep!!
• Arrive with a positive attitude

At the exam
• Dress in layers – exam rooms are often warm
• Bring water, or something to drink
• No cell phones, pagers, or other electronic devices will be allowed on your desk (or in your ears), so bring an old-fashioned watch.
• Check the number of questions and flip through the exam first.
• Start with an easy question.
• If you get stuck on a question move on.
• Read carefully!
• Time management is crucial!!