

Q: Create two classes: GraphList and GraphMat. The GraphList class will implement an **Undirected** Graph by Adjacency List using LinkedList/ArrayList/Vector (whatever you prefer to use). The GraphMat class will implement a Graph by Adjacency Matrix using 2D Array. Implement the following functions given below for both the classes:

i) Create a Constructor for both the classes which takes input from the user and creates the Graph in the desired format. Take the input in the following format:

No of Vertices

No of Edges

Vertex 1 Vertex 2 of Edge 1

Vertex 1 Vertex 2 of Edge 2 (and so on for all edges) (4+4 = 8 Marks)

ii) Write a function named **ConvertToDirected** for both the classes. This function will convert the Undirected Graph to a Directed Graph. Code the necessary changes required. For example: An input Edge 1 2 in an undirected graph means the edge goes from vertex 1 to vertex 2 and also from vertex 2 to vertex 1. In a directed graph, the edge will only go from vertex 1 to vertex 2. Make the necessary changes in the Adjacency Matrix and Adjacency List. (3+3 = 6 Marks)

iii) Write a proper main function to demonstrate the above features. (1 Marks)