Problem F

KMP

KMP is a string algorithm that searches for occurrences of a string as substrings on another string. The name of the algorithm comes from the first character of the last names of the authors, namely Donald Knuth, James Hiram Morris, and Vaughan Pratt.

This problem has nothing to do with the algorithm, rather this problem is about the naming itself. There are N computer scientists in this world numbered from 1 to N. The ith computer scientist has a name A_i. A name consists of one or more word, separated by a single space. A word consists of one or more characters. The first character is an uppercase alphabetical character (A-Z), while the rest of the characters are lowercase alphabetical characters (a-z).

There are Q queries, each consists of a string S of uppercase alphabetical characters. You are wondering whether an algorithm S can be authored by a subset of these N computer scientists. Let say Donald Knuth, James Hiram Morris, and Vaughan Pratt invent another algorithm. The first characters of any word in each computer scientist's name are $\{$D, K$\}$ in Donald Knuth, $\{$J, H, M$\}$ in James Hiram Morris, and $\{$V, P$\}$ in Vaughan Pratt. Then the algorithm can be named by taking exactly one of those first characters from each name, e.g., DJV, DHP, KHV, KMP, KJP, etc. Note that the order does not matter, so algorithm names like PKD or VHK are also valid. However, KKMP or LHO are not valid in this example.

More formally, you are wondering whether there is a sequence of integers $X_1, X_2, \cdots, X_{|S|}$ such that:

- $1 \leq X_1, X_2, \cdots, X_{|S|} \leq N$

- $X_i \neq X_j$ for $i \neq j$

- One of the word in A_{X_i} starts with the character S_i

Input

Input begins with two integers: N Q ($1 \leq N \leq 50$; $1 \leq Q \leq 1000$) representing the number of computer scientists and the number of queries, respectively. The next line contains N strings: A_i representing the name of the ith computer scientist. It is guaranteed that the sum of the length of all A_i is not more than 10^6. The next Q lines contains a string S representing the query which you should answer. It is guaranteed that the sum of the length of all S is not more than 10^6. It is also guaranteed that A_i and S satisfy the format given in the problem statement.

Output

For each query, output "YES" in a line if an algorithm of name S can be authored by a subset of the N computer scientists; otherwise, output "NO".

Sample Input #1

```
3 3
Donald Knuth
Vaughan Pratt
James Hiram Morris
KMP
DVJ
LHO
```

Sample Output #1

```
YES
YES
NO
```

Explanation for the sample input/output #1

The sample input/output illustrates the example given in the problem statement above.

Sample Input #2

```
3 3
Donald Knuth
Vaughan Pratt
James Hiram Morris
D
KP
KKMP
```

Sample Output #2

```
YES
YES
NO
```

Explanation for the sample input/output #2

Note that you can choose a subset of the N computer scientists.