Problem A. Speed Lookup

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	64 megabytes

One of the most essential skill in competitive programming is estimating computational complexity. By 'estimating computational complexity', I mean estimating how fast can the program run. Competitive Programming problems generally have time limit within the range of 1 to 2 second. That means, your program must produce the output for each test case within the time limit, or you will get the "Time Limit Exceeded (TLE)" verdict.

Lets use this question as an example. You are given N words where N can be as high as 100 000. You are also given M query which can also be as high as 100 000. Each query consist of one word. Your task is to determine for each query if the word is included in the N words given before.

Normally you would put the N words in an array, and then for each M query, you would loop for each N item in the array to check if the query string is included. That would mean, at worst case you would be doing $100\,000 \times 100\,000 = 10^{10}$ operations. The rule of thumb in competitive programming is, if it takes more than 10^8 operations, it is too slow, like in this case. Try submitting with this algorithm, you'll get a TLE.

Instead of putting everything in an array, you can use a C++'s `set` or Java's `TreeSet`. These two container internally uses balanced binary search tree to store their items. Because of this structure, you can check if an item is in the collection in $\log_2 N$ operations where N is the number of item in the collection. Including the number of query, the total combined computational complexity is about $N \log_2 N$. So by using a set, the number of operation is now roughly equal to $100\,000 \times \log_2 100\,000 \approx 1\,600\,000$ a much lower number of operation.

Input

The first line consist of a single integer N ($1 \leq N \leq 100\,000$). The next N line consist of a single word w_i which is the ith word. The following line consist of a single integer M ($1 \leq M \leq 100\,000$). The next M line consist of a single word q_i which is the ith query.

Output

For each q_i, print "In" in its own line if the query string is included in list. If not, print "Out".

Example

standard input	standard output
5 ali abu bakar ella ayub 10 ali taufan el akar bakar ayub alla abu ali kenangan	In Out Out Out In In Out In In Out