ITEC324
Study Guide of the Final Exam

The final exam is a comprehensive exam. Thus, you must check the study guidelines of the exam 1 and the exam 2 as well as the following items.

Chapter 8. Binary Trees

1. Define terms given in web page (eg node, tree, binary tree, leaf, root, ...)
2. Define a Binary Search Tree.
3. Execute the following operation in a binary search tree.
    1. add a node
    2. delete a node with no child
    3. delete a node with one child
    4. delete a node with two children

Chapter 11. Heaps

1. Define and recognize a heap, represented either in array or tree
2. Perform trickle up and trickle down in a tree/array
3. Write a source code of trickleUp method and trickledown method using an array data.
4. Simulate removing largest (smallest) element from a heap
5. Simulate creating a heap from an array, showing tree transformation
6. Simulate inserting into heap
7. heapsort
    - simulate in an array
    - state and explain performance
    - describe relation to selection sort
8. Code for insert, remove, trickle up/down, reheapify, heapsort

Chapter 12. Hash tables

1. Operations: list and simulate insert, search (successful and unsuccessful), delete
2. State and explain average case performance of operations under uniform hashing assumption
3. Explain motivation for hash tables and contrast their performance with other lookup methods
4. Define Collisions
5. Open addressing:

    - Define and trace operation of 3 kinds (Practice the following operations using an example with an array.)

1. linear probing
2. quadratic probing
3. doubling hashing
9. Separate chaining
   - Define and trace operations