

Midterm 1 Study Guide

Handout 6
CSCI 136: Spring 2014
5 March

Your midterm will be designed to take 90 minutes to complete. The exam will be given during lab on **Wednesday, March 12th**, and it will be closed book. The exam will **start at 1pm**. The exam will be given in **TCL 123 (Wege)**.

You are responsible for anything we covered in class or in lab through **Monday, March 10th**, and everything in the assigned reading from *Java Structures*, up to and including Lists and Lab 4. Be sure you know how to do the assigned pre- and post-lab thought questions and programs.

The following list covers many of the topics we have touched on:

- Java syntax, as we have used it in our programming assignments.
- Classes, interfaces.
- Java memory management. What is allocated (and how) when regular variables, arrays, and classes are created?
- Information hiding (abstraction) and why it's good.
- Extending classes with inheritance.
- Pre- and post-conditions, and assertions.
- Vector, its implementation in the `structure5` package, and its methods.
- Complexity: Big "O" definition. Determining the asymptotic behavior of mathematical functions. Determining the time and space complexity for a given algorithm. Worst, average, and best case analysis.
- Linear and binary search.
- Recursion and induction. (There is at least one proof by induction on exam.)
- Sorting. Bubble sort, selection sort, insertion sort, merge sort, quicksort. Using `Comparators` for sorting.
- Singly linked lists. (We'll cover on Monday. You should read the book before then.)