Problem 6. Finding the Best Route

Time Limit : 4 second
Memory Limit : 256 megabytes

Description

Bitcity is a capital city of Byteland.

There is a modern highway system in Bitcity and the system is updating frequently – more highways are added to the system.

The system is formed by highways connecting the crossing points.

You, the manager of transporting company, are going to transport computers from one crossing to another.

But in Byteland, the cost of fuel is very expensive so you want to use only one truck to transport.

You want to trasport as much computers as possible, but all the highways has a limit W indicating that the truck which is loaded more than W computers can not pass the highway.

You must calculate the maximum number of computers that you can transport.

It is guaranteed that, you can go from any crossing to any other one on the initial highway system. In other words, original system is connected.

Input

The first line contains one integer $\boldsymbol{T}$ $(1 \leq \boldsymbol{T} \leq 3)$ – indicating the number of test cases.

Each test case begins with one line contains two integers N and M – indicating the number of crossings and highways. $(3 \leq N \leq 70000, N - 1 \leq M \leq 150000)$

The next M lines contain three integers $a\ b\ c$ – indicating that there is a highway between a and b, and c is the limit of the highway.

$(1 \leq a, b \leq n,\ \ 1 \leq c \leq 10000)$

The next line contains one integer Q $(1 \leq Q \leq 105000)$ – indicating the number of queries.

All the queries are one of 2 following forms.

1 a b c : add new highway between a and b, and the limit is c.

2 a b : calculate the maximum number of computers that you can transport from a to b. $(1 \leq a, b \leq n,\ 1 \leq c \leq 10000)$

It is possible that there are 2 or more highways between 2 crossing points.

Output

For each second type query, print the maximum number of transportable computers.

Sample Input

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

Sample Output

```
5
7
6
```