C. Colorful construction

time limit per test: 3 s.
memory limit per test: 256 MB
input: standard input
output: standard output

(33 points) A recent tropical storm has destroyed all of the bridges in the Berlandian archipelago. The government is now facing the challenging problem of restoring the connections between its n islands.

Two organizations have offered their help for rebuilding the bridges: Berlandian League of United Engineers (BLUE) and Revolutionary Engineering Department (RED). Each organization presented a list of proposals, and each one of the proposals offered to construct a bridge between two different islands. The organizations are bitter rivals. As a result, for each pair of islands at most one of them has offered their services to construct a bridge connecting them.

You have been assigned with a task of finding a reconstruction plan: a set of proposals that need to be realized. Using the power of polls, for each proposal you managed to determine how much its realization would increase the happiness of archipelago residents. Your personal goal is to achieve the maximum possible happiness of the residents while following two government guidelines:

- The government will only fund the construction if there are no unnecessary bridges. That is, after the realization of the plan there can be at most one path using bridges between any two islands.
- Bridges built by BLUE are known to be very unreliable. Therefore, if there are two plans, each with a different number of bridges built by RED, you would choose the one where RED builds more bridges regardless of the total happiness achieved by either of them.

Taking these restrictions into account, find the plan that maximizes total happiness.

Input

The first line contains 2 integers: n, m, $1 \le n \le 100000$, $0 \le m \le 100000$ — the number of islands and proposals.

The following m lines contain the descriptions of the proposals. Each line contains three integers a_i, b_i, c_i, $1 \le a_i \le n$, $1 \le b_i \le n$, $1 \le c_i \le 10000$, and a string s_i, $s_i \in \{\text{blue}, \text{red}\}$ — the endpoints of the bridge, the happiness increase and the organization for proposal i. There is at most one proposal for each pair of islands.

Output

Print two integers — the total happiness increase from bridges built by RED and BLUE in the optimal plan.

Examples

input

```
4 6
1 2 1 red
2 3 1 red
3 1 1 red
4 1 10 blue
4 2 10 blue
4 3 10 blue
```

output

```
2 10
```

input

```
4 2
```

```
1 2 1 blue
3 4 2 red
```

output Copy

```
2 1
```
