Topological sort ← Dependency Resolution

Directed graph

Acyclic

C compiler

↓

Python

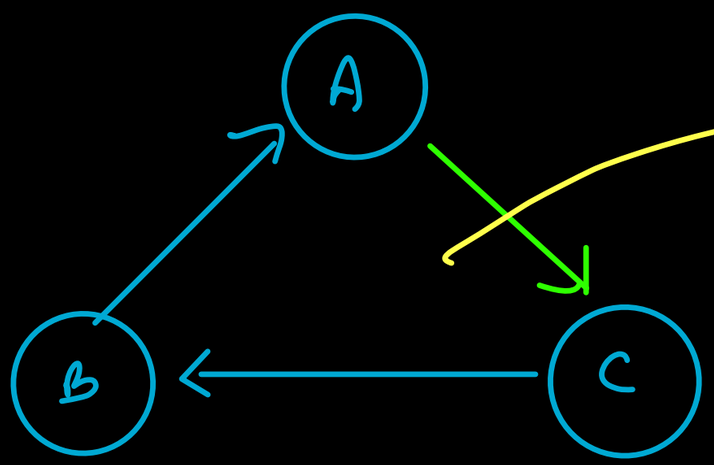
numpy

pandas

Pytorch

dependency graph

DAG



cyclic graph

→ cannot be resolved for dependency

y n inequalities

2

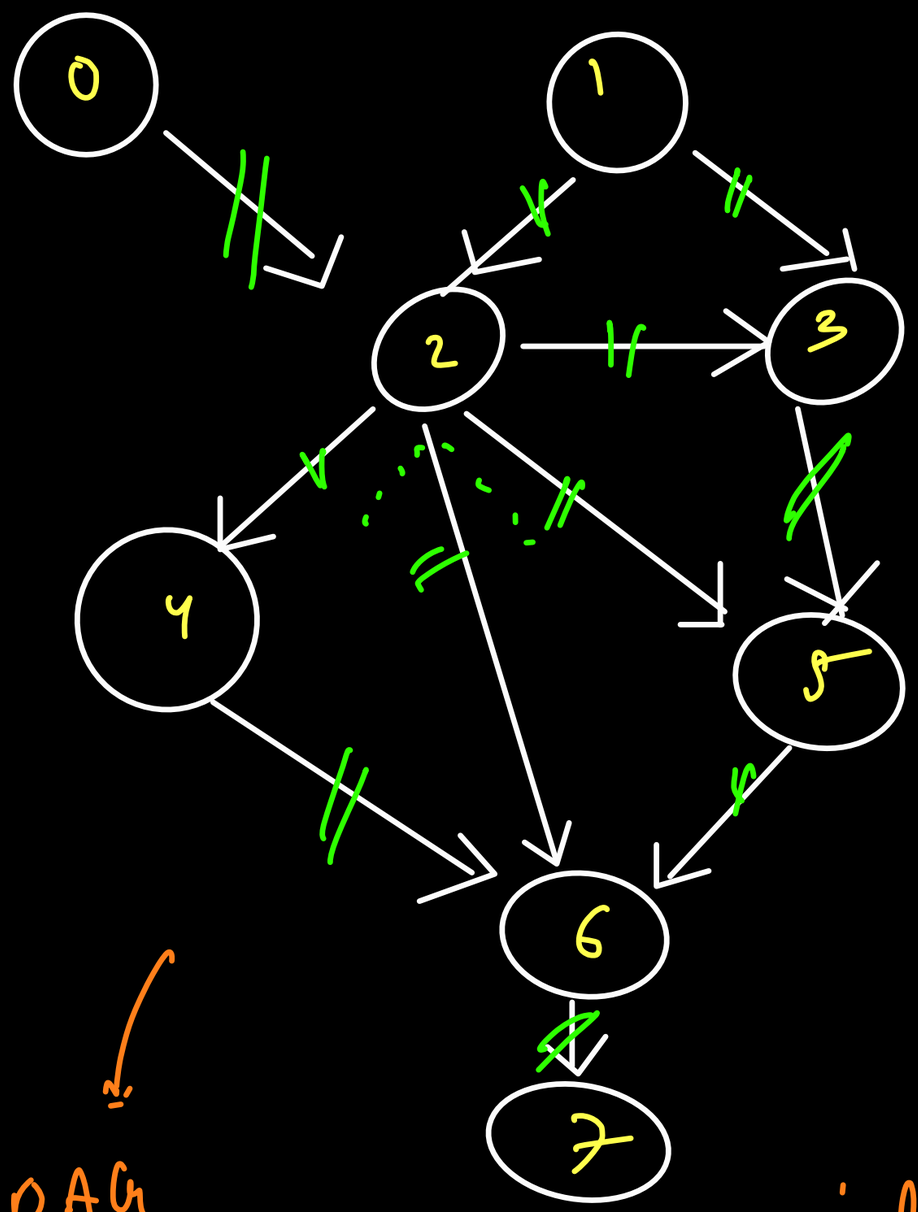
Can these inequalities be resolved ??

$a < b$ $\quad b > d$ $\quad e > f$

$a < d$ $\quad c > f$ $\quad e > a$

$a \longleftarrow b$ $\quad b \longrightarrow d$ $\quad \therefore$

DAG ??



DAG

Kahn's algo → indegree

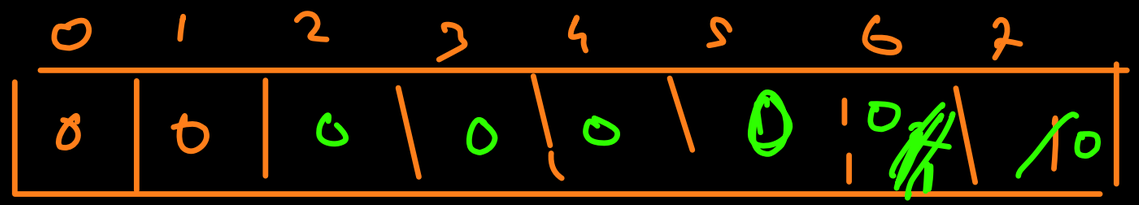
↓

indegree of a node is defined as how many incoming edges you have.

0 1 2 3 4 5 6 7

Queue

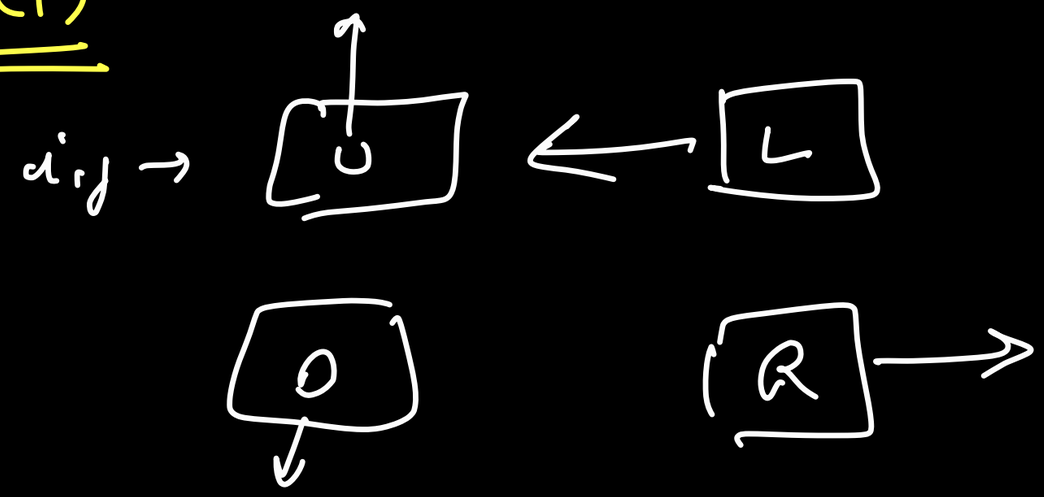
indegree →



Q» Given a grid of $n \times m$ size. Every cell of the grid, are marked as 'L', 'R', 'U', 'D'. Character on a cell denotes if you are standby at that cell, what direction you can move to. Check if we start from (0,0), can we reach $(n-1, m-1)$?? → Space → O(1)

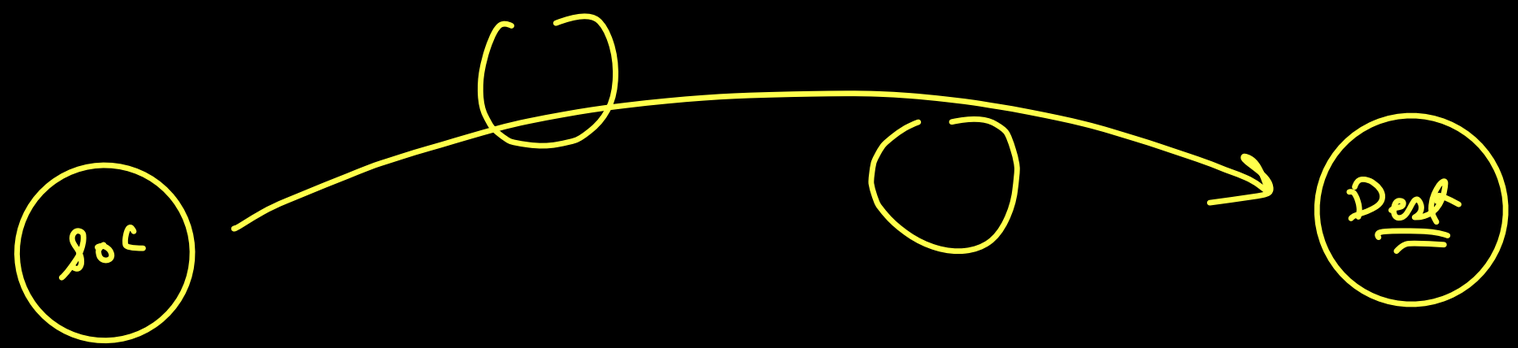
R	R	D	R
D	L	D	L
U	D	L	D
U	R	R	R

non modify



$f(i,d) \rightarrow f(i,d+1)$

$f(i+1,d)$



dfs / bfs

X

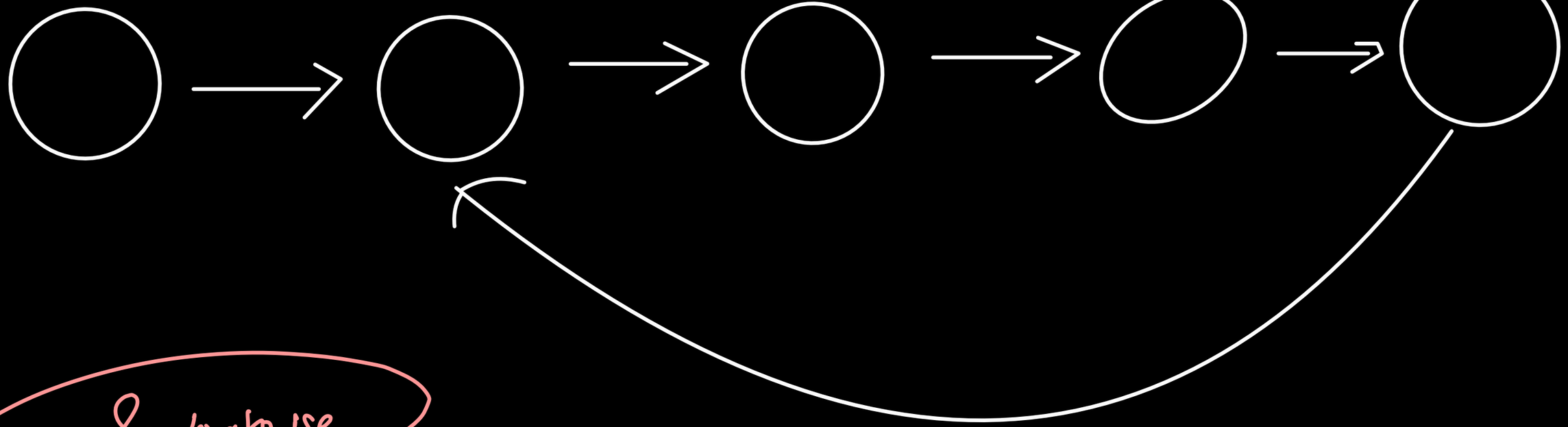
when (grid ≤ n * m)

R	R	R	D	
		U	D	
		U	L	

total → n x m steps

there won't be any cycle if it is possible to reach dest.

we will get a cycle if we visit a cell twice



Hare & tortoise

fast, slow

$x \to x+1$

$x \to x+1$