ACM-ICPC Live Archive

8285 Judge's Mistake

Setting problems for programming competitions takes a long time. Several months ago, the judges sent out a call for problems and Kevin replied with the problem in Figure J.1.

Figure J.1: The original problem that Kevin proposed.

There are C cities in Australia, connected by a network of R two-way roads. There may be several roads connecting the same pair of cities and there may be roads that connect a city to itself. It is possible to reach any city from any other city via a sequence of connected roads. Each road has a maintenance cost in dollars. Due to budget cuts, the government is planning to close a set of roads. The maintenance cost of the remaining roads must be as small as possible and it must still be possible to travel between any pair of cities via some sequence of roads.

What is the cost of the cheapest possible plan?

Source: Pexels

Input

The input file contains several test cases, each of them as described below.

The input starts with a line containing two integers C ($2 \leq C \leq 100000$), which is the number of cities, and R ($1 \leq R \leq 100000$), which is the number of roads. The next R lines describe the roads. Each of these lines contains three integers u ($1 \leq u \leq C$), v ($1 \leq v \leq C$) and w ($1 \leq w \leq 100000$), which indicates that there is a road between u and v with maintenance cost w.

Output

For each test case, on a line by itself, display the cost of the cheapest maintenance plan.

Sample Input

```
3 2
1 3 1
2 3 2
3 3
1 2 3
2 3 2
3 1 1
2 2
1 2 1
2 1 2
```

Sample Output

```
3
3
1
```

Figure J.1: The original problem that Kevin proposed.

This problem was going to be used at the Divisionals contest until we (the judges) messed up. While writing our solutions, one of us accidentally sorted the integers in the official input. We were able to determine the values of C and R, but we are unable to determine the order of the remaining $3R$ integers.

Rather than attempting to reconstruct the original data, we will ask a slightly different question. These $3R$ integers could correspond to many different road networks. Out of all possible road networks that the data could represent, what is the smallest output for the original problem? (That is, what is the cheapest maintenance plan over all possible road networks that may be represented?)

Input

The input file contains several test cases, each of them as described below.

The input starts with a line containing two integers C ($2 \leq C \leq 100000$), which is the number of cities, and R ($1 \leq R \leq 100000$), which is the number of roads.

The second line contains $3R$ integers, which are the u, v and w values from the original problem in Figure J.1. Each of these values is between 1 and 100 000 inclusive. These integers are in nondecreasing order.

It is guaranteed that the input corresponds to at least one possible road network that satisfies the constraints from the original problem.

Output

For each test case, on a line by itself, display the cost of the cheapest maintenance plan over all possible road networks that may be represented.

Sample Input

```
3 2
1 1 2 2 3 3
3 3
1 1 1 2 2 2 3 3 3
2 2
1 1 1 2 2 2
```

Sample Output

```
3
2
1
```