CS 758/858: Algorithms

Problems

http://www.cs.unh.edu/~ruml/cs758

Some Problems

Dynamic Programming

1. optimal substructure: global optimum uses optimal solutions of subproblems
2. ordering over subproblems: solve 'smallest' first, build 'larger' from them
3. 'overlapping' subproblems: polynomial number of subproblems, each possibly used multiple times
4. independent subproblems: optimal solution of one subproblem doesn't affect optimality of another

- top-down: memoization
- bottom-up: compute table, then recover solution

Greedy

Make best *local* choice, then solve remaining subproblem.

Eg, optimal solution uses the greedy choice $+$ optimal solution to remaining subproblem.

Unlike DP, haven't already solved subproblems, don't need to pick 'best' subsolution to use.

Problems

- longest increasing subsequence
- interval covering
- stack of boxes
- largest rectangle under the skyline
- edit distance (insertion, deletion, substitution)

Break

- schedule: no class next Tue

- midterm

- asst 7

- asst 8 posted and recommended

EOLQs

For example:

- What's still confusing?
- What question didn't you get to ask today?
- What would you like to hear more about?

Please write down your most pressing question about algorithms and put it in the box on your way out.
Thanks!