Task-3

Dijkstra algorithm Pseudocode is in the following: dijkstra (G,s):

for each $v \in V[G]$:

do $d[v] \leftarrow v$ $P[v] \leftarrow None$

Q()<- d[5] ←0

d1<- Q ← V[G]

p(v) <- while a not empty:

Log(v) (- do u \ extract_min (a)
Uses heap
data structura for each vertex v \ Adj[u];

works as

BF5.50,

0 (V+E)

do if d[v] dtv] + w(u,v)

then d[v] d \ d[v] + w[u,v] P[v] tu

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Time complexity = $O(v) + O(v \log v)$ + O(v + E)= $O(v \log v) [By ignoring]$ -the lowest terms]

As in task 1 and task 2, dijkstrea algorithm
has been used 50, for both task 1 and
task 2 the time complexity will be O(log V).

= O(N log N)

[Herce, N = number of places/vertices]

If me the number of titans is set to 1,
then the graph will as an BFS. Morecover,
the time complexity of BFS is O(V+E)
which will be O(N+M) according to this
problem state ment. Thus, we can solve this
problem using BFS. The imputs for BFS

algorithm will be graph (list of all ventices) and the start vertex.

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