

In a large organization, everyone knows a lot of colleagues. However, friendship relations are kept with only a few of them, to whom news are told.

Suppose that whenever an employee knows of a piece of news, he tells it to all his friends on the following day. So, on the first day, the source of the information tells it to his friends; on the second day, the source's friends tell it to their friends; on the third day, the friends of the source's friends' tell it to their friends; and so on.

The goal is to determine:

- *the maximum daily boom size*, which is the largest number of employees that, on a single day, hear the piece of news for the first time; and
- *the first boom day*, which is the first day on which the maximum daily boom size occurs.

Write a program that, given the friendship relations between the employees and the source of a piece of news, computes the maximum daily boom size and the first boom day of that information spreading process.

## Input

The first line of the input contains the number  $E$  of employees ( $1 \leq E \leq 2500$ ). Employees are numbered from 0 to  $E - 1$ .

Each of the following  $E$  lines specifies the set of friends of an employee's (from employee 0 to employee  $E - 1$ ). A set of friends contains the number of friends  $N$  ( $0 \leq N < 15$ ), followed by  $N$  distinct integers representing the employee's friends. All integers are separated by a single space.

The next line contains an integer  $T$  ( $1 \leq T < 60$ ), which is the number of test cases.

Each of the following  $T$  lines contains an employee, which represents the (unique) source of the piece of news in the test case.

## Output

The output consists of  $T$  lines, one for each test case.

If no employee (but the source) hears the piece of news, the output line contains the integer '0'.

Otherwise, the output line contains two integers,  $M$  and  $D$ , separated by a single space, where  $M$  is the maximum daily boom size and  $D$  is the first boom day.

## Sample Input

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

## Sample Output

```
3 2
0
2 1
```