
Group of Interest

X37740_en

The UPF Hacklab offers students a space where they can share knowledge to develop interests and skills in a multidisciplinary way. But each time an interest group is created, all members of Hacklab receive an email, spamming students who are not part of the interest group.

In order to automatize the mailing process, Alice has decided to create a repository of students together with their interests.

Input

The input consists of several test cases. Each test case starts with an integer $N \leq 500$ of students. The following N lines contain the name of each student, the number of topics $1 \leq I_n \leq 10$ he or she is interested in and the corresponding names of the topics.

Then, an integer $M \leq 500$ of meetings will take place in the Hacklab. Each meeting will start with the word "Union" or "Intersection", followed by the number of topics $1 \leq T \leq 10$ and the name of each topic. "Union" means that all students interested in *any* of the T topics are invited, while "Intersection" means that only students interested in *all* T topics are invited.

Output

For each test case, output the number of students we have to send email to and their respective names in lexicographical order.

Sample input 1

```
3
John 1 Science
Antoine 2 Science Math
Bob 2 Literature Math
2
Intersection 2 Science Math
Union 2 Science Literature
```

Sample output 1

```
1 Antoine
3 Antoine Bob John
```

Problem information

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