Task-03

Problem-1

For making the graph, the loop runs for each road m;
↳ m+c

For dijkstra:

The conditions → O(1)

The for loop that runs for each neighbouring vertex
↳ (n-1)

Main while loop that runs until q is empty
↳ log(n)

∴ O(m+(n-1)log n) [ignoring constants]

Problem-2

Formation of graph remains same.

In dijkstra, for output I have run 2 more loops ↳ 2n+c

∴ O(m+(n-1)logn+n)

If each road has a weight of 1, this will be similar to having to weight at all. Hence, we can use a modified BFS with $O(V+E)$ time complexity.