United International University
Assignment 2 (BFS-DFS)

Problem 1: Graph Representation

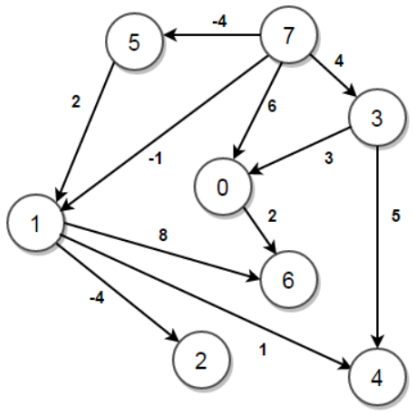
Implement BFS and DFS using the Adjacency Matrix representation of the Graph.

Problem 2: Determine the graph's root vertex

A root vertex of a directed graph is a vertex u with a directed path from u to v for any pair of graph vertices (u, v). In other words, the root vertex can reach every other vertex in the graph.

Problem 3: Longest Path in DAG

Find the cost of the longest path from the source vertex to all other vertices in the graph, given a weighted directed acyclic graph (DAG) and a source vertex. If the vertices are inaccessible from the supplied source vertex, their distance is displayed as infinity.
For example, consider the following DAG,



The longest distance of source vertex 7 to every other vertex is:
dist(7, 0) = 7 (7 —> 3 —> 0)
dist(7, 1) = -1 (7 —> 1)
dist(7, 2) = -5 (7 —> 1 —> 2)
dist(7, 3) = 4 (7 —> 3)
dist(7, 4) = 9 (7 —> 3 —> 4)
dist(7, 5) = -4 (7 —> 5)
dist(7, 6) = 9 (7 —> 3 —> 0 —> 6)

Guidelines:

1. Do the problems in separate files. Name the files using your student ID and problem no like this. Example: 011223999_problem1.cpp, 011223999_problem2.cpp etc.
2. Keep the files in one folder and zip the folder, and submit.
3. DO NOT COPY FROM ANY SOURCE.