$a = 5$
$b = 9$

A	B
2	4
3	5

$a_1 + a_2 = a$

$b_1 + b_2 = b$

2 3 4 5 $\underline{9-4}$

$a = 3$
$b = 6$

A	B
1	4
2	

$\boxed{1 \quad 2}$ 4

— o —

Graph and how we store it
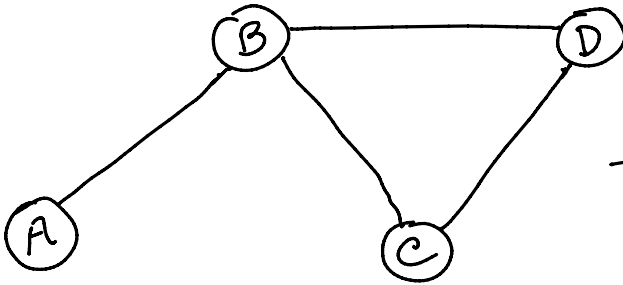
NODE O
EDGE /

→ Graph

2 3 4 6 6 6
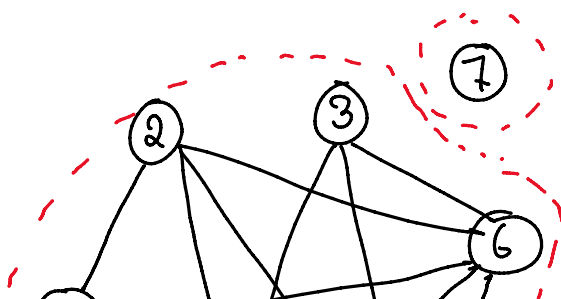
Component : set of (nodes) &
edges

A ———→ B directed edge

4 ——— 6 undirected edge

4 (self loop)
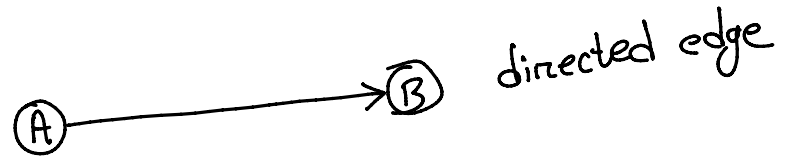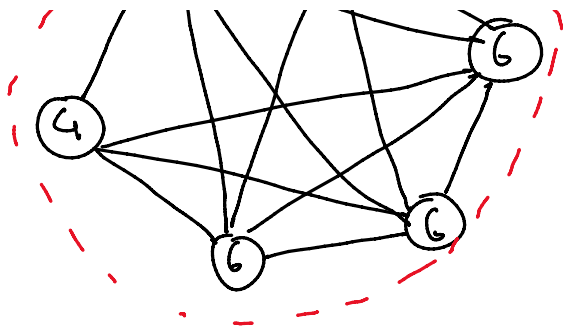
How to store data?

1) Adjacency matrix $(O(n^2))$

2) Adjacency list $(O(n+m))$

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

$2E+V$
$\leq E+V$
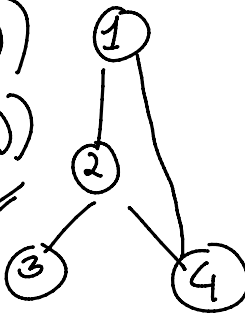
	1	2	3	4
1	1	1	0	1
2	1	1	1	1
3	0	1	1	0
4	1	1	0	1
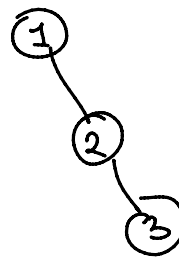
	1	2	3
1	1	1	0
2	1	1	1
3	0	1	1

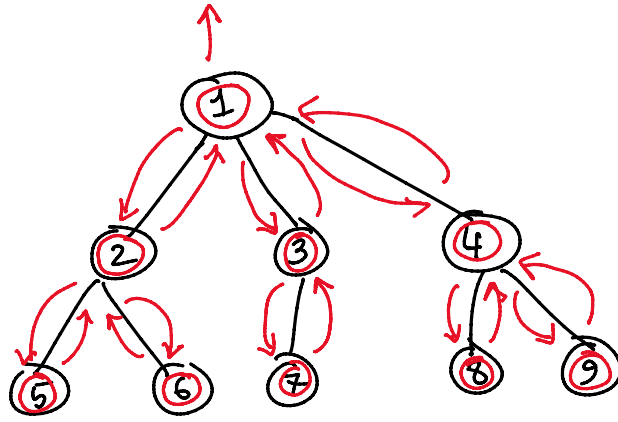## Traversal Algo

1) DFS → (Depth First Search)

2) BFS → (Breadth First Search)

DFS
→ Pre-order
→ In-order
→ Post-order

acyclic graph,
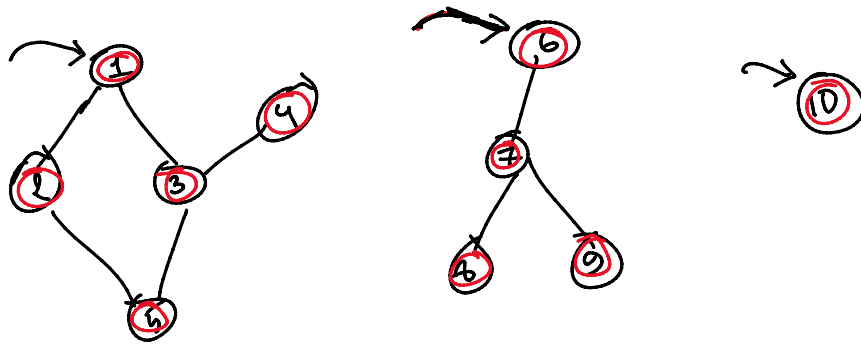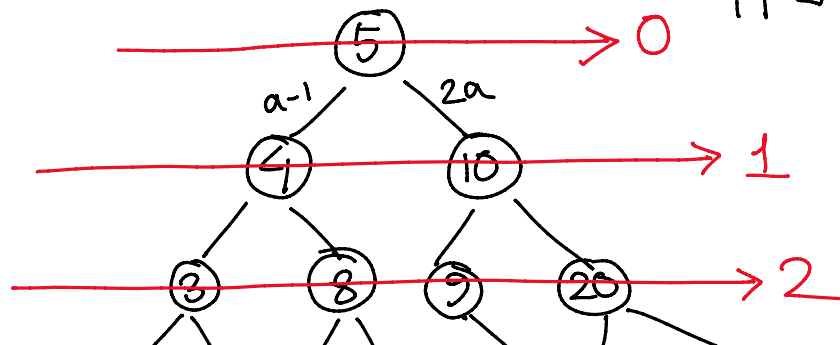component = 1
=
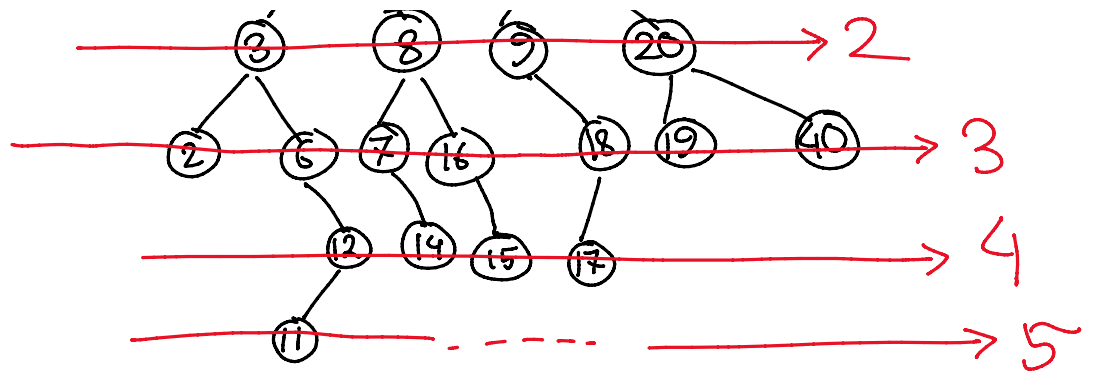TREE

1 2 5 6 3 7 4 8 9

noc : ③

5 ——→ 11

a ——→ b

a → a-1
  → 2a

5 ——→ 4 ——→ 8 ——→ 7 ——→ 14
                                    ↓
11 ← 12 ← 13

22

5 ——————→ 0
a-1   2a
4   10 ——————→ 1
3   8   9   20 ——————→ 2

$$5 \longrightarrow 4 \longrightarrow 3 \longrightarrow 6 \longrightarrow 12 \longrightarrow 11$$