Problem F. Moving On

Time limit: 10 seconds

Firdaws and Fatinah are living in a country with n cities, numbered from 1 to n. Each city has a risk of kidnapping or robbery.

Firdaws's home locates in the city u, and Fatinah's home locates in the city v. Now you are asked to find the shortest path from the city u to the city v that does not pass through any other city with the risk of kidnapping or robbery higher than w, a threshold given by Firdaws.

Input

The input contains several test cases, and the first line is a positive integer T indicating the number of test cases which is up to 50.

For each test case, the first line contains two integers n ($1 \leq n \leq 200$) which is the number of cities, and q ($1 \leq q \leq 2 \times 10^4$) which is the number of queries that will be given. The second line contains n integers $r_1, r_2, \cdots, r_n$ indicating the risk of kidnapping or robbery in the city 1 to n respectively. Each of the following n lines contains n integers, the j-th one in the i-th line of which, denoted by $d_{i,j}$, is the distance from the city i to the city j.

Each of the following q lines gives an independent query with three integers u, v and w, which are described as above.

We guarantee that $1 \leq r_i \leq 10^5$, $1 \leq d_{i,j} \leq 10^5$ ($i \neq j$), $d_{i,i} = 0$ and $d_{i,j} = d_{j,i}$. Besides, each query satisfies $1 \leq u, v \leq n$ and $1 \leq w \leq 10^5$.

Output

For each test case, output a line containing `Case #x:` at first, where `x` is the test case number starting from 1. Each of the following q lines contains an integer indicating the length of the shortest path of the corresponding query.

Sample

standard input	standard output
1 3 6 1 2 3 0 1 3 1 0 1 3 1 0 1 1 1 1 2 1 1 3 1 1 1 2 1 2 2 1 3 2	Case #1: 0 1 3 0 1 2