Problem 1819: Number of Different Subsequences GCDs

Problem Information

Difficulty: Hard
Acceptance Rate: 44.48%
Paid Only: No
Tags: Array, Math, Counting, Number Theory

Problem Description

You are given an array `nums` that consists of positive integers.

The **GCD** of a sequence of numbers is defined as the greatest integer that divides **all** the numbers in the sequence evenly.

* For example, the GCD of the sequence `[4,6,16]` is `2`.

A **subsequence** of an array is a sequence that can be formed by removing some elements (possibly none) of the array.

* For example, `[2,5,10]` is a subsequence of `[1,2,1,**_2_** ,4,1,_**5**_ ,_**10**_]`.

Return _the**number** of **different** GCDs among all **non-empty** subsequences of_ `nums`.

Example 1:

Input: nums = [6,10,3] **Output:** 5 **Explanation:** The figure shows all the non-empty subsequences and their GCDs. The different GCDs are 6, 10, 3, 2, and 1.

Example 2:

Input: nums = [5,15,40,5,6] **Output:** 7

Constraints:

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

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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