



Graph Class - 3

Special class

Topological Sort:-

a linear ordering of vertices

→ Such that for edge $u \rightarrow v$, u comes before v in that ordering

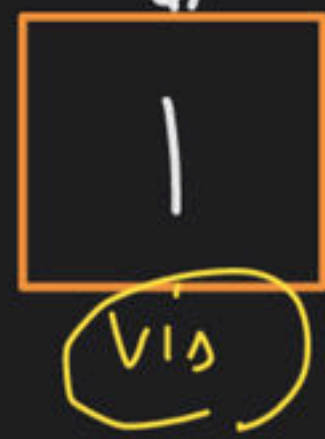
$u \rightarrow v$

dfs

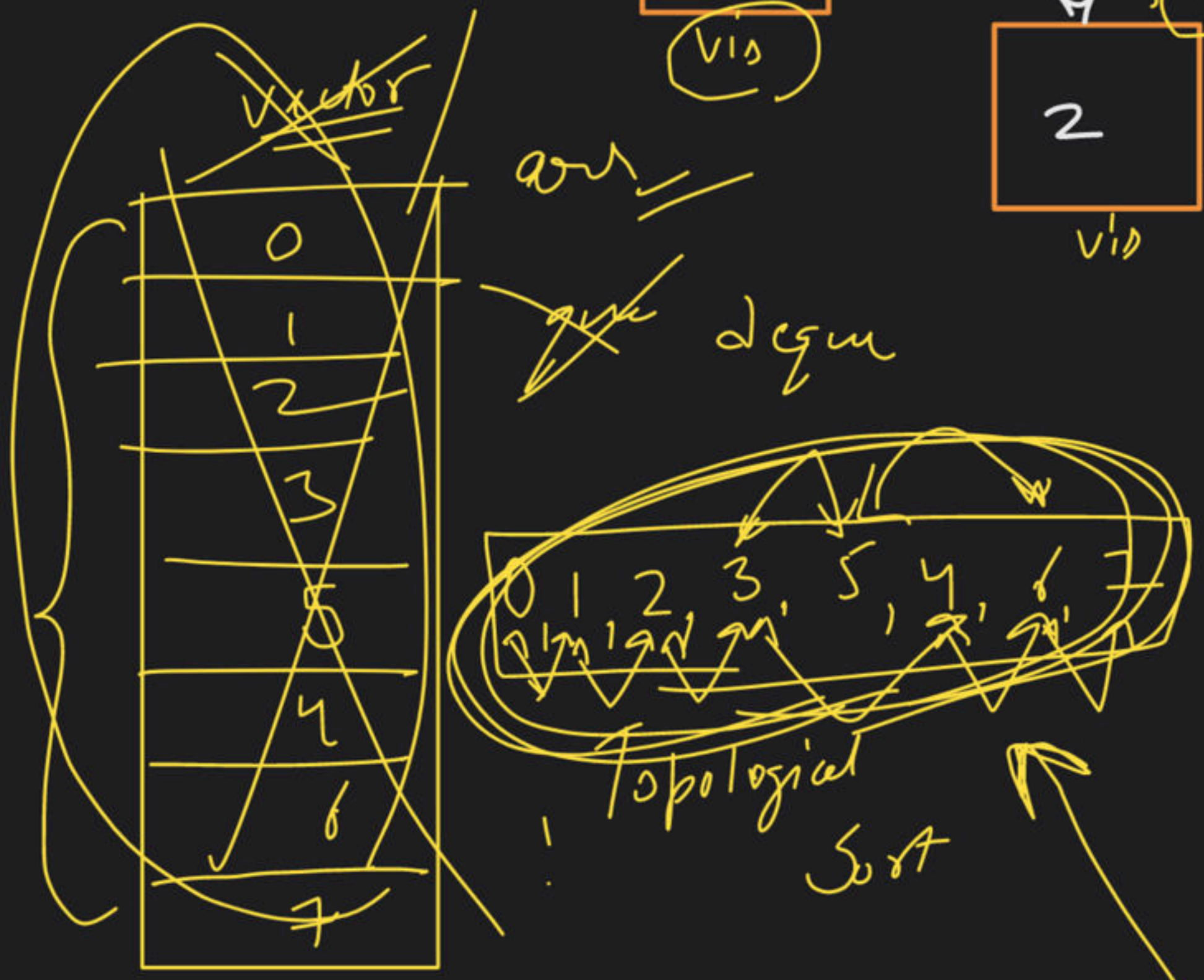
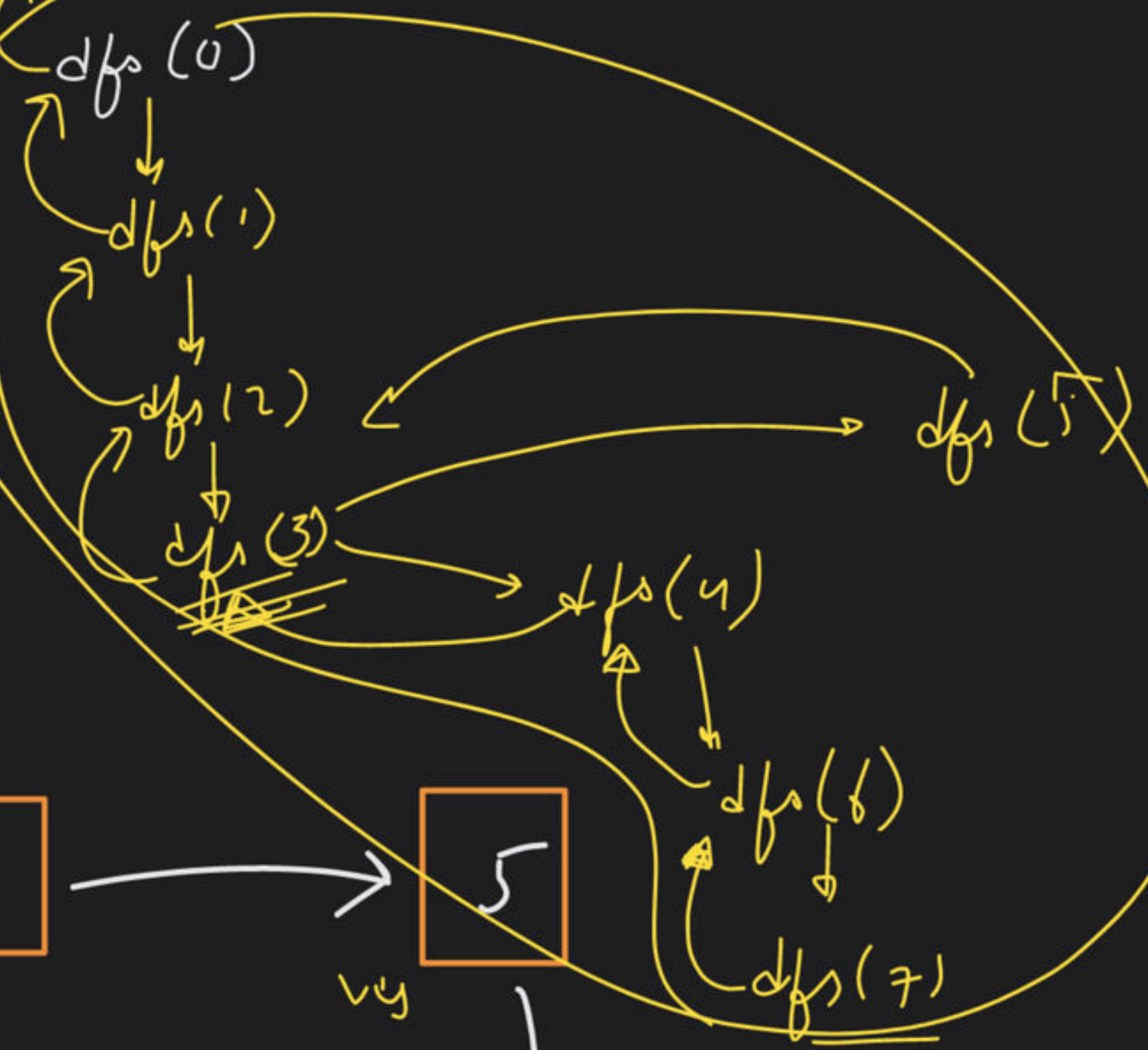
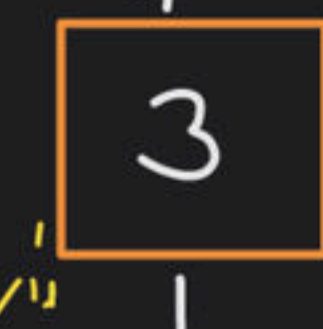
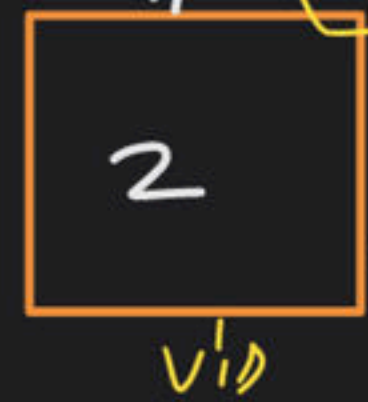
bfs

DAG

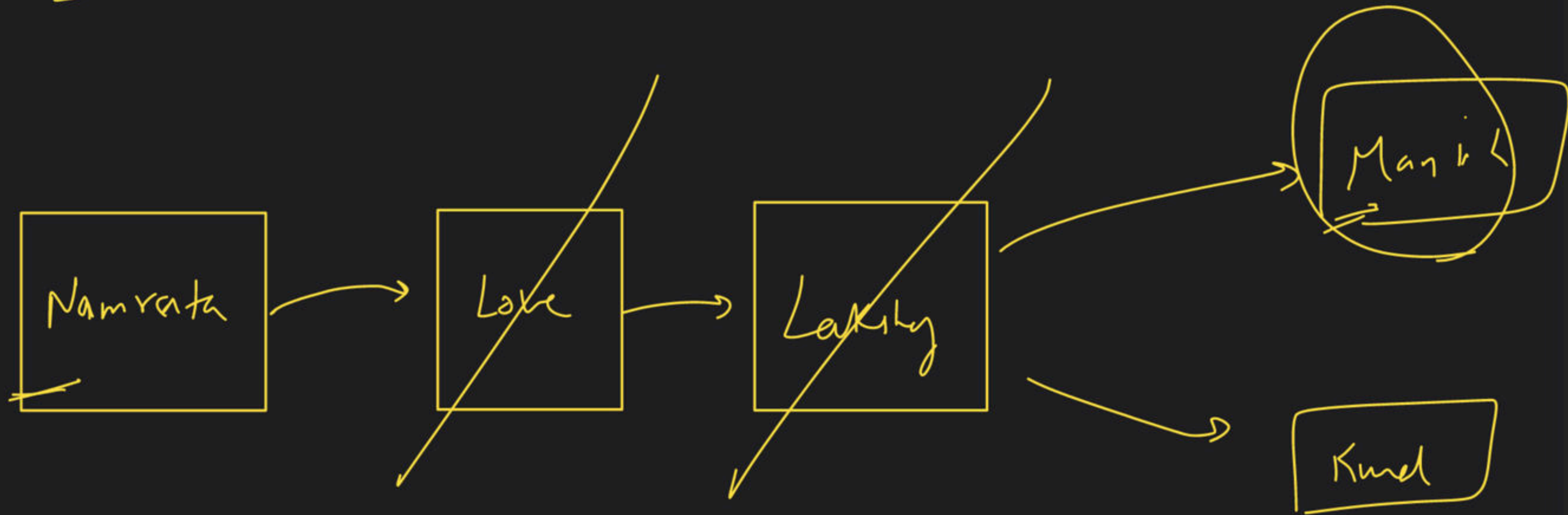
Directed
Acyclic
graph



- 0 → 1
- 1 → 2
- 2 → 3
- 3 → 4
- 4 → 1
- 6 → 7
- 3 → 5
- 5 → 6

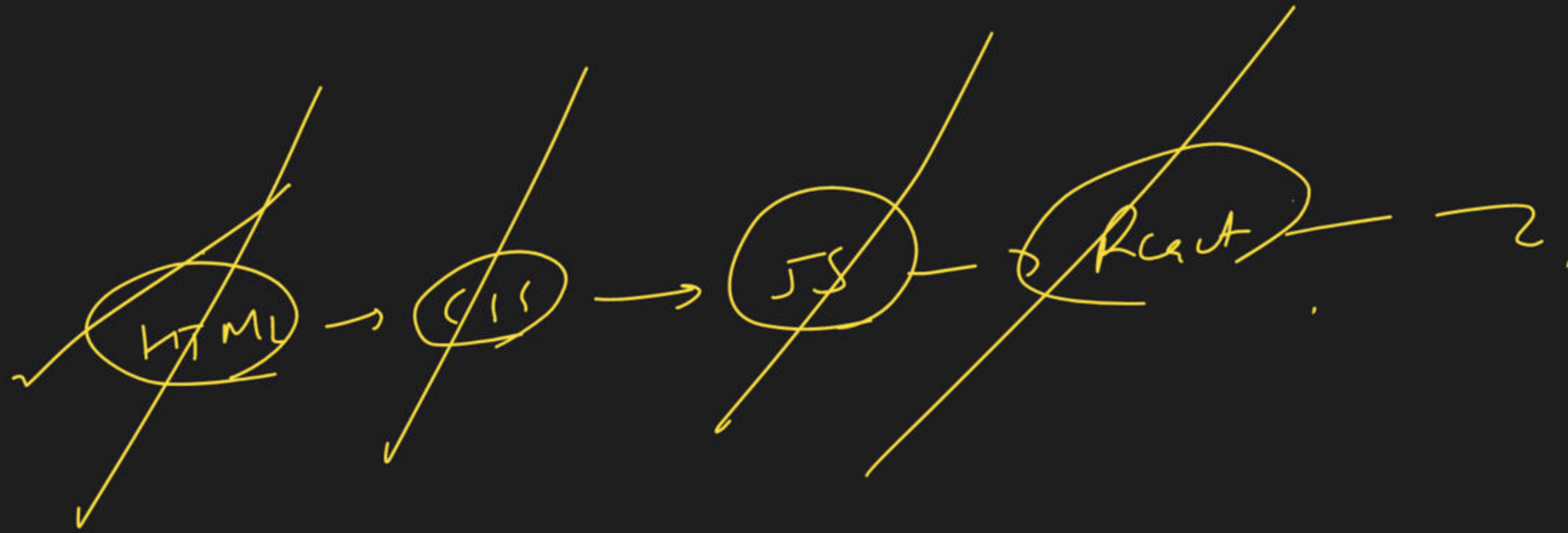


Real-life Use-Case



Namrata, Love, Lakshay, Kunal, Manish

full-stack
Web development



→ Bfs

0	1	2	3	4	5	6	7
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Topologic order

Kahn's
Algorithm

Indegree

0 → 0

1 → X 0

2 → X 0

3 → X 0

4 → 1 0

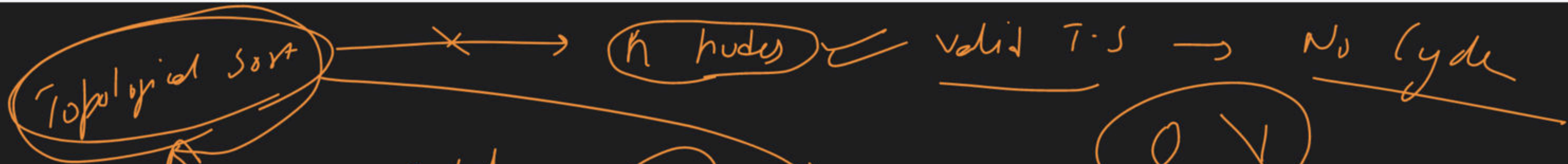
5 → X X 0

6 → X 0

7 → X 0

6

7



Total count = 6

$< n$ nodes

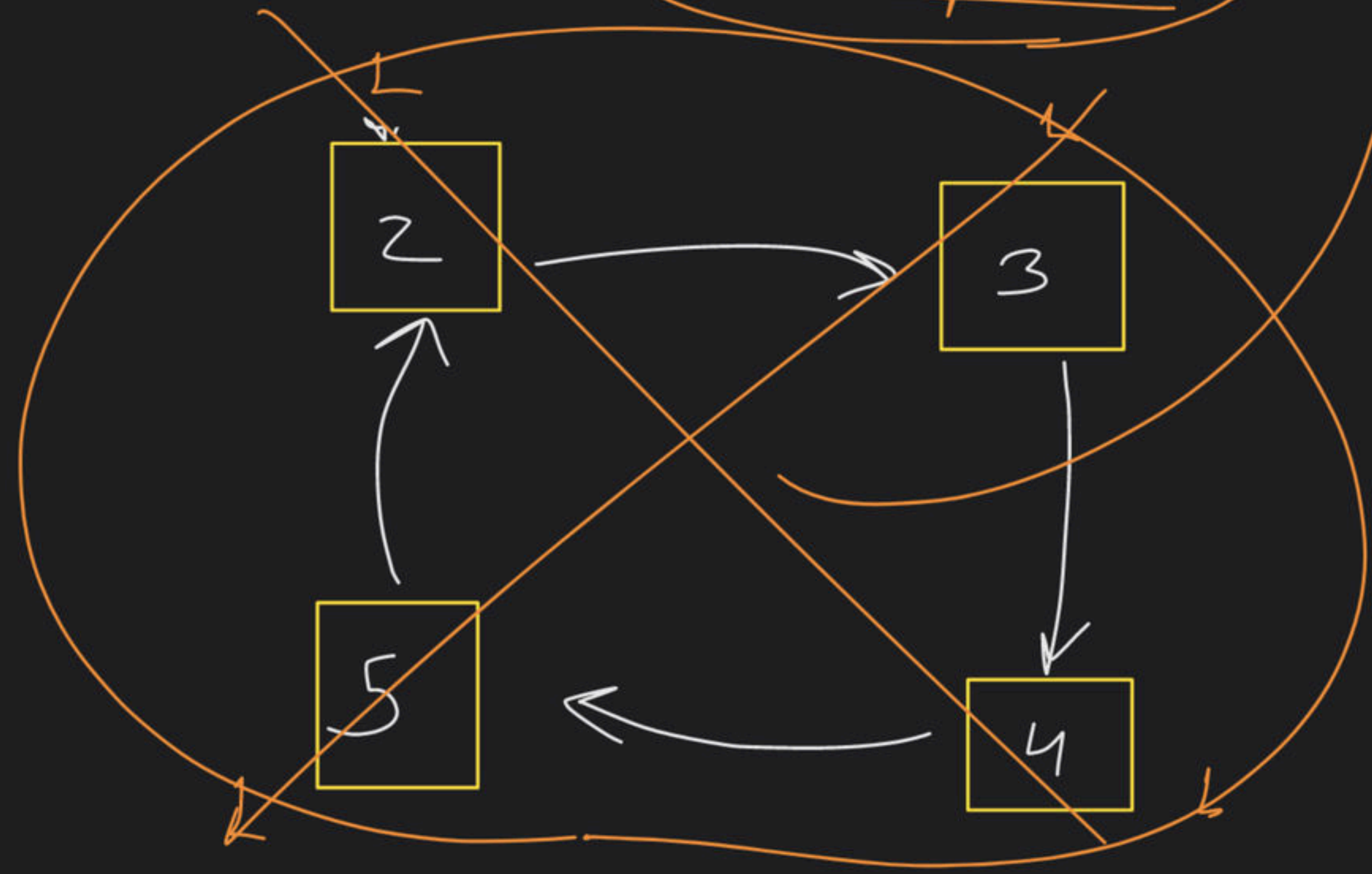
Invalid topo Sort

PKK cycle present

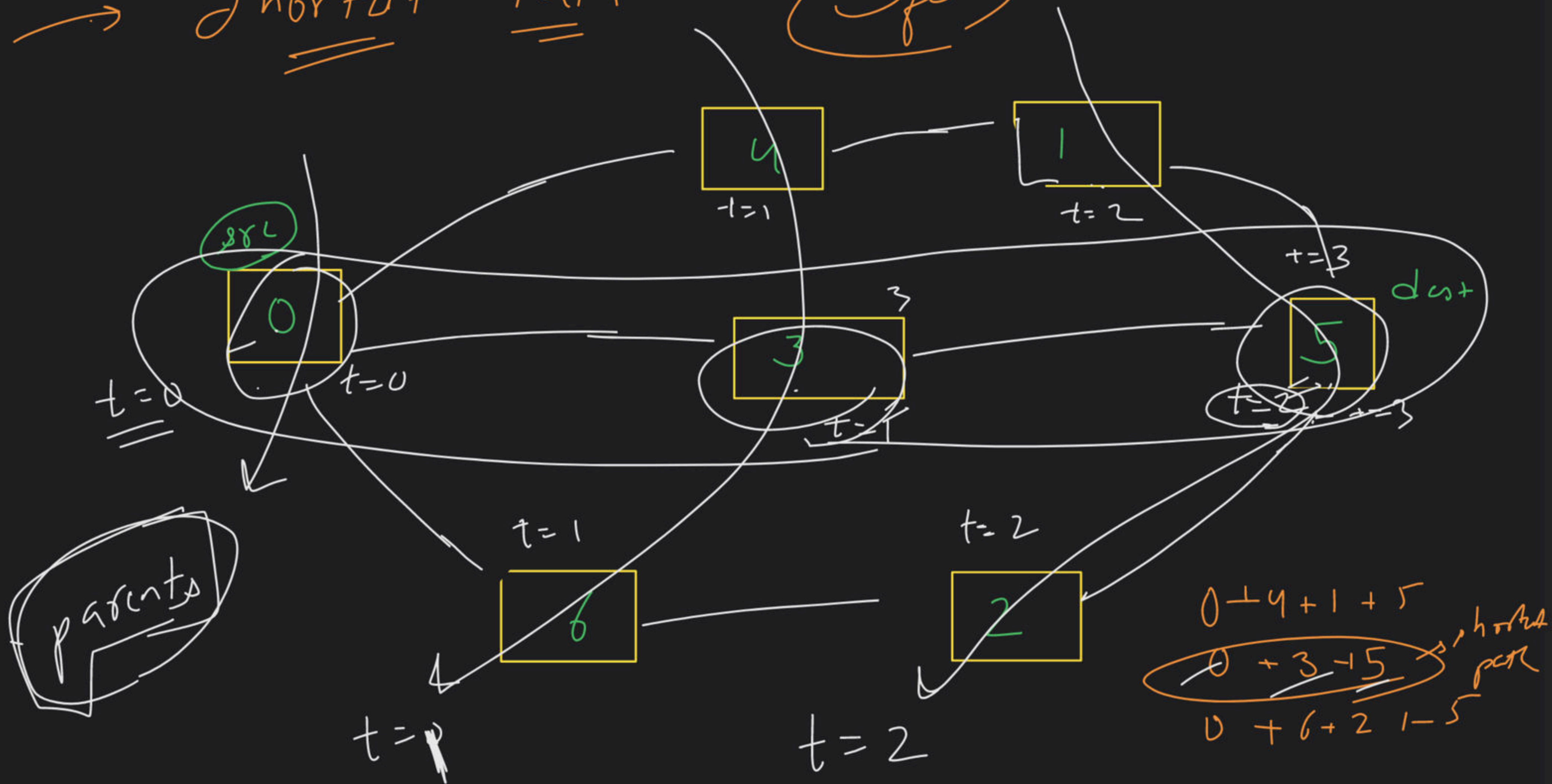
Directed graph

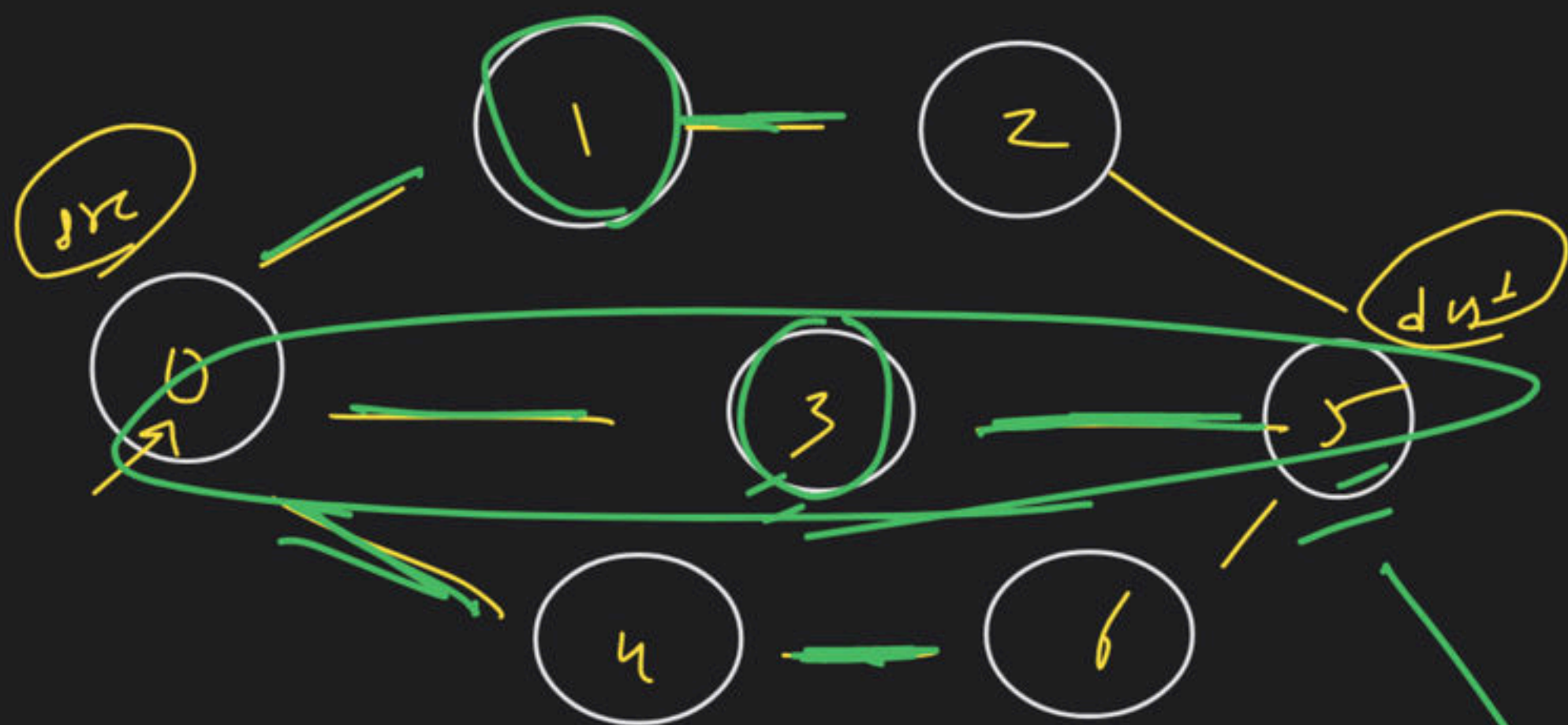
cycle detection

BFS



→ Shortest Path → Bfs





0 → -1
 1 → 0
 2 → 1
 3 → 0
 4 → 0
 5 → 3
 6 → 4

Parent

0 → T
 1 → ~~X~~ T
 2 → ~~X~~ (T)
 3 → ~~X~~ T
 4 → ~~X~~ T
 5 → ~~X~~ T
 6 → ~~X~~ T

visited



queue



Shortcut Path \rightarrow Dfs

Dijkstra







































