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PROBLEMS SUBMIT

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G. Yet Another LCP Problem

time limit per test: 2 seconds memory limit per test: 256 megabytes input: standard input output: standard output

Let $\mathrm{LCP}(s,t)$ be the length of the longest common prefix of strings s and t. Also let $s[x\dots y]$ be the substring of s from index x to index y (inclusive). For example, if s= "abcde", then $s[1\dots 3]=$ "abc", $s[2\dots 5]=$ "bcde".

You are given a string s of length n and q queries. Each query is a pair of integer sets

$$a_1,a_2,\ldots,a_k$$
 and b_1,b_2,\ldots,b_l . Calculate $\sum\limits_{i=1}^{i=k}\sum\limits_{j=1}^{j=l}\mathrm{LCP}(s[a_i\ldots n],s[b_j\ldots n])$ for each query.

Input

The first line contains two integers n and q ($1 \le n, q \le 2 \cdot 10^5$) — the length of string s and the number of queries, respectively.

The second line contains a string s consisting of lowercase Latin letters (|s|=n).

Next 3q lines contains descriptions of queries — three lines per query. The first line of each query contains two integers k_i and l_i ($1 \le k_i, l_i \le n$) — sizes of sets a and b respectively.

The second line of each query contains k_i integers $a_1,a_2,\dots a_{k_i}$ ($1\leq a_1< a_2<\dots < a_{k_i}\leq n$) — set a.

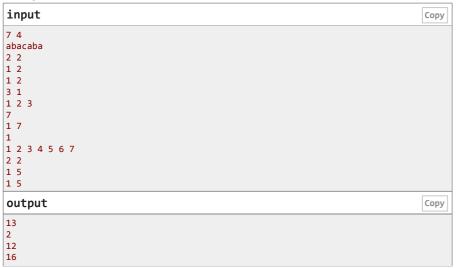
The third line of each query contains l_i integers $b_1,b_2,\dots b_{l_i}$ ($1 \leq b_1 < b_2 < \dots < b_{l_i} \leq n$) — set b.

It is guaranteed that $\sum\limits_{i=1}^{i=q}k_i\leq 2\cdot 10^5$ and $\sum\limits_{i=1}^{i=q}l_i\leq 2\cdot 10^5.$

Output

Print q integers — answers for the queries in the same order queries are given in the input.

Example



Note

Description of queries:

1. In the first query $s[1\dots 7]=abacaba$ and $s[2\dots 7]=bacaba$ are considered. The answer for the query is

Educational Codeforces Round 53 (Rated for Div. 2)

Finished

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Start virtual contest



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→ Contest materials

- Announcement
- Tutorial

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LCP(abacaba, abacaba) + LCP(abacaba, bacaba) + LCP(bacaba, abacaba) + LCP(bacaba, bacaba) = 7 + 0 + 0 + 6 = 13.

2. In the second query s[1\dots 7] = \text{abacaba}, s[2\dots 7] = \text{bacaba}, s[3\dots 7] = \text{acaba} and s[7\dots 7] = \text{a} are considered. The answer for the query is \text{LCP}(\text{abacaba}, \text{a}) + \text{LCP}(\text{bacaba}, \text{a}) + \text{LCP}(\text{acaba}, \text{a}) = 1 + 0 + 1 = 2.

3. In the third query s[1\dots 7] = \text{abacaba} are compared with all suffixes. The answer is the sum of non-zero values: \text{LCP}(\text{abacaba}, \text{abacaba}) + \text{LCP}(\text{abacaba}, \text{acaba}) + \text{LCP}(\text{abacaba}, \text{aba}) + \text{LCP}(\text{abacaba}, \text{ab}) = 7 + 1 + 3 + 1 = 12.

4. In the fourth query s[1\dots 7] = \text{abacaba} and s[5\dots 7] = \text{aba} are considered. The answer for the query is \text{LCP}(\text{abacaba}, \text{abacaba}) + \text{LCP}(\text{abacaba}, \text{aba}) + \text{LCP}(\text{abacaba}, \text{aba}) = 7 + 3 + 3 + 3 = 16
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