Lecture 19

CSE 331

Oct 13, 2023

Respond to project group members

note @321 stop following 1 view

Actions

Please respond to your project group mates

Please do respond back if a group project member reaches out to you to get started on the project. Just FYI, ***I always reserve the right to kick you out of your group (which means a 0 for you)*** **in case you are unresponsive to repeated requests from your group members**.

I understand some of you might be busy now-- it is fine with me if your group decide *as a whole* how the work will be divided (so e.g. someone does less work on the initial problems and someone does more work on the later problems). As long as the group agrees, I do not care about the details.

But please do respond back in a timely fashion: not doing so is you not doing your part in a group project.

project

Edit good note | 0 Updated 1 minute ago by Atri Rudra

Delay in grading Quiz 1

note @314 · stop following · 58 views

Actions

Quiz 1 grading will be done by Friday

Unlike what I said in lecture today, I'll not be able to finish grading quiz 1 tonight. I'll try for tomorrow but at this point it is safer to say I'll finish it by Friday. Sorry for the delay!

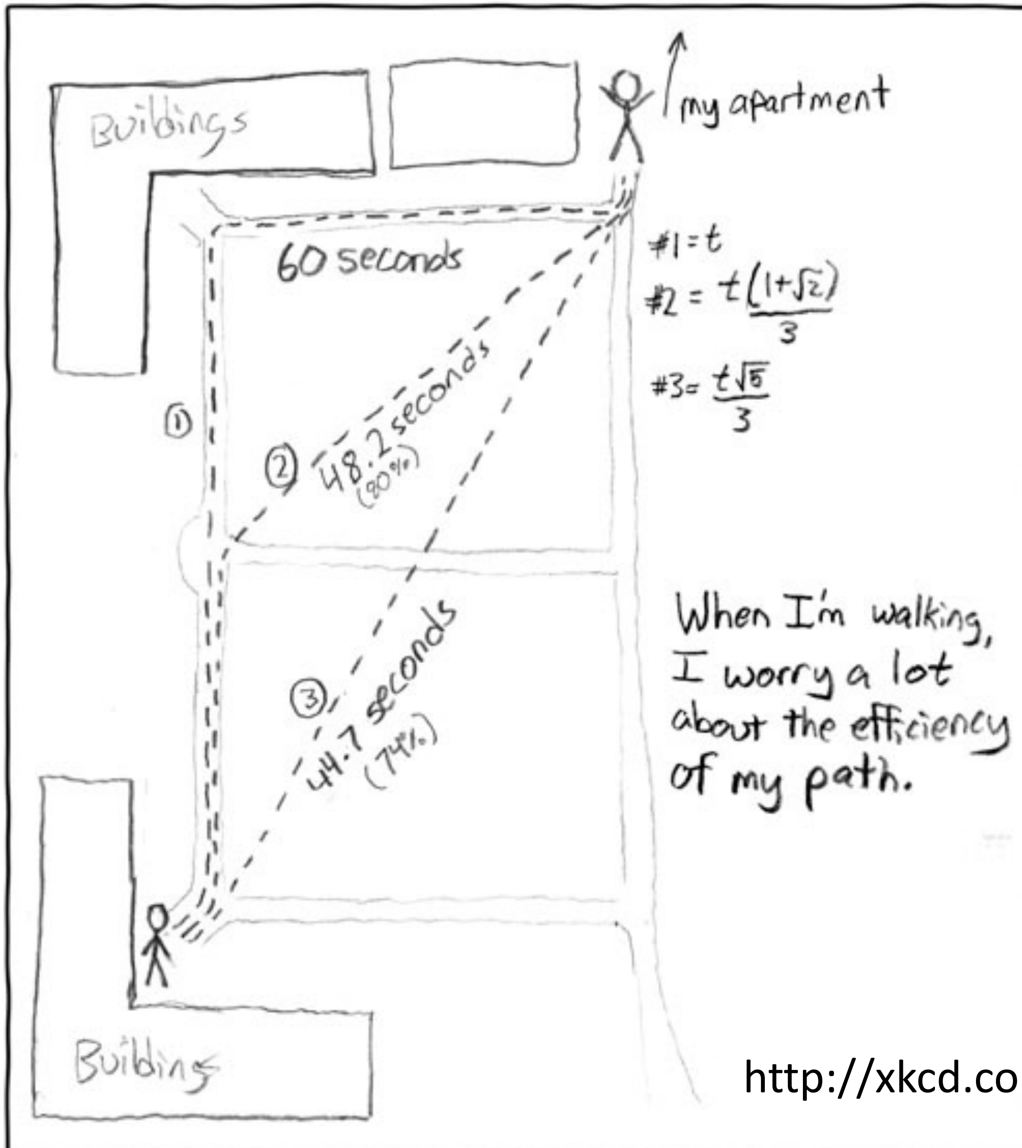
quiz1 grading

Edit · good note | 1

Updated 21 hours ago by Atri Rudra

Questions?

Shortest Path Problem



http://xkcd.com/85/

Another more important application

Is BGP a known acronym for you?

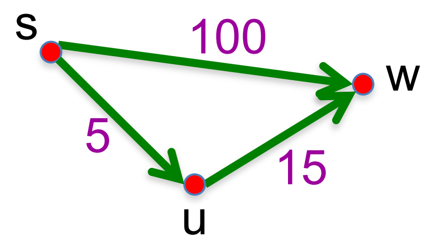
Routing uses shortest path algorithm

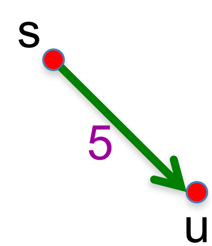
Shortest Path problem

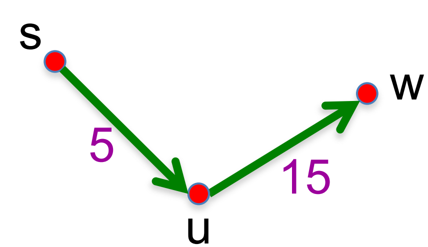
Input: *Directed* graph G=(V,E)

Edge lengths, l_e for e in E

"start" vertex s in V



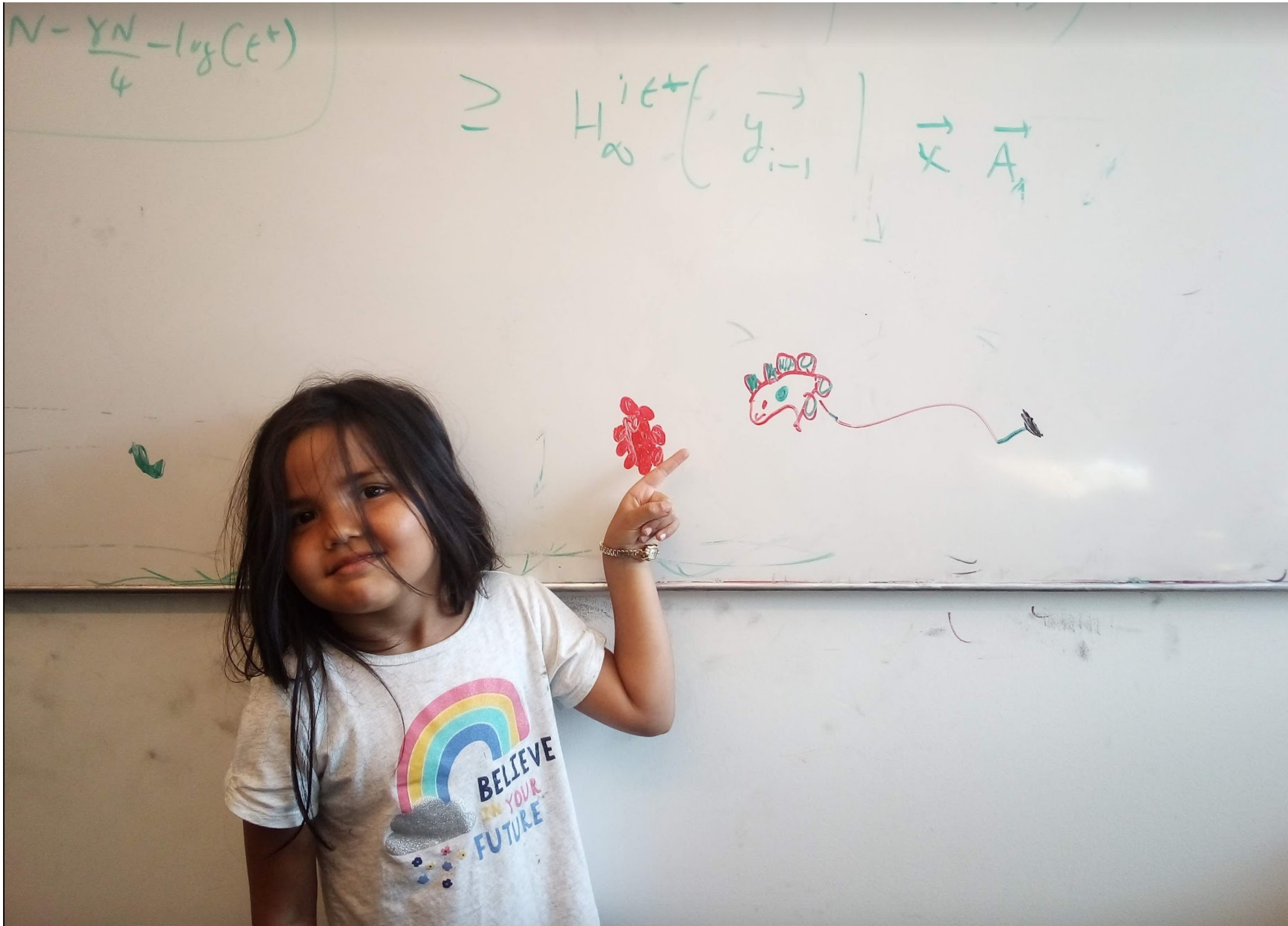




Output: Length of shortest paths from s to all nodes in V

Dijkstra’s shortest path algorithm

Questions/Comments?

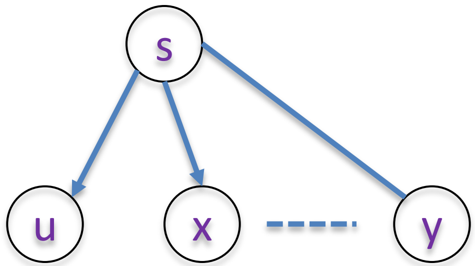


On to the board…

Towards Dijkstra's algo: part ek

Determine d(t) one by one

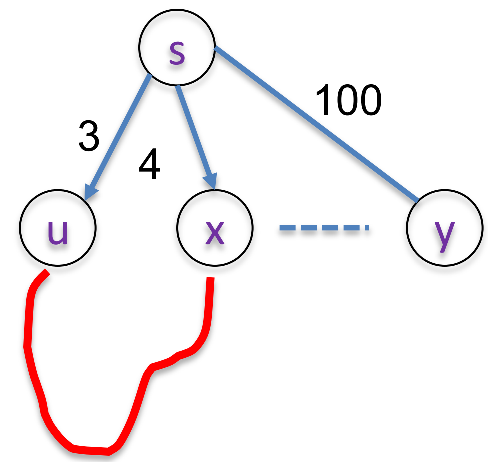
d(s) = 0



Towards Dijkstra's algo: part do

Determine d(t) one by one

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



$$d(u) = \ell_{(s,u)}$$

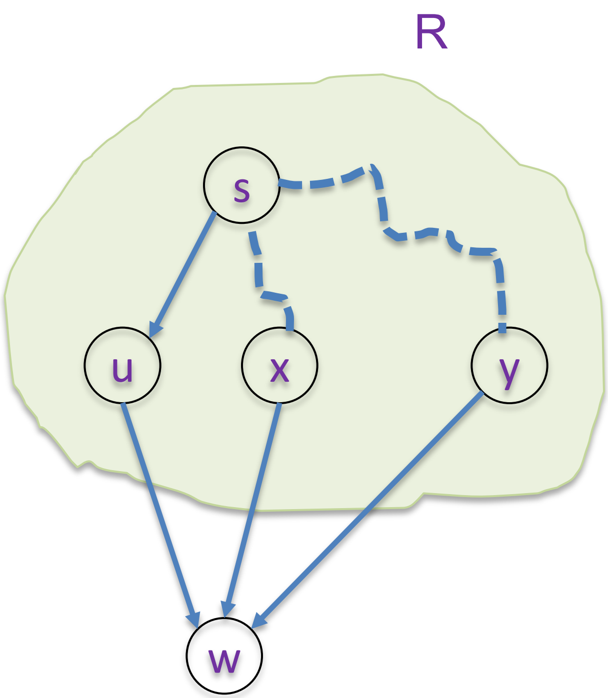
Length of ~ is ≥ 0

Not making any claim on other vertices

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

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

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

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

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

Questions/Comments?