Problem 2256: Minimum Average Difference

Problem Information

Difficulty: Medium
Acceptance Rate: 43.70%
Paid Only: No
Tags: Array, Prefix Sum

Problem Description

You are given a **0-indexed** integer array `nums` of length `n`.

The **average difference** of the index `i` is the **absolute** **difference** between the average of the **first** `i + 1` elements of `nums` and the average of the **last** `n - i - 1` elements. Both averages should be **rounded down** to the nearest integer.

Return _the index with the**minimum average difference**_. If there are multiple such indices, return the **smallest** one.

Note:

* The **absolute difference** of two numbers is the absolute value of their difference. * The **average** of `n` elements is the **sum** of the `n` elements divided (**integer division**) by `n`. * The average of `0` elements is considered to be `0`.

Example 1:

Input: nums = [2,5,3,9,5,3] **Output:** 3 **Explanation:** - The average difference of index 0 is: |2 / 1 - (5 + 3 + 9 + 5 + 3) / 5| = |2 / 1 - 25 / 5| = |2 - 5| = 3. - The average difference of index 1 is: |(2 + 5) / 2 - (3 + 9 + 5 + 3) / 4| = |7 / 2 - 20 / 4| = |3 - 5| = 2. - The average difference of index 2 is: |(2 + 5 + 3) / 3 - (9 + 5 + 3) / 3| = |10 / 3 - 17 / 3| = |3 - 5| = 2. - The average difference of index 3 is: |(2 + 5 + 3 + 9) / 4 - (5 + 3) / 2| = |19 / 4 - 8 / 2| = |4 - 4| = 0. - The average difference of index 4 is: |(2 + 5 + 3 + 9 + 5) / 5 - 3 / 1| = |24 / 5 - 3 / 1| = |4 - 3| = 1. - The average difference of index 5 is: |(2 + 5 + 3 + 9 + 5 + 3) / 6 - 0| = |27 / 6 - 0| = |4 - 0| = 4. The average difference of index 3 is the minimum average difference so return 3.

Example 2:

Input: nums = [0] **Output:** 0 **Explanation:** The only index is 0 so return 0. The average difference of index 0 is: |0 / 1 - 0| = |0 - 0| = 0.

Constraints:

* `1 <= nums.length <= 105` * `0 <= nums[i] <= 105`

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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