Task 4

The time complexity of the Dijkastra Algo is.

$$T(n) = O(N) = O(N \log n) + O(N \log N)$$

$$= O(N) + O(N \log n) + O(M \log n)$$

$N \geq m$

$$T(n) = O((n+M) \log N)$$

So, the complexity is $O((N+M) \log N)$

2nd part:

If the number of titans in each road is exactly 1, then we can say the graph is equal weighted, in this case we can use "BFS Algo" to find the shortest path. Also, the T(n) of BFS algo is $O(N+M)$