

# **LAB REPORT**

DSA Lab : 6

Implementing Non-linear Data Structures - Graph

isDirected(): Returns true if the graph is directed, and false otherwise

```
Check if the graph is directed
Is the graph directed? 0
```

addVertex(newVertex):

```
Vertices added
Number of vertices: 10
```

addEdge(vertex1, vertex2): Adds an edge from vertex1 to vertex2

```
Vertices added
Number of vertices: 10
1 -> 2 3 4 7
2 -> 1 5 6 3
3 -> 1 2 4 5
4 -> 1 3 5
5 -> 2 3 4 6 7
6 -> 2 5 7
7 -> 1 5 6 8 9
8 -> 7
9 -> 7
10 ->
-----
```

removeVertex(vertexToRemove): Remove a vertex from the graph

```
After removing:
Vertex 5 has been removed.
Vertex 3 has been removed.
Vertex 2 has been removed.
```

removeEdge(vertex1, vertex2): Remove an edge from the graph

```
Edge from 6 to 7 has been removed.
1 -> 4 7
4 -> 1
6 ->
7 -> 1 8 9
8 -> 7
9 -> 7
10 ->
```

numVertices(): Returns the number of vertices in the graph

```
Number of vertices: 7
```

numEdges(): Returns the number of edges in the graph

indegree(vertex): Returns the indegree of a vertex

```
InDegree of vertex 1: 2
```

outdegree(vertex): Returns the outdegree of a vertex

```
OutDegree of vertex 1: 2
```

degree(vertex): Returns the degree of a vertex

```
Degree of vertex 1: 4
```

neighbours(vertex): Returns the neighbours of a vertex

```
Neighbors of vertex  
Neighbors of vertex 1: 4 7  
Neighbors of vertex 4: 1  
Neighbors of vertex 7: 1 8 9
```

neighbour(vertex1, vertex2): Returns true if vertex2 is a neighbour of vertex1.

```
Check if two vertices are adjacent  
Is 1 and 2 adjacent? 0  
Is 1 and 4 adjacent? 1  
Is 1 and 7 adjacent? 1  
Is 4 and 5 adjacent? 0
```