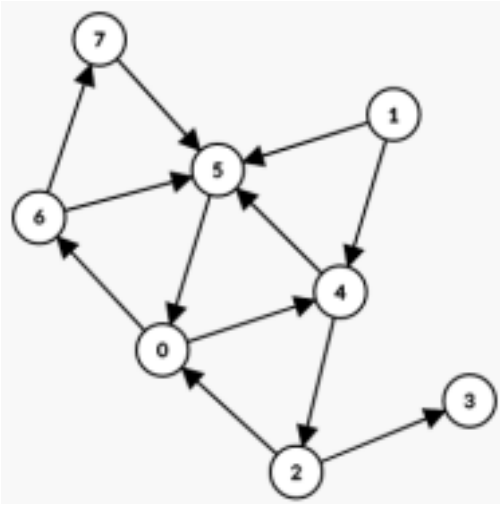
1. Using Proper algorithm and showing each steps find out the strongly connected components of the given graph.



2. Find out the LCS of two string ALGORITHM and LITHIUM using Dynamic Programming.

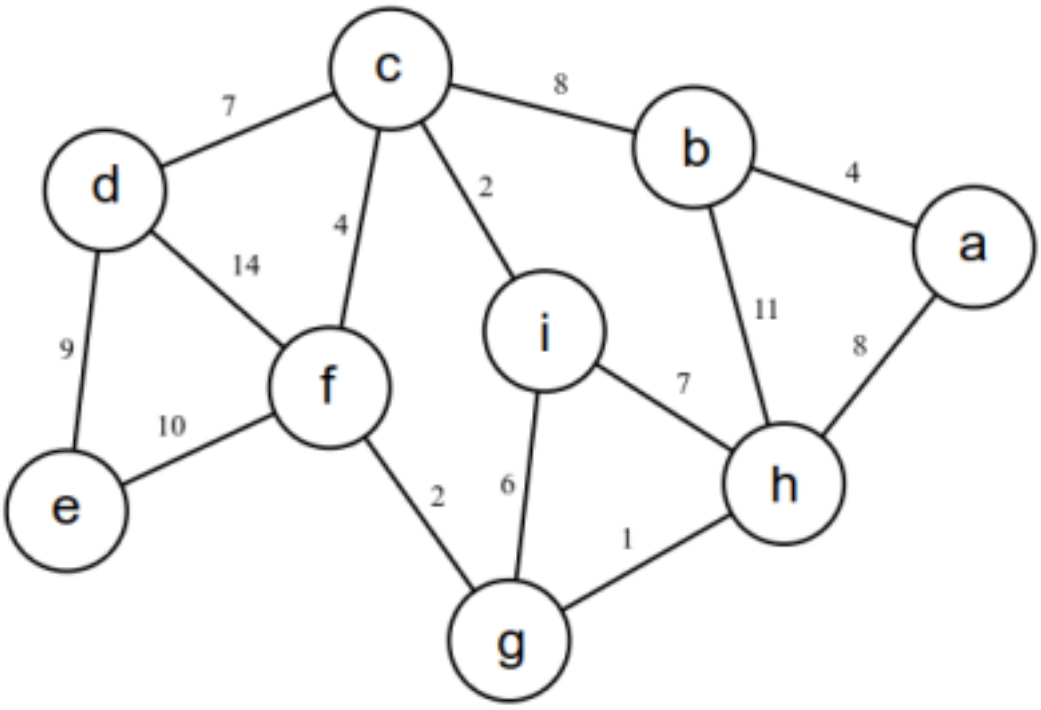


Figure: Graph-1

3. Simulate Prim's Algorithm on Graph 1. Find a Minimum Spanning Tree and the cost of this tree. Show workings in detail.
4. Simulate Kruskal's Algorithm on Graph 1. Find a Minimum Spanning Tree and the cost of this tree. Show workings in detail.

5. From the Minimum Spanning Tree of question (4) and (5) answer the following questions.

(i) Are the Minimum Spanning Tree Same or Different? State the reason why they are same or different.

(ii) Are the cost of the both Minimum Spanning Tree Same of Different?

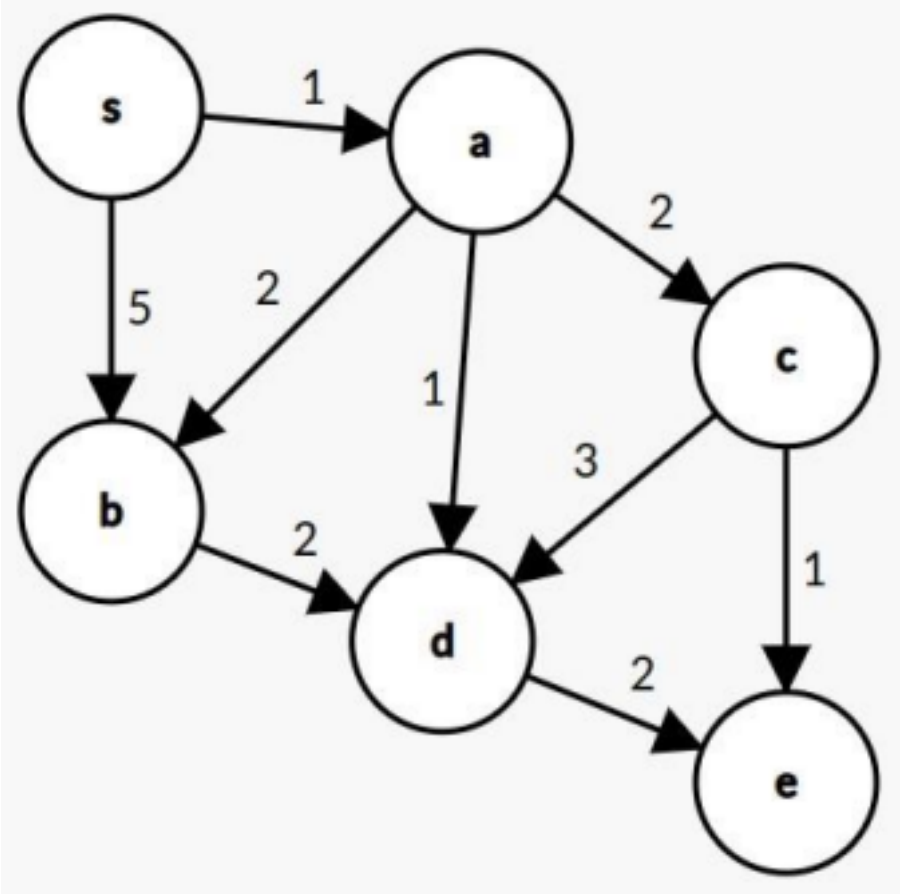


Figure: Graph-2

6. Simulate a Dijkstra's Algorithm on the Graph-2 to determine the shortest path from vertex s to all other vertices. Show your workings in detail by keeping track of the predecessor vertex and shortest distance.