Usman Institute of Technology

Department of Computer Science – Fall 2018

CS-211 Data Structures and Algorithms
Lab Manual

OBJECTIVE:

1. *Understand and implement Dijkstra's Algorithm.*

Name : _____

Roll No. : _____

Semester : _____ Section: _____

Date : _____

Remarks : _____

Signature : _____

Lab 11: Implementation of Dijkstra's Algorithm

EXERCISES:

a. Create a class Dijkstra in order to find the shortest path through Dijkstra's Algorithm.

class Dijkstra

b. Declare two properties in the class Dijkstra, NumofNodes for storing number of nodes in the graph and CostMatrix for storing the connection between vertices.

public int[,] CostMatrix
public int numberOfNodes

c. Create a constructor of class Dijkstra that takes number of nodes as an input argument and initialize CostMatrix.

public Dijkstra (int numOfNodes)

d. Create a function AddEdge() which sets corresponding cost to the matrix element whose vertices are connected .

public void AddEdge(int source, int destination, int cost)

e. Create a function GetNeighbours() which takes a vertex as a parameter and returns the list of all neighbors of that vertex.

public int[] GetNeighbours(int vertex)

f. Create a function PrintMatrix() to print the cost matrix.

public void PrintMatrix()

g. Create a function GetShortestPath in order to get the optimal path from a source vertex

public void GetShortestPath (int source)