Problem 3649: Number of Perfect Pairs

Problem Information

Difficulty: Medium
Acceptance Rate: 32.33%
Paid Only: No
Tags: Array, Math, Two Pointers, Sorting

Problem Description

You are given an integer array `nums`.

A pair of indices `(i, j)` is called **perfect** if the following conditions are satisfied:

* `i < j` * Let `a = nums[i]`, `b = nums[j]`. Then: * `min(|a - b|, |a + b|) <= min(|a|, |b|)` * `max(|a - b|, |a + b|) >= max(|a|, |b|)`

Return the number of **distinct** perfect pairs.

Note: The absolute value `|x|` refers to the **non-negative** value of `x`.

Example 1:

Input: nums = [0,1,2,3]

Output: 2

Explanation:

There are 2 perfect pairs:

`(i, j)` | `(a, b)` | `min(|a − b|, |a + b|)` | `min(|a|, |b|)` | `max(|a − b|, |a + b|)` | `max(|a|, |b|)` ---|---|---|---|---|--- (1, 2) | (1, 2) | `min(|1 − 2|, |1 + 2|) = 1` | 1 | `max(|1 − 2|, |1 + 2|) = 3` | 2 (2, 3) | (2, 3) | `min(|2 − 3|, |2 + 3|) = 1` | 2 | `max(|2 − 3|, |2 + 3|) = 5` | 3 **Example 2:**

Input: nums = [-3,2,-1,4]

Output: 4

Explanation:

There are 4 perfect pairs:

`(i, j)` | `(a, b)` | `min(|a − b|, |a + b|)` | `min(|a|, |b|)` | `max(|a − b|, |a + b|)` | `max(|a|, |b|)`
---|---|---|---|---|--- (0, 1) | (-3, 2) | `min(|-3 - 2|, |-3 + 2|) = 1` | 2 | `max(|-3 - 2|, |-3 + 2|) = 5` | 3 (0, 3) | (-3, 4) | `min(|-3 - 4|, |-3 + 4|) = 1` | 3 | `max(|-3 - 4|, |-3 + 4|) = 7` | 4 (1, 2) | (2, -1) | `min(|2 - (-1)|, |2 + (-1)|) = 1` | 1 | `max(|2 - (-1)|, |2 + (-1)|) = 3` | 2 (1, 3) | (2, 4) | `min(|2 - 4|, |2 + 4|) = 2` | 2 | `max(|2 - 4|, |2 + 4|) = 6` | 4 **Example 3:**

Input: nums = [1,10,100,1000]

Output: 0

Explanation:

There are no perfect pairs. Thus, the answer is 0.

Constraints:

* `2 <= nums.length <= 105` * `-109 <= nums[i] <= 109`

Code Snippets

C++:

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

}
};
```

Java:

```
class Solution {
public long perfectPairs(int[] nums) {


}
}
```

Python3:

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