Bernard's Magic Needles

Bernard has a collection of magic needles. Unfortunately, on his free afternoon, he decided to roam around Canberra, and ended up losing his needles somewhere in a haystack. You have been called in to help him find it again.

The haystack is represented by a sequence of integers h_1 through h_N, such that each number in the sequence is strictly greater than the previous number. Every magic needle has a corresponding magic number, which Bernard has given you. You must find where in the haystack these numbers are.

Input

The first line of the input file will contain an integer N, the number of items in the haystack, 0 <= N <= 100000. Following that will be N lines containing an integer h, 1 <= h <= 1000000000.

The remainder of the input file will consist of lines giving the numbers corresponding to Bernard's needles, terminated with -1. There will be at most 10000 needles in the haystack.

Output

For each number m corresponding to one of Bernard's magic needles, your programme should output a line containing an integer i, such that h_i = m. i.e., you list the position in the haystack of each needle. Sometimes Bernard may lose a needle somewhere other than a haystack, and thus have no chance of finding it again. If a needle is not found in the haystack, the line should contain the phrase "`needle is gone forever`".

Sample Input

```
10
1
8
20
40
42
77
80
84
85
90
8
77
44
85
-1
```

Sample Output

```
2
6
needle is gone forever
9
```

In this example, the haystack is as follows:

h_1	h_2	h_3	h_4	h_5	h_6	h_7	h_8	h_9	h_10

1	8	20	40	42	77	80	84	85	90

The output indicates that the needle given by 8 was at h_2, the needle 77 was at h_6, the needle 44 is not in the haystack, and the needle 85 was at h_9.

Scoring

The score for each input scenario will be 100% if the correct answer is written to the output file, and 0% otherwise.