

Dynamic Programming and Greedy: Summary

Examples (in lectures, labs and homeworks)

Dynamic programming:

- Fibonacci
- Playing a board game
- Rod cutting
- Robbing a house
- Knapsack
- Pharmacist
- Taking a quiz
- Skis and skiers
- String shuffling
- Subset sum
- Unbounded knapsack
- Longest increasing subsequence
- LCS: longest common subsequence

Greedy:

- Activity selection
- Fractional knapsack
- A different pharmacist problem (all bottles have same cost)
- Skis and skiers (when $n = m$)
- Guarding a museum

Congratulations, that's a lot of problems!!! Go through this list and reflect on how the principle of dynamic programming (and greedy, respectively) was instantiated for each one of these problems. Each problem is different but the principle is the same. Check out the summary sheets posted (knapsack-summary, rod-summary, and lcs-summary) and the python notebooks to step through these algorithms. Close your notes, and try to solve any one of these problems. You have grown a lot in your problem solving skills!