Similar Strings

Jimmy loves playing with strings. He thinks string A is *similar* to string B if the following conditions are satisfied:

- Both strings have the same length (i.e., $A = a_0a_1 \ldots a_{n-1}$ and $B = b_0b_1 \ldots b_{n-1}$).
- For each valid pair of indices, (i, j), in the strings, $[a_i = a_j$ and $b_i = b_j]$ or $[a_i \neq a_j$ and $b_i \neq b_j]$.

For example, string $a =$ **"adba"** and $b =$ **"bcgb"** are similar as for $i = 0, j = 3$, $a[0] == a[3]$ and $b[0] == b[3]$ and for all other i, j pairs $a[i] \neq a[j]$ as well as $b[i] \neq b[j]$.

He has a string, S, of size n and gives you q queries to answer where each query is in the form of a pair of integers (l_i, r_i). For each substring $S[l_i, r_i]$, find the number of substrings $S[x, y]$ where substring $S[l_i, r_i]$ is *similar* to substring $S[x, y]$ and print this number on a new line.

Note: Substring $S[x, y]$ is the contiguous sequence of characters from index x to index y. For example, if $S =$ `abcdefgh`, then $S[3, 6] =$ `cdef`.

Input Format

The first line contains two space-separated integers describing the respective values of n and q.
The second line contains string S.
Each line i of the q subsequent lines contains two space-separated integers describing the respective values of l_i and r_i for query i.

Constraints

- $1 \leq n, q \leq 5 \times 10^4$
- $1 \leq L_i \leq R_i \leq n$
- $s_i \in \{a, b, c, d, e, f, g, h, i, j\}$

Output Format

For each query, print the number of similar substrings on a new line.

Sample Input

```
8 4
giggabaj
1 1
1 2
1 3
2 4
```

Sample Output

```
8
6
```

```
2
1
```

Explanation

We perform the following sequence of queries:

1. Strings with length 1 are all similar, so our answer is 8.
2. `gi`, `ig`, `ga`, `ab`, `ba`, and `aj` are similar, so our answer is 6.
3. `gig` and `aba` are similar, so our answer is 2.
4. `igg` has no similar string, so our answer is 1.