

Rescue Mission

Back at home, Lea watches a suspense-packed film about an ancient clan of ninjas. Soon, the main character, “Thunderfist” Shen, is in dire trouble: all other ninjas of his clan have been captured by the evil ninja Karai. Now, he has to infiltrate the enemy base to free them.

The enemy fortress is a twisted maze of winding corridors and dark alleyways, overshadowed by looming watchtowers. Scattered throughout the enemy base are several dungeons where his friends are kept. Whenever a ninja reaches one of the dungeons, he can free all ninjas there. When freed, they either stay where they are and go into hiding or an arbitrary amount of them helps to free the other ninjas. Once all ninjas have been freed, they can rise up and kill all the guards, but until then they have to stay undetected by all means. So, to move through the evil fortress, a ninja has to distract the guards along the way or silently sneak past them. Remember, ninjas always work alone, so if two ninjas sneak through the same corridor, both have to distract the guards independently.

Every time one of the ninjas has to sneak past a guard, there is a chance that the guard raises an alarm and the ninjas’ plan is foiled.

Lea wants to know if she can plan the rescue better than Shen did in the film. Can you tell her the minimum total amount of times the ninjas have to sneak past guards undetected to free all captives?

Input

The first line of the input contains an integer t . t test cases follow, each of them separated by a blank line.

Each test case consists of a line containing three integers n , m , and d , where n is the number of rooms in the enemy base (indexed from 1 to n), m the number of connections between those rooms and d is the amount of dungeons. Shen starts in room 1. d lines follow. The i -th line contains an integer v_i which denotes that room v_i is a dungeon that contains captured ninjas. m lines follow. The j -th line contains three integers v_j , w_j and g_j . v_j and w_j each denote a room in the enemy base, g_j is the amount of times a ninja has to sneak past a guard to move along that corridor.

Output

For each test case, output one line containing “Case # i : x ” where i is its number, starting at 1, and x is the minimum amount of times the ninjas have to sneak past guards. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 50$
- $1 \leq d \leq n \leq 250$
- $1 \leq m \leq 31250$
- $1 \leq v_i, v_j, w_j \leq 500$ for all $1 \leq i, j \leq d$
- $1 \leq g_i, g_j \leq 100$
- The graph is connected.
- There are more than d captives in each dungeon.

Sample Input 1

```
2
5 5 2
2
4
1 2 8
1 3 1
3 4 1
4 5 2
2 5 2

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

Sample Output 1

```
Case #1: 6
Case #2: 8
```

Sample Input 2

```
2
8 10 7
7
2
5
4
8
6
1
2 6 6
6 1 7
1 3 1
6 5 3
2 8 5
5 7 4
6 4 5
4 3 8
3 8 9
6 1 2

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

Sample Output 2

```
Case #1: 25
Case #2: 26
```