

Lecture 35

CSE 331

Nov 28, 2016

Quiz 2 next Monday

☰ note ★stop following **7** views

Quiz 2 in two weeks

A gentle reminder that quiz 2 will be in class on **Monday, December 5** from **1-1:10pm**.

The first two questions will be T/F without justification (so like two from Q1 on sample final- [@735](#)) and the third question will be T/F with justification (so like one from Q2 on sample final- [@735](#)).

#pin

quiz2

edit · good note | 0Updated 14 minutes ago by Atri Rudra

Comments on Feedback

note ☆

stop following

118 views

Actions ▾

Comments on feedback

Thanks for everyone who have feedback ([@627](#)). Over the course of this week, I will address/respond to some of the feedback (both the quantitative ones and the written comments).



In some cases I will be able to incorporate your comments this year. For others, it might not be but I will at least present you my rationale for for why not.

To being with here is the overall response:

I will pin this post and over the course of the week, I will link to separate posts that had more comments on various sections on the feedback:

1. Homeworks ([@759](#))
2. Lectures ([@760](#))
3. TAs ([@761](#))
4. Exams ([@762](#))
5. Overall comments ([@763](#))

Official Feedback forms

 note  1 views

Actions ▾

Incentive for filling in the course evaluations

You must have received an email about filling the course evaluation forms. I believe this is the link:

<https://buffalo.campuslabs.com/courseeval/>

Taking a leaf out of Geoff's playbook, here is my offer to incentivize you guys filling in the course evaluation form:

- If **at least 85%** of you fill in the course evaluation form, then I will release one T/F (without justification) question on the final exam (which corresponds to Q1(a): see @735 for the format).
- If **at least 95%** of you fill in the course evaluation form, then I will release one T/F (without justification) question and one T/F (with justification) question (corresponding to Q1(a) and Q2(a) respectively: see @735 for the format).

Of course if $< 85\%$ of you fill in the course eval form, then no question gets released. The current percentage of you who have filled in the course evals is **3%** (so a bit to go). I will post weekly updates on the response rate.

Course Evaluations

 Active

11 Days Remaining
Ends 12/8/2016 at 11:59 PM EST

 Results

Available 12/25/2016 at 11:59 PM EST

 28%

Response Rate

 175

Enrolled Students

CS Ed week (Dec 5)

We need
volunteers!

We need
demos!

Celebrate
CSEDWEEK

with the Department of Computer
Science and Engineering at UB:
Children K-12 are invited to:

KID'S DAY

Monday, Dec. 5 | Davis Hall, UB

**HANDS-ON ACTIVITIES, LIVE
DEMOS, ROBOTS & MORE!**

When to use Dynamic Programming

There are polynomially many sub-problems

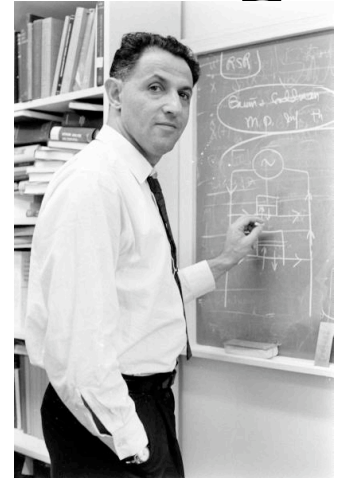
$$\text{OPT}(1), \dots, \text{OPT}(n)$$

Optimal solution can be computed from solutions to sub-problems

$$\text{OPT}(j) = \max \{ v_j + \text{OPT}(p(j)), \text{OPT}(j-1) \}$$

There is an ordering among sub-problem that allows for iterative solution

$$\text{OPT}(j) \text{ only depends on } \text{OPT}(j-1), \dots, \text{OPT}(1)$$



Richard Bellman

Scheduling to min idle cycles

n jobs, i^{th} job takes w_i cycles

You have W cycles on the cloud



What is the maximum number of jobs you can schedule?

Subset sum problem

Input: n integers w_1, w_2, \dots, w_n

bound W

Output: subset S of $[n]$ such that

(1) sum of w_i for all i in S is at most W

(2) $w(S)$ is maximized

Recursive formula

$\text{OPT}(j, W')$ = max value out of w_1, \dots, w_j with bound W'

If $w_j > W'$

$$\text{OPT}(j, W') = \text{OPT}(j-1, W')$$

else

$$\text{OPT}(j, W') = \max \{ \text{OPT}(j-1, W'), w_j + \text{OPT}(j-1, W' - w_j) \}$$

Today's agenda

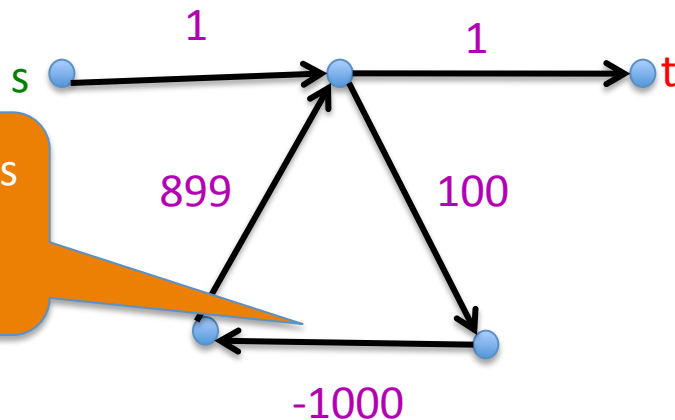
Dynamic Program for Subset Sum problem

Shortest Path Problem

Input: (Directed) Graph $G=(V,E)$ and for every edge e has a cost c_e (can be <0)

t in V

Output: Shortest path from every s to t



Shortest path has cost negative infinity

Assume that G has no negative cycle

May the Bellman force be with you

