CSCI 311 - Fall 2026:
Exam 2 Study Guide

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Learning Goals

This is an outline of the things you have learned so far. Problems on the exam will reference these, showing why these problems were selected to test your knowledge. This outline is not complete–at a minimum, material from quizzes, homeworks, and recitations may also appear.

1. From Exam 1:
   (a) Background & Definitions
   (b) Proof Techniques
   (c) Algorithmic Analysis
   (d) Divide & Conquer
   (e) Dynamic Programming
2. Greedy Algorithms
   (a) Examples: Activity Selection, Fractional Knapsack, Binary Character Encoding, Huffman Codes, Scheduling with Deadlines
   (b) Outline for Correctness Proofs
   (c) Requirements: Optimal Substructure, Greedy Choice Property
3. Huffman Encoding
4. Data Structures
   (a) Abstract Data Types
   (b) Data Structure Definition
   (c) Trees
      i. Tree Representations
      ii. Binary Search Trees
      iii. Red-Black Tree Overview
      iv. B-Trees