

## 5763 Disney's FastPass

*Disney's FastPass is a virtual queuing system created by the Walt Disney Company. First introduced in 1999 (though the idea of a ride reservation system was first introduced in world fairs), FastPass allows guests to avoid long lines at the attractions on while the system is installed, freeing them to enjoy other attractions during their wait. The service is available at no additional charge to all park guests.*

— wikipedia

Disneyland is a large theme park with plentys of entertainment facilities, also with a large number of tourists. Normally, you need to wait for a long time before getting the chance to enjoy any of the attractions. the FastPass is a system allowing you to pick up FastPass-tickets in some specific position, and use them at the corresponding facility to avoid long lines. With the help of the FastPass System, one can arrange his/her trip more efficiently.

You are given the map of the whole park, and there are some attractions that you are interested in. How to visit all the interested attractions within the shortest time?



### Input

The first line contains an integer  $T$  ( $1 \leq T \leq 25$ ), indicating the number of test cases.

Each test case contains several lines.

The first line contains three integers  $N, M, K$  ( $1 \leq N \leq 50, 0 \leq M \leq N(N-1)/2, 0 \leq K \leq 8$ ), indicating the number of locations (starting with 1, and 1 is the only gate of the park where the trip must be started and ended), the number of roads and the number of interested attractions.

The following  $M$  lines each contains three integers  $A, B, D$  ( $1 \leq A, B \leq N, 0 \leq D \leq 10^4$ ) which means it takes  $D$  minutes to travel between location  $A$  and location  $B$ .

The following  $K$  lines each contains several integers  $P_i, T_i, FT_i, N_i, F_{i,1}, F_{i,2} \dots F_{i,N_i-1}, F_{i,N_i}$ , ( $1 \leq P_i, N_i, F_{i,j} \leq N, 0 \leq FT_i \leq T_i \leq 10^4$ ), which means the  $i$ -th interested attraction is placed at location  $P_i$  and there are  $N_i$  locations  $F_{i,1}, F_{i,2} \dots F_{i,N_i}$  where you can get the FastPass for the  $i$ -th attraction. If you come to the  $i$ -th attraction with its FastPass, you need to wait for only  $FT_i$  minutes, otherwise you need to wait for  $T_i$  minutes.

You can assume that all the locations are connected and there is at most one road between any two locations.

Note that there might be several attractions at one location.

### Output

For each test case in the input, print one line: 'Case # $X$ :  $Y$ ', where  $X$  is the test case number (starting with 1) and  $Y$  is the minimum time of the trip.

**Sample Input**

```
2
4 5 2
1 2 8
2 3 4
3 4 19
4 1 6
2 4 7
2 25 18 1 3
4 12 6 1 3
4 6 2
1 2 5
1 4 4
3 1 1
3 2 1
3 4 1
2 4 10
2 8 3 1 4
4 8 3 1 2
```

**Sample Output**

```
Case #1: 53
Case #2: 14
```