

Lecture 24

CSE 331

Oct 29, 2018

Mini Project video due in 1 week

note ☆ stop following **142** views

You can submit mini project reports now

You can now submit your mini project videos now. It is due in a bit over 2 weeks: by 11:59pm on Mon, Nov 5.

The [mini-project page](#) has all the details on what is needed in the submission.

Some important points:

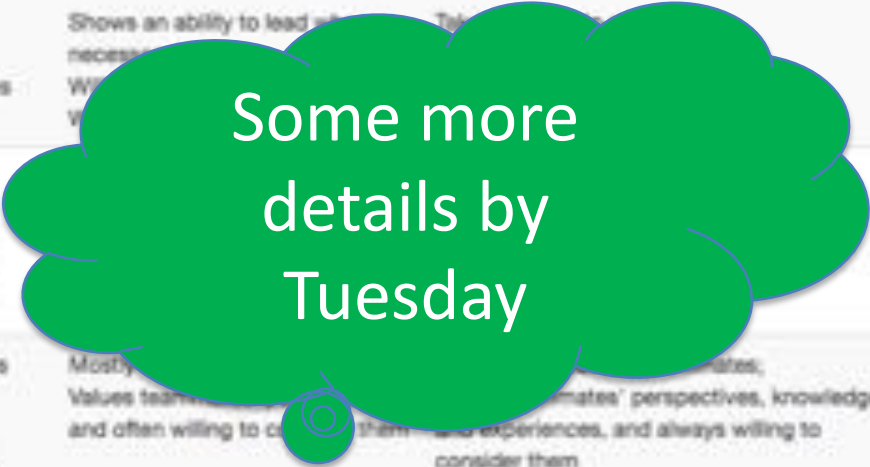
- Please make sure you read through the instructions/requirements carefully.
 - Till last year there used to be an intermediate report stage where I could give some preliminary feedback so that y'all could avoid some of the common mistakes in the video. Y'all do not have the luxury, so please make sure you read through the page very very carefully.
- This is a **group submission**. Please see the instructions at the end of this post.
 - Main thing: do **NOT** submit your report till your group is formed.
- **Check on your group**. We are getting close to the resign date. Unfortunately, some students will drop-- so make sure you check with your group mates to see if they'll be around.
 - If your group-mate(s) drop out, then it is OK for you to continue with a smaller group.
 - Even a group of size 1 is OK if you're fine with it. But if not AND if you give me enough notice, I can try and re-assign

Peer Evaluation Survey

Survey

Each group member will fill in a survey rating their own and their other group member's contribution to the mini project under the categories of team role, leadership, participation, professionalism and quality of work (on scale of 0 – 3 on each). These scores will then be used to divide the team's points so that individual students' survey grades reflect how well they contributed to the overall result. The table below explains what the different numerical values for various categories mean.

Category	0 points (Unsatisfactory)	1 points (Developing)	2 points (Satisfactory)	3 points (Exemplary)
Role	Does not willingly assume team roles; Rarely completes assigned work	Usually accepts assigned team roles; Occasionally completes assigned work	Accepts assigned team roles; Mostly completes assigned work	Accepts all assigned team roles; Always completes assigned work
Leadership	Rarely takes leadership role; Does not collaborate; Sometime willing to assist teammates	Occasionally shows leadership; Mostly collaborates; Generally willing to assist teammates	Shows an ability to lead when necessary; Willing to assist teammates	Takes leadership role when necessary; Always collaborates; Always willing to assist teammates
Participation	Often misses meetings; Routinely unprepared for meetings; Rarely participates in meetings and does not share ideas	Occasionally misses or does not participate in meetings; Somewhat prepared for meetings; Offers unclear or unhelpful ideas in meetings	Participates in meetings; Prepared for meetings; Offers helpful ideas in meetings	Always participates in meetings; Always prepared for meetings; Always offers helpful ideas in meetings
Professionalism	Often discourteous and/or openly critical of teammates; Does not want to listen to any alternate perspectives	Not always considerate or courteous towards teammates; Usually appreciates teammates' perspectives, but often unwilling to consider them	Mostly considerate and courteous towards teammates; Values teammates' perspectives, knowledge, and often willing to consider them	Always considerate and courteous towards teammates; Always values teammates' perspectives, knowledge, and experiences, and always willing to consider them
Quality	Rarely contributes to preparing and making of the video; Others often required to revise, debug, or fix their work	Occasionally contributes to preparing and making of the video; Others sometimes needed to revise, debug, or fix their work	Often contributes to preparing and making of the video; Others occasionally needed to revise, debug, or fix their work	Frequently contributes to preparing and making of the video; Others rarely needed to revise, debug, or fix their work



Submitting the survey

HW 5 grading delayed (more)

New plan to get it done by tonight

Re-grade deadlines

note ☆ stop following 127 views

Re-grading requests have to be in within a week

We have not been enforcing the following rule for re-grading requests (as laid out in the [HW policy document](#)):

All re-grading requests have to be sent by email to the grader within A WEEK of the hw/exam/quiz being handed out (on Autolab).

Given that we are now in the business end of the course, **we will enforce this** for every graded stuff that will handout starting with mid-term 1.

*For HWs 1-4 and quiz 1 that have already been handed out, if you have a re-grade request you have to **get them in by Friday, Nov 2**. After this deadline will not take in any re-grade requests for HWs 1-4 and Quiz 1.*

As usual, please follow the re-grading procedure ([@339](#)) in case you have such a request.

#pin

grading

edit good note 1 Updated 4 days ago by Atri Rudra

Mid-term temp grades

note ☆

2 views

Mid-term temp grade

(For details on grading of mid-term exam, see [@707](#) and [@720](#). More details on one-on-one meetings to talk about your 331 performance is forthcoming.)

Your temp letter grades have been assigned. To calculate your grade, you must first calculate your raw score R as follows:

- Add up your HW scores from HW1-4 to calculate H (out of a max of 400)
 - You need to do the following modification for each HW score. If you got Q_1 , Q_2 and Q_3 points on questions 1, 2 and 3 respectively in a HW, then your HW score should be
$$Q_1 + 20 + \max\left(\frac{Q_2-10}{35}, \frac{Q_3-10}{15}\right) \cdot 35 + \min\left(\frac{Q_2-10}{35}, \frac{Q_3-10}{15}\right) \cdot 15.$$
(See the comments at the end of the post for a justification of this weird formula but this essentially gives you more points if you did better on Q3 part (b) than Q2 part (b)).
- Let Q be your quiz 1 score (out of a max of 10)
- Let M be your mid-term score (out of a max of 100).

Then R is calculated as follows (out of a maximum possible of 59):

$$R = \frac{31}{400} \cdot H + Q \cdot \frac{3}{10} + \frac{M}{4}.$$

(I know the above does not fully follow the grading rubric since it does not drop any HW score and does not substitute the quiz score with the HW score if you better on the latter. However, since this is just supposed to give you an idea of where you stand in the course, I think the above is fine as a proxy.)

One-on-one meeting slots

note ☆

20 views

Meetings to discuss CSE 331 performance

I will email those who have a D or below in their mid-term grade (for more details on the grade see @736). Of course you can also come and talk about your 331 performance even if you have a temp grade higher than D (though students with a D or below will get preference).

I have locked out certain times over next week or so for 10 mins meetings. Please note that **these are NOT walk-ins**: if no one signs up for a slot, I might not be in my office then. If you want to come and talk with me, **please EMAIL me with ALL the slots below that work for you**. (Private posts on piazza will not work: please email me!) Slots will be assigned on a *first-come-first-serve* basis.

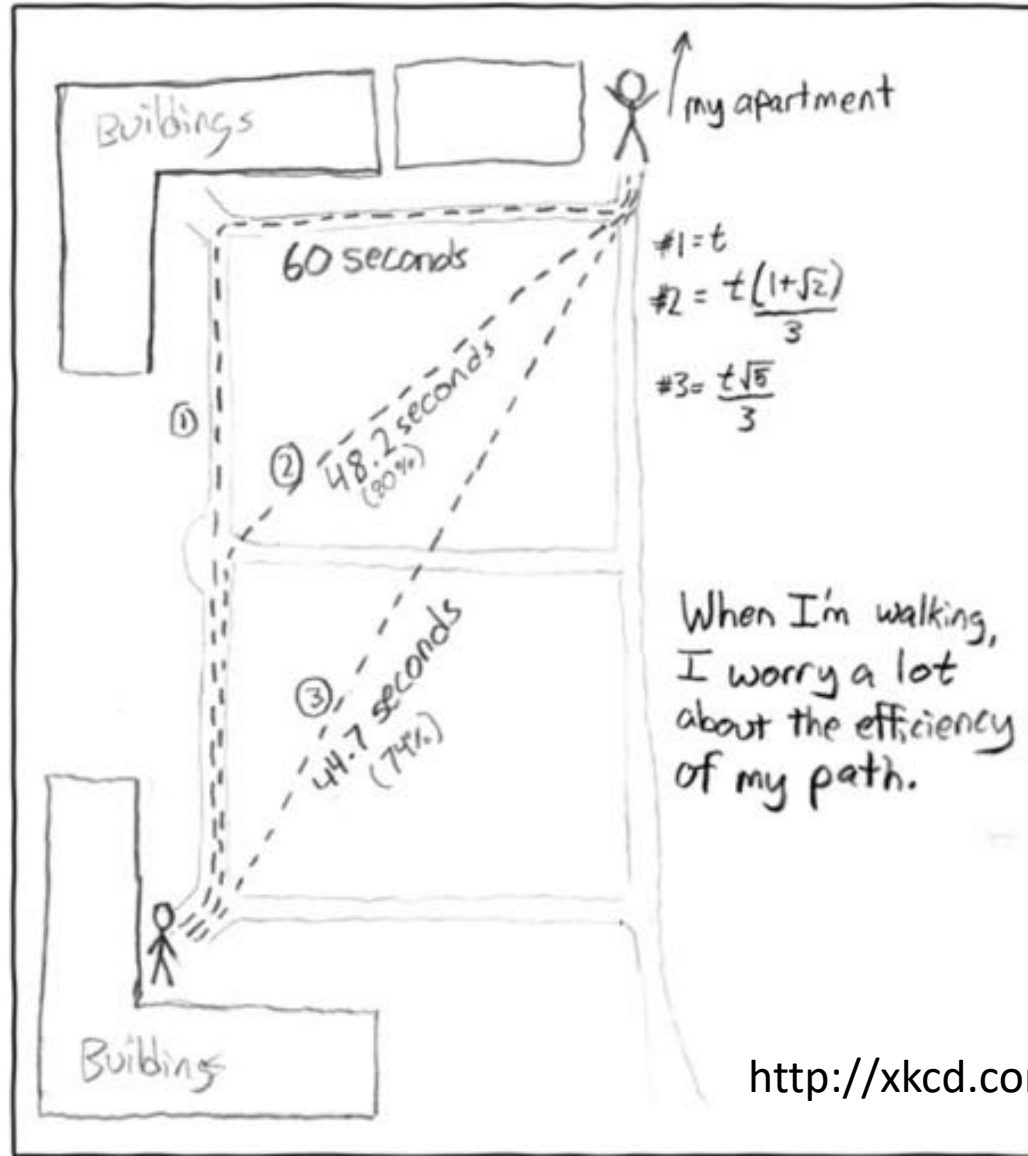
Below are all the available slots (below the start times are listed: a slot that is already taken has a strike-through):

- **Tuesday (Oct 30)**: ~~11:50am~~, 12:00pm, 12:10pm, 12:20pm, ~~12:30pm~~, 3pm
- **Wednesday (Oct 31)**: 11:10am, 11:20am, 11:30am, 11:40am, 11:50am, 12:00pm, 12:10pm, 12:20pm, 12:30pm
- **Thursday (Nov 1)**: 11am, 11:10am, 11:20am, 11:30am, 11:40am, 11:50am, 1:30pm, 1:40pm, 1:50pm, 2:00pm, 2:10pm, 2:20pm, 2:30pm, 2:40pm, 2:50pm, 3:00pm, 3:10pm, 3:20pm, 3:30pm, 3:40pm, 3:50pm, 4:00pm, 4:10pm, 4:20pm, 4:30pm, 4:40pm
- **Friday (Nov 2)**: 11:10am, 11:20am, 11:30am, 1:40pm, 1:50pm, 4:00pm, 4:10pm, 4:20pm, 4:30pm, 4:40pm
- **Monday (Nov 5)**: 12:00pm, 12:10pm, 12:20pm, 12:30pm, 2:00pm, 2:10pm, 2:20pm, 2:30pm, 2:40pm, 2:50pm, 4:00pm, 4:10pm, 4:20pm, 4:30pm, 4:40pm

You can of course also stop by during my office hours (but students with Qs on the HWs will get higher priority) and you unfortunately cannot book a slot during my usual office hours.

All the meetings will be in my office (Davis 319).

Shortest Path Problem



Another more important application

Is BGP a known acronym for you?



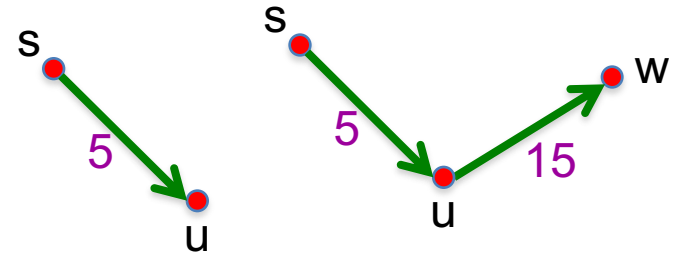
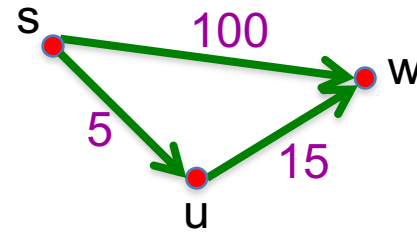
Routing uses shortest path algorithm

Shortest Path problem

Input: *Directed* graph $G=(V,E)$

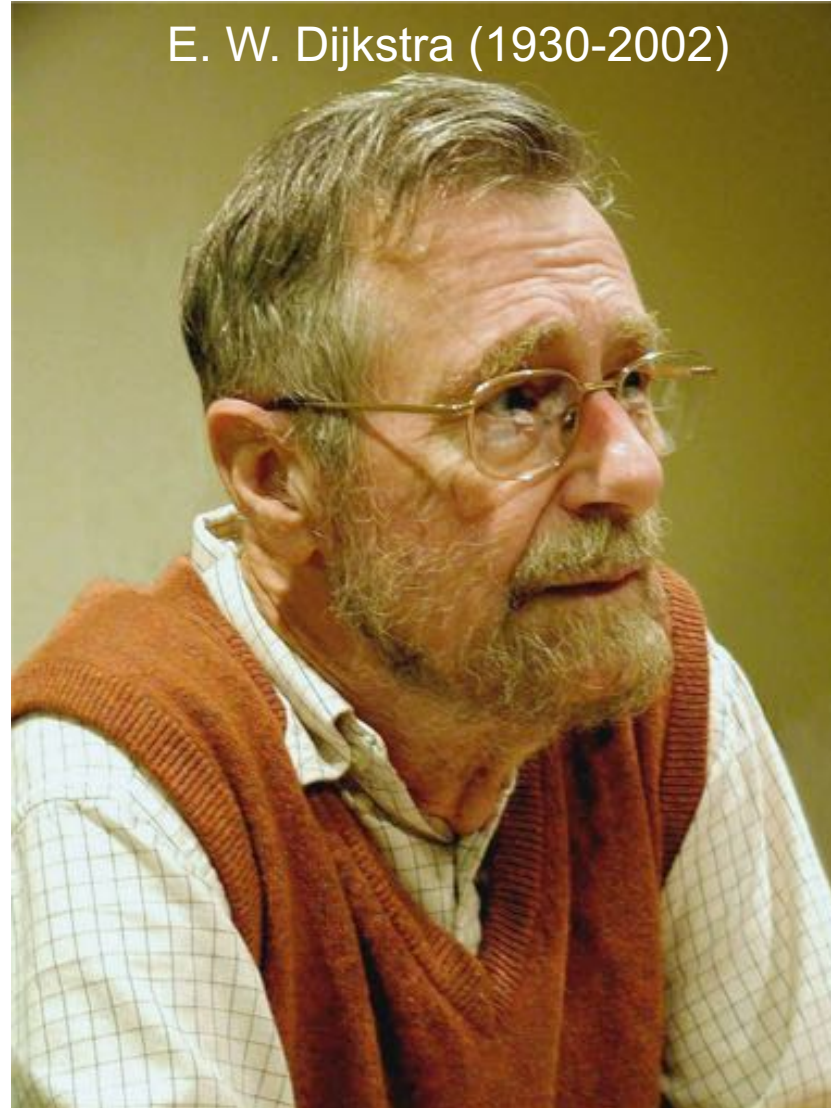
Edge lengths, l_e for e in E

“start” vertex s in V



Output: Length of shortest paths from s to all nodes in V

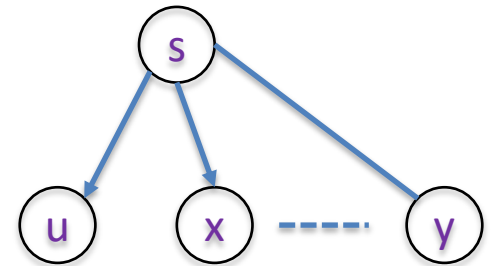
Dijkstra's shortest path algorithm



Towards Dijkstra's algo: part ek

Determine $d(t)$ one by one

$$d(s) = 0$$



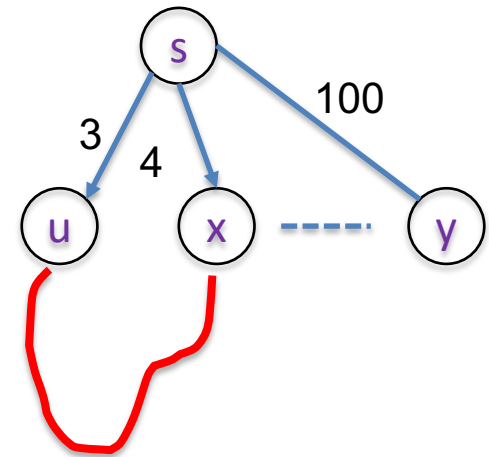
Towards Dijkstra's algo: part do

Determine $d(t)$ one by one

Let u be a neighbor of s with smallest $l_{(s,u)}$

$$d(u) = l_{(s,u)}$$

Not making any claim
on other vertices



Length of  is ≥ 0

Towards Dijkstra's algo: part teen

Determine $d(t)$ one by one

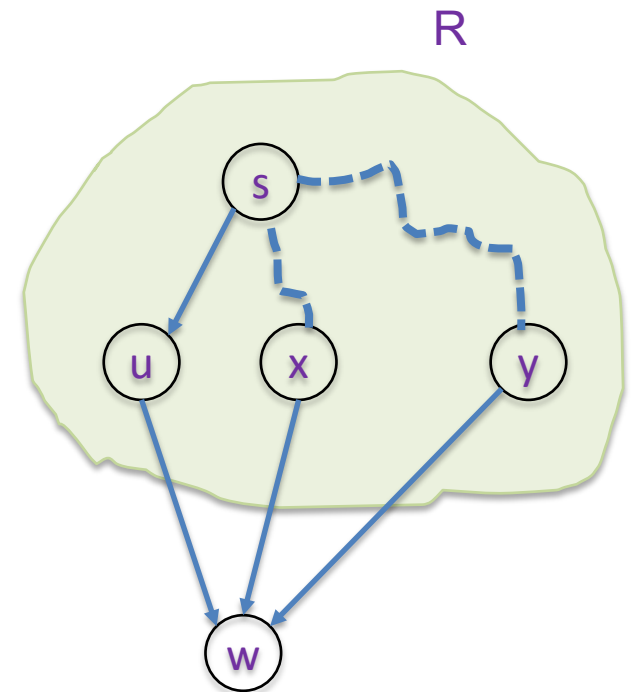
Assume we know $d(v)$ for every v in R

Compute an upper bound $d'(w)$ for every w not in R

$$d(w) \leq d(u) + l_{(u,w)}$$

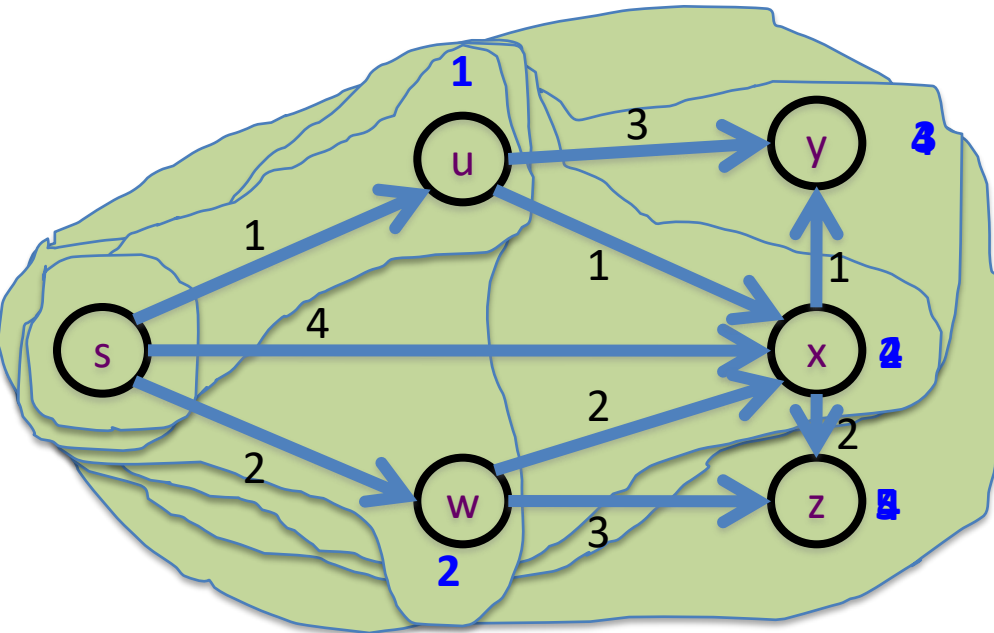
$$d(w) \leq d(x) + l_{(x,w)}$$

$$d(w) \leq d(y) + l_{(y,w)}$$



$$d'(w) = \min_{e=(u,w) \text{ in } E, u \text{ in } R} d(u) + l_e$$

Dijkstra's shortest path algorithm



$$d'(w) = \min_{e=(u,w) \text{ in } E, u \text{ in } R} d(u) + l_e$$

$d(s) = 0$ $d(u) = 1$
 $d(w) = 2$ $d(x) = 2$
 $d(y) = 3$ $d(z) = 4$

Input: Directed $G=(V,E)$, $l_e \geq 0$, $s \text{ in } V$

$R = \{s\}$, $d(s) = 0$

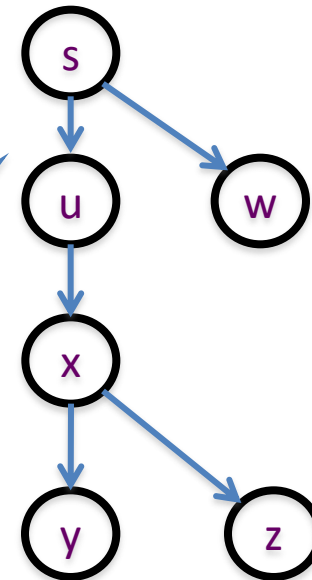
While there is a x not in R with $(u,x) \text{ in } E$, $u \text{ in } R$

Pick w that minimizes $d'(w)$

Add w to R

$d(w) = d'(w)$

Shortest paths



Couple of remarks

The Dijkstra's algo does not explicitly compute the shortest paths

Can maintain “shortest path tree” separately

Dijkstra's algorithm does not work with **negative** weights

Left as an exercise

Rest of Today's agenda

Prove the correctness of Dijkstra's Algorithm

Runtime analysis of Dijkstra's Algorithm