Final Exam Study Guide

Questions may be more than simply asking for information, and instead may require critical thinking applying the concepts taught in the course. The exam will be over topics covered in the second half of the course.

Section 3.4 – Hash Tables

- Basics of a hash table. Hashing function, collisions, table size determination
- Methods to handle collisions: Separate chaining and linear probing

Section 4.1 – Undirected Graphs

- Terminology
- Representing graphs in code: Set-of-edges, adjacency matrix, adjacency list
- Breadth first search and depth first search

Section 4.2 – Directed Graphs

- Terminology
- Representing directed graphs in code
- Reachability, searches, topographical sort and DAGs

Section 4.3 – Minimum Spanning Tree

- What it is, how to tell if something is an MST, and uses
- Kruskal's algorithm
- Prim's algorithm

Section 4.4 – Shortest Paths

- What it is
- Dijkstra's algorithm
- Shortest path on Acyclic edge-weighted digraphs-easier, how?
- Bellman-Ford algorithm, how is it different from Dijkstra's algorithm

Section 5.5 – Data Compression (mainly about PA4)

- Basic concepts of data compression
- Huffman codes

P vs. NP

- P and NP problems: what defines them and how do they differ?
- NP-Complete problems