2731. Movement of Robots

Description

Some robots are standing on an infinite number line with their initial coordinates given by a **0-indexed** integer array `nums` and will start moving once given the command to move. The robots will move a unit distance each second.

You are given a string `s` denoting the direction in which robots will move on command. `'L'` means the robot will move towards the left side or negative side of the number line, whereas `'R'` means the robot will move towards the right side or positive side of the number line.

If two robots collide, they will start moving in opposite directions.

Return *the sum of distances between all the pairs of robots* `d` *seconds after the command.* Since the sum can be very large, return it modulo $10^9 + 7$.

Note:

- For two robots at the index `i` and `j`, pair `(i,j)` and pair `(j,i)` are considered the same pair.
- When robots collide, they **instantly change** their directions without wasting any time.
- Collision happens when two robots share the same place in a moment.
  - For example, if a robot is positioned in 0 going to the right and another is positioned in 2 going to the left, the next second they'll be both in 1 and they will change direction and the next second the first one will be in 0, heading left, and another will be in 2, heading right.
  - For example, if a robot is positioned in 0 going to the right and another is positioned in 1 going to the left, the next second the first one will be in 0, heading left, and another will be in 1, heading right.

Example 1:

```
Input: nums = [-2,0,2], s = "RLL", d = 3
Output: 8
Explanation:
After 1 second, the positions are [-1,-1,1]. Now, the robot at index 0 will move left, and the robot at index 1 will move right.
After 2 seconds, the positions are [-2,0,0]. Now, the robot at index 1 will move left, and the robot at index 2 will move right.
After 3 seconds, the positions are [-3,-1,1].
The distance between the robot at index 0 and 1 is abs(-3 - (-1)) = 2.
The distance between the robot at index 0 and 2 is abs(-3 - 1) = 4.
The distance between the robot at index 1 and 2 is abs(-1 - 1) = 2.
The sum of the pairs of all distances = 2 + 4 + 2 = 8.
```

Example 2:

```
Input: nums = [1,0], s = "RL", d = 2
Output: 5
Explanation:
After 1 second, the positions are [2,-1].
After 2 seconds, the positions are [3,-2].
The distance between the two robots is abs(-2 - 3) = 5.
```

Constraints:

- `2 <= nums.length <= 10^5`
- `-2 * 10^9 <= nums[i] <= 2 * 10^9`
- `0 <= d <= 10^9`
- `nums.length == s.length`
- `s` consists of 'L' and 'R' only
- `nums[i]` will be unique.