Summer 2003 CMSC 451 Instructor: Ken Hennacy

Midterm II Study Sheet

Emphasis is on Greedy Algorithms and Graphs: Formulation, Application, Performance with far less emphasis on writing psuedocode (meaning at most 1 problem requiring psuedocode) than on the first exam.

1. Greedy Algorithms
    a. Activity Selection Problem
    b. Huffman Code
    c. Fractional Knapsack Problem
    d. Dijkstra's Algorithm
    e. Kruskal's Algorithm
    f. Prim's Algorithm

2. Graph Concepts & Algorithms
    a. Breadth First Search
    b. Depth First Search
    c. Topological Sort
    d. Strongly Connected Components
    e. DAG

3. Weighted Graphs
    a. Single Source Shortest Paths
    b. Bellman-Ford Algorithm
    c. Topological Sorted DAG Algorithm

4. Performance and Proofs
    a. Correctness of Greedy Algorithm (Huffman code example)
    b. Correctness of Graph Algorithms (Chapt 22)
    c. Performance of various Algorithms : T(n) and Size(n)
    d. Minimal Spanning Tree (Generic Algorithm Proof)

Points to consider:

1. What assumptions are built into the algorithms (if any) ?
2. What information does each algorithm require (generate) ?
3. Why do greedy algorithms perform better than dynamic programming solutions? Under what circumstances do greedy algorithms fail?