# Input

First line contains 4 integers (b: number of branches, r: number of requests, m: number of services, d: maximum accepted distance):

**b r m d**

The next line m lines contain b integers , where represents the number of time slots needed to finish service *i* at branch *j.*

Then follows *r*  lines, each line contains variables () where are the location of the request, is the priority of the request and is the requested service of the .

Then follows a batch of lines, each batch starts with () , (x,y) are the location of the branch, s is the number of slots per day at the branch and c is the number of counters at the branch.

Then follows lines, each lines begins with an integer *n* indicating the number of services provided at counter , then n integers follows indicating which services the counter provides .

**Example:**

2 4 3 100

1 2

3 1

1 1

30 20 1 0

20 50 1 1

10 10 0 0

40 40 2 2

15 15 8 2

3 0 1 2

1 1

85 50 5 3

3 0 1 2

2 1 2

3 0 1 2

# Output

The first line contains a single integer *n* , where n is the maximum number of matchings.

Each of the next n lines contains 4 integers:

indicating that request will be handled at branch at time slot at counter .