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B. Counting Substrings

time limit per test: 2 seconds[?]
memory limit per test: 512 megabytes

Now try to modify the algorithm to solve the following problem.

Given a string t and n queries, each query is a string s_i. For each request you need to count how many times the string s_i occurs as a substring in t.

Input

The first line of input contains the string t ($1 \le |t| \le 300,000$).

The second line contains an integer n, the number of queries ($1 \le n \le 300,000$). The following n lines contain one non-empty line s_i each. The sum of the lengths of all strings s_i does not exceed $300,000$.

All strings consist of lowercase English letters.

Output

For each request print one integer, the number of times the string s_i occurs as a substring in t.

Examples

input	Copy
ababba
3
ba
baba
abba	

output	Copy
2
0
1	

input	Copy
itmouniversity
3
it
more
university	

output	Copy
2
0
1	

input	Copy
aaa
2
a
aa	

output	Copy
3
2	

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