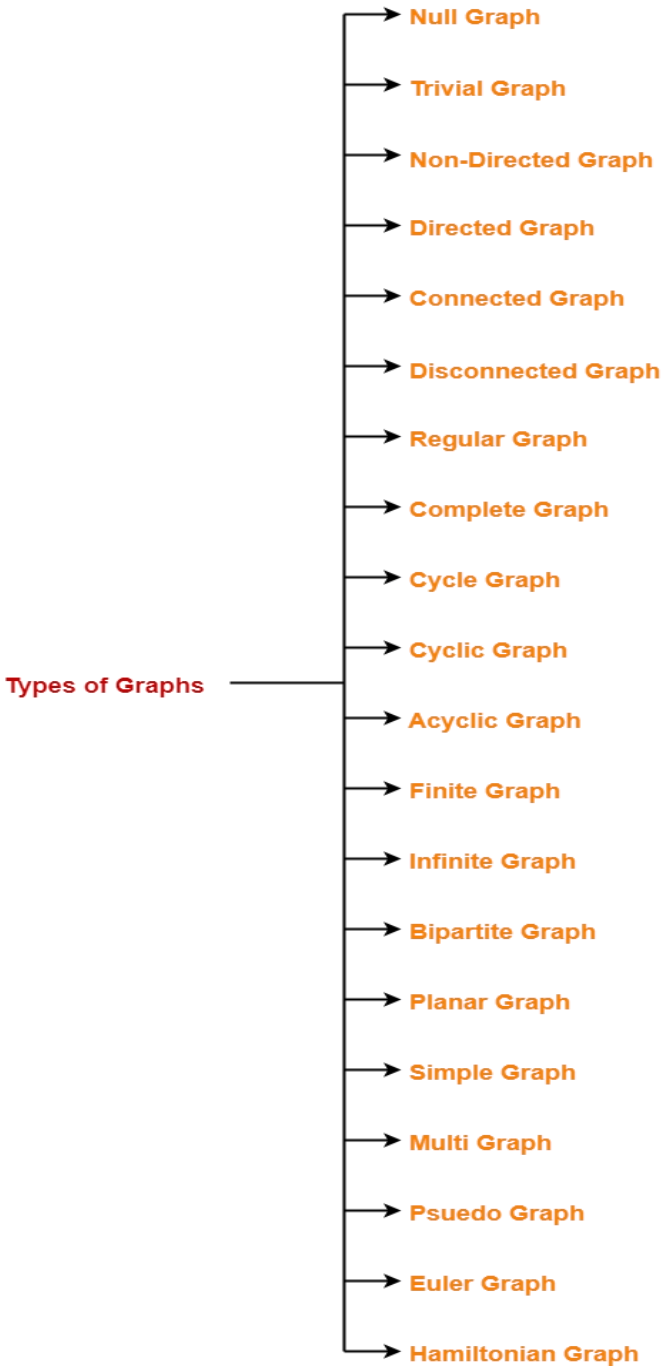
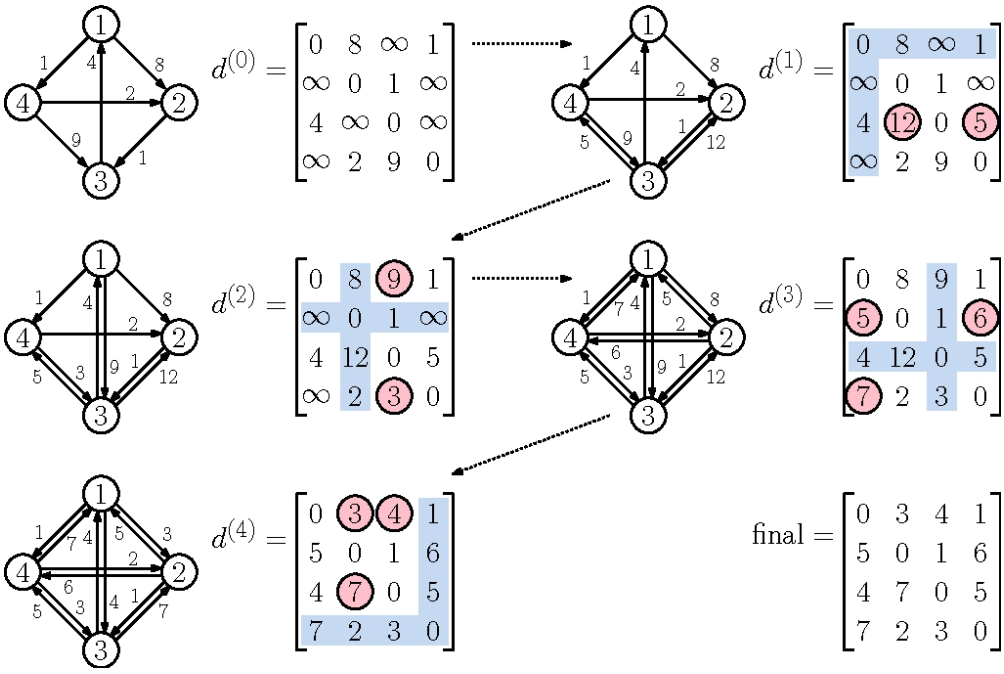
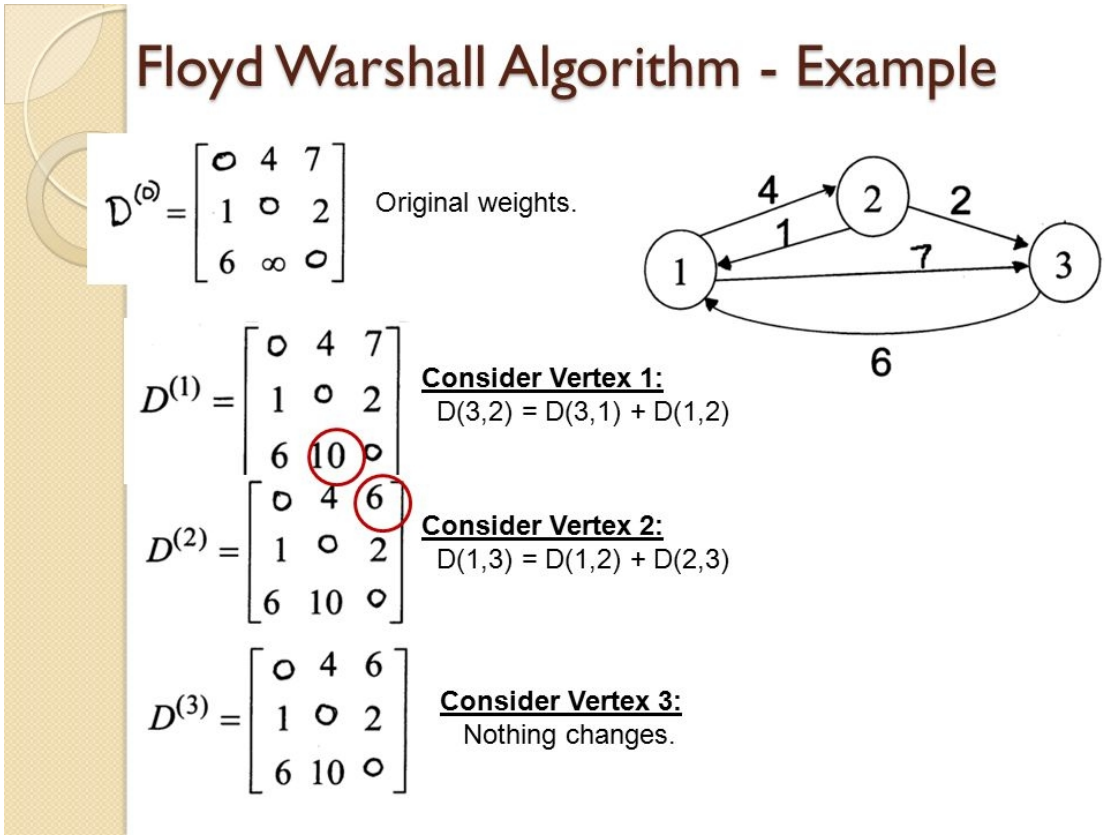

Types of Graphs
Null Graph
Trivial Graph
Non-Directed Graph
Directed Graph
Connected Graph
Disconnected Graph
Regular Graph
Complete Graph
Cycle Graph
Cyclic Graph
Acyclic Graph
Finite Graph
Infinite Graph
Bipartite Graph
Planar Graph
Simple Graph
Multi Graph
Psuedo Graph
Euler Graph
Hamiltonian Graph

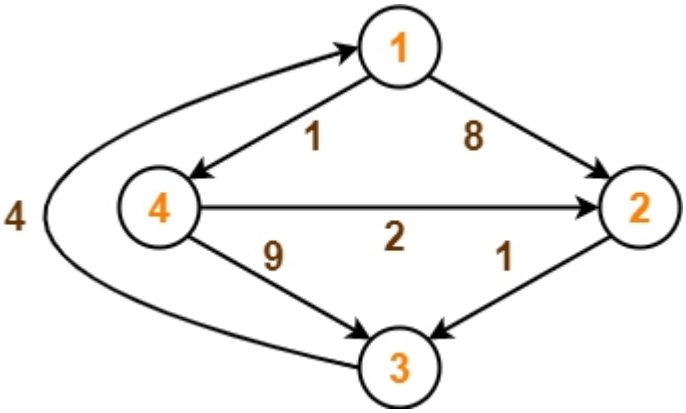
## Example1: Floyd's Warshall algorithm




## Example2: Floyd's Warshall algorithm:



## Example 3: Floyd's Warshall algorithm




$D_1 =$

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 0 | 8 | ∞ | 1 |
| 2 | ∞ | 0 | 1 | ∞ |
| 3 | 4 | 12 | 0 | 5 |
| 4 | ∞ | 2 | 9 | 0 |

$D_2 =$

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 0 | 8 | 9 | 1 |
| 2 | ∞ | 0 | 1 | ∞ |
| 3 | 4 | 12 | 0 | 5 |
| 4 | ∞ | 2 | 3 | 0 |

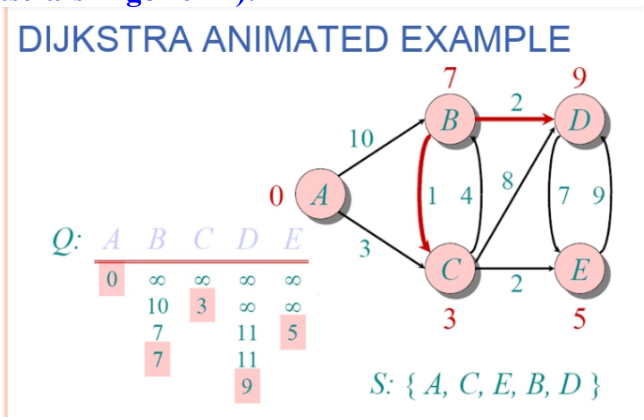
$D_3 =$

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 0 | 8 | 9 | 1 |
| 2 | 5 | 0 | 1 | 6 |
| 3 | 4 | 12 | 0 | 5 |
| 4 | 7 | 2 | 3 | 0 |

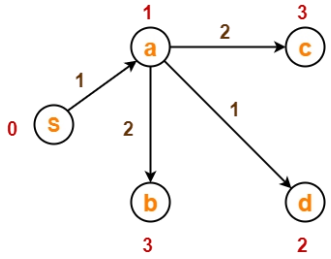
$D_4 =$

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 0 | 3 | 4 | 1 |
| 2 | 5 | 0 | 1 | 6 |
| 3 | 4 | 7 | 0 | 5 |
| 4 | 7 | 2 | 3 | 0 |

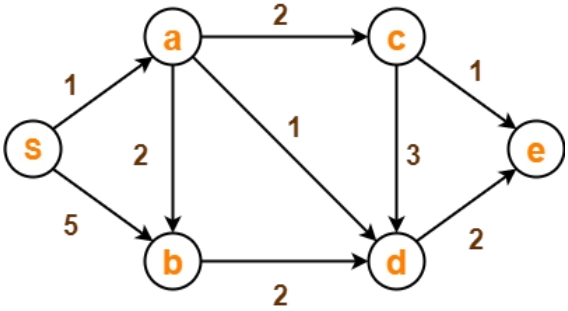
**Example 4 (Dijkastra's Algorithm):**



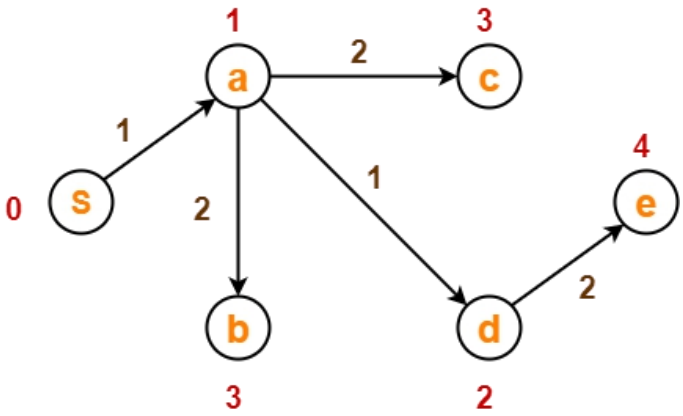

**Example 5 (Dijkastra's Algorithm):**



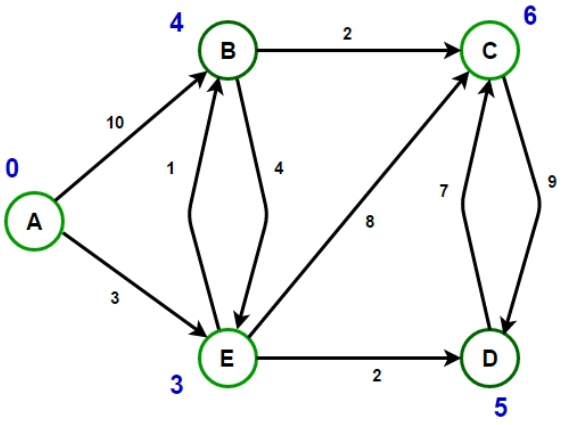

**Example 6(Dijkastra's Algorithm):**



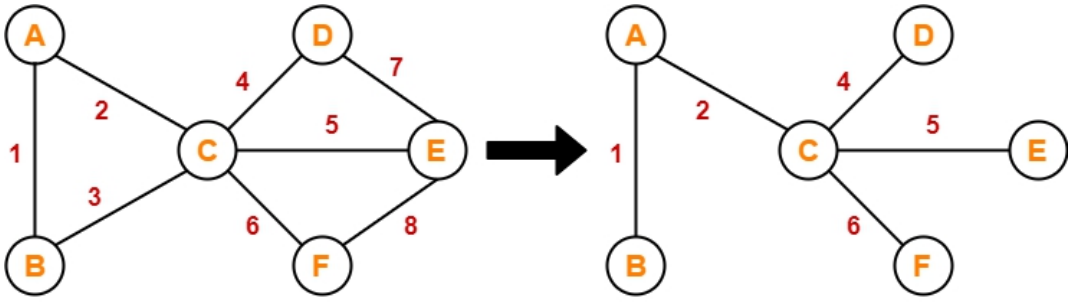

Solution:



## Example 7(Dijkastra's Algorithm):



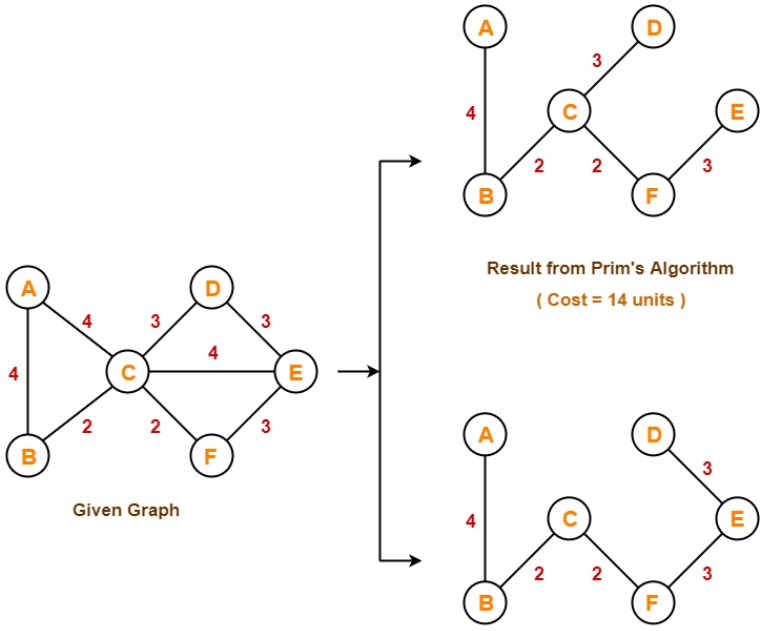

## Example 8( Find spanning tree using Prim's and Kruskal's algorithm):



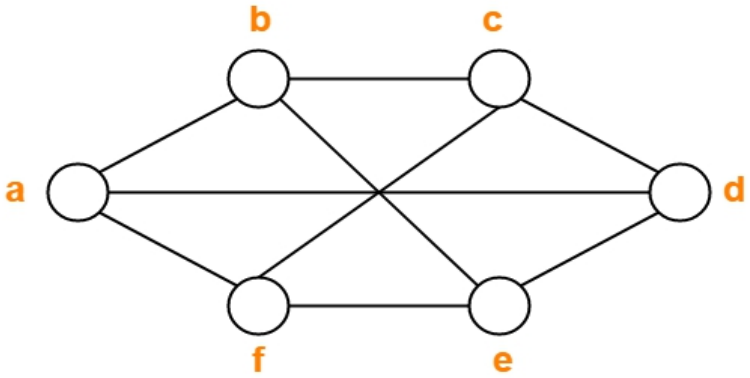

Given Graph

Minimum Spanning Tree (MST)

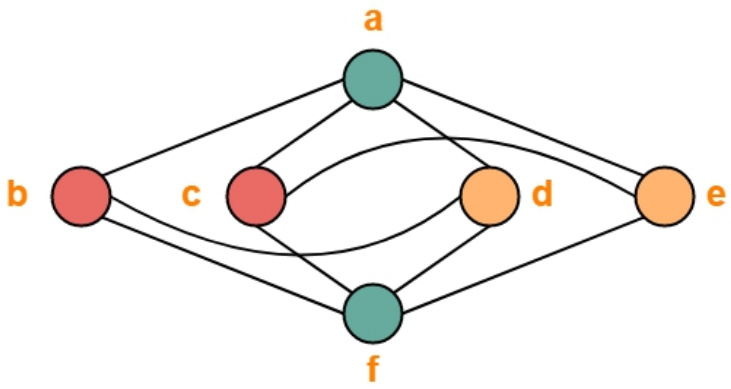
(Cost = 18 units)



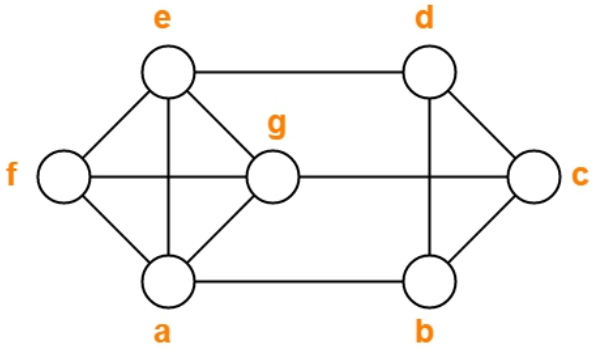
**Example 9(Find the chromatic number using Graph coloring algorithm):**



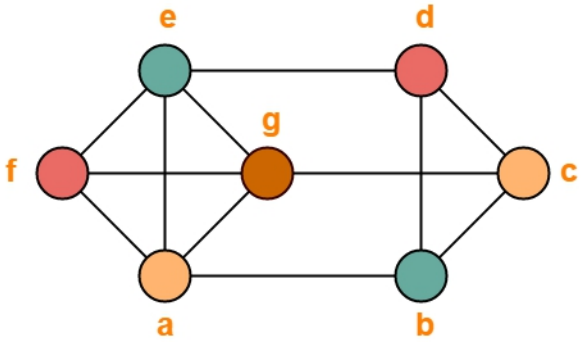

Solution:



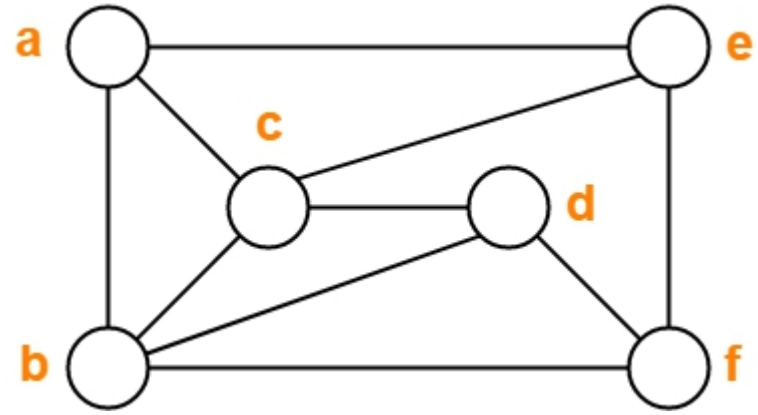

**Example10(Find the chromatic number using Graph coloring algorithm):**



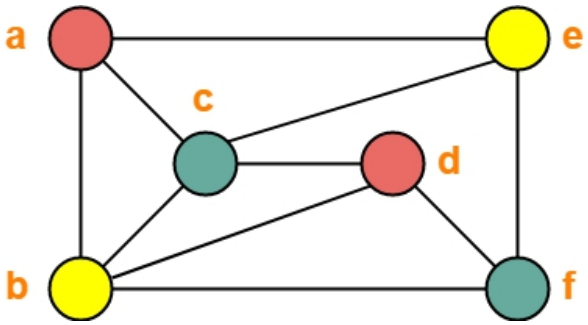

Solution:



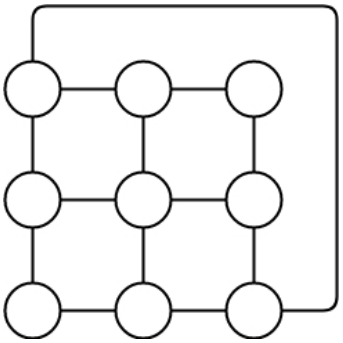
**Example 11(Find the chromatic number using Graph coloring algorithm):**



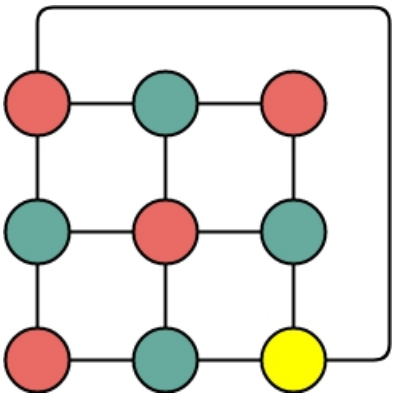

Solution:



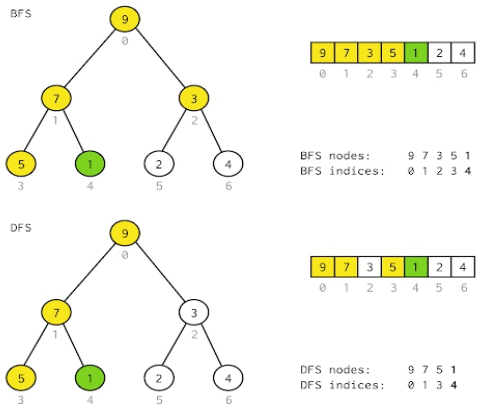

**Example 12(Find the chromatic number using Graph coloring algorithm):**

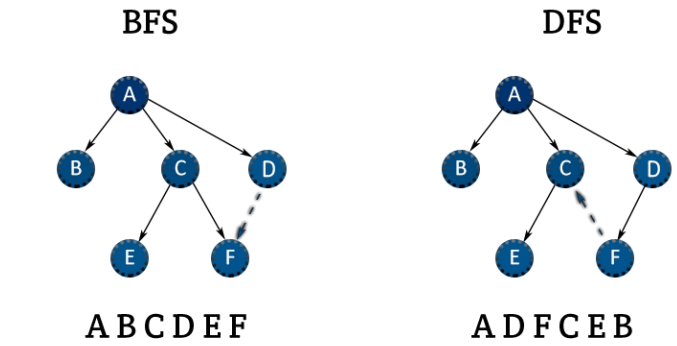


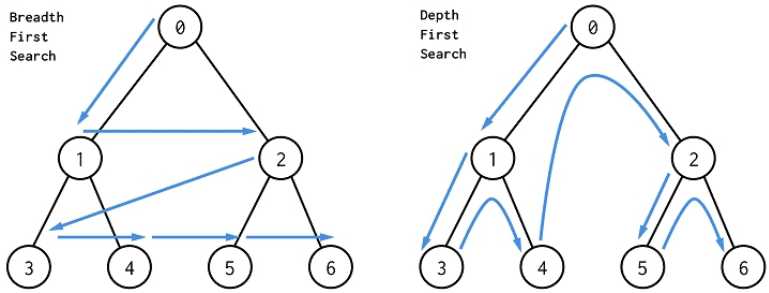
Solution:



## Example 13(BFS and DFS):

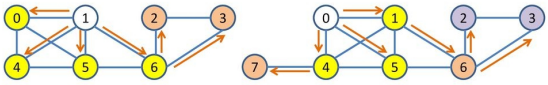


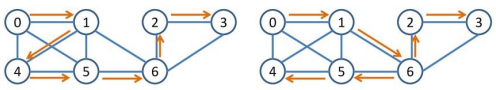




Graph Traversal

- BFS traversal examples:

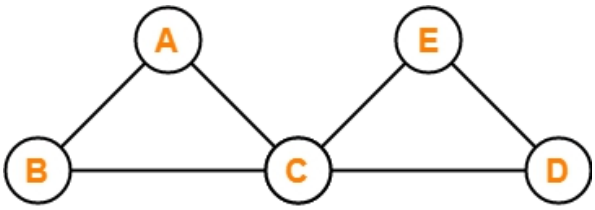


- DFS traversal examples :



**Euler Graph Example-**

The following graph is an example of an Euler graph-




Example of Euler Graph

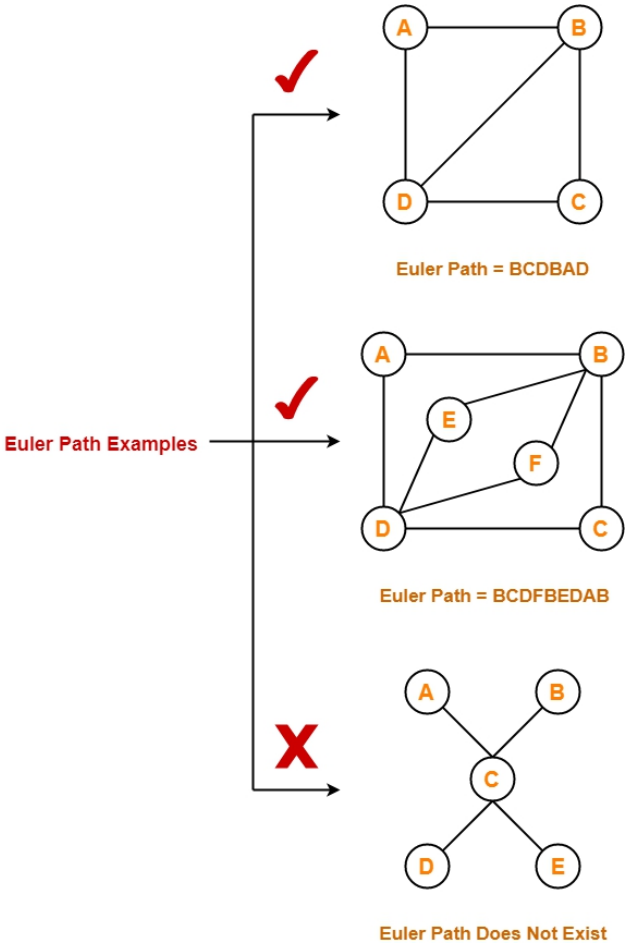
Here,

- This graph is a connected graph and all its vertices are of even degree.
- Therefore, it is an Euler graph.

Alternatively, the above graph contains an Euler circuit BACEDCB, so it is an Euler graph.

**Euler Path Examples-**

Examples of Euler path are as follows-



Euler Circuit Examples-

Examples of Euler circuit are as follows-