

Competitive Programming SS23

Submit until end of contest



Problem: duck (1.0 second timelimit)

Note: This is a problem that is harder to solve than usual. Solve the other problems first before spending too much time on this one.

After returning from her skiing trip to Mars, Zoe is back home with her pet duck *Dag*. *Dag* loves to run around in complete undirected graphs, like the one Zoe built yesterday. With attention to detail, she has put non-negative integers on edges. But she fell asleep before all edges had a positive weight so some of them are still zero.

When released onto it, *Dag* will select a subgraph as her home. A pet duck home obviously should include as few edges as possible, to still be able to reach all nodes without leaving the home. Moreover, the sum of the integers on the home's edges should be as small as possible.

Zoe is wondering how nice *Dag*'s home will be.

Input The first line contains $2 \leq n \leq 10^5$ and $0 \leq m \leq \min\left(2 \cdot 10^5, \frac{n^2-n}{2}\right)$, the number of nodes and the number of edges with positive weights. The following m lines each contain u, v and w , the two nodes of one positive edge ($1 \leq u, v \leq n$ and $u \neq v$) and the integer on the edge $0 < w < 2^{30}$. All other edges have weight zero.

Output Print the sum of integers *Dag*'s home will have.

Sample input

```
4 4
1 2 7
2 4 15
3 1 14
4 3 14
```

Sample output

```
7
```

```
5 6
2 4 11
1 4 7
5 3 10
2 3 14
3 4 8
2 1 6
```

```
0
```