Overview of All Topics Covered in Slides

Stable Matching

Propose and reject. (Came up on Midterm)

Algorithm

Proof.

Man-optimality. Is propose and reject biased?

Matching residents to hospitals. Multiple residents per hospital.

Divide and Conquer

Find Max/Min

Towers of Hanoi

Merge Sort. (Came up on Midterm)

Recurrence Relations

T(n) = aT(n/b) + d1(n) + d2(n)

Binary Search

Strassen’s Matrix Multiplication

Dynamic Programming

Matrix Chain Multiplication

Optimal Polygon Triangulation

Longest Common Subsequence

Optimal Binary Search Tree

Traveling Salesman. (Came up on Midterm)

Greedy

Exam Scheduling

Chromatic Number

Activity Selection

Problem 1: Maximum mutually compatible jobs.

Problem 2: Minimum number of auditoriums to process all jobs.

Problem 3: How do you distribute the jobs to processors such that the cost is minimized. (Came up on Midterm)

Job scheduling

Problem 1: Is there a feasible schedule for jobs given execution times and deadlines

Problem 2: Find maximum profit of jobs given execution times, deadlines, and profits

Minimum Spanning Tree

Design least cost network for communication between cities.

Kruskal’s algorithm.

Network Flow X

Max Flow Computation

Ford Fulkerson Method

Min Cuts (Came up on Quiz 2)

Forward Labeling, etc.

NP Completeness

P = NP, two definitions of P and NP.

3SAT

3 Dimensional Matching

Vertex Cover -> NP complete, proof by 3SAT being NP complete

Hamiltonian Circuit

Clique

Partition

Approximation Algorithms

ε-approximation

How to find job schedule with minimized makespan