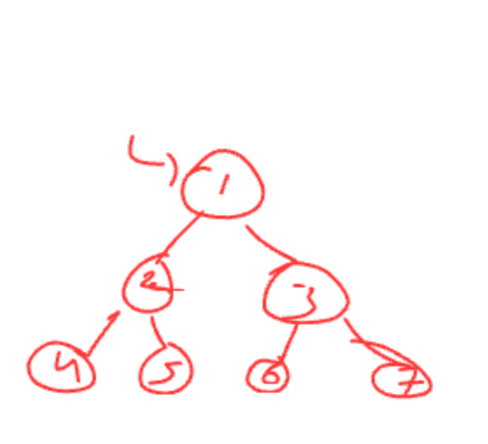
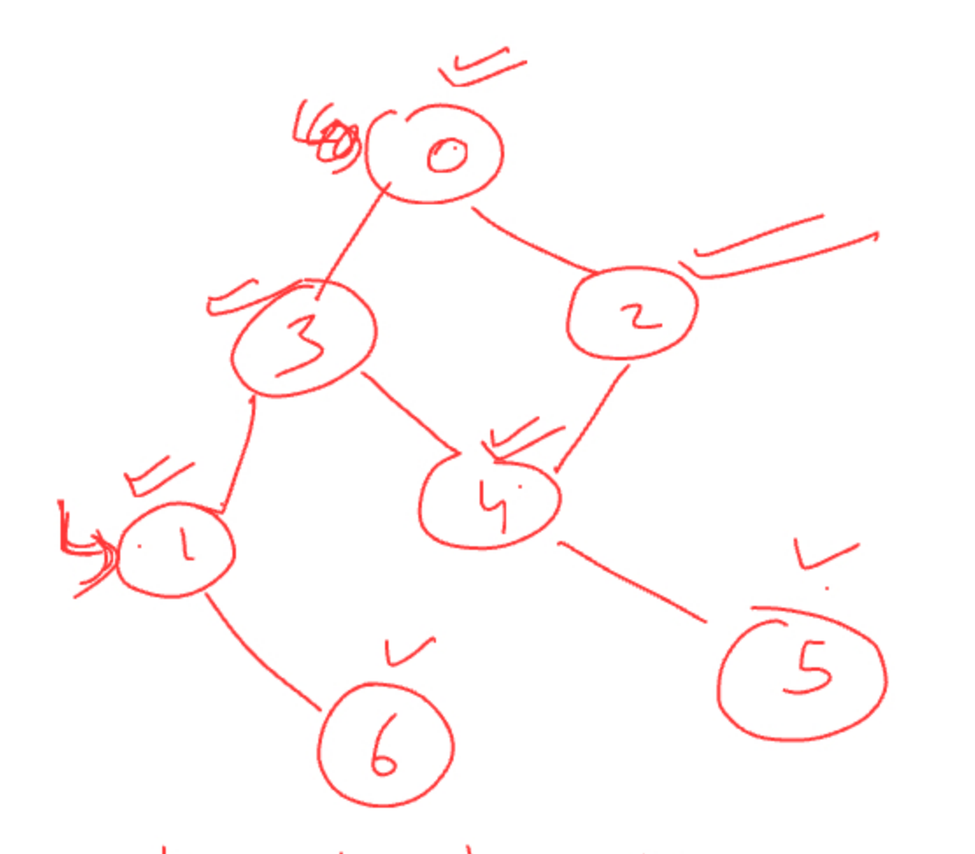
BFS

Level - order Traversal



[1, 2, 3, 4, 5, 6, 7]



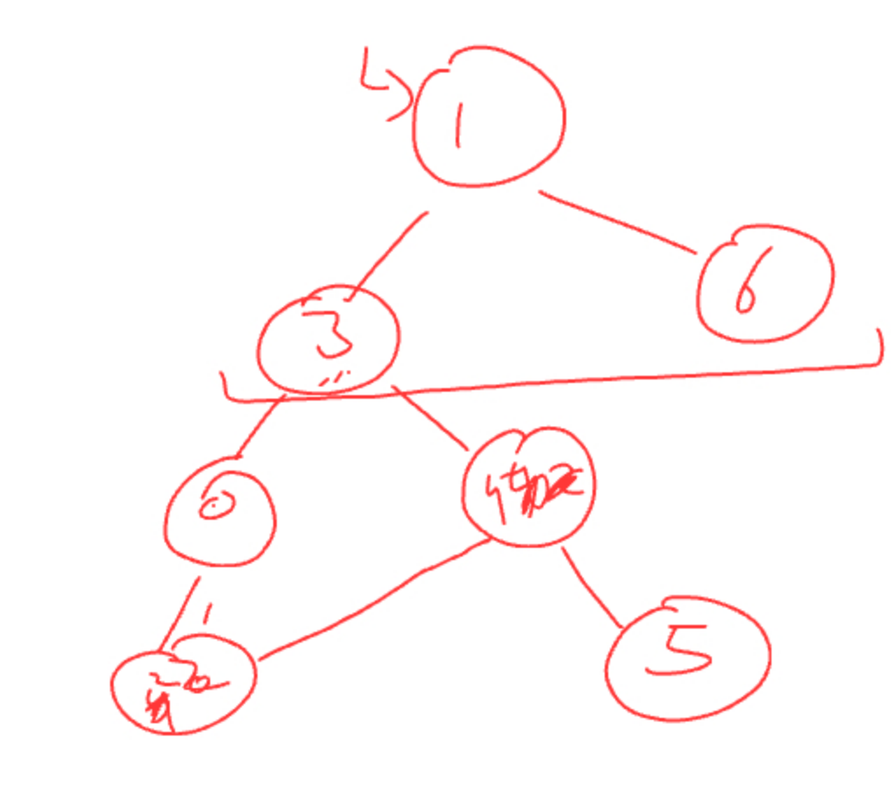
queue: 1, 3, 6, 0, 4, 2, 5

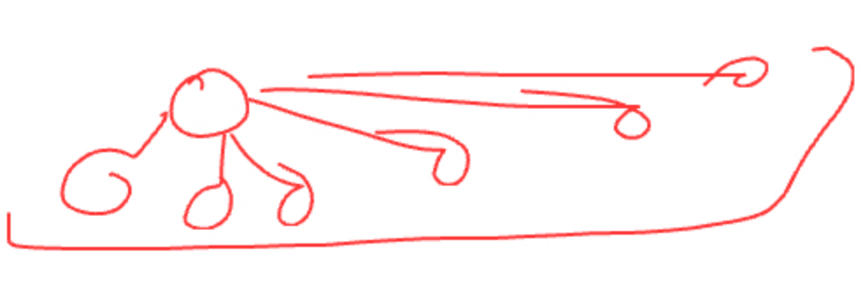
0 : 3, 2
1 : 3, 6
2 : 0, 4
3 : 0, 1, 4
4 : 3, 2, 5
5 : 4
6 : 1

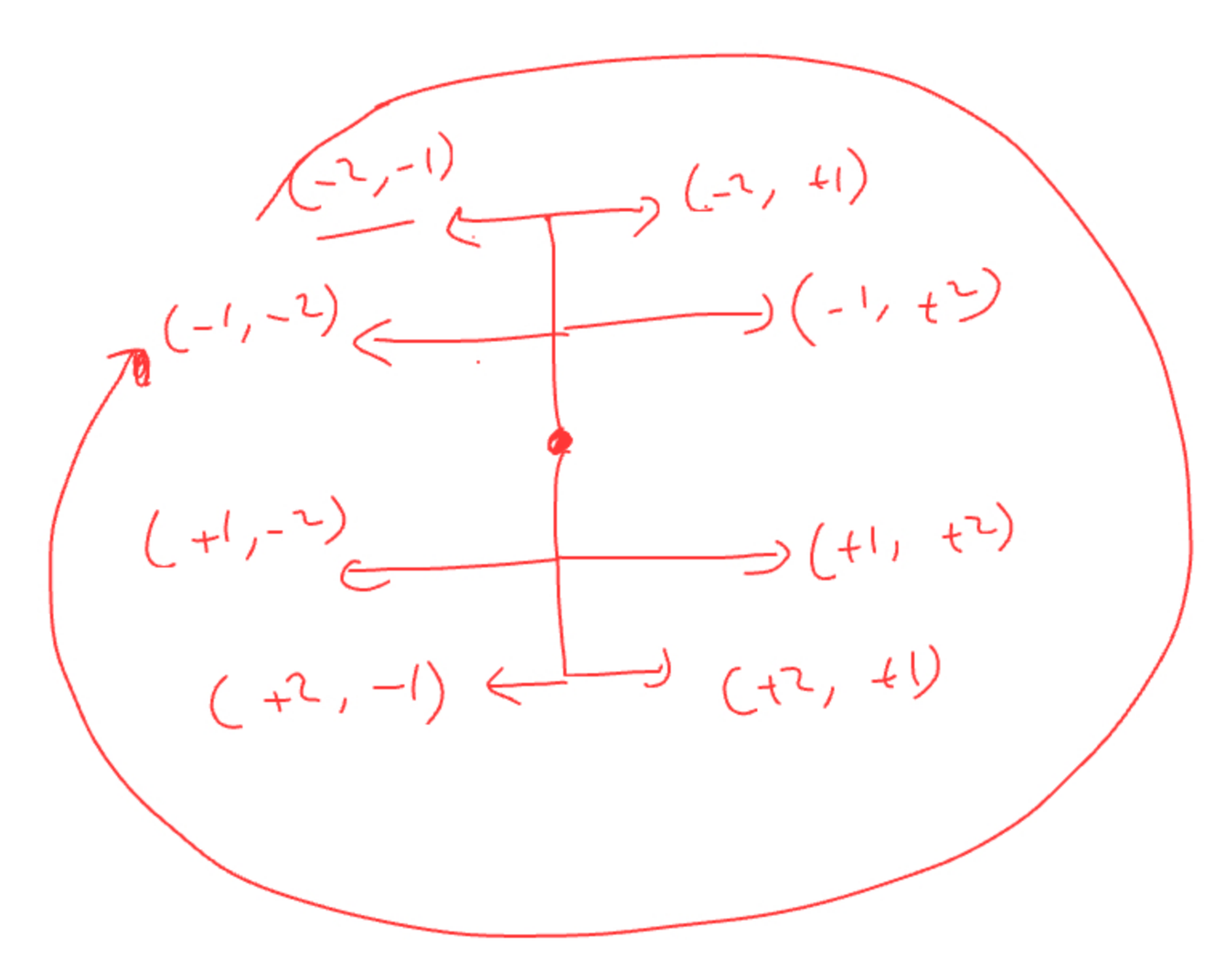
1, 3, 0, 2, 4,

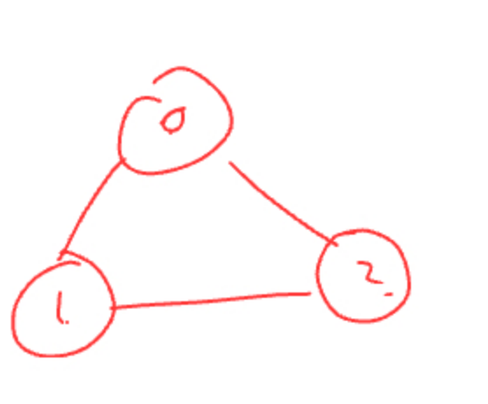
BFS : [1, 3, 6, 0, 4, 2, 5]

[1, 3, 6, 0, 4, 2, 5]
0 1 2 3





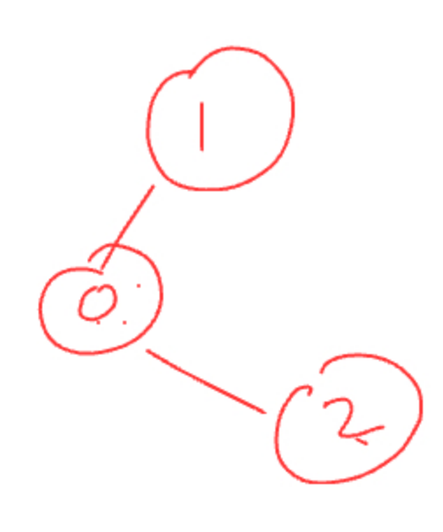


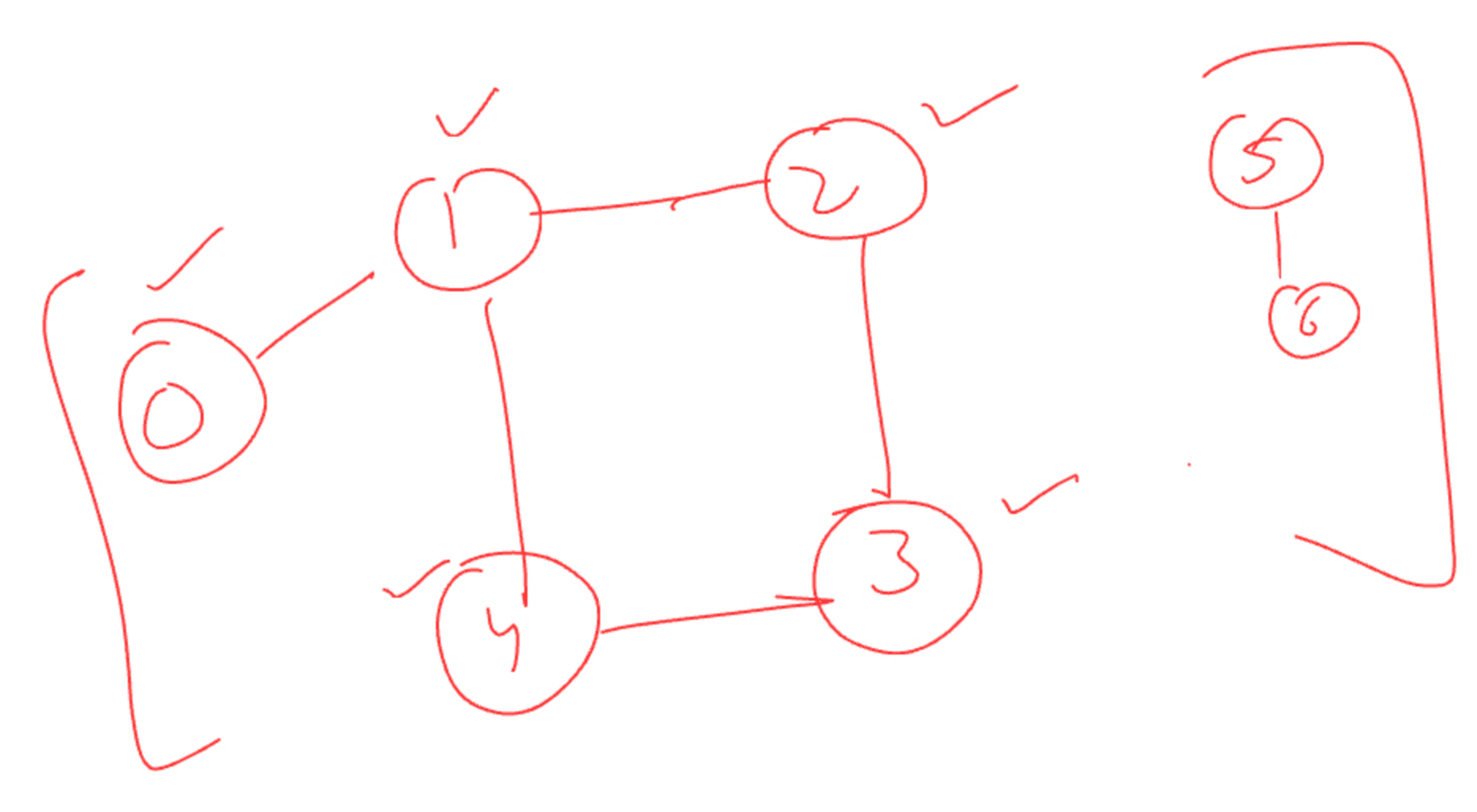


$V = n^2$

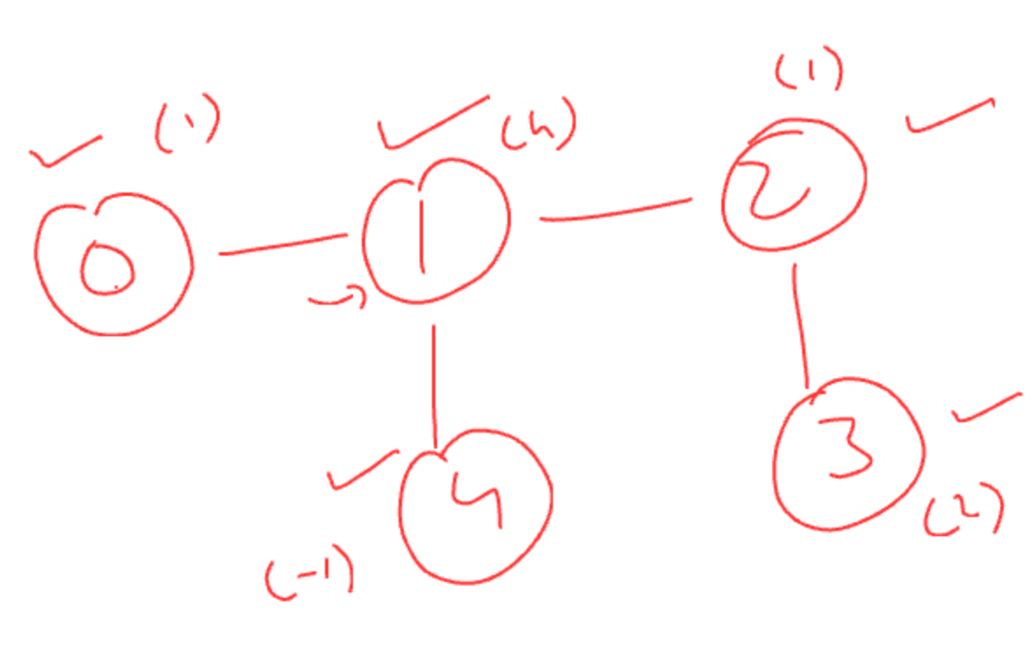
$E <= 8n^2$

$O(V+E) = O(n^2)$

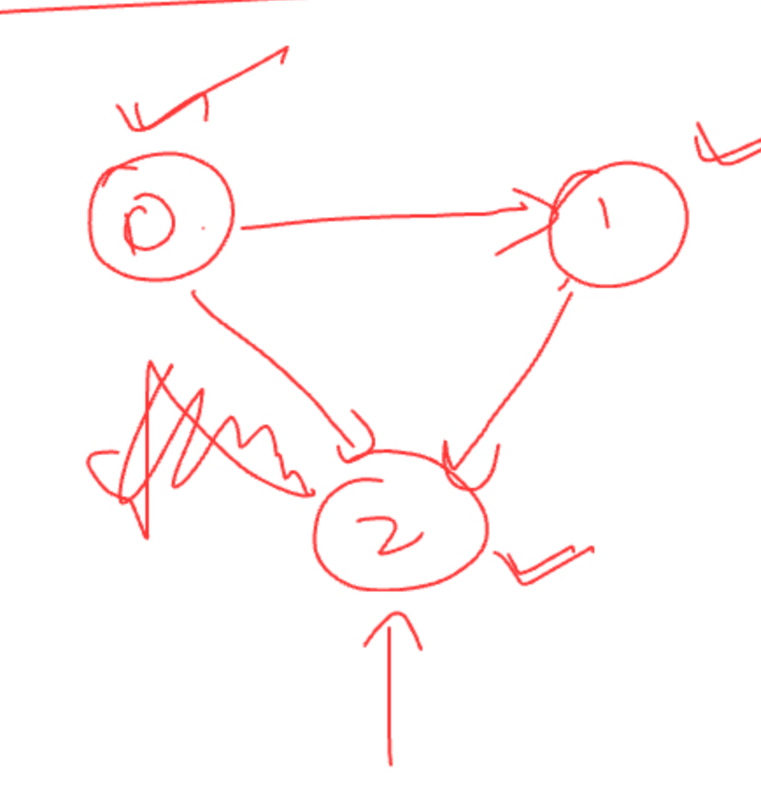


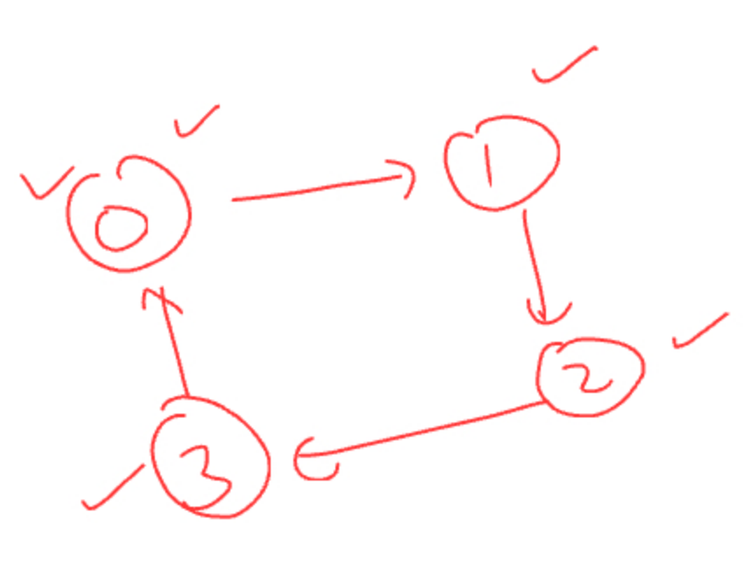


0 : 1
1 : 0, 2, 4
2 : 1, 3
3 : 2, 4
4 : 1, 3



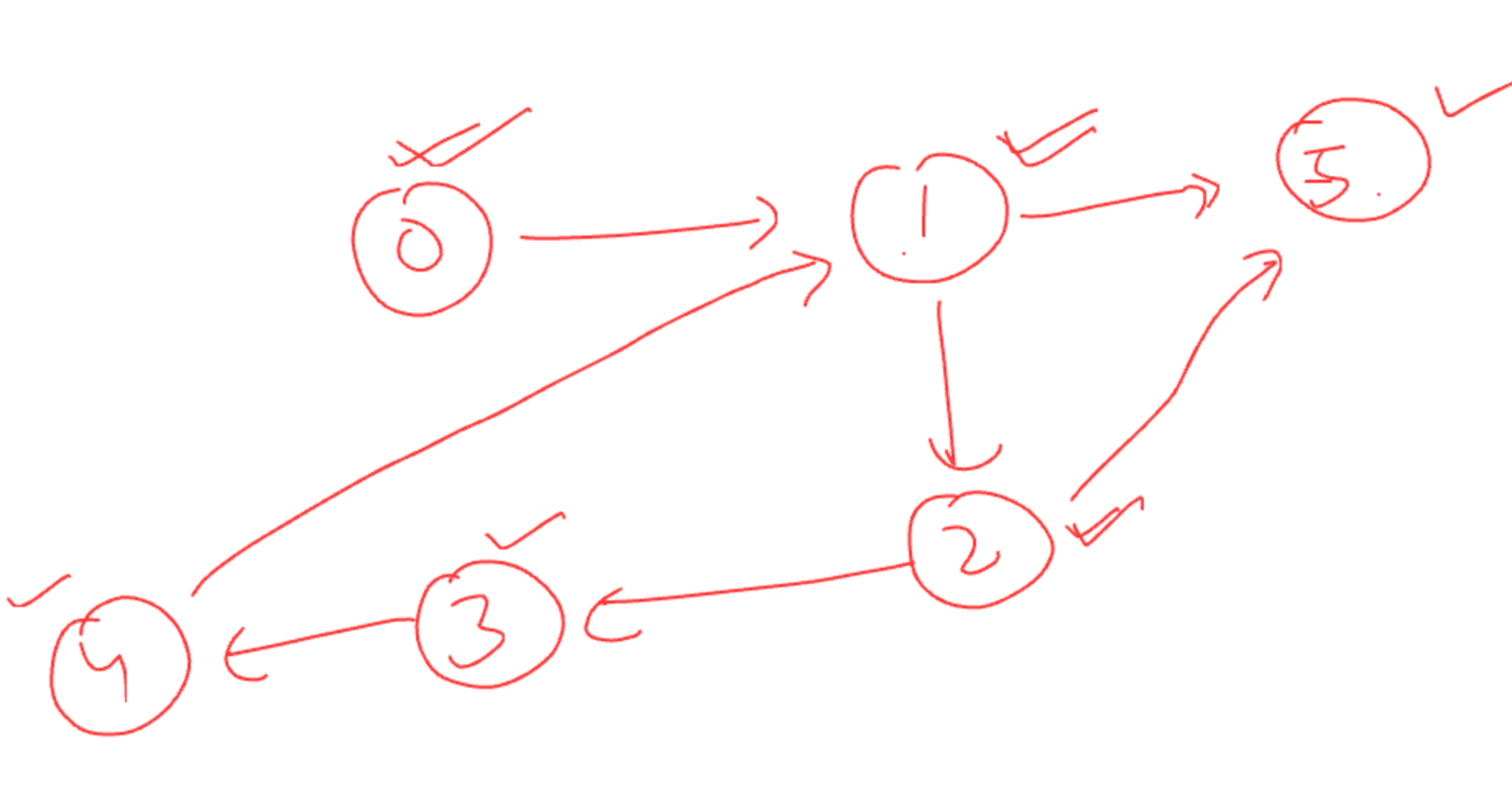
0 : 1
1 : 0, 2, 4
2 : 1, 3
3 : 2
4 : 1





0 : 1, 2
1 : 2
2 :

[0, 1, 2, 2

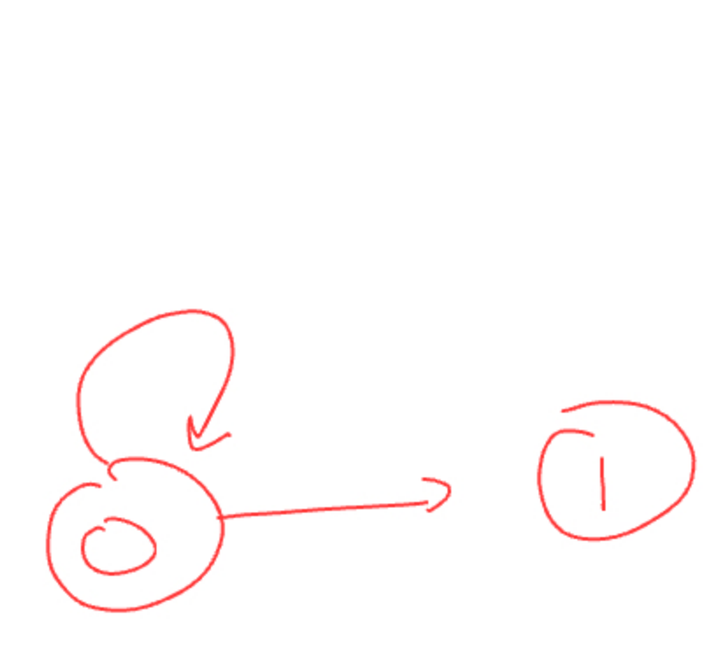


0 : 1
1 : 5, 2
2 : 5, 3
3 : 4
4 : 1
5 :

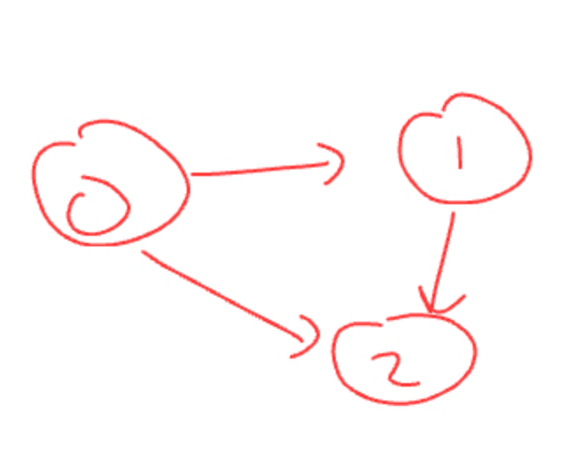
recStack: [0, 1, 5, 2,

[recStack: [0, 1, 2, 3, 4]

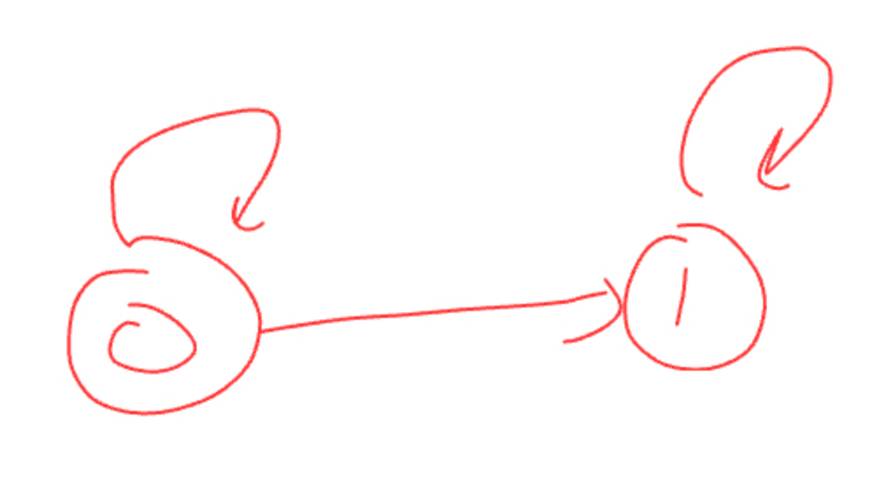
vis
recStack



0 : 0, 1
1 : -



0 : 1, 2
1 : 2
2 : —



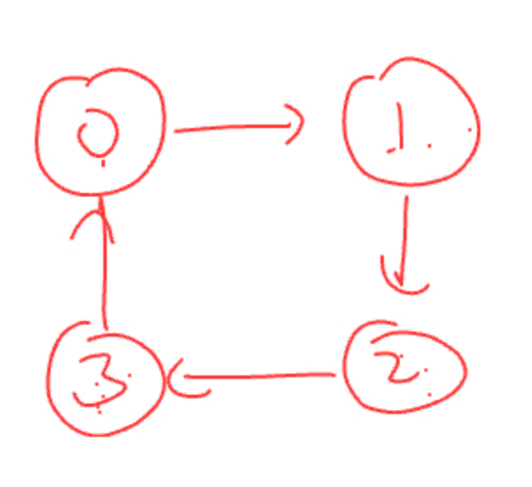
0 : 0, 1
1 : 1

---

u → v ⇒ u should come before v

DAG

u → v



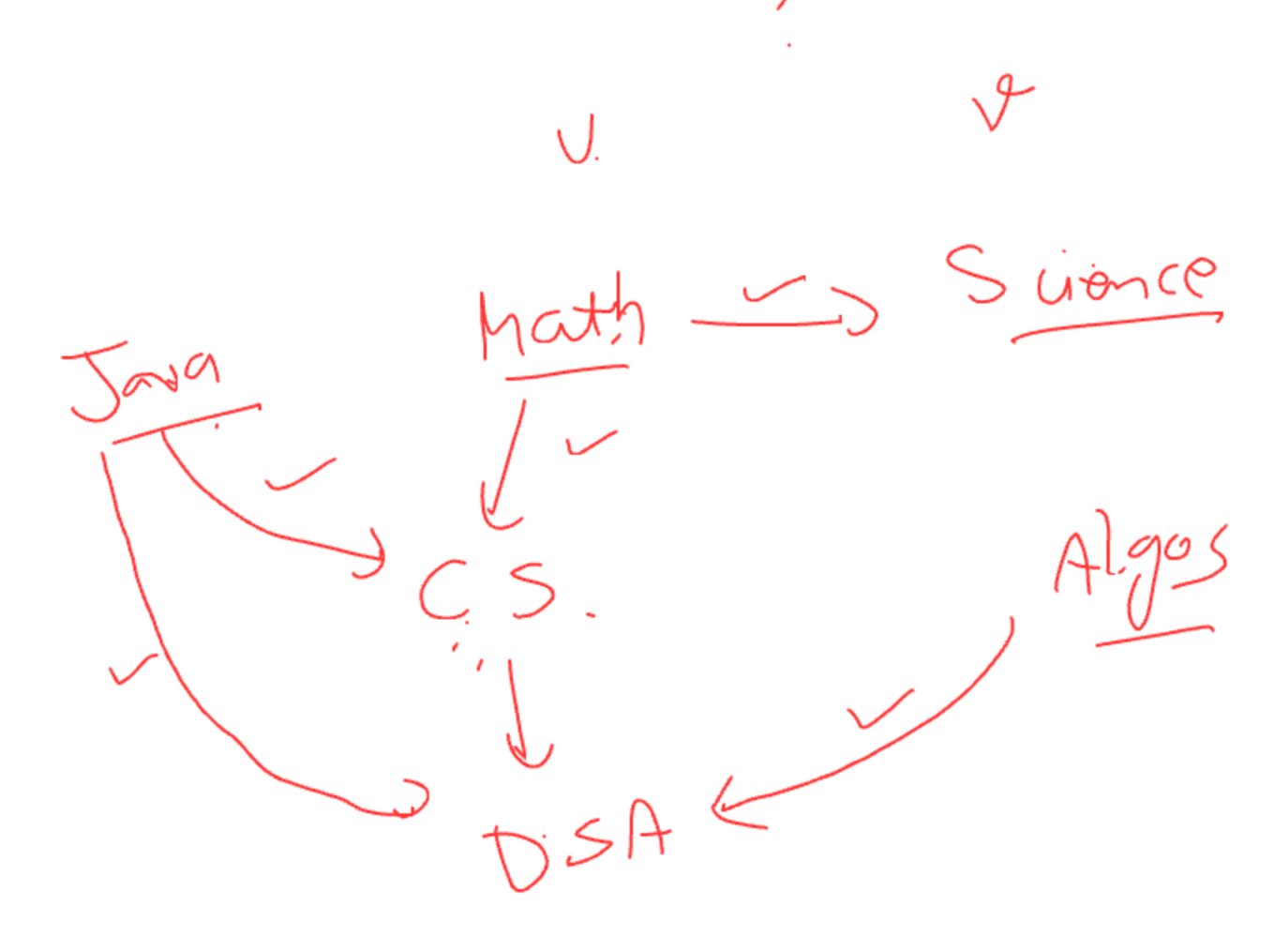
0 1 2 3

Course - Ordering

Prereq.

Science : Math
CS : Math, Java
DSA : CS, Java, Algos ...

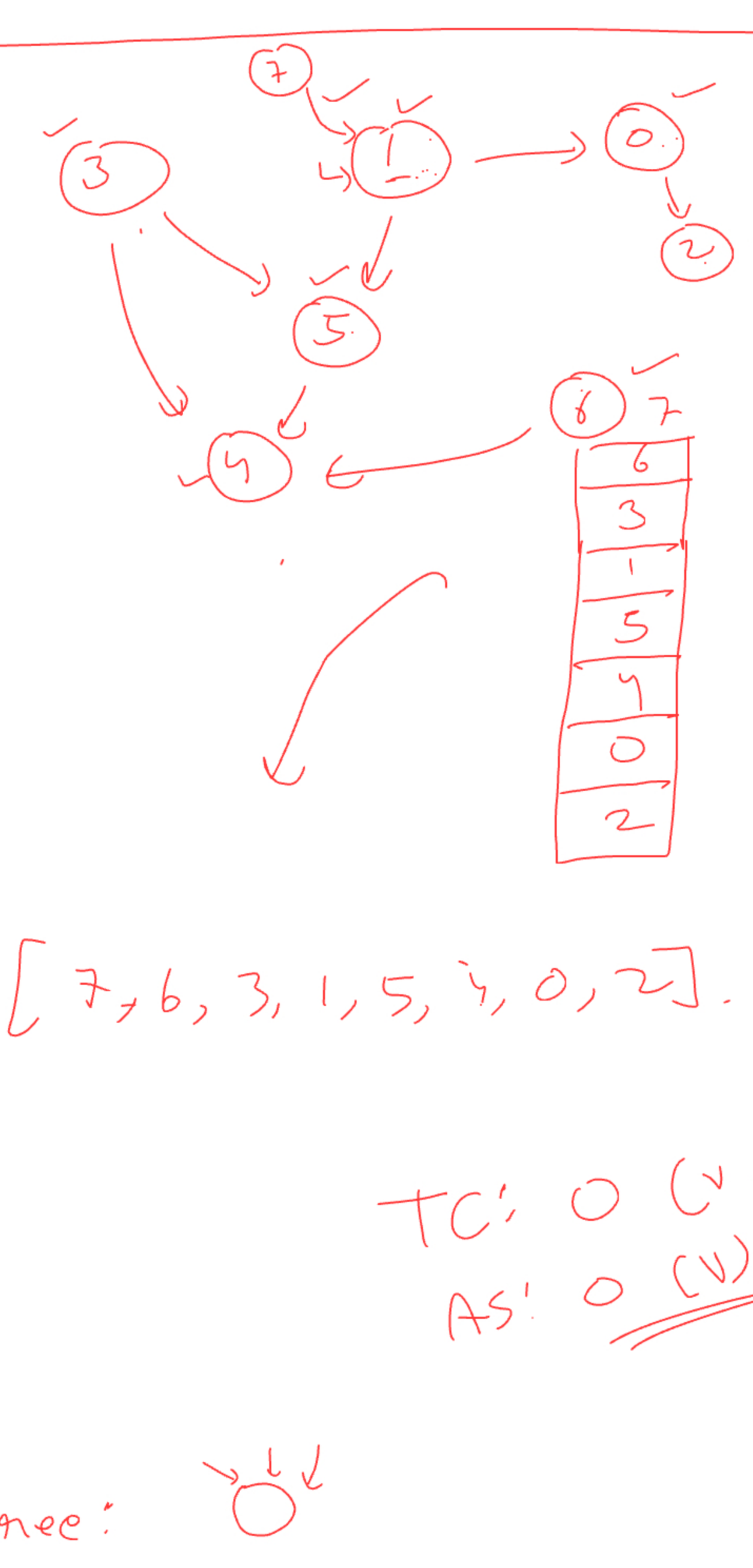
u → v



[Math, Science, Java, CS, Algos, DSA]

---

u → v1, v2, ...



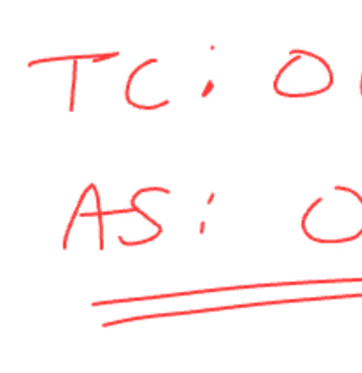
0 : 2
1 : 0, 5
2 :
3 : 5, 4
4 :
5 : 4
6 : 4
7 : 1

topo: [1,

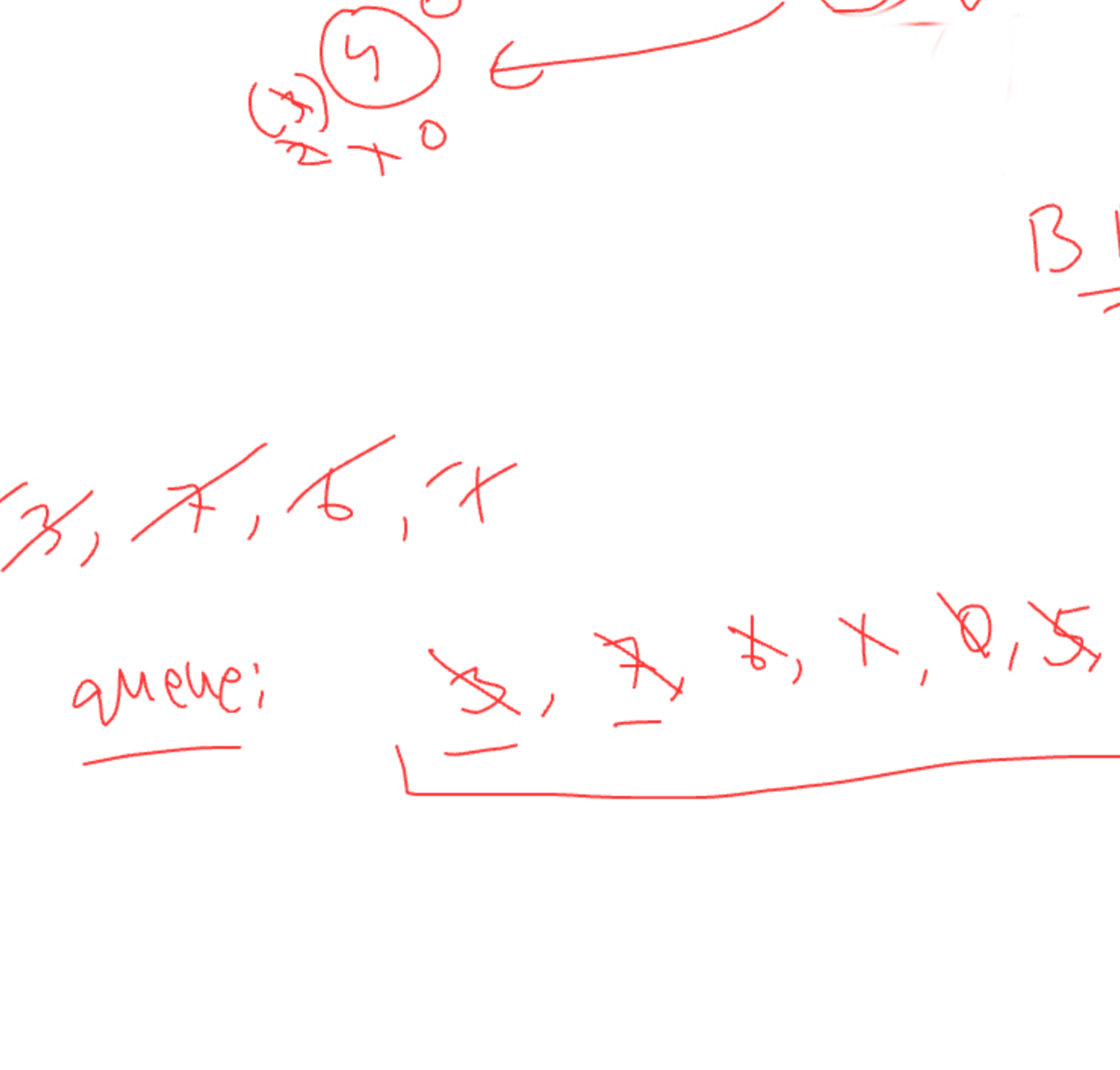
[7, 6, 3, 1, 5, 4, 0, 2].

TC: O(V+E)
AS: O(V)

In-Degree :



Out-Degree



TC: O(V+E)
AS: O(V)

BFS - kind

[3, 7, 6, 1

queue: 3, 7, 6, 1, 0, 5, 2, 4

Topo : [3, 7, 6, 1, 0, 5, 2, 4]