

Midterm Exam Study Guide

1 Linked List (Chapter 17)

- implementation of insert/delete
- double vs. singly linked lists

2 Iterators

3 Algorithm Analysis (Chapter 5)

- O , Ω , Θ
- Asymptotic analysis, ordering of functions as $n \leftarrow \infty$
- finding running time of algorithms
- logarithms

4 Recursion (Chapter 7)

- Basic recursion
- base case
- inductive hypothesis
- Divide & Conquer
- Solving run-time recurrences
- pitfalls of recursion
- memoization
- dynamic programming
- backtracking

5 Sorting (Chapter 8)

- - Bubble Sort
 - Selection Sort
 - Insertion Sort

– MergeSort

– QuickSort

- worst case, best case, avg case
- picking the pivot
- lower-bound for comparison based sort

6 Stacks and Queues (Chapter 16)

- array implementation
- linked list implementation

7 Trees (Chapter 18)

- Structure/definition
- depth, height, size
- parent, child, ancestor, descendent, sibling
- leaf
- path length
- first child/next sibling storage
- binary trees
- implementation of size, height
- traversals (pre-order, in-order, post-order, level-order) and (sequential and recursive) implementations