

Introduction to Computer Programming and Data Structures

Assignment 08

Maximum Marks: **80**

Submission Deadline: **2022-Dec-02**

Topic: Graph Algorithms

Assignment problem # AP0801

Finding shortest path: A weighted directed graph G is given as an adjacency list stored in a file "input_AP0801_src.txt". If the number of vertices is N , given two vertices u and v , find length of the shortest path between them. Print the path too.

- **Input1:** fileName `input_AP0801_src.txt` is in the following form
 1. 1st line: n , the no of vertices
 2. 2nd line onwards, $i j$, (indicates v_i and v_j are connected, $i, j \in [n]$)
- **Input2:** fileName `input_AP0801_test.txt` is in the following form
 - 1st line: m , the no of test cases
 - 2nd line onwards, $i j$ ($i, j \in [n]$)
- **Output:** For each test cases: print their shortest path, if exists.

[40]

Assignment problem # AP0802

Checking Bipartite-ness: Let $G = (V, E)$ is a graph with $n = |V|$ vertices where v_i is the i th vertex. Given, the edge-list, find if the graph is a bipartite graph or not.

- **Input:** fileName `input_AP0802.txt`
 1. 1st line: n , the no of vertices
 2. 2nd line onwards, $i j$, (indicates v_i and v_j are connected, $i, j \in [n]$)
- **Output:** YES/NO

[40]