MA/CSSE 473 Winter 2017 Exam 2 specification (Last updated January 9, 2017)

Resources allowed:

1. No other electronic devices, including calculators, phones, MP3 players, anything with headphones or earbuds.
2. No internet connection.
3. No books or papers.

Material Covered

- **Background material from 230:**
  Recursion and mathematical induction.
  Writing and solving simple recurrence relations,
  analysis of nested loops as in Weiss chapter 5 and its exercises.
  Sequential and binary search.
  Well-known sorting methods: Insertion, selection, merge, quick, heap.
  Binary tree traversals: preorder, inorder, postorder, level order.
  Formal definitions of O(N), Θ(N), etc.
- **HW 6A - HW 8** (including the "not to turn in" problems)
- **Textbook reading:**
  Sections
  3.5 [5.2],
  4.1 [5.1],
  4.2-4.5 [5.3-5.6, 4.3],
  5.1-5.2 [4.1-4.2],
  5.3-5.5 [4.4-4.6]
- **Material from Lectures:** Days 8-18.
  In particular:
  DFS, BFS, topological sort
  Interpolation Search
  Permutation Generation:
  recursive minimal change,
  Johnson-Trotter,
  lexicographic
  Subset generation – Including Binary-reflected Gray Code
  Towers of Hanoi
  Closest Pair – divide-and-conquer algorithms
  QuickHull
  Shell's Sort
  Strassen's matrix multiplication algorithm