Problem I. Palindrome Strings

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

You are given a string $S = S_1S_2 \dots S_{|S|}$ and q queries. In each query, a string $t = t_1t_2 \dots t_{|t|}$ is given, and you should determine the number of pairs (ℓ, r) such that $1 \le \ell \le r \le |S|$ and the combined string $t_1t_2 \dots t_{|t|}S_\ell S_{\ell+1} \dots S_r$ is a palindrome, which means that

$$t_1t_2 \dots t_{|t|}S_\ell S_{\ell+1} \dots S_r = S_rS_{r-1} \dots S_\ell t_{|t|}t_{|t|-1} \dots t_1 .$$

Input

The first line contains two integers n and q ($1 \le n \le 10^6$, $1 \le q \le 10^5$) denoting the length of string S and the number of queries, respectively.

The second line contains a single string S.

Each of the following q lines contains a single string t denoting a query.

It is guaranteed that all the strings only contain lowercase English letters and that $\sum |t| \le 10^6$.

Output

For each query, output a single line containing one integer: the required number of pairs.

Example

standard input	*standard output*
8 3 icpccamp p c pc	4 7 4

Note

- For the first query, the 4 pairs are $(2, 3)$, $(3, 3)$, $(7, 8)$, and $(8, 8)$, and the combined strings are "pcp", "pp", "pmp", "pp", respectively.
- For the second query, the 7 pairs are $(1, 2)$, $(2, 2)$, $(2, 5)$, $(3, 4)$, $(4, 4)$, $(4, 5)$, and $(5, 5)$.
- For the third query, the 4 pairs are $(1, 3)$, $(2, 3)$, $(3, 3)$, and $(8, 8)$.