

Problem 1887: Reduction Operations to Make the Array Elements Equal

Problem Information

Difficulty: Medium

Acceptance Rate: 72.40%

Paid Only: No

Tags: Array, Sorting

Problem Description

Given an integer array `nums`, your goal is to make all elements in `nums` equal. To complete one operation, follow these steps:

1. Find the **largest** value in `nums`. Let its index be `i` (**0-indexed**) and its value be `largest`. If there are multiple elements with the largest value, pick the smallest `i`.
2. Find the **next largest** value in `nums` **strictly smaller** than `largest`. Let its value be `nextLargest`.
3. Reduce `nums[i]` to `nextLargest`.

Return `_` the number of operations to make all elements in `nums` `_equal_`.

Example 1:

Input: `nums = [5,1,3]` **Output:** 3 **Explanation:** It takes 3 operations to make all elements in `nums` equal: 1. `largest = 5` at index 0. `nextLargest = 3`. Reduce `nums[0]` to 3. `nums = [3,1,3]`. 2. `largest = 3` at index 0. `nextLargest = 1`. Reduce `nums[0]` to 1. `nums = [1,1,3]`. 3. `largest = 3` at index 2. `nextLargest = 1`. Reduce `nums[2]` to 1. `nums = [1,1,1]`.

Example 2:

Input: `nums = [1,1,1]` **Output:** 0 **Explanation:** All elements in `nums` are already equal.

Example 3:

****Input:**** nums = [1,1,2,2,3] ****Output:**** 4 ****Explanation:**** It takes 4 operations to make all elements in nums equal: 1. largest = 3 at index 4. nextLargest = 2. Reduce nums[4] to 2. nums = [1,1,2,2,_2_]. 2. largest = 2 at index 2. nextLargest = 1. Reduce nums[2] to 1. nums = [1,1,_1_,2,2]. 3. largest = 2 at index 3. nextLargest = 1. Reduce nums[3] to 1. nums = [1,1,1,_1_,2]. 4. largest = 2 at index 4. nextLargest = 1. Reduce nums[4] to 1. nums = [1,1,1,1,_1_].

****Constraints:****

*`1` <= nums.length <= 5 * 104` *`1` <= nums[i] <= 5 * 104`

Code Snippets

C++:

```
class Solution {
public:
    int reductionOperations(vector<int>& nums) {

    }
};
```

Java:

```
class Solution {
    public int reductionOperations(int[] nums) {

    }
}
```

Python3:

```
class Solution:
    def reductionOperations(self, nums: List[int]) -> int:
```