Widely Known Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	6 seconds
Memory limit:	1024 megabytes

This problem might be well-known in some countries, but how do other countries learn about such problems if nobody poses them?

You are given a string s of length n consisting of lowercase English letters. The characters of s are numbered from 1 to n.

You are also given m patterns, where the i-th pattern is $s[\mathrm{tl}_i \dots \mathrm{tr}_i]$ (inclusive).

Now, there are q queries. Each query is denoted by two endpoints, ql_i and qr_i. For each query, you need to find how many patterns appear **at least once** in $s[\mathrm{ql}_i \dots \mathrm{qr}_i]$ (inclusive).

Input

The first line of input contains three integers: n, m, and q ($1 \le n \le 4 \cdot 10^5$; $1 \le m, q \le 10^6$).

The next line of input contains a string s of length n.

The next m lines of the input describe the patterns. The i-th of these lines contains two integers, tl_i and tr_i ($1 \le \mathrm{tl}_i \le \mathrm{tr}_i \le n$).

The next q lines of the input describe the queries. The i-th of these lines contains two integers, ql_i and qr_i ($1 \le \mathrm{ql}_i \le \mathrm{qr}_i \le n$).

Output

Output q lines. The i-th of these lines should contain a single integer: the answer for the i-th query.

Example

standard input	standard output
5 2 2 abaab 3 4 4 5 2 4 1 5	1 2