Topics for the CSCI 151 Final Exam
Thursday, January 20
The final exam is scheduled for Thursday January 20 from 2 to 4 pm.

It can be remote or in-person. You can take the final in King 106 from 2 to 4 (or 2 to 5 if you have accommodations for extra time). I will also email it to the entire class a little before 2PM on January 20. You can print the exam and write on it, or you can write your solutions in a text editor. Because there may be people taking the exam on a different continent, you can start the exam up to 12 hours after you receive it. But unless you have time accommodations you only have 2 hours to do the exam and you should send me your solutions as soon as you finish it. I expect to receive your solutions before noon on Friday, January 21.
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 notation
- 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.