

Shelters

A country where earthquakes occur frequently prepares shelters everywhere so that people can go to a shelter quickly when an earthquake occurs. Suppose there are M shelters in a city where N people are living. The location of person i ($1 \leq i \leq N$) is denoted by (p_x^i, p_y^i) and that of shelter j ($1 \leq j \leq M$) by (s_x^j, s_y^j) . The distance between person i and shelter j is defined as $|s_x^j - p_x^i| + |s_y^j - p_y^i|$. The maximum number of persons a shelter can accommodate is known in advance for each shelter. In other words, shelter j can accommodate c_j persons at most. When an earthquake alert sounds, all the people should move to any shelter under the following two conditions:

- (1) Each person can go to a shelter which is located within distance L from him/her.
- (2) Each shelter cannot accommodate more people than its capacity.

Given information regarding the locations of N people and M shelters, maximum capacity for each shelter and the distance bound L each person can go at most when an alert sounds, make a program which can determine whether every people can go to any shelter holding the two conditions explained above.

[Input]

The first line of the input file contains a number T ($T \leq 90$) which denotes the number of test cases. The first line of each test case contains two integers N and M , which represent the number of people and the number of shelters, respectively. Each of the following N lines contains two integers p_x^i and p_y^i , which represent the location of person i ($1 \leq i \leq N$) ($1 \leq p_x^i, p_y^i \leq 100,000,000$). Each of the following M lines contains two integers s_x^j and s_y^j , which represent the location of shelter j ($1 \leq j \leq M$) ($1 \leq s_x^j, s_y^j \leq 100,000,000$). In the following line M integers are given, each of which represents the capacity c_j ($1 \leq c_j \leq N$) of shelter j ($1 \leq j \leq M$). In the last line integer L ($1 \leq L \leq 200,000,000$) is given, which represents the distance bound a person can go at most.

The inputs are given in 2 sets as follows:

- Set 1: $1 \leq N, M \leq 10$.
- Set 2: $1 \leq N, M \leq 500$.

[Output]

Print either 1 or 0 in a line for each test case. Print 1 if everybody can go to any shelter holding the both conditions explained above, otherwise print 0.

[I/O example]

Input

```
3
4 2
0 0
1 1
5 1
6 0
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1 0
5 0
2 2
1
4 2
0 0
1 1
5 1
6 0
1 0
5 0
1 3
5
4 2
0 0
1 1
5 1
6 0
1 0
5 0
1 3
4

Output

1
1
0