Lab9 Assignment – DFS, Shortest Paths

Do these problems in order. Use the adjacency list representation to store the input graph.

Problem 1: Depth First Search

Write a program to implement DFS on an undirected graph. Read in a graph and a source vertex from the user. Print the vertices in the order in which they are discovered. Print the timestamps of each vertex.

Problem 2: Dijkstra's Shortest Path

Write a program to implement Dijkstra's shortest path algorithm on a directed graph. Read in a directed graph and a source vertex **s** from the user. Your program should print the length of the shortest path from source vertex **s** to all the vertices in the graph. For each vertex **v**, print the vertices in the actual shortest path from **s** to **v.**

Problem 3: Non-recursive DFS.

Write a non-recursive (iterative) function to perform a DFS on an undirected graph.