National Institute of Technology Calicut
Department of Computer Science and Engineering
Winter Semester 2020 – 2021
CS3093D: Networks Laboratory

Experiment No. 5
Evaluation Question with Expected Output

Total Marks: 5

Question

Link state routing is a technique in which each router shares the knowledge of its neighbourhood with every other router in the internetwork.

Alice and Bob are connected to each other using the internet. Let us assume the network has the routers from R0, R1, R2, ….. R(n-1). Alice is connected with the R0 router and Bob is connected with R(n-1). Routers use Link State Routing algorithm for making routing tables. Now suddenly one router Rp is down ($0 \leq p \leq n-1$) and all links connected with Rp are not working. Now the Routing Table of each router is modified using the same Link state routing algorithm and Dijkstra algorithm.

The task is to find the shortest **distance** between Alice and Bob after Rp is down and the routing table is modified. Assume that all other routers and links are working correctly as ideal conditions. And also assume distance between Alice and Ro is negligible and the same for Bob and Rn-1.

In case no path exists between Alice and Bob print -1

Input:

- First line contains r and e referring to numbers of routers and numbers of links between routers.
- Next line contains x y wt implies router Rx is connected to Ry and distance between them is wt.
- Next line routers that is down say Rp

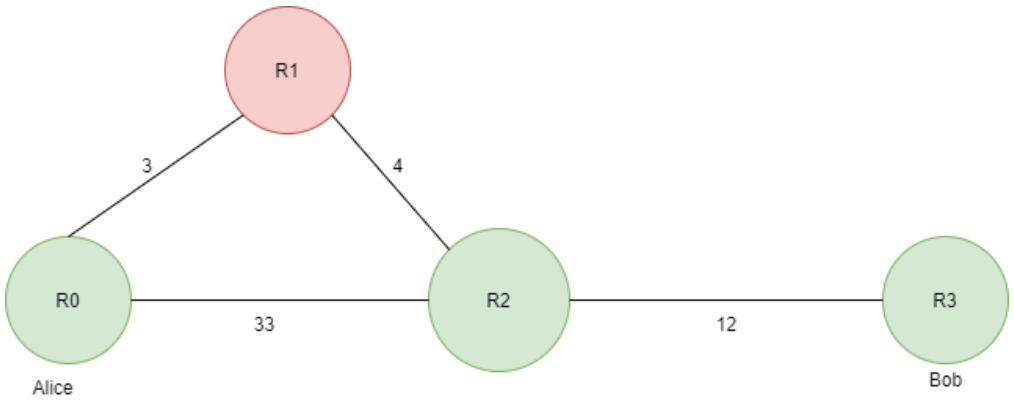
Output:

- First the shortest **distance** between Alice and Bob when Rp is not working or -1 if no path exist

Constraints:
$e, r \leq 100$
$0 \leq p \leq 99$
$wt \leq 100$

Sample Input:
4 4
0 1 3
1 2 4
2 3 12
0 2 33
1

Sample Output:
45



Here Router R1 is not working. So the shortest distance between Alice and Bob is 45.

Test Cases

Input 1
4 4
0 1 3
1 2 4
2 3 12
0 2 33
0

Input 2
4 4
0 1 3
1 2 4
2 3 12
0 2 33
3

Input 3
4 4
0 1 33
1 2 4
2 3 12
0 2 3
1

Input 4
4 4
0 1 1
1 3 3
2 3 4
0 2 2
1

Input 5
4 4
0 1 1
1 3 3
2 3 4
0 2 2
2

Input 6
5 5
0 1 1
1 2 2
2 3 3
1 3 10
3 4 4
2

Input 7

```
4 3
0 1 1
1 2 1
2 3 1
2
```

Input 8

```
4 4
0 1 3
1 2 4
2 3 12
0 2 33
0
```