Lecture 35

CSE 331

Nov 27, 2017

Quiz 2 next Monday

note ☆

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Actions

Quiz 2 on December 4

A gentle reminder that quiz 2 will be in class on **Monday, December 4** from **1-1:10pm**. (This is the Monday in last week of class.)

The first two questions will be T/F without justification (so like two from Q1 on sample final- @842) and the third question will be T/F with justification (so like one from Q2 on sample final- @842 but with the modification below).

Based on the suggestion in @806, the T/F with justification question will be of the following format:

- You will be given a correct statement and will be asked to justify it (2 points)
- Then you will be given a variant of the correct statement and will be asked to say whether this statement if True or False and you will need to prove justification for your claim.
  - Correct T/F will be worth 1 points and the justification will be worth 3 points.
  - Incorrect T/F will get 0 out of 4 irrespective of the justification.

You can bring in **two** 8.5" X 11" review sheets (you can use all four sides).

#pin

quiz2

edit · good note | 0

Updated 3 days ago by Atri Rudra

Final exam post

note ☆ stop following 65 views Actions

Final exam post

I'll start off with some generic comments:

- The final exam will be based on all the material we will see in class till the lecture on Monday Dec 4 (i.e. up to the P vs NP stuff).
- The lecture on Wednesday, Dec 6 will (partly) be a Q & A session (where you can ask any 331 related questions)-- stay tuned for more details.
- Exam will be from **noon to 2:30** on Friday, **Dec 15** in class (**NSC 225**). Note that the exam will be for 2.5 hours and *not 3* hours as it says on HUB.

Next are comments related to **preparing for the finals**:

1. Take a look at the sample final (@842) and spend some quality time solving it. Unlike the homeworks, it might be better to try to do this on your own. Unlike the sample mid-term, this one is an actual 331 final exam so in addition to the format, you can also gauge how hard the final exam is going to be (your final exam will be the same ballpark). However as with the sample mid-term, you make deduction about the coverage of topics at your own peril (but see points below). Once you have spent time, on it on your own, take a look at the sample final solutions (@842).
2. Stay tuned for more information on extra OHs (during the finals week).
3. Attend the Q&A session (Wednesday, Dec 6) in class.
4. The actual final will have the same format as the sample final: The first question will be T/F, 2nd will be T/F with justification, the rest of the three will be longer questions and will ask you to design algorithms (parts of them might be just analyzing an algorithm.)
5. For the T/F questions (i.e. the first two questions), anything that was covered in class is fair game. If you want to refresh your memory on what was covered, take a look at the schedule page. If you want quick summaries of (almost all) the lectures, review

Official Feedback forms

note

stop following 61 views

Actions

Incentive for filling in the course evaluations

You must have received an email (or should be receiving an email shortly) about filling the course evaluation forms. I believe this is the link:

https://www.smartevals.com/login.aspx?s=buffalo

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 @842 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 @842 for the format).

Of course if < 85% of you fill in the course eval form, then no question gets released. I will post weekly updates on the response rate.

(Also to clarify: the % is only for students who are still registered in the course and have not resigned, which is an even 200.)

Couple of requests:

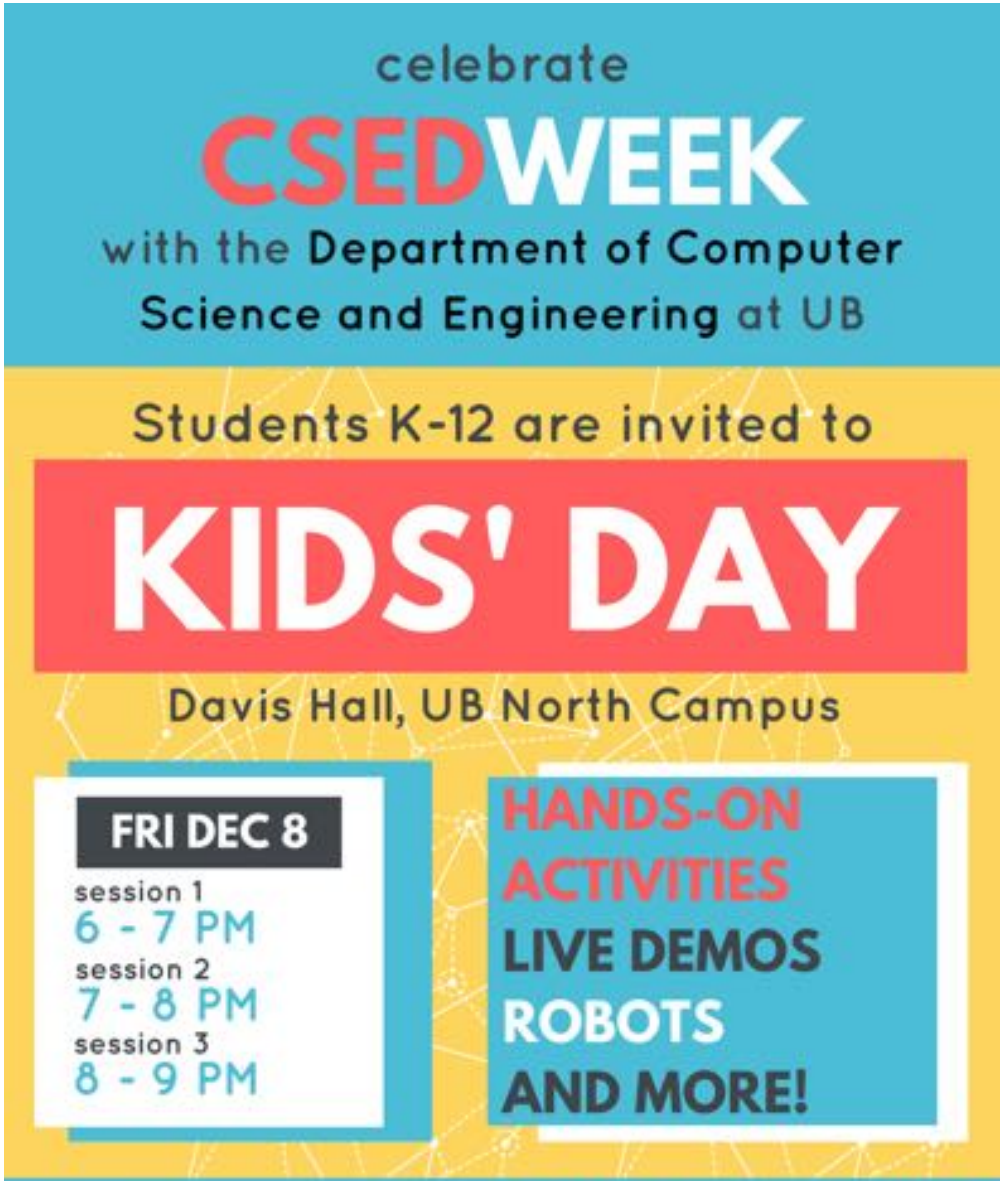
- Please do let me know (via comments in the course evals) what you think I could do to improve CSE 331 for future students;
- Please let me know what worked well (or not) for you on the support material (including but not limited to walkthrough videos, lecture videos, notations for lectures) on the CSE 331 webpage.

FA 2017	2179_10751_Y	CSE	331LR		Intro to Algorithms	LEC	200	21	179	10 %	11/24/17	12/10/17

CS Ed week (Dec 5)

We need volunteers!

We need demos!



When to use Dynamic Programming

Richard Bellman

There are polynomially many sub-problems

$OPT(1), \ldots, OPT(n)$

Optimal solution can be computed from solutions to sub-problems

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

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

$OPT\ (j)$ only depends on $OPT(j-1), \ldots, OPT(1)$

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 $w_1, w_2, \ldots, w_n$

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

$OPT(j, B)$ = max value out of $w_1,..,w_j$ with bound B

If $w_j > W'$

$OPT(j, B) = OPT(j-1, B)$

else

$OPT(j, B) = \max \{ OPT(j-1, B), w_j + OPT(j-1, B-w_j) \}$

Today's agenda

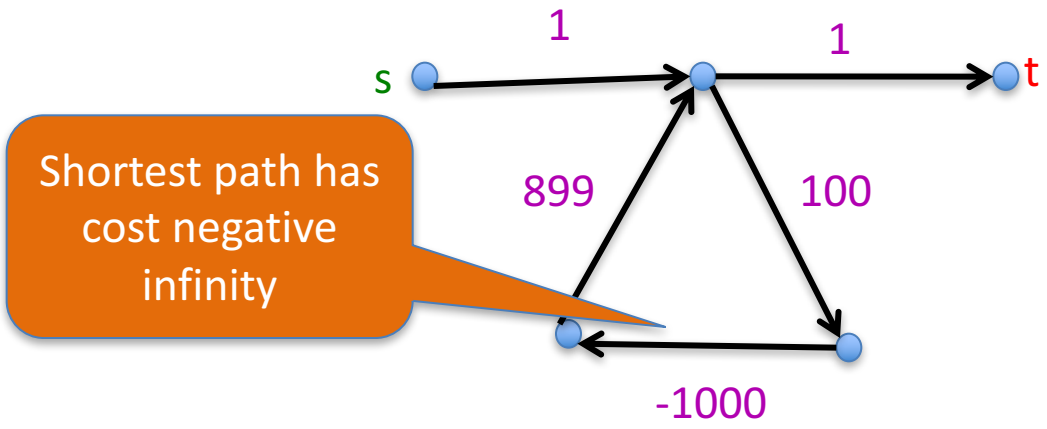
Dynamic Program for Subset Sum problem

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



Assume that G has no negative cycle

May the Bellman force be with you