340. Longest Substring with At Most K Distinct Characters

Medium 2003 64 Add to List Share

Given a string `s` and an integer `k`, return *the length of the longest substring of* `s` *that contains at most* `k` ***distinct*** *characters*.

Example 1:

```
Input: s = "eceba", k = 2
Output: 3
Explanation: The substring is "ece" with length 3.
```

Example 2:

```
Input: s = "aa", k = 1
Output: 2
Explanation: The substring is "aa" with length 2.
```

Constraints:

- `1 <= s.length <= 5 * 10^4`
- `0 <= k <= 50`

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Java Autocomplete

```java
class Solution {
    public int lengthOfLongestSubstringKDistinct(String s, int k) {
        int n = s.length();
        if (n * k == 0) {
            return 0;
        }
        int left = 0;
        int right = 0;

        Map<Character, Integer> rightmostPosition = new HashMap<>();

        int maxLength = 1;

        while (right < n) {
            rightmostPosition.put(s.charAt(right), right++);

            if (rightmostPosition.size() == k + 1) {
                int lowestIndex = Collections.min(rightmostPosition.values());
                rightmostPosition.remove(s.charAt(lowestIndex));
                left = lowestIndex + 1;
            }

            maxLength = Math.max(maxLength, right - left);
        }
        return maxLength;
    }
}
```