Lecture 37

CSE 331

Dec 3, 2018

Quiz 2

1:00-1:10pm

Lecture starts at 1:15pm

Final Reminder

note ☆ stop following **144 views**

Incentive for filling in course evals

As I have done in the past few years, depending on the level of response on the official course evals, I will release come questions on the final exam. (See @975 to see what Q I mean below)

- If **>=85%** students submit the course evals, I will release **Q1(a)**
- If **>=90%** students submit the course evals, I will release **Q1(a) AND Q2(a)**

Some other relevant comments:

- I will post the current response rate in the comments section below every 3 days till the deadline
- The % is based on current student registered (236): i.e. it does not include students who have resigned
- I believe this is the link to the course evals: https://sunyub.smartevals.com/
    - But double check the email you might have received on this.

#pin

feedback

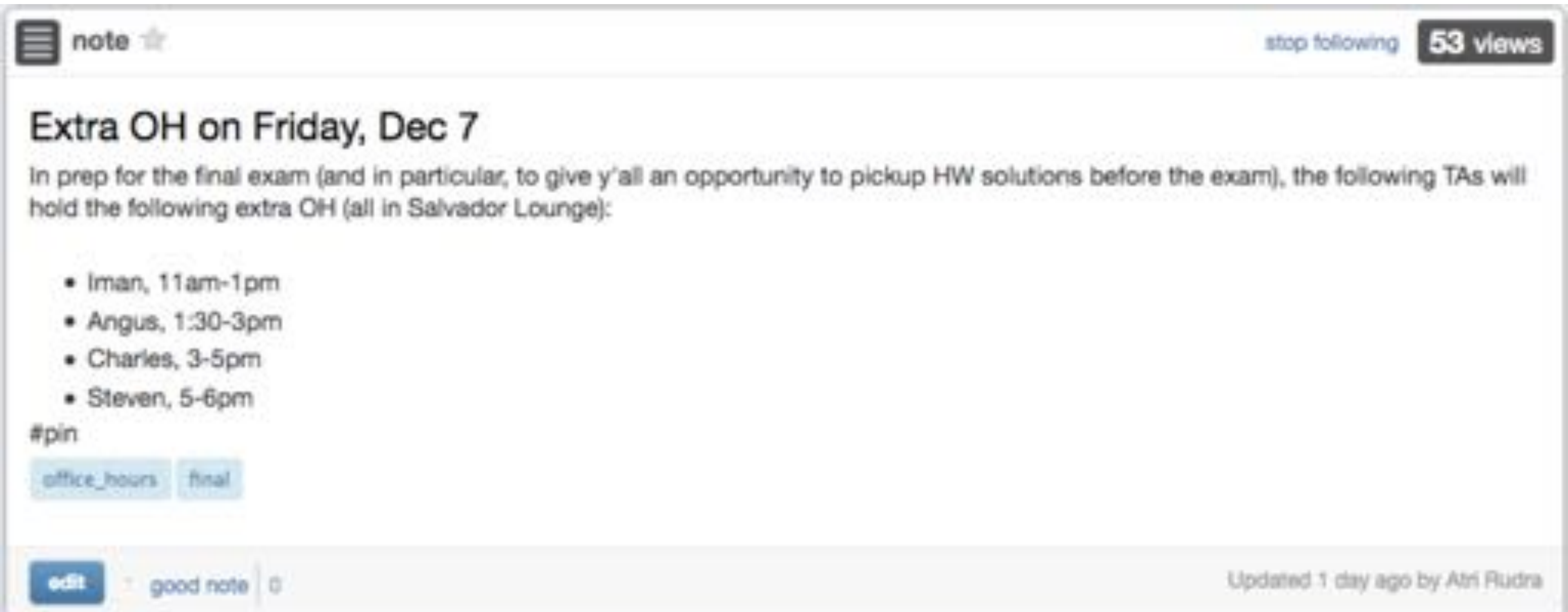
edit · good note | 1 Updated 6 days ago by Atri Rudra

No quiz discussion on piazza

till Noon

Review sessions/extra OH

Friday lecture will be a Q&A session


note

stop following

53 views

Extra OH on Friday, Dec 7

In prep for the final exam (and in particular, to give y'all an opportunity to pickup HW solutions before the exam), the following TAs will hold the following extra OH (all in Salvador Lounge):

- Iman, 11am-1pm
- Angus, 1:30-3pm
- Charles, 3-5pm
- Steven, 5-6pm

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office_hours final

edit | good note | 0

Updated 1 day ago by Atri Rudra

HWs 6-9 solutions

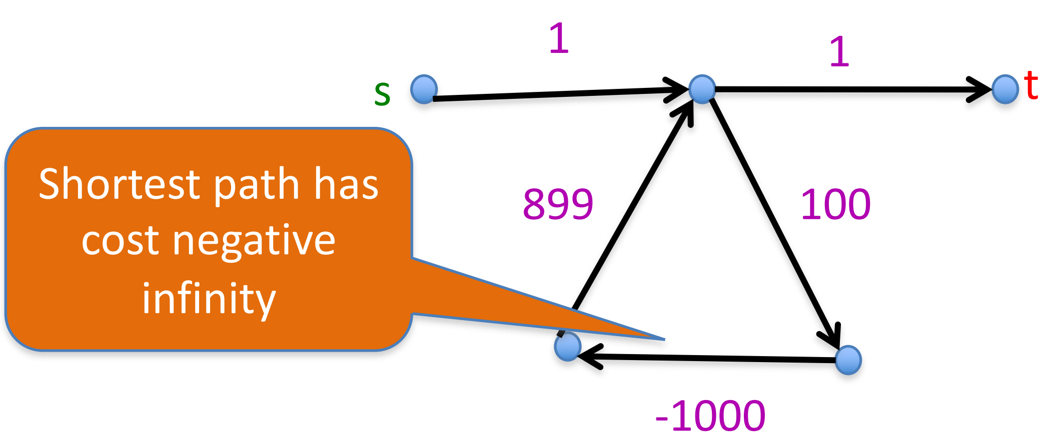
At the end of the lecture

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

When to use Dynamic Programming

Richard Bellman

There are polynomially many sub-problems

Optimal solution can be computed from solutions to sub-problems

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

Sub-problems

OPT(u,i) = cost of shortest path from u to t with at most i edges

Today’s agenda

Finish Bellman-Ford algorithm

Analyze the run time

The recurrence

$OPT(u,i)$ = shortest path from u to t with at most i edges

$$OPT(u,i) = \min \{ OPT(u,i-1), \min_{(u,w) \text{ in } E} \{ c_{u,w} + OPT(w, i-1) \} \}$$

Some consequences

OPT(u,i) = cost of shortest path from u to t with at most i edges

$$\mathrm{OPT}(u,i) = \min \{ \mathrm{OPT}(u, i-1), \min_{(u,w) \text{ in } E} \{ c_{u,w} + \mathrm{OPT}(w,i-1) \} \}$$

OPT(u,n-1) is shortest path cost between u and t

Group talk time:
How to compute the shortest path between s and t given all OPT(u,i) values