Problem 1685: Sum of Absolute Differences in a Sorted Array

Problem Information

Difficulty: Medium
Acceptance Rate: 68.11%
Paid Only: No
Tags: Array, Math, Prefix Sum

Problem Description

You are given an integer array `nums` sorted in **non-decreasing** order.

Build and return _an integer array_`result` _with the same length as_`nums` _such that_`result[i]`_is equal to the**summation of absolute differences** between _`nums[i]`_and all the other elements in the array._

In other words, `result[i]` is equal to `sum(|nums[i]-nums[j]|)` where `0 <= j < nums.length` and `j != i` (**0-indexed**).

Example 1:

Input: nums = [2,3,5] **Output:** [4,3,5] **Explanation:** Assuming the arrays are 0-indexed, then result[0] = |2-2| + |2-3| + |2-5| = 0 + 1 + 3 = 4, result[1] = |3-2| + |3-3| + |3-5| = 1 + 0 + 2 = 3, result[2] = |5-2| + |5-3| + |5-5| = 3 + 2 + 0 = 5.

Example 2:

Input: nums = [1,4,6,8,10] **Output:** [24,15,13,15,21]

Constraints:

* `2 <= nums.length <= 105` * `1 <= nums[i] <= nums[i + 1] <= 104`

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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