

(Q1) Doris and Pirates

There is a planet where there are N islands connected by X airways and Y waterways. This God of Planet is **Doris** and she lives on central island A(which is the First island). The i th airway connects island a_i to b_i which whose length is s_i . The i th waterway connects the central island 1 to island x_i whose length is y_i .

Recently the waterways became unsafe because of the increased activity of pirates, so **Doris** decided to close as many waterways as many possible under the certain condition:

- (a) The travel time from central island to any of the island must not change

NOTE

- All the ways(airways and waterways) are bi-directional
- It is guaranteed that there exists at least one way to reach any island from Central island.
- There can be multiple airways between two islands.
- Planet has a unique plane which is capable of travelling at the same speed in water and air and that plane is used for all the travelling

Input:

The first line of input contains three integers N, X, Y ($2 \leq N \leq 2 \cdot 10^5$; $1 \leq X \leq 2 \cdot 10^5$; $1 \leq Y \leq 10^5$).

Each of the next X lines of input contains three integers a_i, b_i, s_i ($1 \leq a_i, b_i \leq N$; $a_i \neq b_i$; $1 \leq s_i \leq 2 \cdot 10^9$).

Each of the next Y lines contains two integers x_i and y_i ($2 \leq x_i \leq N$; $1 \leq y_i \leq 10^9$).

OUTPUT:

A single integer representing the maximum number of the waterways that can be closed

Sample Input

5 6 4

1 2 1

2 3 2

1 3 3

3 4 4

1 5 7

2 7

3 5

4 5

5 5

Output: 2

(Q2)

Situation became so grave that **Doris** blocked all the waterways and introduced more airways such that any of the islands can be reached from any other islands through airways.

Now find out the length of the path which is minimum and includes all the islands

NOTE

- Airways are bi-directional

Input:

The first line of input contains three integers N(number of islands), M(number of airways), ($0 \leq N, M \leq 10^5$).

Each of the next M lines of input contains three integers a_i, b_i, s_i ($1 \leq a_i, b_i \leq N$; $1 \leq s_i \leq 2 \cdot (10^9)$).

OUTPUT:

A single integer representing the minimum length path which includes all the islands

Sample Input

```
5 5
1 2 1
2 3 2
1 3 3
3 4 4
1 5 7
```

Output: 14

(Q3) **Best Path**

Despite all the action taken by **Doris**, Pirates defeated her and took over the planet. Now they have built many more waterways and want to set up their headquarters/center on the island which is connected to maximum number of islands i.e the island from where maximum number of islands can be reached through waterways.

NOTE

- Waterways are directed

Input:

The first line of input contains two integers N (number of islands), M (number of waterways); ($0 \leq N, M \leq 10^5$).

Each of the next M lines of input contains three integers a_i, b_i ($1 \leq a_i, b_i \leq N$) representing a directed waterway from island a_i to b_i .

OUTPUT:

A single integer representing the island which is connected to most number of islands. If there are more than 1 such island, output the least value. i.e. if x, y have the same number of connected islands then output x if $x < y$.

Sample Input

```
8 7
4 2
2 3
1 2
5 1
5 6
7 1
7 8
```

Output: 5