Problem I
Unique Ability

Emma lives in Shu Nation, a peaceful and technologically advanced nation, where it has N cities that are connected by M bidirectional roads. To traverse the i^{th} road from one end to the other end, one needs exactly T_i minute. It is possible to travel from a city to any city using these roads.

Each resident in Shu Nation is assigned to an integer representing their group identifier so that its government can better control the residents' movements. How? Each road in Shu Nation is equipped with a security system that allows only those with a group identifier of P_i to pass it; those with a different group identifier cannot use the road. Shu Nation believes that such a system might reduce the congested roads problems that they have faced for centuries.

Emma has a group identifier of 1, initially. Here comes the interesting part. Emma has the ability to change her group identifier to any other integer as she likes. It seems that she does some hacking in order to do that, but no, she didn't. To change her group identifier from a into b, she only needs to stay still and meditate for exactly $|a - b|$ minutes. She can only do this while she's in a city; she cannot change her group identifier while on a road. That's her unique ability.

Emma is at city 1 and wants to visit her friend at city N. To avoid any suspicion from the government, Emma should change her group identifier back to 1 once she arrives at city N (if she ever changes it).

Your task is to determine the minimum time needed by Emma to go to her friend at city N from city 1.

Input

Input begins with a line containing two integers N M ($2 \leq N \leq 200\,000$; $N - 1 \leq M \leq 200\,000$) representing the number of cities and the number of bidirectional roads in Shu Nation, respectively. The next M lines each contains four integers A_i B_i P_i T_i ($1 \leq A_i, B_i \leq N$; $A_i \neq B_i$; $1 \leq P_i, T_i \leq 10^9$) representing a bidirectional road connecting city A_i and city B_i that requires T_i minutes to traverse and can only be used by those who have a group identifier of P_i. It is guaranteed that from any city you can reach any other cities by going through one or more roads.

Output

Output contains an integer in a line representing the minimum time for Emma to go from city 1 to city N and ends her trip with a group identifier of 1.

Sample Input #1

```
3 3
1 2 2 4
2 3 2 5
1 3 5 4
```

Sample Output #1

```
11
```

Explanation for the sample input/output #1

Emma can reach city 3 by using road 1 and 2. In order to use road 1, Emma needs to change her group identifier from 1 to 2; it takes $|1-2| = 1$ minute. She needs another 4 minutes to travel from city 1 to city 2 by using road 1. After arriving at city 2, she can directly use road 2 without changing her group identifier. She needs 5 minutes to travel from city 2 to city 3 by using road 2. Finally, Emma reaches city 3, her destination, while having a group identifier of 2, thus, she needs to change back it to 1; it takes $|2-1| = 1$ minute. In total, she needs $1+4+5+1 = 11$ minutes.

Sample Input #2

```
4 5
1 2 6 4
1 2 2 10
2 3 4 4
3 4 5 5
3 4 2 6
```

Sample Output #2

```
24
```

Sample Input #3

```
5 5
1 2 5 1
2 3 1 1
3 4 5 1
4 5 1 1
1 5 6 8
```

Sample Output #3

```
18
```