

Lecture 12

CSE 331

Sep 25, 2017

Mini Project group due TODAY!

note ☆ stop following 163 views Actions

Mini project needs groups of size EXACTLY 3

A gentle reminder that your group composition is due in just over a week (11:59pm on **Monday, Sep 25**).

The important thing to note is that you need to send me **groups of size EXACTLY three**. This means you are responsible for finding two other students in 331 to form your group. I will **not** make any group assignments.

Feel free to use the comments on this post to try and find others who are still looking to form a group.

#pin

[mini_project](#)

[edit](#) good note | 0 Updated 7 days ago by Atul Ratra

Register for CSE 50!

<https://engineering.buffalo.edu/computer-science-engineering/news-events/cse50.html>

CSE 50th Anniversary Celebration

September 28 - October 1, 2017 | University at Buffalo

Home

Program

Committee

Speakers

Sponsors

Travel

Things to Do

Give to CSE

Celebrate with us

Our department is one of the first in the nation to offer the Computer Science program. CSE@UB is home to all CS and CE (as a part of the previous ECE) faculty, students and alumni. We are very proud of our heritage and that we have grown into the largest department within the School of Engineering and Applied Sciences. We are equally proud of our alumni and their high achievements over the years, and our many talented students who embody the hope of tomorrow. Our anniversary celebration offers many opportunities to socialize and network with students, faculty and alumni, including a Golf Outing, Graduate Research Conference, and Alumni Symposium. Join us as we celebrate our 50th Anniversary!

For those who have grants that cover travel costs, we have created a special event, the ['Emerging Topics in Computing Symposium'](#), which will be held concurrently on September 28th - October 1st and shares sessions with the 50th Anniversary Graduate Research Conference and Alumni Symposium.

Event information

Dates: 9/28/2017 - 10/1/2017

Location: University at Buffalo
North Campus

Register Now!

Use the “Current Student & Faculty Registration” option

We will have class on Friday and HW 3 is still due 11am on Friday

Connectivity Problem

Input: Graph $G = (V, E)$ and s in V

Output: All t connected to s in G

Breadth First Search (BFS)

Build layers of vertices connected to s

$$L_0 = \{s\}$$

Assume L_0, \dots, L_j have been constructed

L_{j+1} set of vertices not chosen yet but are connected to L_j

Stop when new layer is empty

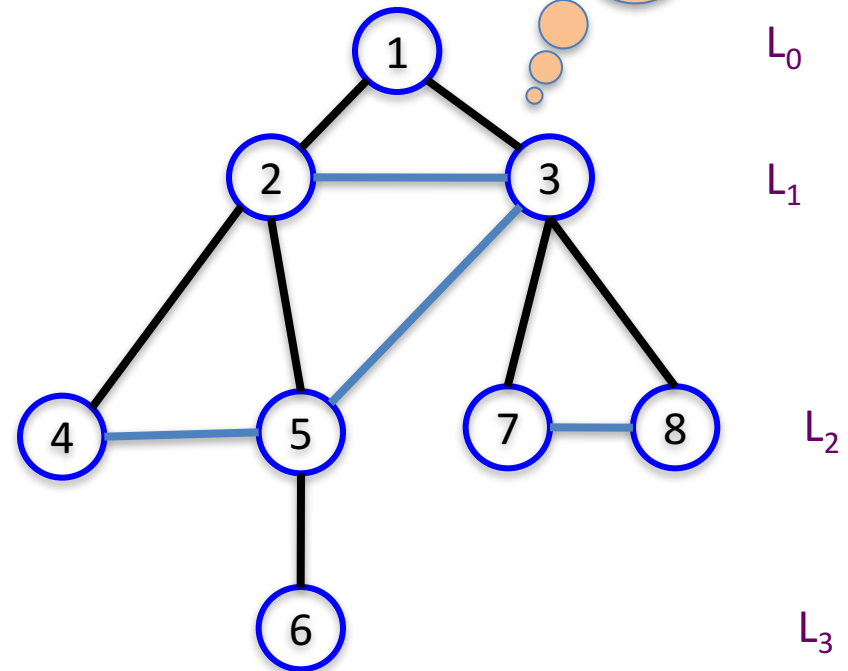
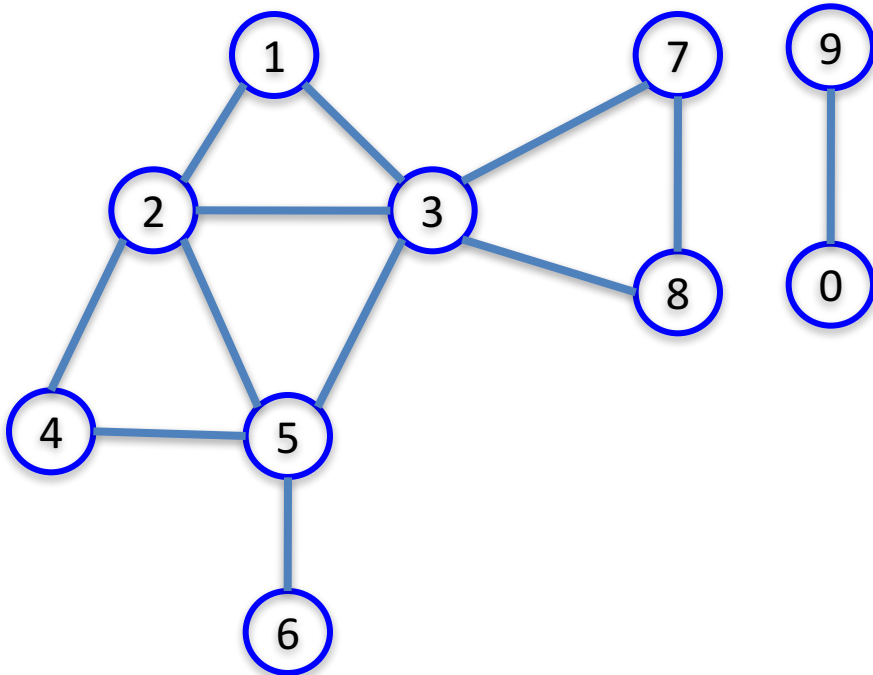
BFS Tree

BFS naturally defines a tree rooted at s

L_j forms the j th “level” in the tree

u in L_{j+1} is child of v in L_j from which it was “discovered”

Add non-tree edges

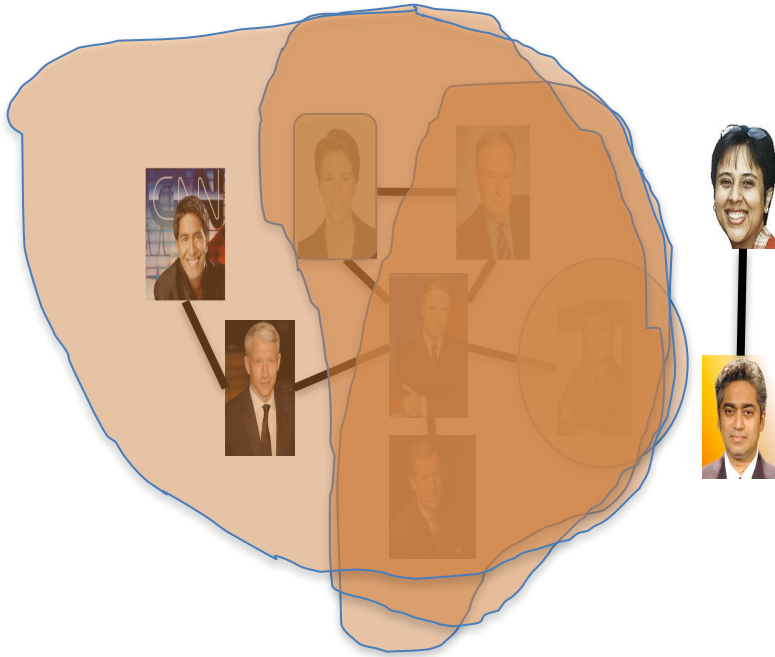


Today's agenda

Every edge in is between consecutive layers

Computing Connected component

Computing Connected Component



Explore(s)

Start with $R = \{s\}$

While exists (u,v) edge v not in R and u in R

Add v to R

Output $R^* = R$

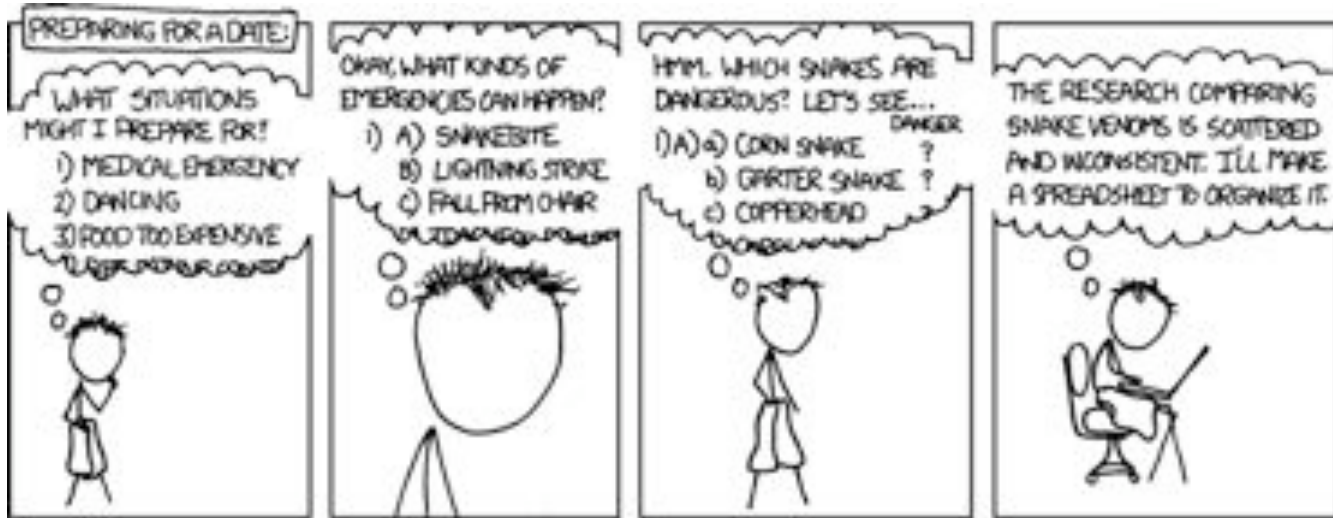
Questions?



BFS



Depth First Search (DFS)



I REALLY NEED TO STOP USING DEPTH-FIRST SEARCHES.

<http://xkcd.com/761/>

DFS(**u**)

Mark **u** as explored and add **u** to **R**

For each edge (**u**,**v**)

 If **v** is not explored then DFS(**v**)