

Queries in Social Networks

Task Description

In this problem you are given the names of m persons, $1 \leq m \leq 500$. The goal is to maintain a social network, so that the following two types of queries can be answered:

- **MakeFriend NameA NameB**

This means that the person named **NameA** and the person named **NameB** become friends to each other after this query.

It is guaranteed that **NameA** \neq **NameB**.

Furthermore, there will be no duplicate pairs.

- **ListFriend NameA**

This is a query for the friend list of **NameA** up to the present time. You need to output the friend list of **NameA** for this query.

Input

The first line contains one integer m , $1 \leq m \leq 500$, the number of persons.

Each of the next m lines contains one string s , $1 \leq |s| \leq 20$, which is the name of each person.

The next line contains one integer n , $1 \leq n \leq 1000$, the number of queries to be processed.

Then there are n lines, each contains one query as described in the above format.

It is guaranteed that the name of each person consists of only alphabetical characters.

Output

For each ListFriend query, output the friend list of that person, separated by a space, in a line.

Example1

Input	Output
3	John Xman
Amy	Amy
John	
Xman	
4	
MakeFriend Amy John	
MakeFriend Amy Xman	
ListFriend Amy	
ListFriend Xman	

Example2

Input	Output
5	Superman
Xman	
Superman	
Spiderman	Xman Batman Spiderman
Batman	
Ironman	
7	
MakeFriend Xman Superman	
MakeFriend Batman Superman	
ListFriend Batman	
ListFriend Ironman	
MakeFriend Spiderman Superman	
ListFriend Ironman	
ListFriend Superman	

