

Problem 3009: Maximum Number of Intersections on the Chart

Problem Information

Difficulty: Hard

Acceptance Rate: 45.00%

Paid Only: Yes

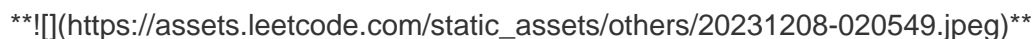
Tags: Array, Hash Table, Math, Binary Indexed Tree, Geometry, Line Sweep, Sorting

Problem Description

There is a line chart consisting of n points connected by line segments. You are given a **1-indexed** integer array y . The k th point has coordinates $(k, y[k])$. There are no horizontal lines; that is, no two consecutive points have the same y-coordinate.

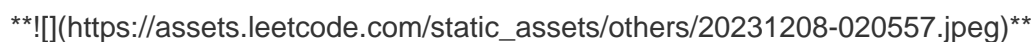
We can draw an infinitely long horizontal line. Return the **maximum** number of points of intersection of the line with the chart.

Example 1:



Input: $y = [1, 2, 1, 2, 1, 3, 2]$ **Output:** 5 **Explanation:** As you can see in the image above, the line $y = 1.5$ has 5 intersections with the chart (in red crosses). You can also see the line $y = 2$ which intersects the chart in 4 points (in red crosses). It can be shown that there is no horizontal line intersecting the chart at more than 5 points. So the answer would be 5.

Example 2:



Input: $y = [2, 1, 3, 4, 5]$ **Output:** 2 **Explanation:** As you can see in the image above, the line $y = 1.5$ has 2 intersections with the chart (in red crosses). You can also see the line $y = 2$ which intersects the chart in 2 points (in red crosses). It can be shown that there is no horizontal line intersecting the chart at more than 2 points. So the answer would be 2.

****Constraints:****

* `2 <= y.length <= 105` * `1 <= y[i] <= 109` * `y[i] != y[i + 1]` for `i` in range `[1, n - 1]`

Code Snippets

C++:

```
class Solution {  
public:  
    int maxIntersectionCount(vector<int>& y) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int maxIntersectionCount(int[] y) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def maxIntersectionCount(self, y: List[int]) -> int:
```