Problem F - The Bagel Network

Time limit: 1 second

After investing in the bagel industry, Jack found himself with a lot of extra money. With all his extra money, he's decided to create the world's first large-scale network exclusive to bagel shops.

After purchasing all the networking companies, he has found himself with m different network cables already wired between bagel shops. Each cable has a certain cost to operate, but Jack does not necessarily need to use all the cables.

The engineers of the companies Jack bought out have informed him that some of the cables *must* be used in his network, since they have pre-existing government contracts to use those cables. Furthermore, they have told him that if there are multiple paths between any bagel shop in the network, the cables will catch on fire and cause an immediate climate crisis.

Jack still needs to save some of his money to keep re-investing in the bagel industry, so help Jack create his network of bagel shops using the least amount of money without breaking government contracts or causing a climate crisis.

Input

The first line will be an integer T, denoting the number of test cases.

For each test case, there will be two integers n and m ($2 \leq n \leq 10^4, 1 \leq m \leq 10^5$), which denote the number of bagel shops and network cables.

Following this, there will be m lines, each representing a network cable. The lines will be of the form $c\ u\ v\ w$, where c is 'R' for regular cables, or 'B' for cables with government contracts. u and v ($0 \leq u, v \leq n-1$) are the bagel shops that are connected by the cable, and w is an integer representing the cost of operating that cable.

Output

For each test case, print out the total cost of the network, or NOPE if no such network exists.

Sample Input

```
4
3 3
R 0 1 1000
R 1 2 1
R 2 0 1
3 3
B 0 1 1000
R 1 2 1
R 2 0 1
3 3
B 0 1 1000
B 1 2 1
R 2 0 1
3 3
B 0 1 1000
B 1 2 1
B 2 0 1
```

Sample Output

```
2
1001
1001
NOPE
```