

B. Polycarpus is Looking for Good Substrings

time limit per test: 4 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

We'll call string $s[a, b] = s_a s_{a+1} \dots s_b$ ($1 \leq a \leq b \leq |s|$) a *substring* of string $s = s_1 s_2 \dots s_{|s|}$, where $|s|$ is the length of string s .

The *trace* of a non-empty string t is a set of characters that the string consists of. For example, the trace of string "aab" equals {'a', 'b'}.

Let's consider an arbitrary string s and the set of its substrings with trace equal to C . We will denote the number of substrings from this set that are maximal by inclusion by $r(C, s)$. Substring $s[a, b]$ of length $n = b - a + 1$ belonging to some set is called maximal by inclusion, if there is no substring $s[x, y]$ in this set with length greater than n , such that $1 \leq x \leq a \leq b \leq y \leq |s|$. Two substrings of string s are considered different even if they are equal but they are located at different positions of s .

Polycarpus got a challenging practical task on a stringology exam. He must do the following: given string s and non-empty sets of characters C_1, C_2, \dots, C_m , find $r(C_i, s)$ for each set C_i . Help Polycarpus to solve the problem as he really doesn't want to be expelled from the university and go to the army!

Input

The first line contains a non-empty string s ($1 \leq |s| \leq 10^6$).

The second line contains a single integer m ($1 \leq m \leq 10^4$). Next m lines contain descriptions of sets C_i . The i -th line contains string c_i such that its trace equals C_i . It is guaranteed that all characters of each string c_i are different.

Note that C_i are not necessarily different. All given strings consist of lowercase English letters.

Output

Print m integers — the i -th integer must equal $r(C_i, s)$.

Examples

input
aaaaa 2 a a
output
1 1

input
abacaba 3 ac ba a
output
1 2 4