Problem 2483: Minimum Penalty for a Shop

Problem Information

Difficulty: Medium
Acceptance Rate: 67.79%
Paid Only: No
Tags: String, Prefix Sum

Problem Description

You are given the customer visit log of a shop represented by a **0-indexed** string `customers` consisting only of characters `'N'` and `'Y'`:

* if the `ith` character is `'Y'`, it means that customers come at the `ith` hour * whereas `'N'` indicates that no customers come at the `ith` hour.

If the shop closes at the `jth` hour (`0 <= j <= n`), the **penalty** is calculated as follows:

* For every hour when the shop is open and no customers come, the penalty increases by `1`.
* For every hour when the shop is closed and customers come, the penalty increases by `1`.

Return _the**earliest** hour at which the shop must be closed to incur a **minimum** penalty._

Note that if a shop closes at the `jth` hour, it means the shop is closed at the hour `j`.

Example 1:

Input: customers = "YYNY" **Output:** 2 **Explanation:** - Closing the shop at the 0th hour incurs in 1+1+0+1 = 3 penalty. - Closing the shop at the 1st hour incurs in 0+1+0+1 = 2 penalty. - Closing the shop at the 2nd hour incurs in 0+0+0+1 = 1 penalty. - Closing the shop at the 3rd hour incurs in 0+0+1+1 = 2 penalty. - Closing the shop at the 4th hour incurs in 0+0+1+0 = 1 penalty. Closing the shop at 2nd or 4th hour gives a minimum penalty. Since 2 is earlier, the optimal closing time is 2.

Example 2:

Input: customers = "NNNNN" **Output:** 0 **Explanation:** It is best to close the shop at the 0th hour as no customers arrive.

Example 3:

Input: customers = "YYYY" **Output:** 4 **Explanation:** It is best to close the shop at the 4th hour as customers arrive at each hour.

Constraints:

* `1 <= customers.length <= 105` * `customers` consists only of characters `'Y'` and `'N'`.

Code Snippets

C++:

```
class Solution {
public:
int bestClosingTime(string customers) {

}
};
```

Java:

```
class Solution {
public int bestClosingTime(String customers) {

}
}
```

Python3:

```
class Solution:
def bestClosingTime(self, customers: str) -> int:
```