2311. Longest Binary Subsequence Less Than or Equal to K

`Solved` ✓

`Medium` 🏷 Topics   🏢 Companies   💡 Hint

You are given a binary string `s` and a positive integer `k`.

Return *the length of the **longest** subsequence of* `s` *that makes up a **binary** number less than or equal to* `k`.

Note:

- The subsequence can contain **leading zeroes**.

- The empty string is considered to be equal to `0`.

- A **subsequence** is a string that can be derived from another string by deleting some or no characters without changing the order of the remaining characters.

Example 1:

```
Input: s = "1001010", k = 5
Output: 5
Explanation: The longest subsequence of s that makes up a binary number less than or equal to 5
is "00010", as this number is equal to 2 in decimal.
Note that "00100" and "00101" are also possible, which are equal to 4 and 5 in decimal,
respectively.
The length of this subsequence is 5, so 5 is returned.
```
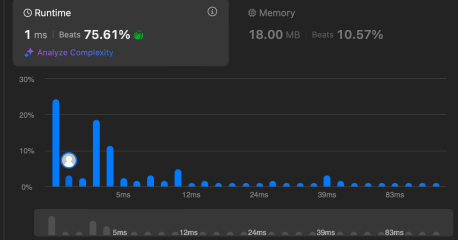
```python
class Solution:
    def longestSubsequence(self, s: str, k: int) -> int:
        res = 0
        pos = 0
        dec = 0
        zeros = s.count('0')
        for c in s[::-1]:
            if c == '0':
                pos += 1
                res += 1
                zeros -= 1
            else:
                dec += 2 ** pos
                if dec <= k:
                    res += 1
                    pos += 1
                else:
                    break

        return res + zeros
```

Ln 16, Col 29   ☁ Saved

☑ Testcase   >_ Tes

⏱ Runtime   ⓘ   ⊘ Memory
1 ms Beats **75.61%** 🥧   18.00 MB Beats **10.57%**
✦ Analyze Complexity

iterate from tail,
        if c == '0', go on
        else:
                if dec <= k, go on
                else, break

        append the rest '0' in the front