

# Find A Sub-Word

We define a *word character* to be any of the following:

- An English alphabetic letter (i.e., `a-z` and `A-Z`).
- A decimal digit (i.e., `0-9`).
- An underscore (i.e., `_`, which corresponds to ASCII value `95`).

We define a *word* to be a contiguous sequence of one or more word characters that is preceded and succeeded by one or more occurrences of non-word-characters or line terminators. For example, in the string `I 10ve-cheese_?`, the words are `I`, `10ve`, and `cheese_`.

We define a *sub-word* as follows:

- A sequence of word characters (i.e., English alphabetic letters, digits, and/or underscores) that occur in the same exact order (i.e., as a contiguous sequence) inside another word.
- It is preceded and succeeded by word characters *only*.

Given  $n$  sentences consisting of one or more words separated by non-word characters, process  $q$  queries where each query consists of a single string,  $s$ . To process each query, count the number of occurrences of  $s$  as a *sub-word* in all  $n$  sentences, then print the number of occurrences on a new line.

## Input Format

The first line contains an integer,  $n$ , denoting the number of sentences.

Each of the  $n$  subsequent lines contains a sentence consisting of words separated by non-word characters.

The next line contains an integer,  $q$ , denoting the number of queries.

Each line  $i$  of the  $q$  subsequent lines contains a string,  $s_i$ , to check.

## Constraints

- $1 \leq n \leq 100$
- $1 \leq q \leq 10$

## Output Format

For each query string,  $s_i$ , print the total number of times it occurs as a sub-word *within all words in all  $n$  sentences*.

## Sample Input

```
1
existing pessimist optimist this is
1
is
```

## Sample Output

## Explanation

We must count the number of times  $s = \text{is}$  occurs as a sub-word in our  $n = 1$  input sentence(s):

- $s$  occurs 1 time as a sub-word of `existing`.
- $s$  occurs 1 time as a sub-word of `pessimist`.
- $s$  occurs 1 time as a sub-word of `optimist`.
- While  $s$  is a substring of the word `this`, it's followed by a blank space; because a blank space is non-alphabetic, non-numeric, and not an underscore, we do not count it as a sub-word occurrence.
- While  $s$  is a substring of the word `is` in the sentence, we do not count it as a match because it is preceded and succeeded by non-word characters (i.e., blank spaces) in the sentence. This means it doesn't count as a sub-word occurrence.

Next, we sum the occurrences of  $s$  as a sub-word of all our words as  $1 + 1 + 1 + 0 + 0 = 3$ . Thus, we print 3 on a new line.