2083. Substrings That Begin and End With the Same Letter Premium

Medium | Topics | Hint

You are given a **0-indexed** string `s` consisting of only lowercase English letters. Return *the number of **substrings** in `s` that begin and end with the **same** character.*

A **substring** is a contiguous non-empty sequence of characters within a string.

Example 1:

```
Input: s = "abcba"
Output: 7
Explanation:
The substrings of length 1 that start and end with the same letter are: "a", "b", "c", "b", and "a".
The substring of length 3 that starts and ends with the same letter is: "bcb".
The substring of length 5 that starts and ends with the same letter is: "abcba".
```

Example 2:

```
Input: s = "abacad"
Output: 9
Explanation:
The substrings of length 1 that start and end with the same letter are: "a", "b", "a", "c", "a", and "d".
The substrings of length 3 that start and end with the same letter are: "aba" and "aca".
The substring of length 5 that starts and ends with the same letter is: "abaca".
```

Example 3:

```
Input: s = "a"
Output: 1
Explanation:
The substring of length 1 that starts and ends with the same letter is: "a".
```

Constraints:

- `1 <= s.length <= 10^5`
- `s` consists only of lowercase English letters.

Seen this question in a real interview before? 1/5

Yes No

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Topics

Hash Table Math String Counting Prefix Sum

Hint 1

In the string "abacad", the letter "a" appears 3 times. How many substrings begin with the first "a" and end with any "a"?

Hint 2

There are 3 substrings ("a", "aba", and "abaca"). How many substrings begin with the second "a" and end with any "a"? How about the third?

Hint 3

2 substrings begin with the second "a" ("a", and "aca") and 1 substring begins with the third "a" ("a").

Hint 4

There is a total of 3 + 2 + 1 = 6 substrings that begin and end with "a".

Hint 5

If a character appears i times in the string, there are i * (i + 1) / 2 substrings that begin and end with that character.

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