

Word prefixes

Task

Given two lists of strings, the first list is called the dictionary.

Let $b = b_1b_2b_3 \dots b_k$ be a string from the second list, where $b_1 \dots b_k$ are the characters of this string. For each i from 1 to k , determine the number of strings a from the dictionary such that $b_1 = a_1, b_2 = a_2, \dots, b_i = a_i$. For each prefix of the string b from the second list, calculate the number of strings from the dictionary that share the same prefix.

Compute this for each string from the second list.

Input

The first line contains an integer $1 \leq n \leq 10^5$ – the number of strings in the dictionary.

This is followed by n lines, each containing one string belonging to the dictionary. These strings are not necessarily distinct.

Next is an integer q ($1 \leq q \leq 10^5$) – the number of strings in the second list.

This is followed by q lines, each containing one string belonging to the second list.

All strings consist of lowercase English letters, and the sum of the lengths of the strings in each list does not exceed $3 \cdot 10^5$.

Output

For each string b from the second list, print on one line the count of strings from the dictionary that have the same prefix as b of lengths 1, 2 up to the length of string b . Do not print a space after the last number on each line.

Example

input

```
3
aaaa
abaa
aabb
4
aaaa
aaba
nothing
aaaaarg
```

output

```
3 2 1 1
3 2 1 0
0 0 0 0 0 0 0
3 2 1 1 0 0 0
```