

# Exam#1 Study Guide

## Chapter 2:

- (1) Describe and analyze algorithms.
- (2) Examine two algorithms for sorting: insertion sort and merge.
- (3) Describe algorithms in Pseudocode.
- (4) Use asymptotic notation to express running time analysis.
- (5) Examine two algorithms for searching: Linear search, Binary search. ( from the exercises )

## Chapter 3:

- (1) Asymptotic analysis.
- (2) Describe growth of functions.
- (3) Focus on what's important by abstracting away low- order terms and constant factors.
- (4) How we indicate running times of algorithms.
- (5) A way to compare size of functions:
  - Big O notation
  - Big  $\Omega$  notation
  - Big  $\Theta$  notation

## Chapter 4:

- (1) Divide and conquer paradigm.
- (2) Recurrences.
- (3) Analyzing divide and conquer algorithms
- (4) Examine two divide and conquer algorithms: Maximum subarray and matrix multiplication.
- (5) Solve recurrences using one of the three methods: substitution, recursion tree ,and master theorem.

## Chapter 6:

- (1) Heap Sort.
- (2) Max heap property
- (3) Examine three algorithms: Max Heapify, build max heap, heap sort.