

Task: KIN

King's condition

Stage CSPC 2006, day ???, source file kin.*, available memory 32 MB

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Algopolis is a vast and beautiful land. There are N towns in Algopolis, enumerated from 1 to N . Some towns are connected by bidirectional roads, and any two towns can be connected by at most one road. The Mighty King especially loves two towns: 1 and N and very often travels between them. Unfortunately, bad times have come to Algopolis, and - due to economy reasons - one town must be destroyed. (with the town, all roads starting from it will be destroyed) The King wants such town to be chosen, that the length of the shortest path between his favourites towns (which are 1 and N as mentioned above) will not increase. Your task is, given the description of all roads and their lengths, to find how many towns can be chosen to cover King's condition. You can assume that towns 1 and N are connected by at least one path.

Task

Write a program, that:

- reads **using SVIO** the description of roads in Algopolis
- calculates number of towns that cover King's condition
- writes **using SVIO** the result

Input

The first line will contain 2 integers: N and M ($2 \leq N \leq 30\,000$, $1 \leq M \leq 100\,000$), the number of towns and roads in Algopolis. Each of the next M lines contains 3 integers a_i, b_i, c_i ($1 \leq a_i, b_i \leq N$, $1 \leq c_i \leq 1000$) separated with single spaces describing one road: a_i, b_i are the numbers of towns connected and c_i is the length of the road.

Output

The one and only line of output must contain only one number - the number of towns that cover the King's condition.

Example

Dla danych wejściowych:

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6 6
1 2 1
2 4 1
1 3 1
3 4 1
```

4 6 1

2 5 1

poprawnym wynikiem jest:

3

Solution

At first we have to construct the subgraph being the union of all shortest paths between the two king's towns. Each town not in the chosen subgraph can be safely destroyed. But that's not all.

Now we find separating vertices in this subgraph. Each of these vertices, when removed, increases the length of the shortest path between the chosen towns. Each of the other vertices can be safely destroyed.