

## Problem G. Transfer of Duty

Input file: *standard input*  
Output file: *standard output*  
Time limit: 4 seconds  
Memory limit: 512 mebibytes

Anya is going to be an operator at the laboratory today. The operator's desk has one million switches, no kidding! The switches are numbered by integers from 1 to  $10^6$ , and each switch corresponds to a device with the same number. The switches don't show whether the respective devices are on or off, but it is known that toggling a switch changes the state from "on" to "off" and from "off" to "on".

When Anya arrives in the morning, all devices are off. After that, fellow workers come and occasionally toggle the switches.

To optimize energy consumption, after each toggle, the operator has to distinguish between the following classes of states:

- all devices are off,
- exactly one device is on: it is necessary to know which one,
- two or more devices are on.

Sure enough, Anya will be able to do this. But then she will have to transfer the operator duty to her friend Andrei. And during the transfer, she may only leave a short note to him. After reading the note, Andrei will have the exact same task: fellow workers will toggle the switches, and he will have to know the current class of states of the laboratory.

Help the friends devise a way to write the note so that not only Anya, but also Andrei has all the necessary information after each toggle.

### Interaction Protocol

In this problem, your solution will be run twice on each test. In each test, all toggles during both runs are fixed in advance. Each line of input is terminated by an end-of-line character.

### First Run

During the first run, the solution acts for Anya. The first line contains the word "**start**". The second line contains an integer  $n$ , the number of toggles ( $1 \leq n \leq 100\,000$ ). Each of the following  $n$  lines contains one integer: the number of the device (from 1 to  $10^6$ ) for which a worker toggled the switch.

For each toggle, print a line with a single integer:

- 0 if all devices are off,
- the number of the device that is on, if there is exactly one such device,
- -1 if two or more devices are on.

After all the answers, print a single line containing the note Anya will leave to Andrei. The note must have length from 0 to 1000 characters and consist only of characters with ASCII codes from 32 to 126. There are no other restrictions on the note's contents.

### Second Run

During the second run, the solution acts for Andrei. The first line contains the word "**resume**". The second line contains the note, exactly as it was printed during the first run. The third line contains an integer  $m$ , the number of toggles ( $1 \leq m \leq 100\,000$ ). Each of the following  $m$  lines contains one integer: the number of the device (from 1 to  $10^6$ ) for which a worker toggled the switch.

For each toggle, print a line with a single integer, following the same rules as during the first run.

## Example

For each test, the input during the second run depends on the solution's output during the first run. Below we show two runs of a certain solution on the first test.

<i>standard input</i>	<i>standard output</i>
start	10
5	-1
10	14
14	-1
10	-1
12	3 10 12 14
10	

<i>standard input</i>	<i>standard output</i>
resume	-1
3 10 12 14	-1
6	-1
14	277
277	0
12	12
10	
277	
12	