

MA/CSSE 473 Winter 2017 Final exam specification (Last updated Feb 16, 2017)

Resources allowed:

1. Calculator (not a smart phone, iPod, etc. that happens to have a calculator).
 - a. The only necessary operations are +, *, -, /, exponentiation.
2. (Optional) one 8.5" x 11" sheet of paper with handwritten notes on one side.
 - a. **Must be written on a page that I will give you in class later this week.**

My goal is to write an exam that more than half of the class will finish in *120-150* minutes, but you will have the entire four hours if you need it. It will be comprehensive. The things that were not in the specs for the previous exams will account for a disproportionately high percentage of the credit on the exam (probably 30-45%), since I have not had the opportunity to test you on that material yet.

Material Covered

- **Everything on the specifications for Exams 1, 2, and 3.**
- **HW 0 - HW 14** (including the "not to turn in" problems)
 - You can ignore the problems in HW 15-17
- **Assigned readings** from Chapters 1-9, 11.1-11.3, 11.3, 12.1 from the textbook, as well as documents posted on Moodle that are listed on the Schedule page, and material from PowerPoint slides and class notes for sessions.
- **More details below** on specific algorithms you should know.

Question types: See the previous exam specifications. There may be a problem or two that take more thought than on the previous exams, since you will have more time to think about them.

Do you know the details of this algorithm? Some questions will be checking to see whether you know and understand the details of specific algorithms. Here are examples of algorithms that you should be able to explain and discuss the results of what happens when they are implemented with specific input data. These are in addition to the algorithms from previous exams.

Examples

- The examples from the previous exam specifications
- Optimal Binary Search Trees
- File compression and Huffman codes
- Prim's Algorithm for finding a MST (L 9.1)
- Kruskal Algorithm for finding a MST (L 9.2)
- Analysis of running time and proofs that these algorithms work.
- Disjoint sets and union-find problem (L 9.2)
- Skiplist insertion and deletion
- OO non-attacking queens

Concepts, definitions, etc.

- Concepts that appeared on previous exam specifications
- What is a greedy algorithm? (L 9.intro)