DSA Lab 14

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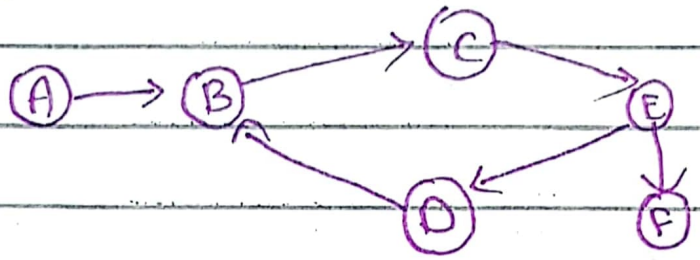
Lab Task 1:

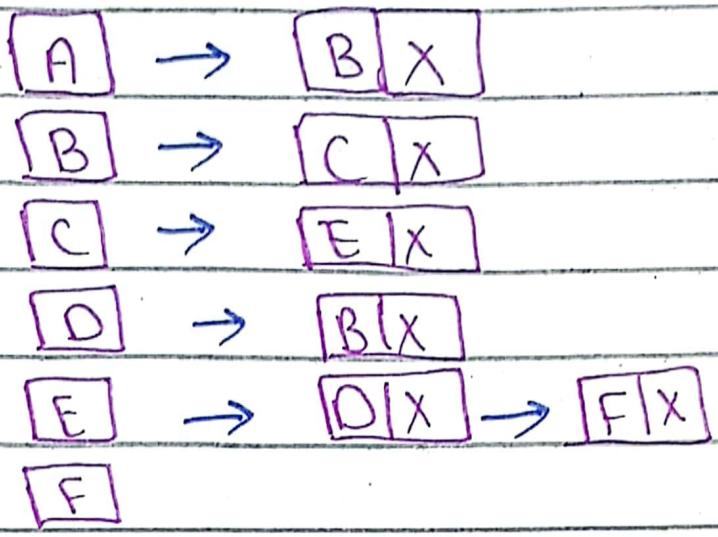
Graph:



Adjacency Matrix:

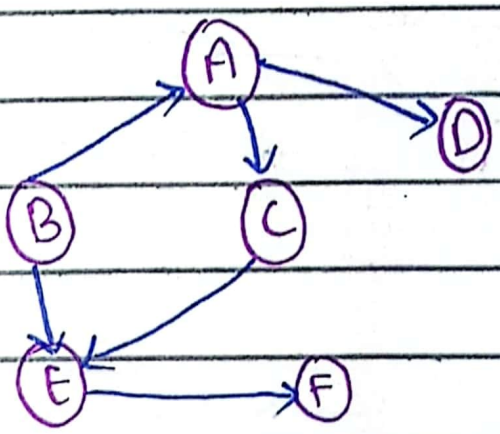
	A	B	C	D	E	F
A	0	1	0	0	0	0
B	0	0	1	0	0	0
C	0	0	0	0	1	0
D	0	1	0	0	0	0
E	0	0	0	1	0	1
F	0	0	0	0	0	0

Adjancey List:



Graph

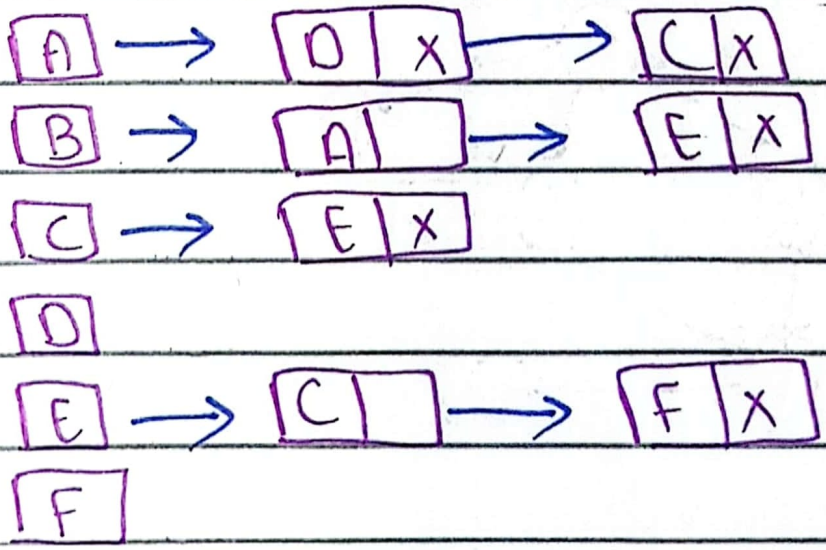
Directed - Graph



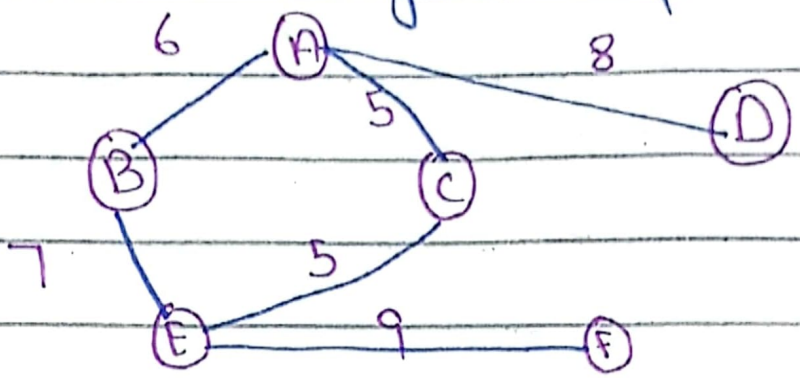
Adjacency Matrix:

	A	B	C	D	E	F
A	0	0	1	1	0	0
B	1	0	0	0	1	0
C	0	0	0	0	1	0
D	0	0	0	0	0	0
E	0	0	1	0	0	1
F	0	0	0	0	0	0

Adjancey List:



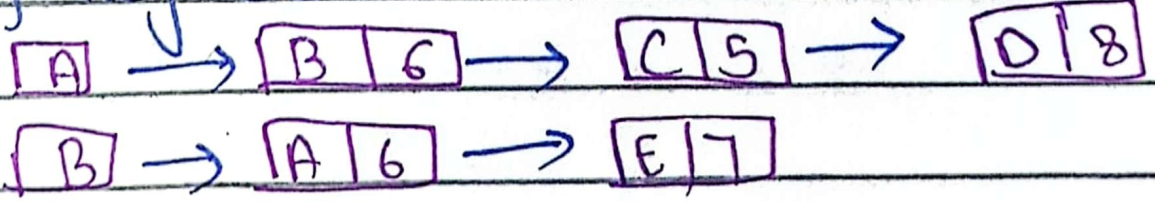
Graph:- Weighted Graph

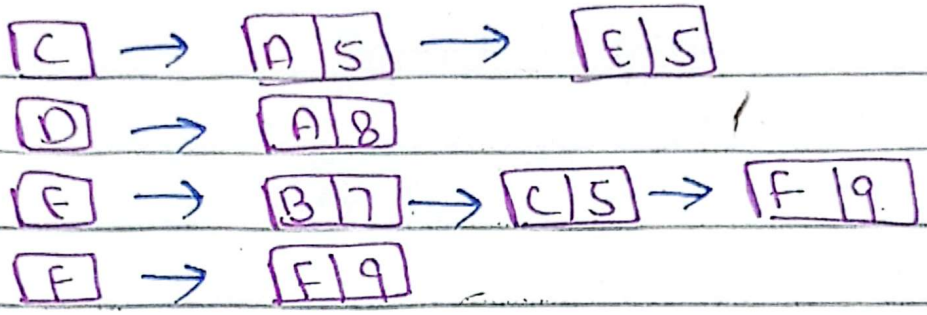


Adjancey Matrix:

	A	B	C	D	E	F
A	0	6	5	8	0	0
B	6	0	0	0	7	0
C	5	0	0	0	5	0
D	8	0	0	0	0	0
E	0	7	5	0	0	9
F	0	0	0	0	9	0

Adjancey List:





Graph 1

BFS:

A B C D E F

DFS:

A B C E F D

Graph 2 (Directed Graph)

BFS:

A B C D E F

DFS:

A B E F C D

Graph 3 (Weighted Graph)

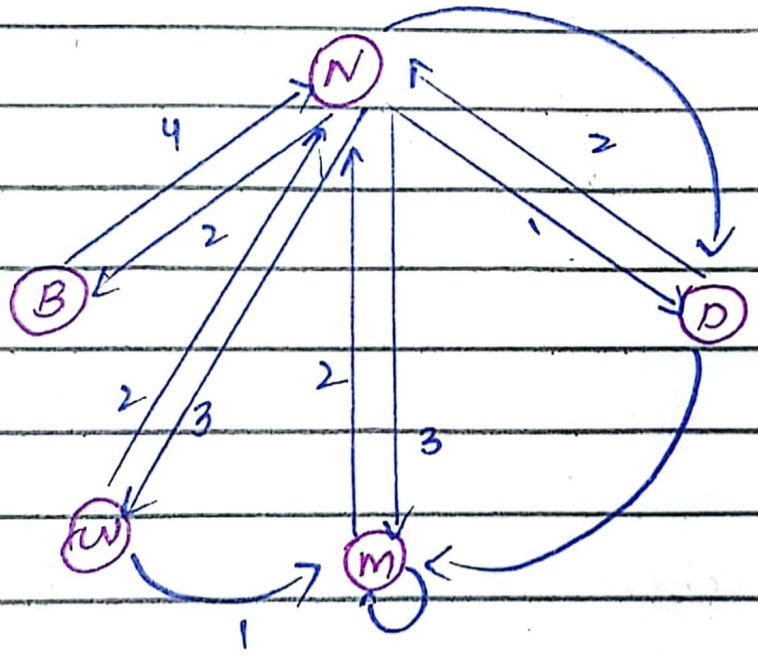
BFS:

A B C D E F

DFS:

A B E F C D

Lab Task 2:



Lab Task 3:

1. Nodes:

Each node represent a student in the class. For exple we might label them as A, B, C, D, E, f.

2. Directed Edges:

A directed edge (arrow) between two nodes indicates that one student knows another. For example: An edge A → B means A knows student B. and so on.

3. No Duplicate Edges:

→ Ensure there is only one directed edge b/w two nodes. For instance A knows B, there should not be another edge B → A unless specified that B also knows A.

→ No bidirectional relationship unless stated. If A → B do not automatically add B → A unless both know each other.

4. No Self-Referential loops:

Avoid loops where a node points to itself. A loop such as A → A (where student A knows their

own name) should not exist.

Example:

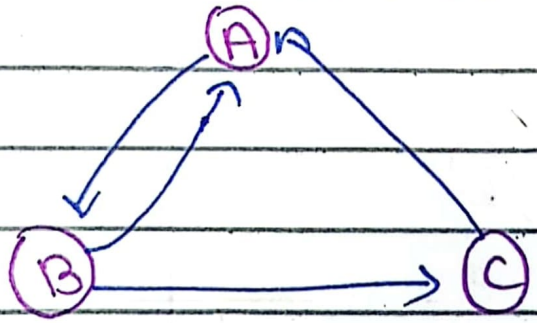
Let's consider a simple class of 3 students:

A, B, C

- A → B: A knows B
- B → C: B knows C
- C → A: C knows A

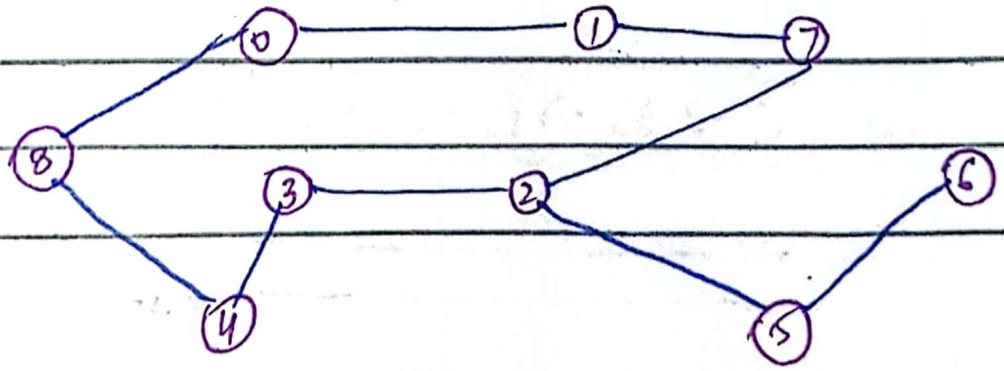
In this model, each student know each other.

Graph:-



Lab Task 4:-

Graph 1:



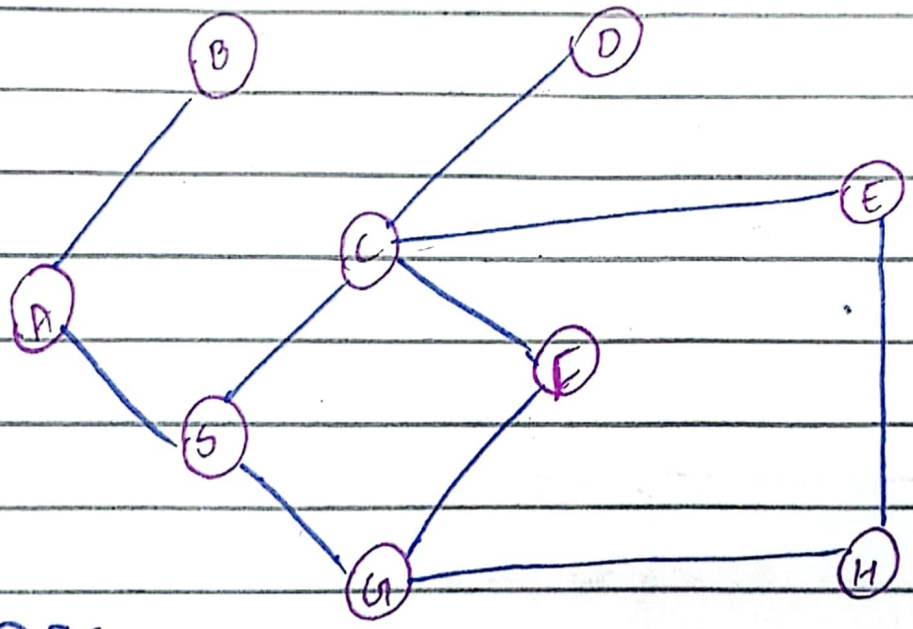
BFS:

$0 \rightarrow 1 \rightarrow 8 \rightarrow 7 \rightarrow 3 \rightarrow 4 \rightarrow 2 \rightarrow 6 \rightarrow 5$

DFS:

$0 \rightarrow 1 \rightarrow 7 \rightarrow 3 \rightarrow 12 \rightarrow 5 \rightarrow 6 \rightarrow 2 \rightarrow 4$

Graph 2:



BFS:

$A \rightarrow B \rightarrow S \rightarrow C \rightarrow G \rightarrow F \rightarrow D \rightarrow H \rightarrow E$

DFS:

$A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \rightarrow S \rightarrow G \rightarrow F \rightarrow H$

THE END!!