Problem 2211: Count Collisions on a Road

Problem Information

Difficulty: Medium
Acceptance Rate: 44.89%
Paid Only: No
Tags: String, Stack, Simulation

Problem Description

There are `n` cars on an infinitely long road. The cars are numbered from `0` to `n - 1` from left to right and each car is present at a **unique** point.

You are given a **0-indexed** string `directions` of length `n`. `directions[i]` can be either `'L'`, `'R'`, or `'S'` denoting whether the `ith` car is moving towards the **left** , towards the **right** , or **staying** at its current point respectively. Each moving car has the **same speed**.

The number of collisions can be calculated as follows:

* When two cars moving in **opposite** directions collide with each other, the number of collisions increases by `2`. * When a moving car collides with a stationary car, the number of collisions increases by `1`.

After a collision, the cars involved can no longer move and will stay at the point where they collided. Other than that, cars cannot change their state or direction of motion.

Return _the**total number of collisions** that will happen on the road_.

Example 1:

Input: directions = "RLRSLL" **Output:** 5 **Explanation:** The collisions that will happen on the road are: - Cars 0 and 1 will collide with each other. Since they are moving in opposite directions, the number of collisions becomes 0 + 2 = 2. - Cars 2 and 3 will collide with each other. Since car 3 is stationary, the number of collisions becomes 2 + 1 = 3. - Cars 3 and 4 will collide with each other. Since car 3 is stationary, the number of collisions becomes 3 + 1 = 4. - Cars 4 and 5 will collide with each other. After car 4 collides with car 3, it will stay at the point

of collision and get hit by car 5. The number of collisions becomes 4 + 1 = 5. Thus, the total number of collisions that will happen on the road is 5.

Example 2:

Input: directions = "LLRR" **Output:** 0 **Explanation:** No cars will collide with each other. Thus, the total number of collisions that will happen on the road is 0.

Constraints:

* `1 <= directions.length <= 105` * `directions[i]` is either `'L'`, `'R'`, or `'S'`.

Code Snippets

C++:

```cpp
class Solution {
public:
int countCollisions(string directions) {


}
};
```

Java:

```java
class Solution {
public int countCollisions(String directions) {


}
}
```

Python3:

```python
class Solution:
def countCollisions(self, directions: str) -> int:
```