January 2023 CSE 208
Online: Single Source Shortest Path

Time: 30 minutes

Subsections: A1 & B1

Farhan has his friends in every state of the country, excluding the state where he lives in. So he wants to visit his friends on this Eid. He makes a plan to pick his next visit: if the total time required to reach a friend's house plus the time to return from there is minimum, he will choose to visit that friend. Your task is to help Farhan pick his next visit.

Input

Take input from a file. The first line will contain two space-separated integers s and r, denoting the number of states and the number of roads respectively. **All the roads are one-way**.

In each of the following r lines, there will be three space-separated integers u, v, t denoting a road, where u and v denote the states connected by that road and t denotes the time to reach v from u.

The final line will contain one integer f, denoting the state where Farhan lives in.

Output

In the first line of the output file, print the minimum total time Farhan would need to visit his chosen friend.

In the following two lines, print the paths that Farhan would need to follow to go to his friend's house and to return from there, along with their respective times.

See the Sample I/O for further clarification.

Sample I/O

Input File

```
9 17
4 8 70
6 4 80
5 1 4000
8 0 10000
2 3 200
0 7 60
8 2 1000
0 3 300
3 8 50000
7 1 150
2 5 120
6 3 1500
3 7 200
4 0 90
5 7 50
1 6 100
4 1 90
0
```

Output File

```
Minimum total time: 480

Paths:
0 -> 7 -> 1 (time: 210)
1 -> 6 -> 4 -> 0 (time: 270)
```