



DAILY PROGRAMMING CHALLENGE



Count Substrings with Exactly K Distinct Characters

You are given a string s of lowercase English alphabets and an integer k . Your task is to count all possible substrings of s that contain exactly k distinct characters.

Input:

- A string s consisting of lowercase English letters.
- An integer k , where $1 \leq k \leq 26$
- The length of the string satisfies $1 \leq n \leq 104$

Output:

- Return an integer that represents the number of substrings of s that contain exactly k distinct characters.

Examples:

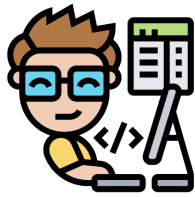
- Example 1
Input: $s = \text{"pppqs"}$, $k = 2$
Output: 7
Explanation: The possible substrings with exactly 2 distinct characters are: "pq", "ppq", "qp", "pqs", "pq", "qs", and "pq". Thus, there are 7 such substrings.

Constraints:

- A string s consisting of lowercase English letters.
- An integer k , where $1 \leq k \leq 26$
- The length of the string satisfies $1 \leq n \leq 104$

Test Cases:

1. Input: $s = \text{"pppqs"}$, $k = 2$
Output: 7
2. Input: $s = \text{"aabacbebebe"}$, $k = 3$
Output: 10
3. Input: $s = \text{"a"}$, $k = 1$
Output: 1
4. Input: $s = \text{"abc"}$, $k = 3$
Output: 1



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5. Input: $s = \text{"abc"}$, $k = 2$
Output: 2

Edge Cases:

1. Small values of k : If $k = 1$, count the number of substrings with only one distinct character (such as repeated characters).
2. Large values of k : If $k > n$, it is impossible to have a substring with k distinct characters, so the result is 0.
3. String with all identical characters: If the string consists of repeated characters, count substrings based on their length for different values of k .