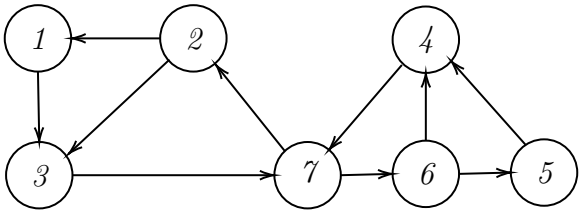
Problem 1. *Suppose the graph $G = (V, E)$ below with a set of vertex $V = \{1, 2, 3, 4, 5, 6, 7\}$ and edges of $E = \{(1, 3), (2, 1), (2, 3), (3, 7), (4, 7), (5, 4), (6, 4), (6, 5), (7, 2), (7, 6)\}$*

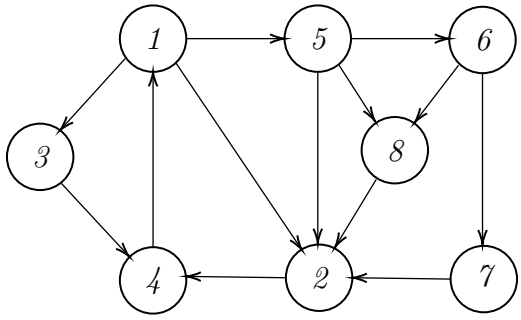


Represent G with:

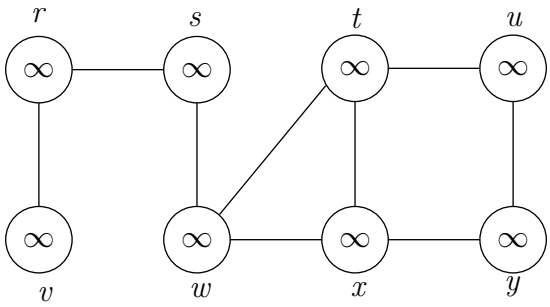
A. *Adjacency list*

B. *Adjacency matrix*

Problem 2. *Use the following graph, start at vertex 1 demonstrates depth-first traversal using an explicit stack (show all steps), Explain briefly DFS running time in terms of the Big-O notation.*



Problem 3. *Use the following graph, start at vertex s demonstrates breadth-first **BFS** traversal using explicit queue (show all steps), show distance between vertex s and all other vertices of the graph, Explain briefly DFS running time in terms of the Big-O notation.*



Problem 4. *Find the MST of the following graph using Prim's Algorithm*