Algorithm Design

IIT Goa
Deadline:06-03-23 (06:00pm)

(Lab - 07)

Question

– You may form groups of two each and stick to the submission guidelines as before.

In this assignment, you are supposed to read the adjacency matrix of a graph from the input file provided with. The first line contains the number of vertices n and the next n lines correspond to the rows in the adjacency matrix (you may assume the vertices are labelled 1 to n). You are provided with a wrapper program which reads the name of the file as a command line argument and loads the details to the adjacency matrix. You are supposed to implement the following member functions in the class **graph** (*refer the cpp file provided with*).

1. **printAdjMatrix():** Prints the contents of the **weighted** adjacency matrix the following form (the vertices are labelled from 1 to 5).

```
0 2 4 5 3
4 0 1 9 1
1 2 0 3 8
4 8 9 0 5
1 1 5 8 0
```

2. **countEdge():** Counts the edges in the graph, stores it in the variable *edgeCount* and returns the same.
3. **loadAdjList():**Loads the associated adjacency list data structure using the adjacency matrix.
4. **printAdjList():**Prints the adjacency list in the template below ($- > neughbor\ weight$). The i^{th} row begins with vertex i followed by the list of it's neighbors together with the corresponding edge weights. Recall that adjacency list is an array of linked lists.

```
1->5 3->4 5->3 4->2 2 NULL
2->5 1->4 9->3 1->1 4 NULL
3->5 8->4 3->2 2->1 1 NULL
4->5 5->3 9->2 8->1 4 NULL
5->4 8->3 5->2 1->1 1 NULL
```

5. We will update on rest of the tasks soon.