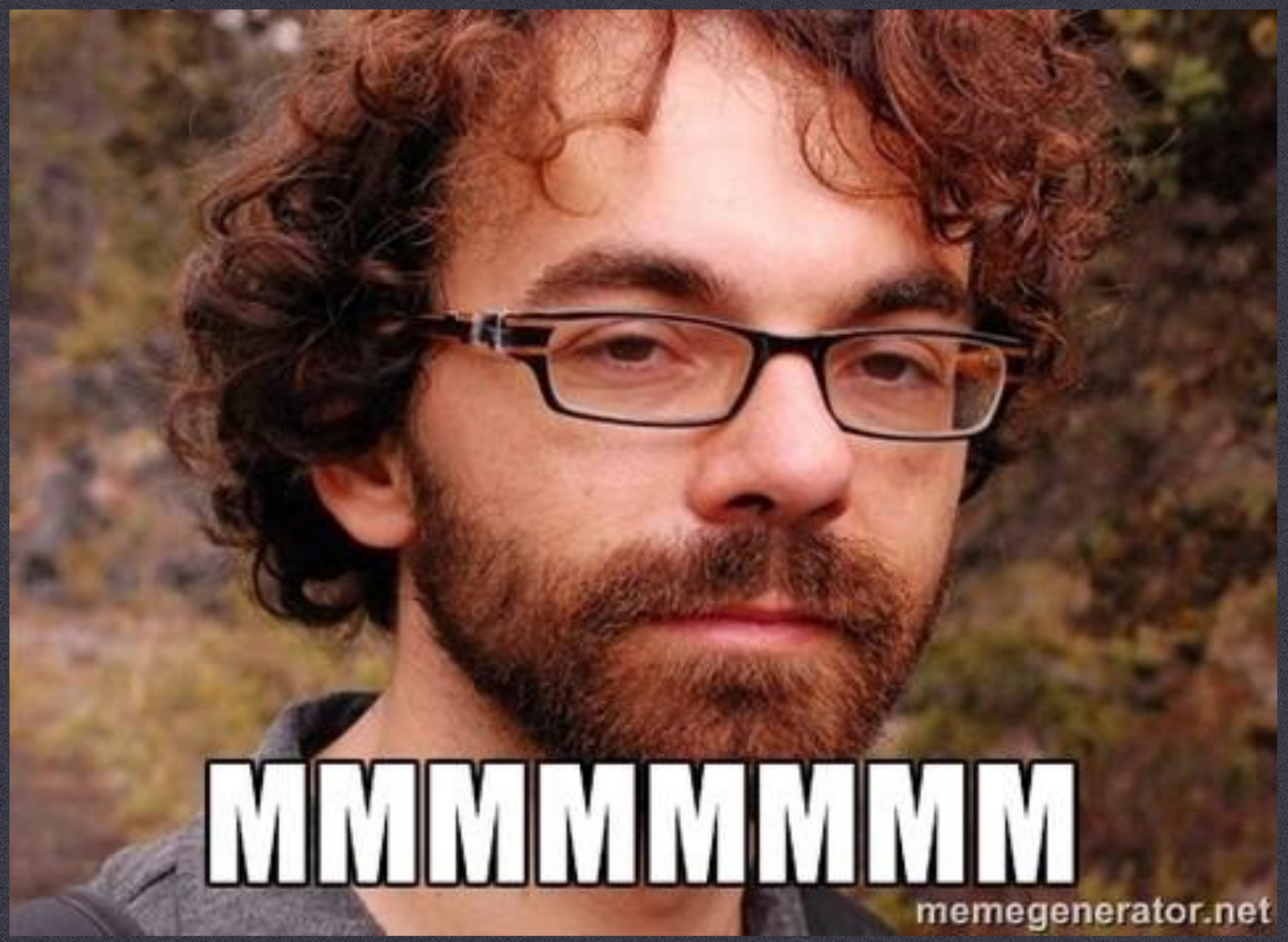


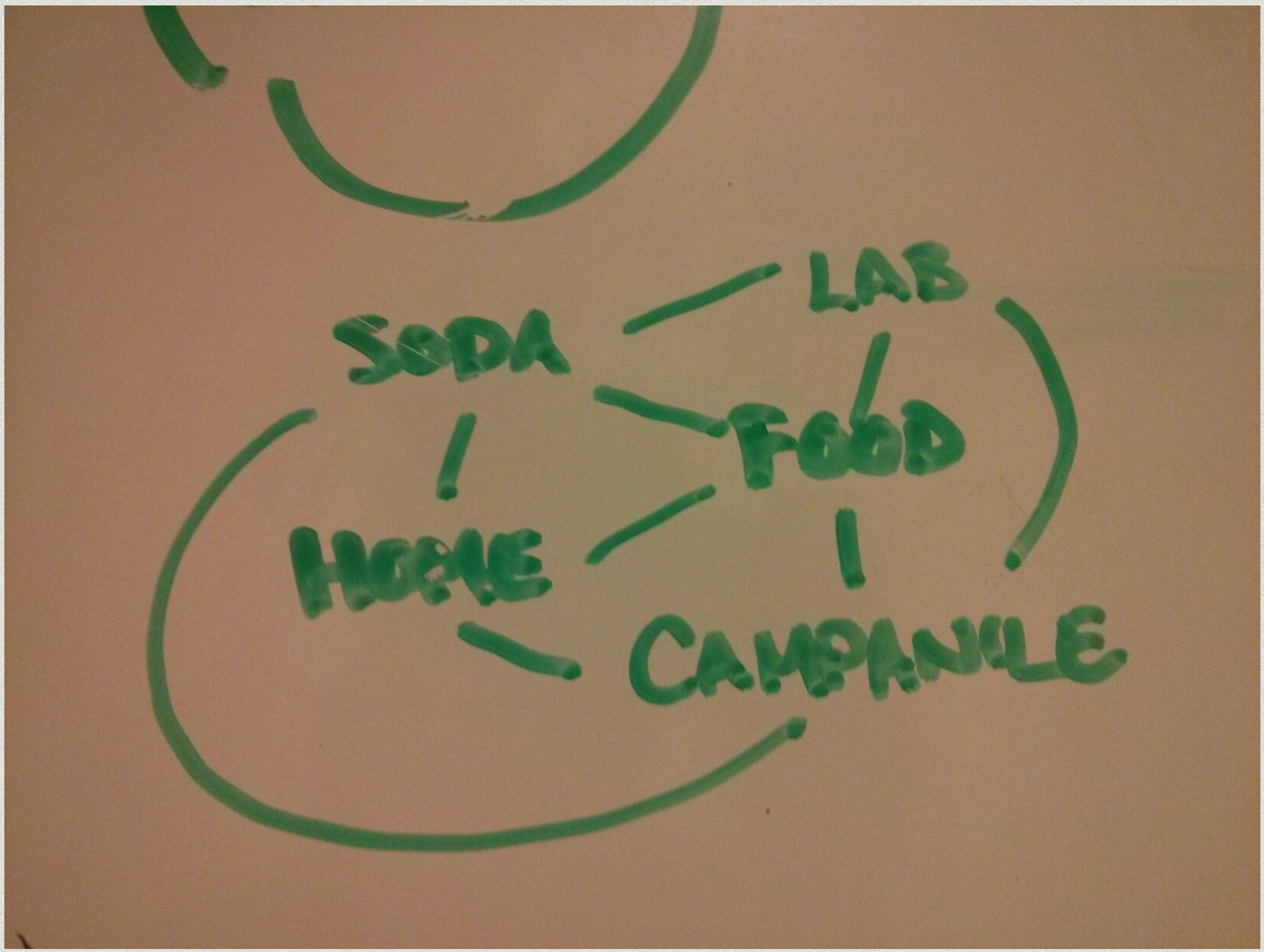
CS61B DISCUSSION 11

TA: SHERDIL NIYAZ

Administrivia

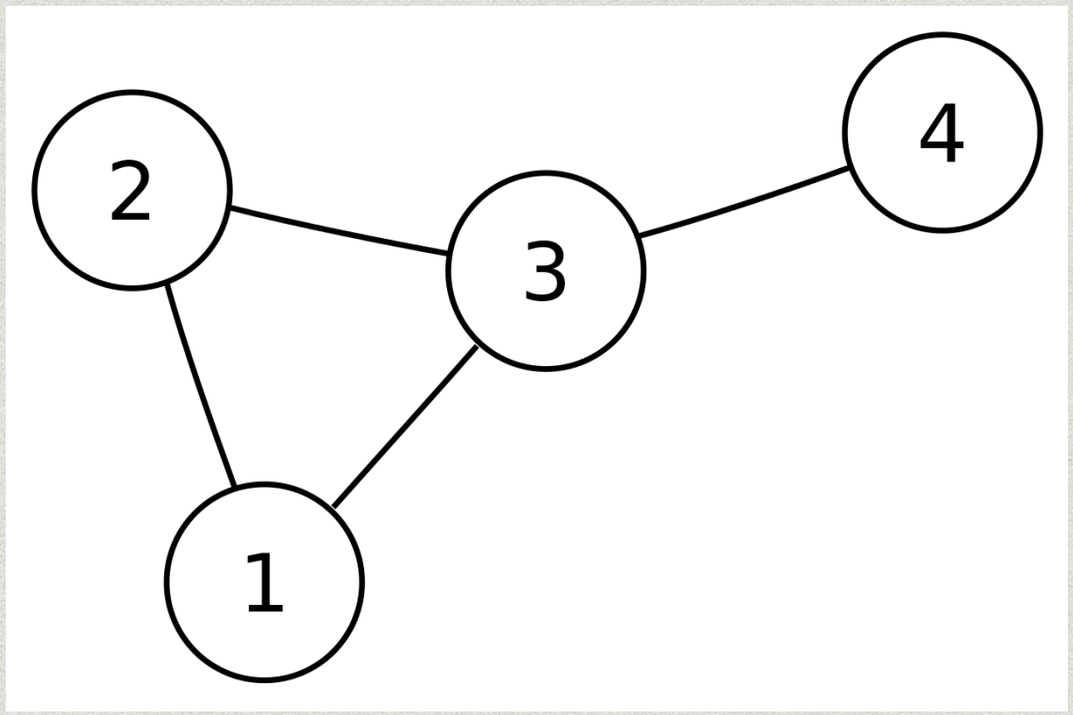
- Project 3!
- There is a link on section site if you weren't on the mailing list (and want to be, of course)
- If you want to set up a one-on-one meeting with me outside of class, send me an email!
- Reminder: Anonymous feedback on section site!
- Graph practice problems coming later this week! Will be based on CS 188 problems.

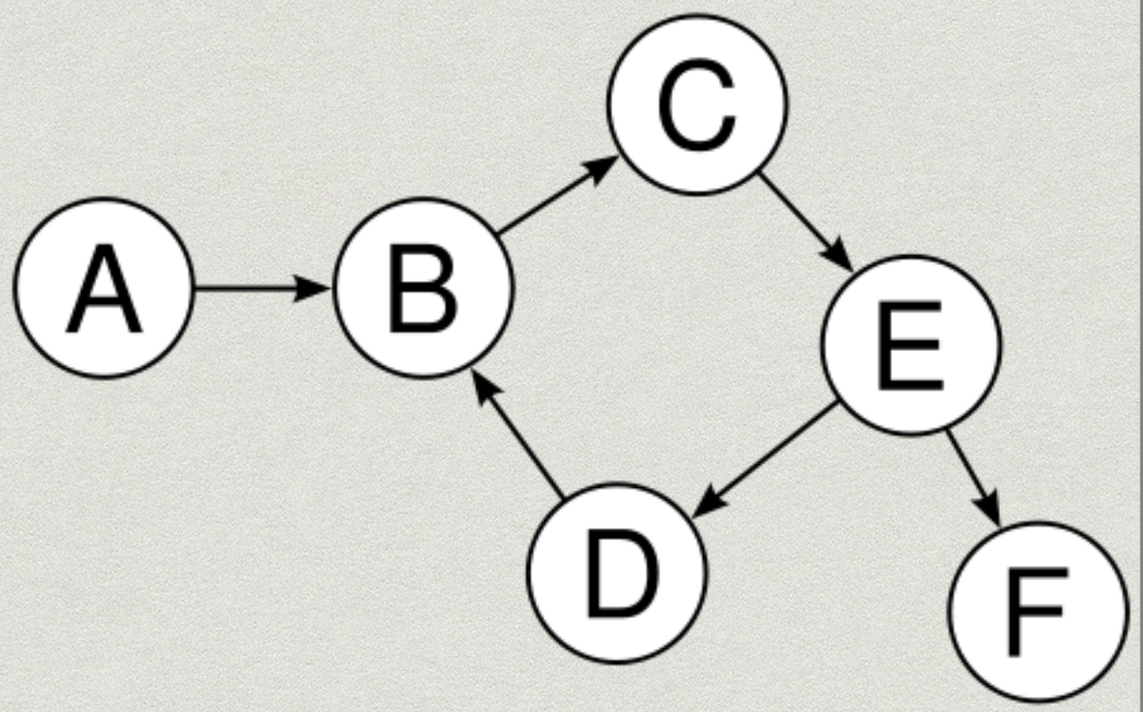
Graphs!



Graph Buzzwords

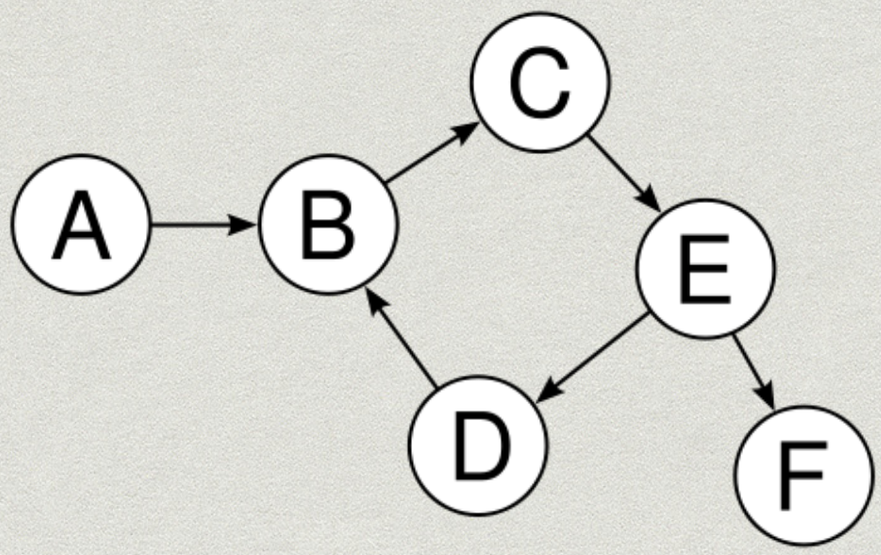
- **Directed Graph**: Direction of edges matters.
- **Undirected Graph:** Direction of edges does *not* matter!





Graph Buzzwords

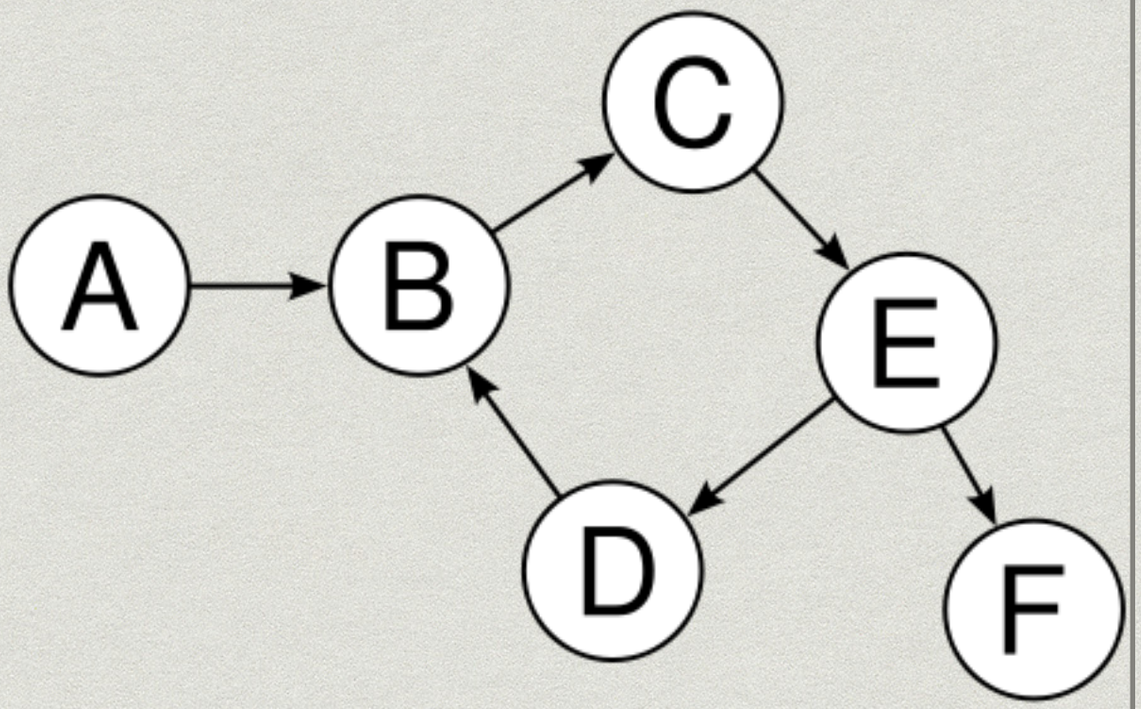
- **Adjacent** Node: For some node, has edge to other this other node.
- **DFS/BFS**: Search Techniques
- Animations!
- http://visualgo.net/dfsbfs.html
- Differences you notice?



General DFS idea

- You can define DFS recursively:

```
DFS(node):
    visit this node
    for v in neighbors:
        DFS(v)
```



General DFS idea

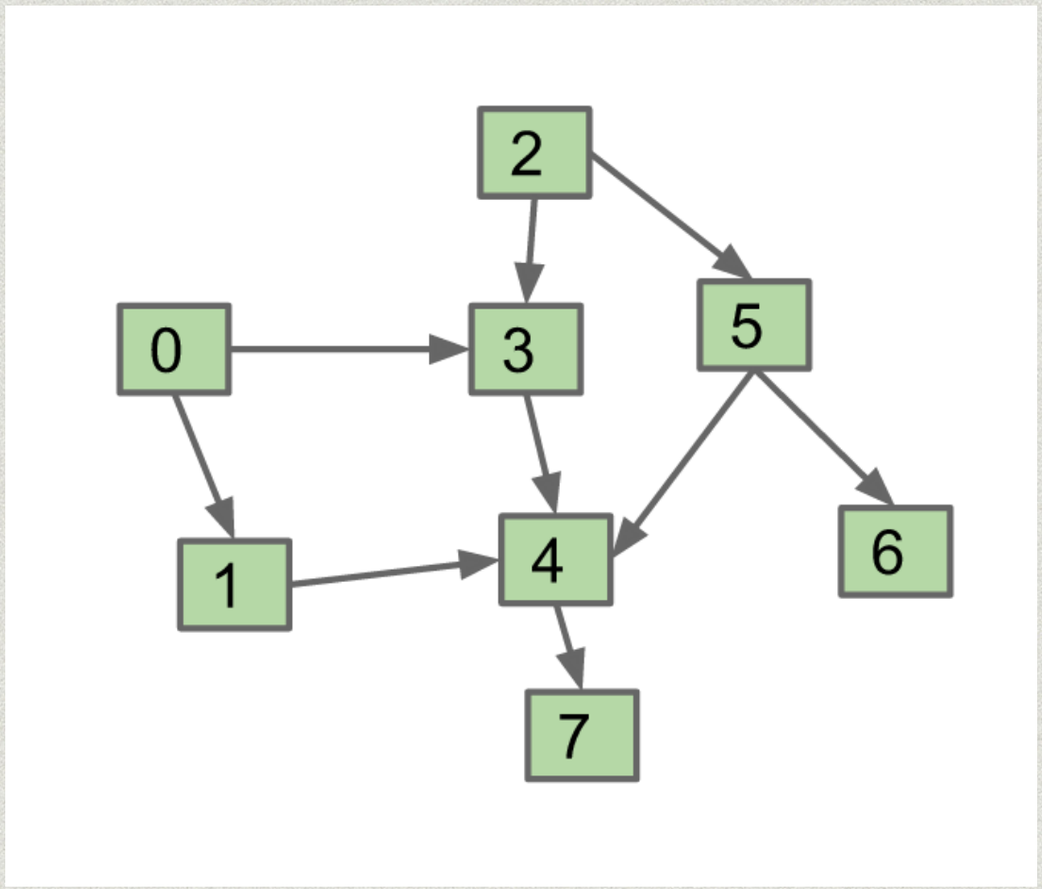
- **Pre-Order:** Order of nodes that we **call** this function on.
- **Post-Order**: Order nodes for which this function **returns.**

```
DFS(node):
    visit this node
    for v in neighbors:
        DFS(v)
```

Topological Sort

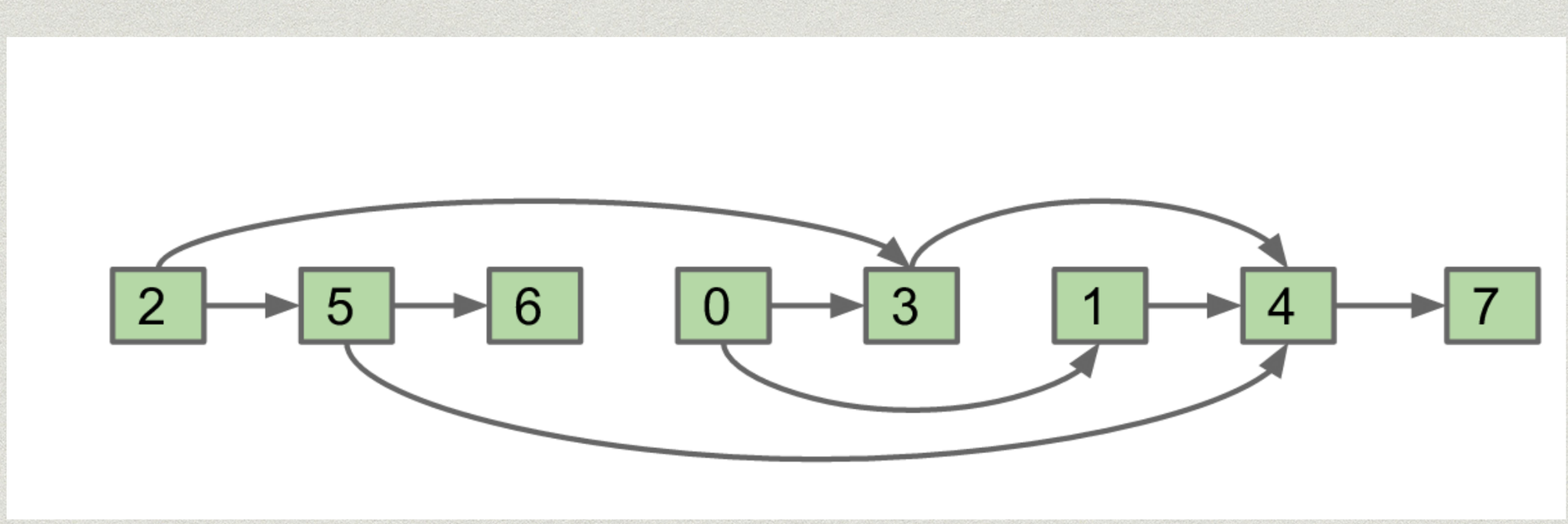
- Can I **redraw** this graph with nodes lined up left to right so that the edges only go from **left to right?**

- **Only** for directed graphs- doesn't make sense for undirected ones…



Topological Sort

- **Yes!**
- The exact same graph, just redrawn!

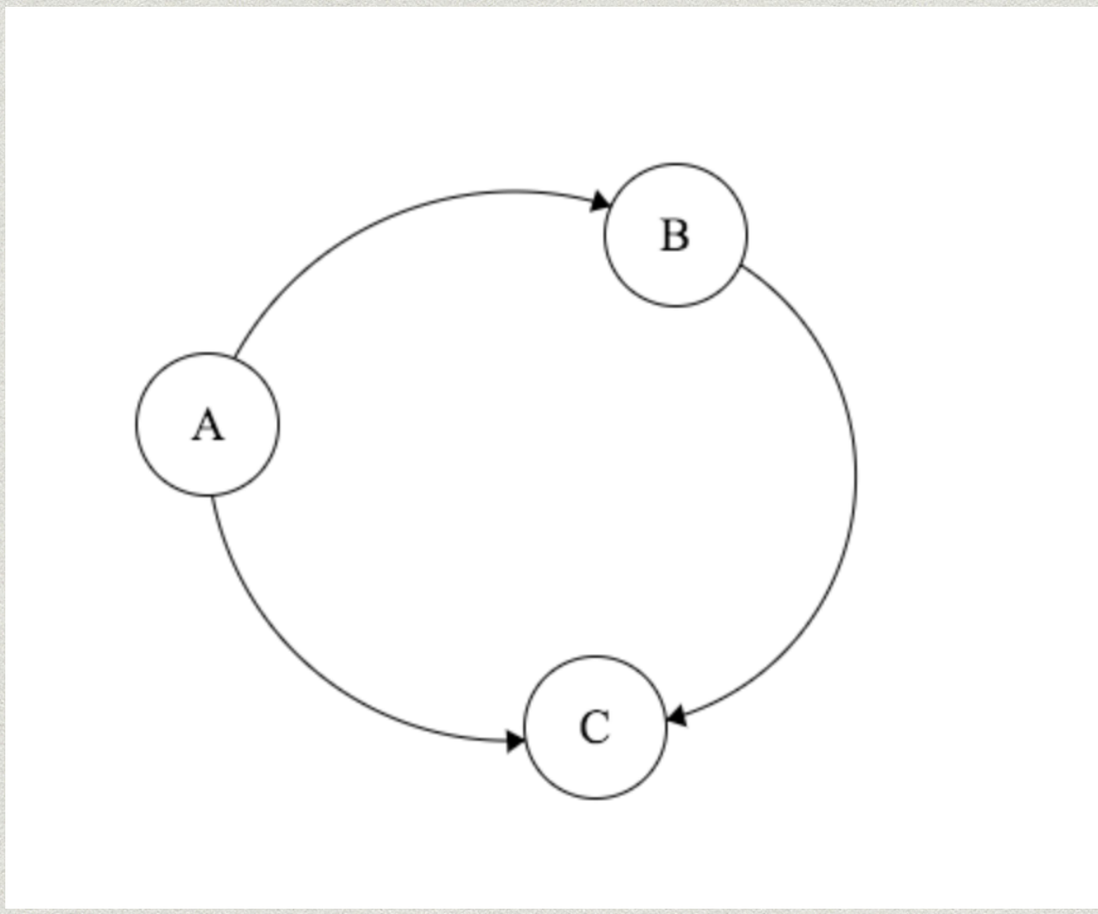


Topological Sort

- We can use DFS post order to do this. Think of how! (#3 on Worksheet this week.)
- **Can we do this for all graphs?**

Topological Sort

- Can we do this for all graphs?
- **No!** You can't Topologically Sort a graph that has a **cycle** (a series of edges that begin and end at the same node).



QUESTIONS?

(IF YOU LIKE THIS STUFF, TAKE CS170!)