Problem D. Queries for Number of Palindromes

Time limit 5000 ms
Mem limit 262144 kB

You've got a string $s = s_1 s_2 \ldots s_{|s|}$ of length $|s|$, consisting of lowercase English letters. There also are q queries, each query is described by two integers l_i, r_i $(1 \le l_i \le r_i \le |s|)$. The answer to the query is the number of substrings of string $s[l_i \ldots r_i]$, which are palindromes.

String $s[l \ldots r] = s_l s_{l+1} \ldots s_r$ $(1 \le l \le r \le |s|)$ is a *substring* of string $s = s_1 s_2 \ldots s_{|s|}$.

String t is called a *palindrome*, if it reads the same from left to right and from right to left. Formally, if $t = t_1 t_2 \ldots t_{|t|} = t_{|t|} t_{|t|-1} \ldots t_1$.

Input

The first line contains string s $(1 \le |s| \le 5000)$. The second line contains a single integer q $(1 \le q \le 10^6)$ — the number of queries. Next q lines contain the queries. The i-th of these lines contains two space-separated integers l_i, r_i $(1 \le l_i \le r_i \le |s|)$ — the description of the i-th query.

It is guaranteed that the given string consists only of lowercase English letters.

Output

Print q integers — the answers to the queries. Print the answers in the order, in which the queries are given in the input. Separate the printed numbers by whitespaces.

Sample 1

Input	Output
caaaba 5 1 1 1 4 2 3 4 6 4 5	1 7 3 4 2

Note

Consider the fourth query in the first test case. String $s[4 \ldots 6]$ = «aba». Its palindrome substrings are: «a», «b», «a», «aba».