

2.2-> Adjacency Matrix

Graph Representation

- ① Adjacency Matrix ② Adjacency List ③ Edge List

① Adjacency Matrix

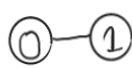
সমান্তরাল ২টি
Node

Adjacent
A-B

2D Array → Array এর row/col
২টি number of
node.

Note: $matrix[i][j] = 1$ হবে যদি $i \rightarrow j$ i নং নোড থেকে j নং
নোডে একটি edge use করা যাবে।

Example:



0 → 1
1 → 0
node = 2টি

matrix[2][2]

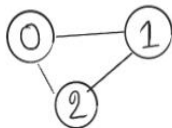
0	1
1	0

thinking

0 → 1
0 নোড থেকে 1
নং node-এ যাওয়া হবে।

How to present different type of variant
in adjacency matrix

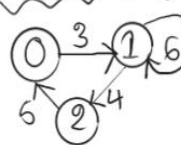
i) Undirected & Un-Weighted



0 → 1 1 → 0
0 → 2 2 → 0
1 → 2 2 → 1

	0	1	2
0		1	1
1	1		
2	1	1	

ii) Directed & Weighted



0 → 1
1 → 2
2 → 0
1 → 1

Note: Weighted graph-G
weight এর value same/1
শাকলি তাকে un-weighted
করে নেওয়া যায়।

	0	1	2
0		3	
1			4
2	5		

w_{ij}

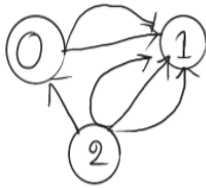


সুতরাং

$matrix[i][j] = w_{ij}$



Un-Weighted + Multi edge

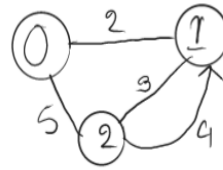


0 → 1 } 2 edges
0 → 1

2 → 1 } 6 edges
2 → 1
2 → 1
2 → 1
2 → 0

	0	1	2
0		2	
1			
2	1	3	

Weighted + Multi edge

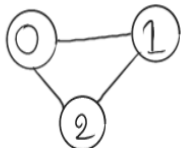


Adjacency matrix - G
weighted + multi edge graph
represent not efficient
way st.

2.3 → Adjacency List



Undirected & Unweighted



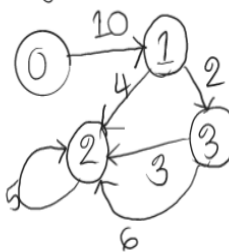
0 → 1 1 → 0
0 → 2 2 → 0
1 → 2 2 → 1

Graph edge
use node (node)
node node - 1 2 3 4 5
st.

$$\begin{bmatrix} 0 \rightarrow 1, 2 \\ 1 \rightarrow 2, 0 \\ 2 \rightarrow 1, 0 \end{bmatrix}$$

Adjacency List → Vector Linked List

Directed and Weighted and multi edge



total node = 4
0 → 1
1 → 2 1 → 3
2 → 2
3 → 2 3 → 2

0 → (1, 10) → weight
1 → (2, 4), (3, 3)
2 → (2, 5)
3 → (2, 3), (2, 6)
 ↓
 weight

2.4->Edge List

