

## Assignment 9 - Graph Algorithms 1

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### Sample Input & Output

```
Enter the number of vertices in your graph: 3
Note that the vertices should have their values from 1 - 3
Do you want to enter more edges? (y/n): y
Enter the edge: 1 2
Edge (1,2) added.
Do you want to enter more edges? (y/n): y
Enter the edge: 2 3
Edge (2,3) added.
Do you want to enter more edges? (y/n): y
Enter the edge: 1 3
Edge (1,3) added.
Do you want to enter more edges? (y/n): n
The Input Graph in Adjacency Matrix representation:
0 1 1
1 0 1
1 1 0

Enter the start vertex for DFS : 1
Set of reachable vertices from vertex 1 are : 1 3 2

Enter the start vertex for BFS : 2
The vertex 1 is reachable from the given vertex 2 with distance between them = 1
The vertex 2 is reachable from the given vertex 2 with distance between them = 0
The vertex 3 is reachable from the given vertex 2 with distance between them = 1
```

### Time Complexity (Undirected, Adjacency Matrix)

The Time Complexity of **DFS(int n)** is  **$O(|V|^2)$**

The Time Complexity of **BFS(int n)** is  **$O(|V|^3)$**  (In general it is  $O(|V|^2)$ , but here in order to find *min distance*, we need this much.)

where E,V denote the set of Edges & Vertices respectively of the graph.