Topics for the CSCI 151 Final Exam
Saturday, December 12
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.