

Problem 1577: Number of Ways Where Square of Number Is Equal to Product of Two Numbers

Problem Information

Difficulty: Medium

Acceptance Rate: 42.77%

Paid Only: No

Tags: Array, Hash Table, Math, Two Pointers

Problem Description

Given two arrays of integers `nums1` and `nums2`, return the number of triplets formed (type 1 and type 2) under the following rules:

* Type 1: Triplet (i, j, k) if $\text{nums1}[i]^2 = \text{nums2}[j] * \text{nums2}[k]$ where $0 \leq i < \text{nums1.length}$ and $0 \leq j < k < \text{nums2.length}$. * Type 2: Triplet (i, j, k) if $\text{nums2}[i]^2 = \text{nums1}[j] * \text{nums1}[k]$ where $0 \leq i < \text{nums2.length}$ and $0 \leq j < k < \text{nums1.length}$.

Example 1:

Input: $\text{nums1} = [7,4]$, $\text{nums2} = [5,2,8,9]$ **Output:** 1 **Explanation:** Type 1: (1, 1, 2), $\text{nums1}[1]^2 = \text{nums2}[1] * \text{nums2}[2]$. ($4^2 = 2 * 8$).

Example 2:

Input: $\text{nums1} = [1,1]$, $\text{nums2} = [1,1,1]$ **Output:** 9 **Explanation:** All Triplets are valid, because $1^2 = 1 * 1$. Type 1: (0,0,1), (0,0,2), (0,1,2), (1,0,1), (1,0,2), (1,1,2). $\text{nums1}[i]^2 = \text{nums2}[j] * \text{nums2}[k]$. Type 2: (0,0,1), (1,0,1), (2,0,1). $\text{nums2}[i]^2 = \text{nums1}[j] * \text{nums1}[k]$.

Example 3:

Input: $\text{nums1} = [7,7,8,3]$, $\text{nums2} = [1,2,9,7]$ **Output:** 2 **Explanation:** There are 2 valid triplets. Type 1: (3,0,2). $\text{nums1}[3]^2 = \text{nums2}[0] * \text{nums2}[2]$. Type 2: (3,0,1). $\text{nums2}[3]^2 = \text{nums1}[0] * \text{nums1}[1]$.

Constraints:

*`1 <= nums1.length, nums2.length <= 1000` *`1 <= nums1[i], nums2[i] <= 105`

Code Snippets

C++:

```
class Solution {
public:
    int numTriplets(vector<int>& nums1, vector<int>& nums2) {

    }
};
```

Java:

```
class Solution {
    public int numTriplets(int[] nums1, int[] nums2) {

    }
}
```

Python3:

```
class Solution:
    def numTriplets(self, nums1: List[int], nums2: List[int]) -> int:
```