Review Topics for Final Exam

I. Be familiar with all the topics for Midterm Review.

II. Study the concepts and definitions, as well as, the time complexity and functionalities of operations (inserting, deleting, searching, and so on) when using:
   a. Binary Tree
   b. Binary Search Trees
   c. Heaps.

III. Study the algorithm for breadth-first (level-order) traversal through a binary tree.

IV. Study the depth-first traversal algorithms (pre-order, in-order, post-order) for stepping and searching through binary trees.

V. Know the key differences between the data structures we have studied: arrays, array lists, singly linked lists, doubly linked lists, sets, maps, stacks, queues, binary trees and binary search trees, heaps, and graphs. When would one be a better choice than another?

VI. Study the definitions and concepts of hashing (Appendix E)

VII. Study the algorithms and big-oh performance of common sorting algorithms, including bubble sort, insertion sort, selection sort, merge sort, and quicksort.

VIII. Be familiar with recursion, especially in the context of sorting, backtracking (e.g., N Queens), and traversing recursive data structures.

IX. Study all the chapters in our class schedule: Appendix E, Chapter 8, Chapters 9.2 and 9.3, Chapters 10 to 13, and Chapter 15

X. At the end of each of the chapters there is a section called “Self-Review Questions”. It is a good idea, after finishing each chapter, that you answer those questions to test your knowledge. All the questions are answered in the same section, so first give your own answers and then double check to see if yours were accurate.