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Homework 3 Report

The basic idea of my program is to iterate through each of the edge in the graph, set that edge to 0 for the weight, and check whether the distance from the source vertex 1 to destination vertex n is the smallest, if yes, than that is the answer to this problem.

Now I will explain the code in deeper details. First, we create the graph. After creating the graph, we add the edges from the input. Then we run Dijkstra 2 times, 1 time we set the source vertex as the vertex 1, the other time we set the source vertex as vertex n. This is needed in order to find the shortest path from vertex 1 to other vertices and to find the shortest path from vertex n to other vertices. Finally, we iterate through every vertices. For each vertices, we iterate through its neighbours. Then we find the distance from the vertex 1 to the current vertex and the distance from vertex n to the neighbours of the current vertex, add these two distances, and check whether this total distance is smaller than the previous total distance, if yes, then update the total distance to this, if no, then leave it as it is. Repeat this step until all of the neighbours of all of the vertices have been traversed. Finally, print the total.