Numeric String Template

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Kristina has an array a, called a *template*, consisting of n integers. She also has m strings, each consisting only of lowercase Latin letters. The strings are numbered from 1 to m. She wants to check which strings match the template.

A string s is considered to match the template if all of the following conditions are simultaneously satisfied:

- The length of the string s is equal to the number of elements in the array a.
- The same numbers from a correspond to the same symbols from s. So, if $a_i = a_j$, then $s_i = s_j$ for $(1 \le i, j \le n)$.
- The same symbols from s correspond to the same numbers from a. So, if $s_i = s_j$, then $a_i = a_j$ for $(1 \le i, j \le n)$.

In other words, there must be a one-to-one correspondence between the characters of the string and the elements of the array.

For example, if a = $[3, 5, 2, 1, 3]$, then the string "`abfda`" matches the template, while the string "`afbfa`" does not, since the character "`f`" corresponds to both numbers 1 and 5.

Input

The first line of input contains a single integer t $(1 \le t \le 10^4)$ — the number of test cases.

The following descriptions are for the test cases.

The first line of each test case contains a single integer n $(1 \le n \le 2 \cdot 10^5)$ — the number of elements in the array a.

The second line of each test case contains exactly n integers a_i $(-10^9 \le a_i \le 10^9)$ — the elements of the array a.

The third line of each test case contains a single integer m $(1 \le m \le 2 \cdot 10^5)$ — the number of strings to check for template matching.

Following are m strings, each containing a non-empty string s_j $(1 \le |s_j| \le 2 \cdot 10^5)$, consisting of lowercase Latin letters.

It is guaranteed that the sum of n across all test cases does not exceed $2 \cdot 10^5$, and that the sum of the lengths of all strings does not exceed $2 \cdot 10^5$.

Output

For each test case, output m lines. On the i-th line $(1 \le i \le m)$ output:

- "`YES`", if the string with index i matches the template;
- "`NO`" otherwise.

You may output the answer in any case (for example, the strings "`yEs`", "`yes`", "`Yes`", and "`YES`" will be recognized as a positive answer).

Example

input
3 5 3 5 2 1 3 2

```
abfda
afbfa
2
1 2
3
ab
abc
aa
4
5 -3 5 -3
4
aaaa
bcbc
aba
cbcb
```

output

```
YES
NO
YES
NO
NO
NO
YES
NO
YES
```

Note

The first test case is explained in the problem statement.