

### Task-03

JD-18301231

For task 1 and task-02 we used dijkstra's algorithm to solve these problems.

Now, for  $N$  places and  $M$  roads the time complexity for task 1 is  $O(M \log N)$ .

Again, for  $N$  places and  $M$  roads in task-2, we get  $O(M \log N)$  time complexity.

If ~~no~~ number of titans in each road is exactly 1, there is an  $O(N+M)$  algorithm to solve the problem. It will be BFS, as each road has exactly 1 titan.