TITLE: To find shortest path between 2 nodes in a Network using Dijkstra's Algorithm

PROBLEM STATEMENT: Write a C Program to find the shortest path between any given 2 nodes using Dijkstra's Algorithm. For output part, The network should be a minimum of 8 nodes Pick any source of your choice, and find the shortest path from that source to the rest of all the nodes.

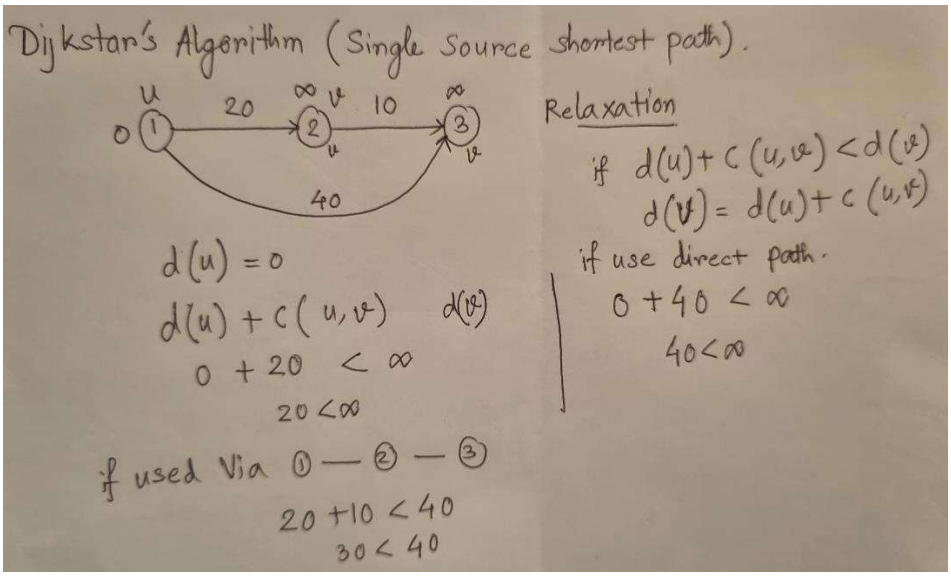
BRIFE THEORY & BACKGROUND:

A fundamental and widely used algorithm for finding the shortest path between two nodes in a graph. It is particularly useful in network routing and optimization problems.

The algorithm works by maintaining a set of tentative distances from the source node to all other nodes in the graph. It iteratively selects the node with the smallest tentative distance, explores its neighbors, and updates their tentative distances if a shorter path is found. This process continues until the destination node is reached, and the shortest path is determined.

The algorithm's efficiency lies in its ability to guarantee the discovery of the shortest paths in a graph with non-negative edge weights. Dijkstra's Algorithm is a single-source shortest path algorithm, meaning it finds the shortest paths from a designated source node to all other nodes in the graph.

Briefly I attached the picture where I randomly generated the 8-node network graph and also given the random cost number. After adding that also analyze the network and make table how to traverse from source to destination and how to add one by one from current node to adjacent node.



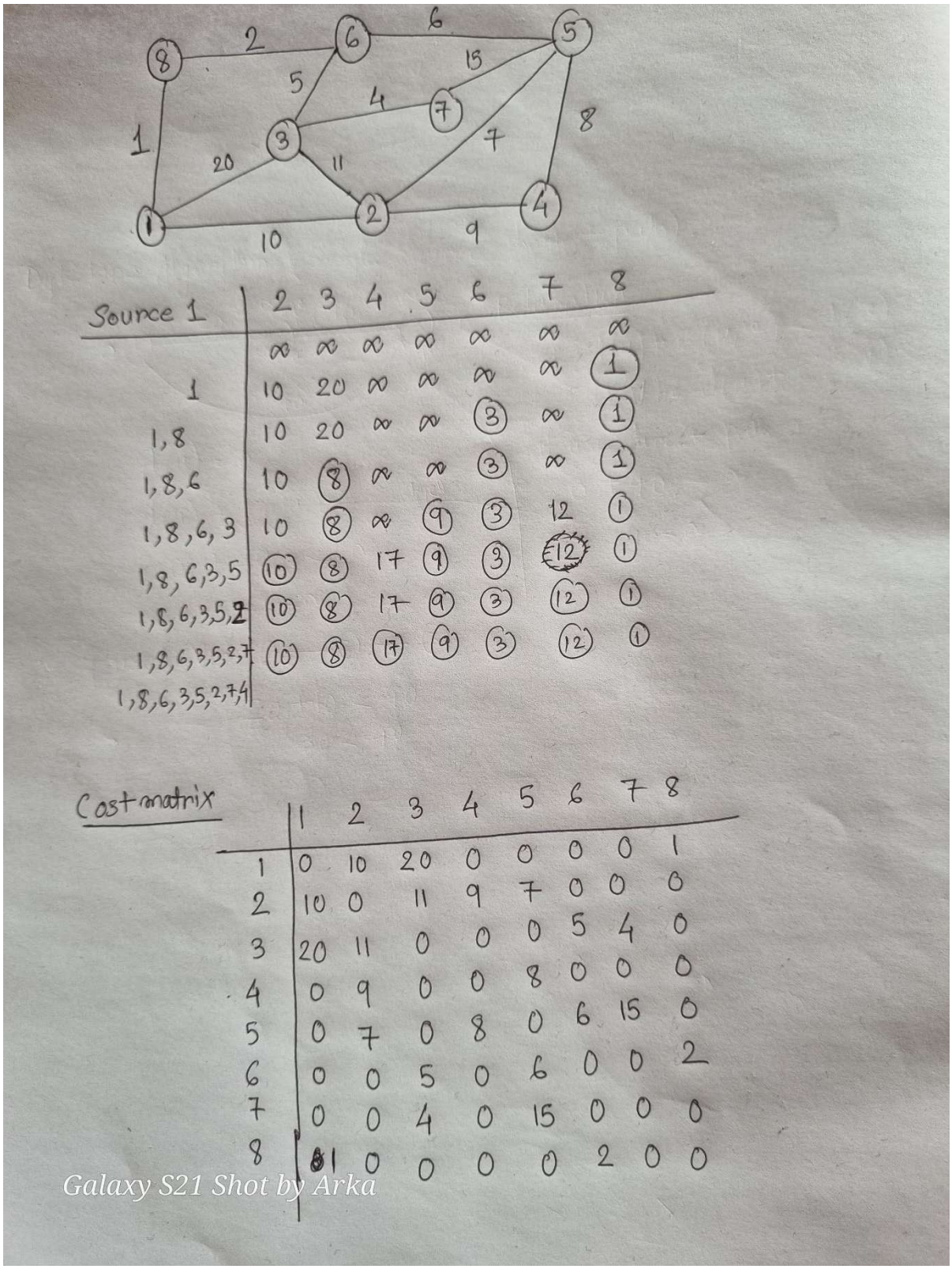


Fig: Designed 8 node network graph and cost matrix.