

Problem 2183: Count Array Pairs Divisible by K

Problem Information

Difficulty: Hard

Acceptance Rate: 30.43%

Paid Only: No

Tags: Array, Math, Number Theory

Problem Description

Given a **0-indexed** integer array `nums` of length `n` and an integer `k`, return the number of pairs `(i, j)` such that:

`0 ≤ i < j ≤ n - 1` and `nums[i] * nums[j]` is divisible by `k`.

Example 1:

Input: `nums = [1,2,3,4,5]`, `k = 2` **Output:** 7 **Explanation:** The 7 pairs of indices whose corresponding products are divisible by 2 are (0, 1), (0, 3), (1, 2), (1, 3), (1, 4), (2, 3), and (3, 4). Their products are 2, 4, 6, 8, 10, 12, and 20 respectively. Other pairs such as (0, 2) and (2, 4) have products 3 and 15 respectively, which are not divisible by 2.

Example 2:

Input: `nums = [1,2,3,4]`, `k = 5` **Output:** 0 **Explanation:** There does not exist any pair of indices whose corresponding product is divisible by 5.

Constraints:

`1 ≤ nums.length ≤ 105`, `1 ≤ nums[i]`, `k ≤ 105`

Code Snippets

C++:

```
class Solution {  
public:  
    long long countPairs(vector<int>& nums, int k) {  
  
    }  
};
```

Java:

```
class Solution {  
    public long countPairs(int[] nums, int k) {  
  
    }  
}
```

Python3:

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