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2262. Total Appeal of A String

Hard

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12

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The **appeal** of a string is the number of **distinct** characters found in the string.

- For example, the appeal of "abbca" is 3 because it has 3 distinct characters: 'a', 'b', and 'c'.

Given a string `s`, return the **total appeal of all of its substrings**.

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

Example 1:

Input: `s = "abbca"`

Output: 28

Explanation: The following are the substrings of "abbca":

- Substrings of length 1: "a", "b", "b", "c", "a" have an appeal of 1, 1, 1, 1, and 1 respectively
- Substrings of length 2: "ab", "bb", "bc", "ca" have an appeal of 2, 1, 2, and 2 respectively.
- Substrings of length 3: "abb", "bbc", "bca" have an appeal of 2, 2, and 3 respectively. The sum is 6.
- Substrings of length 4: "abbc", "bbca" have an appeal of 3 and 3 respectively. The sum is 6.
- Substrings of length 5: "abbca" has an appeal of 3. The sum is 3.

The total sum is $5 + 7 + 7 + 6 + 3 = 28$.

Example 2:

Input: `s = "code"`

Output: 20

Explanation: The following are the substrings of "code":

- Substrings of length 1: "c", "o", "d", "e" have an appeal of 1, 1, 1, and 1 respectively. The sum is 4.
- Substrings of length 2: "co", "od", "de" have an appeal of 2, 2, and 2 respectively. The sum is 6.
- Substrings of length 3: "cod", "ode" have an appeal of 3 and 3 respectively. The sum is 6.
- Substrings of length 4: "code" has an appeal of 4. The sum is 4.

The total sum is $4 + 6 + 6 + 4 = 20$.

Constraints:

- $1 \leq s.length \leq 10^5$
- `s` consists of lowercase English letters.

Problems

Pick One

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