

# Midterm Study Guide

## CSE 326: Data Structures

### Autumn 2006

Midterm Exam, Friday, October 27, 2006

- Exam policies
  - Closed book, closed notes, closed calculators. (All calculations can be expressed as formulas.)
  - The exam begins promptly at 11:30.
- Topics covered
  - Linked lists. Simple linked lists, doubly linked lists, circularly linked lists.
  - Stacks and Queues, array and list implementations.
  - Recursion. Designing algorithms recursively.
  - Asymptotic analysis, Big-O. Worst case, upper bound, lower bound, analyzing loops, recurrences, amortized complexity.
  - Trees – definitions
  - Binary Heaps, D-heaps - Findmin, Deletemin, Insert. Additional operations of increase, decrease, buildheap.
  - Leftist Heaps and Skew Heaps - Findmin, Deletemin, Insert. Additional operations of merge, increase, decrease
  - Binomial Queues - Findmin, Deletemin, Insert. Additional operations of merge, increase, decrease.
  - Dictionary ADT
  - Binary search trees – Inorder, preorder, postorder traversals, insert, delete, find.
  - AVL trees - Single and double rotations, insert, find.
  - B-trees – properties, insert, find.
- Study suggestions
  - Do concrete problems from the book and re-work problems from lecture, section, and HW #1. Suggestions of more problems from the book: Chapter 2: 2.6, 2.10. Chapter 3: 3.21, 3.22, 3.23 (a). Chapter 4: 4.1, 4.2, 4.8, 4.9, 4.22, 4.27, 4.28. Chapter 6: 6.2, 6.3, 6.26, 6.30.
  - Practice all the operations in binary heaps, leftist, binomial queues, binary search trees, AVL trees, B-trees. Practice analysis of algorithms.
  - All material from lecture up through B-trees is fair game. This material corresponds to: Chapters: 1, 2, 3, 4, and 6.