Topics for the CSCI 151 Final Exam
Monday, May 10
Java and Programming Techniques

• Types
• Inheritance
• Generics
• Abstract classes and interfaces
• Exceptions
• Recursion
• Writing recursive methods
• Dynamic Programming
B. Data Structures

- ArrayLists
- Linked Structures, especially singly and doubly linked lists
- Stacks
- Queues
- Binary Search Trees
- AVL trees
- Heaps and Priority Queues
- Hashing, Hash Tables, and Hash Maps
- Graphs
Algorithms

- Big-Oh etc. notation  Upper bounds and lower bounds
- Algorithm analysis
- BubbleSort, SelectionSort, InsertionSort
- Lower bound for sorting
- MergeSort, QuickSort, HeapSort
- Insert, Search, and Remove algorithms for each of our data structures
- Shortest Path algorithms for a directed graph
- Topological Sort for a directed graph
For each data structure you should know how it is implemented, how it works, what it is good for, and Big-O estimates of the running times of its methods.

There will not be any LONG programs to write, but you will likely be asked to write some code, just as on our midterm exams.

In general I am more interested in whether you know how our data structures work and how they can be used than whether you can code their methods during the exam.