MA/CSSE 473 Winter 2017 Exam 3 specification (Last updated January 24, 2017)

Resources allowed:

1. Calculator
2. No other electronic devices, including calculators, phones, MP3 players, anything with headphones or earbuds.
3. No internet connection.
4. 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 8 - HW 11** (including the "not to turn in" problems)

- **Textbook reading:**
  Sections
  4.5 [5.6]
  5.3 [4.4]
  6.1-6.6
  7.1-7.4
- **Material from Lectures:** Days 18-26.
  In particular:
  Binary Trees, including the four standard traversals
  AVL Trees
  2-3 Trees
  B-Trees
  Presorting
  Gaussian Elimination
  Heaps and Priority Queues
  Heapsort
  Shell's Sort
  Horner's Rule
  Problem reduction (including LCM and path-counting)
  Nim
  Sorting by counting
  Horspool and Boyer-Moore string search algorithms
  Hash table implementation
  B-trees (analysis, not algorithms for insertion)
  Josephus problem