Palindrome Query

You've got a string $s = s_1s_2... s_{|s|}$ 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 $s[l_i... r_i]$, which are palindromes.

String $s[l... r] = s_l s_{l+1}... s_r$ ($1 \le l \le r \le |s|$) is a substring of string $s = s_1s_2... s_{|s|}$.

String t is called a palindrome, if it reads the same from left to right and from right to left. Formally, if $t = t_1t_2... t_{|t|} = t_{|t|}t_{|t|-1}... t_1$.

Input:

The first line contains a string s ($1 \le |s| \le 5000$). The second line contains a single integer q ($1 \le q \le 1000000$) — 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.

Example :

Input:

caaaba
5
1 1
1 4
2 3
4 6
4 5

Output:

1
7
3
4