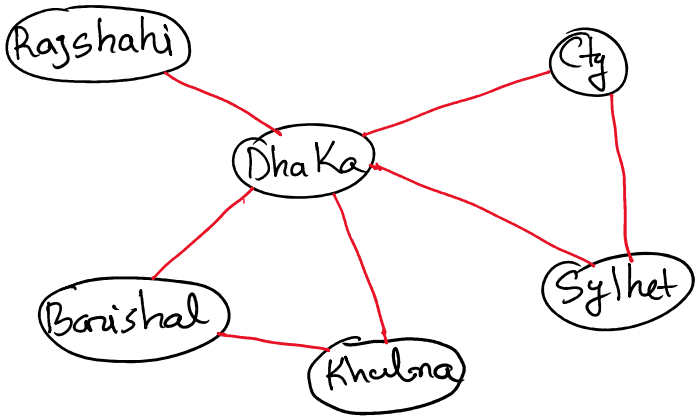
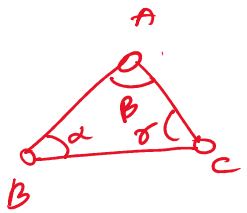
Monday, December 25, 2023 8:51 PM

Graph:

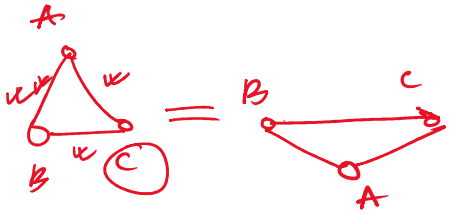


Vertex / Node : Dhaka, Ctg, Khulna .....

Edges

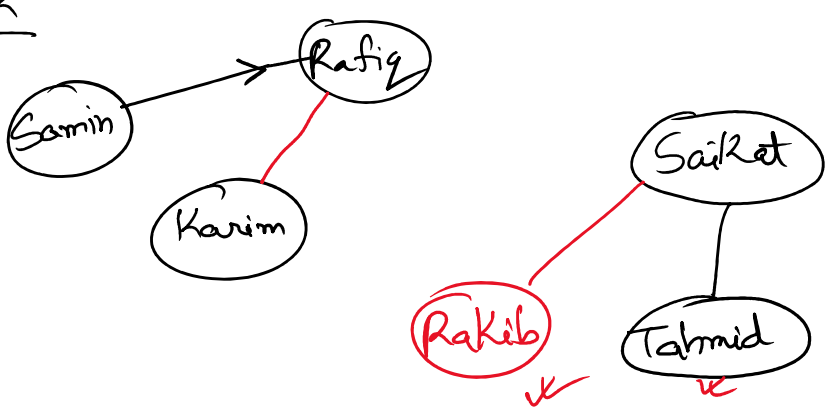


Geometry

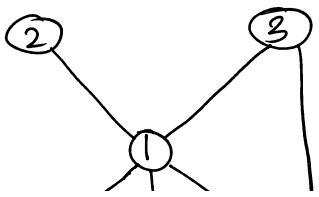


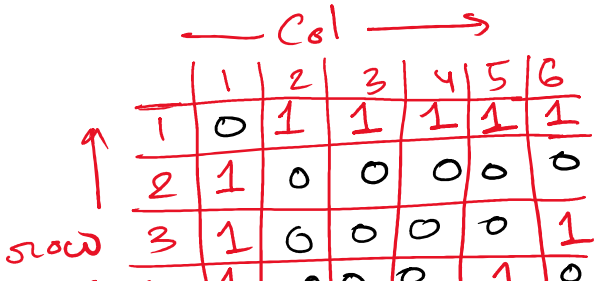
Graph

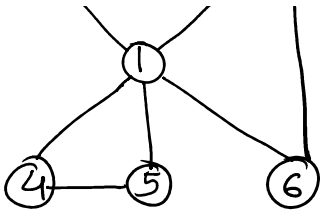
Facebook



Adjacency Matrix







3	1	0	0	0	0	1
4	1	0	0	0	1	0
5	1	0	0	1	0	0
6	1	0	1	0	0	0

row

2D Array O(1)

You will be given N number of nodes.

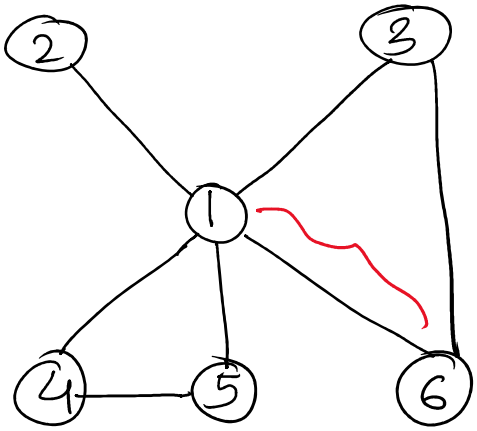
⇒ T.C : $O(N^2)$ Searching : O(1)

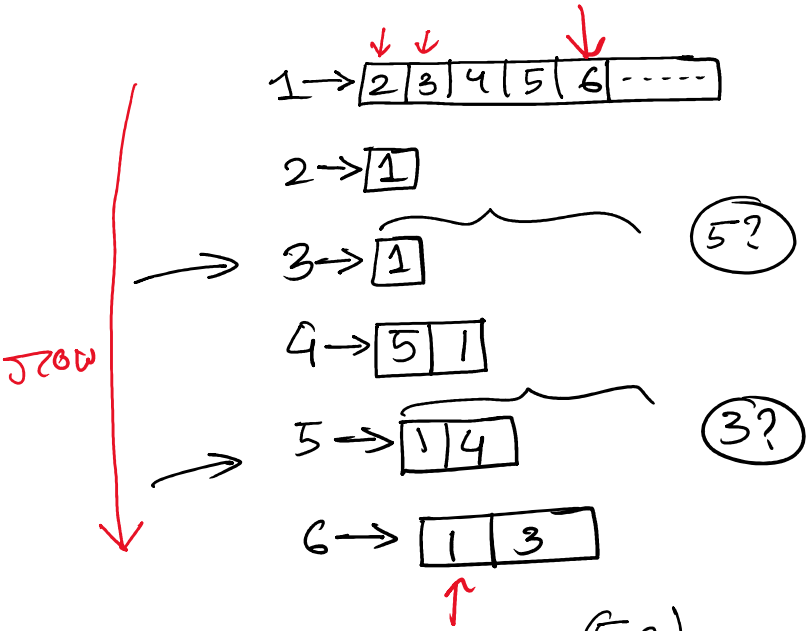
M.C : $O(N^2)$

$1 \le N \le 10^5$

$\frac{10^{10}}{10^8} = 100$ sec

Adjacency List :





T.C : O(number of edges)

M.C : O(number of edges)

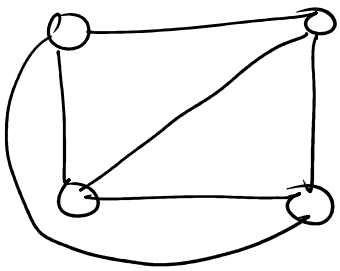
Searching : O(Size of a list)

Input : $1 \le N \le 10^5$

N=4, E=6

Input : $1 \le N \le 10^5$

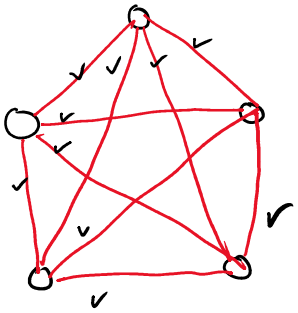
$1 \le E \le 10^5$



Sparse Graph : Very low number of edges

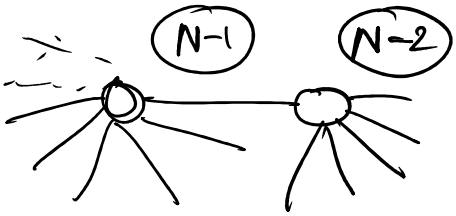
Dense Graph : Very high number of edges

N = 5 Maximum Edges = 9



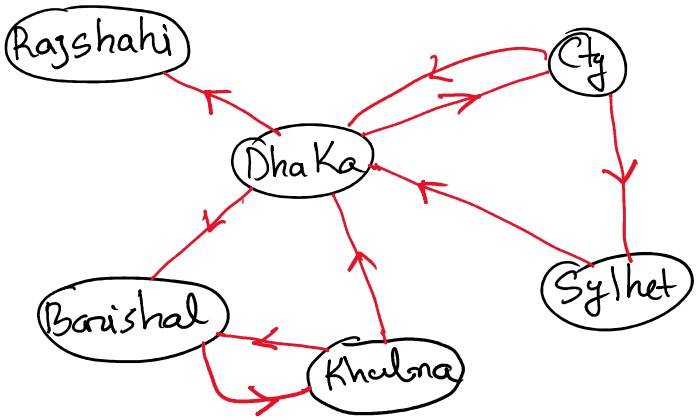
$4 + 3 + 2 + 1 = 10$

$\frac{n(n-1)}{2}$



---- 1

Directed / Undirected



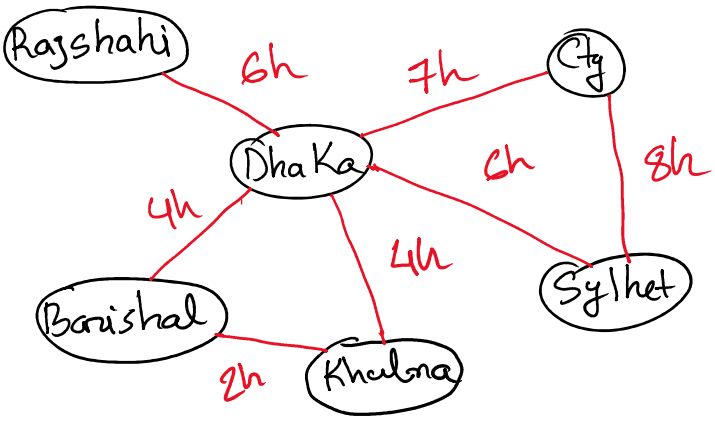
Undirected Graph / Bi-directional Graph

Directional Graph / Unidirectional Graph

Weighted Graph

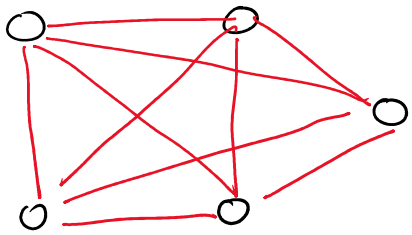
Unweighted Graph

Unweighted Graph

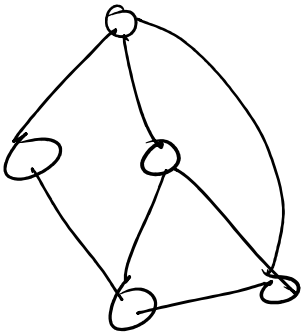


Weighted Graph

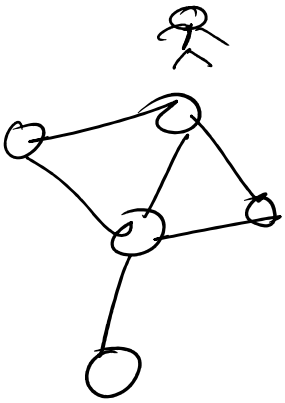
Complete Graph

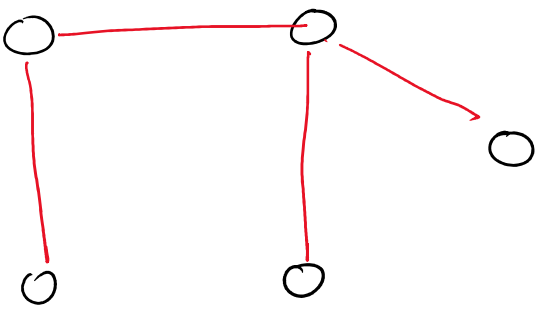


Connected / Disconnected Graph



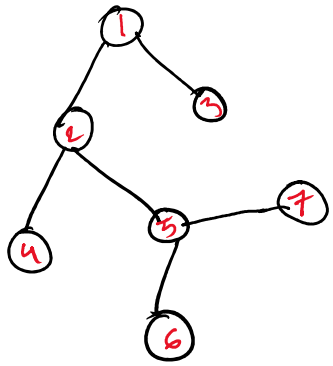
Disconnected Graphs





Connected Graph

Tree :



Cycle ✗

N node Tree

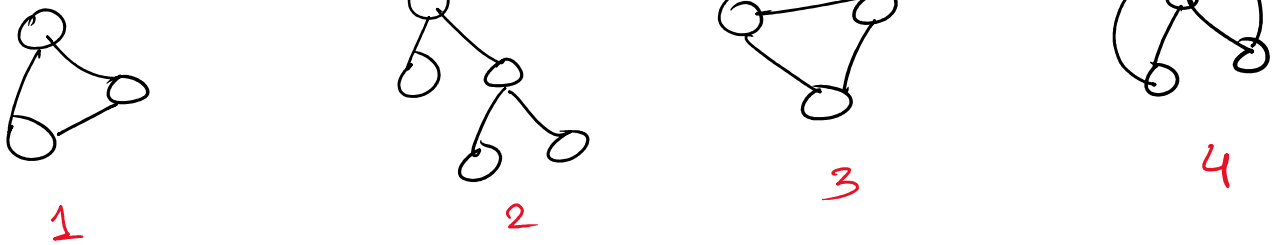
Lowest Edges

N-1

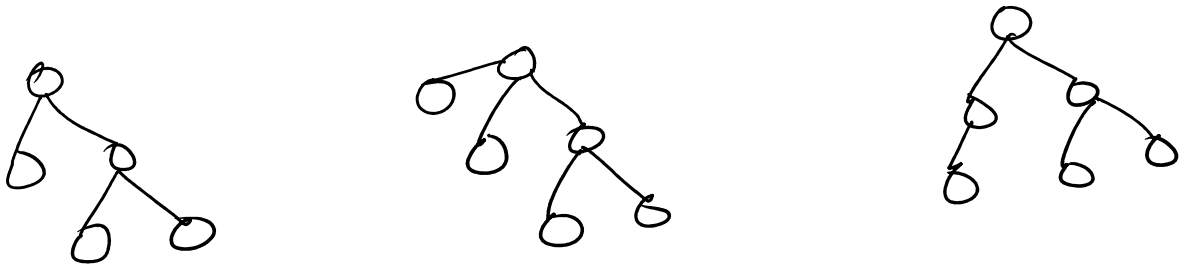
Highest Edges

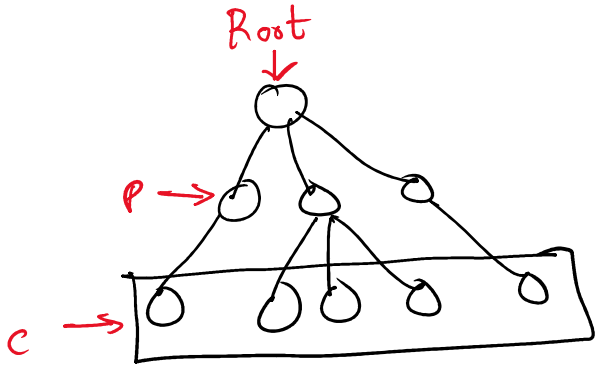
N-1

Component



Forest :





Leaf

BFS ⟶

DFS ⟶

Shortest Path → DijKastra

Discrete Math Book ↔ Rosen