



Similar Strings

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Problem

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

For example, string $a = \text{"adba"}$ and $b = \text{"bcgb"}$ 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 $S = \text{abcdefgh}$, then $S[3, 6] = \text{cdef}$.

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**.

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Submissions: [922](#)

Max Score: 85

Difficulty: Advanced

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Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

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