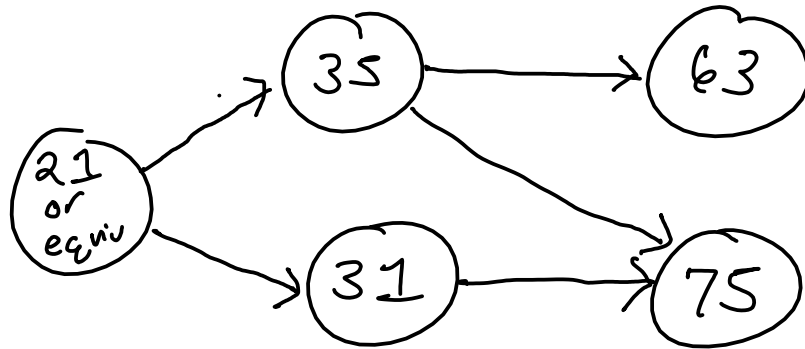
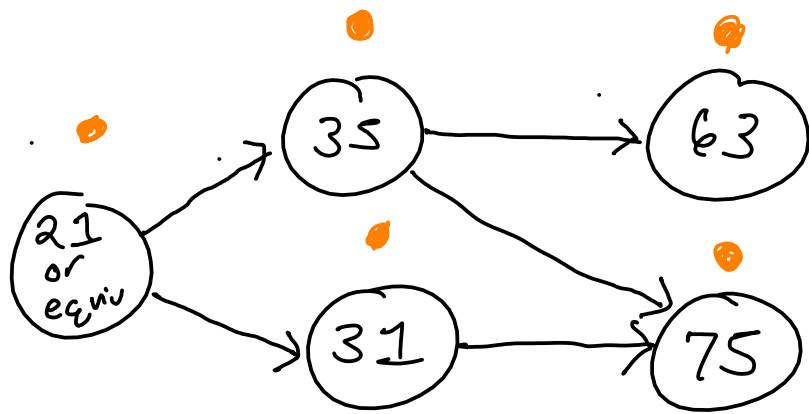


# Graph Algorithms



- Queuing?
- Build a queue by visiting nodes only when prereqs are complete



- not visited
- visiting (in-progress)
- complete

21, 31, 35, 63, 75

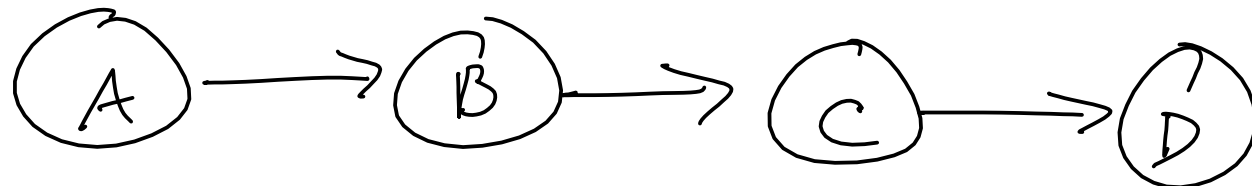
Topological

21

21, 35, 63, 31, 75

Sort

21, 35, 31, 75, 63



Function topoSort (Graph g): (returns List<V>)

List<V> answer ← new LL

For each vertex v in g:  
visit(v, answer)

Return answer

Function visit (V vertex, List<V> answer):

If vertex is in-progress: Fail!

If vertex is complete: Return

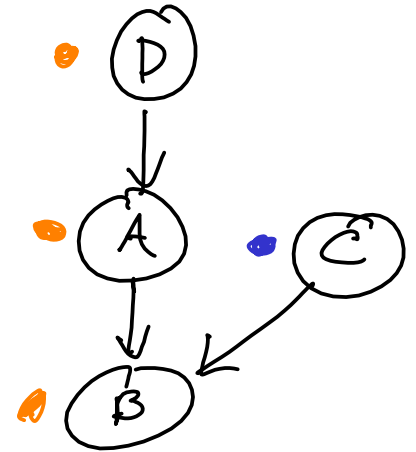
mark vertex as in-progress

for each neighbor of vertex:

visit(neighbor, answer)

answer.insertAtFront(vertex)

mark vertex complete



D, A, B

Directed  
Acyclic  
Graph



# Minimum Spanning Tree (MST)

(on a connected graph):

a subset of edges s.t. the resulting graph is a tree

Applications:

Graph:

vertices: locations in city

edges: water connection

weight: cost of installation

