

# Palindrome

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            5 seconds  
Memory limit:          1024 megabytes

As a magician and a palindrome lover, you want to make strings become palindromes through magic operation.

In one magic operation, you can erase  $S[l...r]$  of a string  $S$  and concatenate the rest of  $S$  to get the target string, which costs  $r - l + 1$  units of magic potion.

You are given a string  $str$ , consisting of  $n$  lowercase Latin letters, and there are  $m$  magic tests.

For each one, you are given two integers  $l, r$ , denoting  $S$  as  $str[l...r]$ .

You should use **at most one** magic operation, report the minimal cost of magic potion to make  $S$  become palindrome, and the number of ways to achieve the target with the previous minimized cost.

Specifically, if  $S$  is already a palindrome, just output '0 0'.

## NOTE:

- A palindrome is a string that reads the same from left to right as from right to left. For example, 'aba', 'ccpcc', 'qacq' are palindromes, while 'ccpc' and 'qhd' are not.
- $S[l...r]$  means the substring of  $S$  which starts from the  $l$ -th character and ends with the  $r$ -th character.

## Input

The first line contains an integer  $n$  and a string  $str$  ( $1 \leq n = |str| \leq 5 \times 10^5$ ) of lowercase English letters.

The second line contains an integer  $m$  ( $1 \leq m \leq 4 \times 10^5$ ) representing the number of magic tests.

The following  $m$  lines describe the tests.

In each line, there are two integers  $l, r$  ( $1 \leq l \leq r \leq n$ ), you should take the  $str[l...r]$  as the problem.

## Output

For each tests, output one line consisting two integers - the minimal cost and the number of ways to achieve it, separated by one space.

## Examples

standard input	standard output
5 abcca 3 1 5 3 4 3 5	1 1 0 0 1 1
5 babdb 2 1 4 3 4	1 1 1 2