CSC 210 WEEK 8 TEST STUDY GUIDE

PROFESSOR GODFREY C MUGANDA

This test will cover material on binary trees, heap sort, and graphs.

1. Binary Trees

Definition of binary trees and binary search trees. Be able to write code for doing operations on binary trees and binary search trees: traversal methods, counting leaves, determining the number of nodes at a specific level in the tree, determining the height of a tree, determining the level of a particular value in the tree, determining the minimum and maximum values in a binary search tree, and adding new values to a binary search tree.

You should be able to write code to remove the largest value in a binary search tree.

2. Heaps and Heap Sort

Definition of a heap, definition of a complete binary tree, how to store a heap in an array and determine the positions of the parent, left child, and right child of a value at a specific position in the array, how to code the sift up and sift down operations.

3. Graphs

Definition of graphs, adjacency matrices and adjacency lists, depth first traversal and breadth first traversal methods. You need to know how to write code to build adjacency lists from data entered in a file (similar to the homework project), and how how to write code to depth first search and breadth first search.

Recursive version of depth first search.

Applications of breadth first search and depth first search, directed acyclic graphs (DAG) and topological sort of DAGs.