Problem 3245: Alternating Groups III

Problem Information

Difficulty: Hard
Acceptance Rate: 17.38%
Paid Only: No
Tags: Array, Binary Indexed Tree, Ordered Set

Problem Description

There are some red and blue tiles arranged circularly. You are given an array of integers `colors` and a 2D integers array `queries`.

The color of tile `i` is represented by `colors[i]`:

* `colors[i] == 0` means that tile `i` is **red**. * `colors[i] == 1` means that tile `i` is **blue**.

An **alternating** group is a contiguous subset of tiles in the circle with **alternating** colors (each tile in the group except the first and last one has a different color from its **adjacent** tiles in the group).

You have to process queries of two types:

* `queries[i] = [1, sizei]`, determine the count of **alternating** groups with size `sizei`. * `queries[i] = [2, indexi, colori]`, change `colors[indexi]` to `colori`.

Return an array `answer` containing the results of the queries of the first type _in order_.

Note that since `colors` represents a **circle** , the **first** and the **last** tiles are considered to be next to each other.

Example 1:

Input: colors = [0,1,1,0,1], queries = [[2,1,0],[1,4]]

Output: [2]

Explanation:

![](https://assets.leetcode.com/uploads/2024/06/03/screenshot-from-2024-06-03-20-14-44.png)

First query:

Change `colors[1]` to 0.

![](https://assets.leetcode.com/uploads/2024/06/03/screenshot-from-2024-06-03-20-20-25.png)

Second query:

Count of the alternating groups with size 4:

![](https://assets.leetcode.com/uploads/2024/06/03/screenshot- from-2024-06-03-20-25-02-2.png)![](https://assets.leetcode.com/uploads/2024/06/03/screenshot-from-2024-06-03-20-24-12.png)

Example 2:

Input: colors = [0,0,1,0,1,1], queries = [[1,3],[2,3,0],[1,5]]

Output: [2,0]

Explanation:

![](https://assets.leetcode.com/uploads/2024/06/03/screenshot-from-2024-06-03-20-35-50.png)

First query:

Count of the alternating groups with size 3:

![](https://assets.leetcode.com/uploads/2024/06/03/screenshot- from-2024-06-03-20-37-13.png)![](https://assets.leetcode.com/uploads/2024/06/03/screenshot-from-2024-06-03-20-36-40.png)

Second query: `colors` will not change.

Third query: There is no alternating group with size 5.

Constraints:

* `4 <= colors.length <= 5 * 104` * `0 <= colors[i] <= 1` * `1 <= queries.length <= 5 * 104` * `queries[i][0] == 1` or `queries[i][0] == 2` * For all `i` that: * `queries[i][0] == 1`: `queries[i].length == 2`, `3 <= queries[i][1] <= colors.length - 1` * `queries[i][0] == 2`: `queries[i].length == 3`, `0 <= queries[i][1] <= colors.length - 1`, `0 <= queries[i][2] <= 1`

Code Snippets

C++:

```
class Solution {
public:
vector<int> numberOfAlternatingGroups(vector<int>& colors,
vector<vector<int>>& queries) {

}
};
```

Java:

```
class Solution {
public List<Integer> numberOfAlternatingGroups(int[] colors, int[][] queries)
{

}
}
```

Python3:

```
class Solution:
def numberOfAlternatingGroups(self, colors: List[int], queries:
List[List[int]]) -> List[int]:
```