Problem: Spin

Filename: *alarge* **(NOTE THE ATYPICAL FILE NAME!!!)**

Time limit: *5 seconds*

Pauline is an extremely slow walker and she is always late to class. Consequently, when the Spin scooters came to UCF last year she was saved! Now Pauline depends on the spin scooters to make it to all of her classes on time. However, since the pandemic has started, Pauline is very concerned about how much exposure she gets to Covid-19. Because of this, she is weary of how many crosswalks she scooters by.

The Problem

Given a description of the UCF campus, help Pauline find the shortest path to get from her dorm to class where she uses at most w crosswalks. Campus can be described as several locations connected by roads. Some roads are considered to be crosswalks and as previously stated, Pauline is only willing to traverse a maximum of w crosswalks. Pauline's dorm is represented by node 1 and the class she is going to will be represented by location n in the graph.

The Input

The first line of input will contain a single positive integer, c ($c \leq 20$), representing the number of input cases to process. The input cases follow. The first line of each input case contains the integers n ($2 \leq n \leq 5000$), m ($1 \leq m \leq 10^4$), and w ($0 \leq w \leq 20$), representing the number of locations on the campus, the number of roads connecting locations on campus, and the maximum number of crosswalks Pauline is willing to cross, respectively. The following m lines each contain four integers, u, v ($1 \leq u, v \leq n, u \neq v$), x ($0 \leq x \leq 1$), and d ($1 \leq d \leq 10^4$), describing the start and end of each road as well as whether or not the road is a crosswalk (0 meaning it is NOT a crosswalk and 1 meaning it is a crosswalk) and the length of the road. There is at most one road between any two nodes and each road can be traveled in either direction.

The Output

For each query, output a single integer representing the length of the shortest path for Pauline to get from her dorm to her class that doesn't use more than w crosswalks. If it is not possible for Pauline to make it without crossing too many crosswalks (or make it at all), output -1.

Sample Input

```
4
4 4 1
1 2 1 8
2 4 0 12
1 3 1 3
3 4 1 6
4 4 2
1 2 1 8
2 4 0 12
1 3 1 3
3 4 1 6
6 8 2
1 2 1 10
1 3 0 10
2 3 1 8
2 4 1 20
3 4 0 30
3 5 1 1
4 5 0 16
6 4 1 5
2 1 0
1 2 1 4
```

Sample Output

```
20
9
32
-1
```