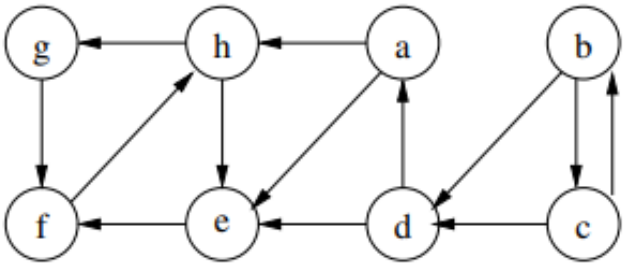
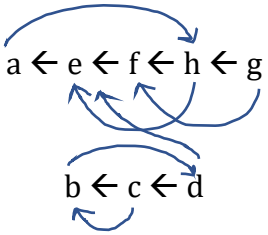
DFS Worksheet



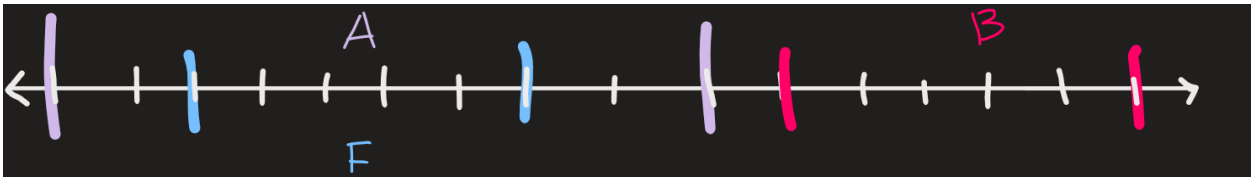
1. Label each vertex with its discovery and finish time stamp.

Vertex	d	f
a	1	10
e	2	9
f	3	8
h	4	7
g	5	6
b	11	16
c	12	15
d	13	14

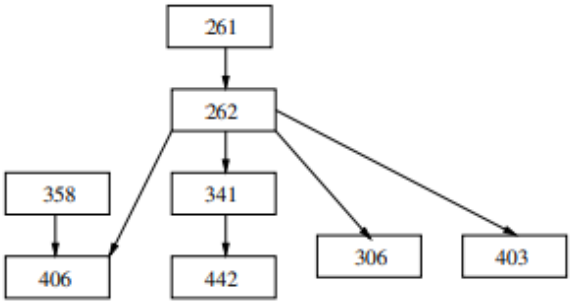
2. Draw the depth-first tree. (Augment with back, cross and forward edges.)



3. Show the discovery-finish range for vertices a, f and b on a number-line.



Topological Sorting on DAGs.



1. The figure above should be near and dear to your hearts! Do you see why it had better be an acyclic graph?
   Yes, because you need prerequisite classes to take more advance classes. For example, class 442 cannot be a prereq for class 261 since you would not be able to graduate. Therefore, it needs to be an acyclic graph.

2. (Quickly) perform a DFS on the DAG in the figure, labeling each vertex with its finish time stamp.

Vertex	d	f
306	1	2
341	3	6
442	4	5
261	7	14
262	8	13
403	9	10
406	11	12
358	15	16

3. Now, list the vertices in topological order based on the finish times above.
   358 → 261 → 262 → 406 → 403 → 341 → 442 → 306