CSCI 313

Topics On Final Exam

General Information:
Study all data structures and homeworks. Be prepared for algorithms and implementations.
AVL Implementation and Quick Sort are not on final.

Final exam(35 points):

1. Data structure implementation (10 – 15 points)
2. Runtime analysis (5 – 6 points)
3. Tree graphs and traversal (3 - 5 points)
4. Algorithm steps (3 – 5 points)
5. Applications of data structure (5 - 10 points)

Some important topics:

1. Be able to implement LinkedList class:
   1) SinglyLinkedList
   2) DoublyLinkedList

2. Implementation of Stack and Queue using different approaches.

3. Implementation of HashMap using Separate Chaining and Open Addressing

4. Trees:
   1) Implementation of Binary Search Tree.
   2) Search, Add, remove algorithms of BinarySearch Tree and AVL Tree.
   3) Be able to draw graphs of Trees.
   4) Traversals of tree:inorder, preorder, postorder and level order. Algorithms and implementations.

5. Insert, remove algorithms of MaxHeap and MinHeap. Be able to implement MaxHeap and MinHeap class.

6. Runtime Analysis and Master Theorem.

7. **Applications of data structures. (**i.e. reverse linked list, valid parentheses, find middle node of singlyLinkedList, implement queue using stack, implement stack using queue, count frequency, height of tree node. Depth of tree node ……..)