Problem 2222: Number of Ways to Select Buildings

Problem Information

Difficulty: Medium
Acceptance Rate: 50.59%
Paid Only: No
Tags: String, Dynamic Programming, Prefix Sum

Problem Description

You are given a **0-indexed** binary string `s` which represents the types of buildings along a street where:

* `s[i] = '0'` denotes that the `ith` building is an office and * `s[i] = '1'` denotes that the `ith` building is a restaurant.

As a city official, you would like to **select** 3 buildings for random inspection. However, to ensure variety, **no two consecutive** buildings out of the **selected** buildings can be of the same type.

* For example, given `s = "0 _**0**_ 1 _**1**_ 0 _**1**_ "`, we cannot select the `1st`, `3rd`, and `5th` buildings as that would form `"0** _11_** "` which is **not** allowed due to having two consecutive buildings of the same type.

Return _the**number of valid ways** to select 3 buildings._

Example 1:

Input: s = "001101" **Output:** 6 **Explanation:** The following sets of indices selected are valid: - [0,2,4] from "_**0**_ 0** _1_** 1** _0_** 1" forms "010" - [0,3,4] from "_**0**_ 01 _**10**_ 1" forms "010" - [1,2,4] from "0 _**01**_ 1 _**0**_ 1" forms "010" - [1,3,4] from "0 _**0**_ 1 _**10**_ 1" forms "010" - [2,4,5] from "00 _**1**_ 1 _**01**_ " forms "101" - [3,4,5] from "001 _**101**_ " forms "101" No other selection is valid. Thus, there are 6 total ways.

Example 2:

Input: s = "11100" **Output:** 0 **Explanation:** It can be shown that there are no valid selections.

Constraints:

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

Code Snippets

C++:

```
class Solution {
public:
long long numberOfWays(string s) {

}
};
```

Java:

```
class Solution {
public long numberOfWays(String s) {

}
}
```

Python3:

```
class Solution:
def numberOfWays(self, s: str) -> int:
```