

1513. Number of Substrings With Only 1s

Solved 

Medium

 Topics

 Companies

 Hint

Given a binary string `s`, return *the number of substrings with all characters 1's*. Since the answer may be too large, return it modulo $10^9 + 7$.

Example 1:

Input: `s = "0110111"`

Output: 9

Explanation: There are 9 substring in total with only 1's characters.

"1" -> 5 times.

"11" -> 3 times.

"111" -> 1 time.

Example 2:

Input: `s = "101"`

Output: 2

Explanation: Substring "1" is shown 2 times in s.

Example 3:

Input: `s = "111111"`

Output: 21

Explanation: Each substring contains only 1's characters.

Constraints:

- `1 <= s.length <= 105`
- `s[i]` is either `'0'` or `'1'`.

Python:

```
class Solution:
    def numSub(self, s: str) -> int:
        cnt = 0
        for part in s.split('0'):
            n = len(part)
            cnt += n*(n+1)

        return (cnt // 2) % (10**9 + 7)
```

JavaScript:

```
/**
 * @param {string} s
 * @return {number}
 */
var numSub = function(s) {
    let total = 0;
    s.split("0").filter(block => {
        const length = block.length;
        if(length) {
            total += (length * (length + 1))/2
        }
    });
    return total % (10**9 + 7);
};
```

Java:

```
class Solution {
    public int numSub(String s) {
        final int mod=1000000007;
        long cnt=0, ans=0;
        for(char c: s.toCharArray()){
            ans+=(1-(c-'0'))*cnt*(cnt+1)/2;
            cnt=(c-'0')*(cnt+1);
        }
        ans+=cnt*(cnt+1)/2;// last one
        return (int)(ans%mod);
    }
}
```