316 : Data Structures

Mid-Term Exam Study Guide

(10/21/2020, closed book and closed notes.)

Algorithm Analysis

- How do we compare algorithms?
- Big-O notation

Unsorted and Sorted Lists

- Very good knowledge of the Unsorted/Sorted list specification and implementation using arrays and linked-lists.
- Implementation details (e.g., insert at the end/front of the list for unsorted lists implemented using arrays/linked-lists).
- Running times for all the functions of the Unsorted and Sorted List implementations.

Stacks and Queues

- Very good knowledge of the Stack/Queue specification and implementation using arrays and linked-lists.
- Implementation details (e.g., using "front" and "rear" to determine whether the queue is empty or full).
- Running times for all the functions of the Stack and Queue implementations.

Recursion

- What is recursion?
- How do we implement a recursive function?
- Iterative solutions vs. recursive solutions (trade-offs).

Binary Trees

- Binary search tree property.
- Very good knowledge of the Binary Search Tree specification and implementation.
- Inserting/Deleting nodes.
- Binary Tree traversals: inorder, preorder, postorder, and level-order

Binary Search Tree

- Binary search tree property.
- Inserting/Deleting nodes regarding Binary search tree --Running times are important.

Heap

- Heap property.
- Inserting/Deleting nodes --Running times are important.
- Constructing a Heap
- Heapsort

General Comments

Make sure you that you go over the examples we did in class and the quizzes on Brightspace.