Problem H. Hunt For Common Prefixes

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	1024 mebibytes

A string x is called a *prefix* of a string y if x can be obtained by removing the last letter of y zero or more times. For example, the string "`abac`" has the following prefixes: "`abac`", "`aba`", "`ab`", "`a`", and the empty string.

For two strings x and y, let $\mathrm{LCP}(x, y)$ be the length of the longest common prefix of x and y. For example, $\mathrm{LCP}(\texttt{abacab}, \texttt{abacbba}) = 4$ because the longest common prefix of these two strings is "`abac`". Note that $\mathrm{LCP}(x, y)$ is always defined for any strings x and y because at least an empty string is one of their common prefixes.

You are given n strings $s_1, \ldots, s_n$ and m strings $t_1, \ldots, t_m$ consisting of lowercase English letters. Then, you are given q queries. In each query, you are given an integer sequence $a_1, \ldots, a_k$. Let u be the concatenation of $t_{a_1}, \ldots, t_{a_k}$. Your task is to calculate $\sum_{i=1}^{n} \mathrm{LCP}(u, s_i)$.

Input

The first line of input contains a single integer n ($1 \le n \le 2 \cdot 10^5$). Each of the next n lines contains a non-empty string s_i of lowercase English letters.

The next line contains a single integer m ($1 \le m \le 2 \cdot 10^5$). Each of the next m lines contains a non-empty string t_j of lowercase English letters.

The next line contains a single integer q, the number of queries ($1 \le q \le 2 \cdot 10^5$). Then q queries follow. Each query is given in a single line as "$k\ \ a_1\ \ \ldots\ \ a_k$" ($1 \le k \le 2 \cdot 10^5$; $1 \le a_i \le m$).

The sum of lengths of s_i does not exceed $2 \cdot 10^5$. Similarly, the sum of lengths of t_i does not exceed $2 \cdot 10^5$. Additionally, the sum of k over all queries does not exceed $2 \cdot 10^5$.

Output

Output q lines. The i-th line should contain a single integer: the answer to the i-th query.

Example

standard input	*standard output*
5 abcde aaa a ab bcd 5 a bc de aaaa b 5 1 1 3 1 2 3 2 2 3 5 5 4 3 2 1 3 3 3 3	4 9 3 1 0