Week 5
The Greedy Approach

INFSCI 2591

Spring 2023

Learning Objectives

- Describe the greedy programming technique
- Contrast the greedy and dynamic programming approaches to solving problems
- Identify when greedy programming should be used to solve a problem
- Prove/disprove greedy algorithm produces optimal solution
- Solve optimization problems using the greedy approach

Reading Materials

- Chapter 4
  - Sections 4.1, 4.2, 4.4

Minimum Spanning Trees

- Prim's algorithm
  - Algorithm 4.1 (pages 160-161)
  - Analysis of Algorithm 4.1: Every-Case Time Complexity (Prim's Algorithm) (pages 161-162)
- Kruskal's algorithm
  - Algorithm 4.2 (page 166)
  - Analysis of Algorithm 4.2: Worst-Case Time Complexity (Kruskal's Algorithm) (pages 166-167)

Dijkstra's Algorithm

- Algorithm 4.3 (pages 170-172)

Huffman Code

- Huffman's Algorithm (pages 185-187)