

Problem 2654: Minimum Number of Operations to Make All Array Elements Equal to 1

Problem Information

Difficulty: Medium

Acceptance Rate: 54.60%

Paid Only: No

Tags: Array, Math, Number Theory

Problem Description

You are given a **0-indexed** array `nums` consisting of **positive** integers. You can do the following operation on the array **any** number of times:

* Select an index `i` such that $0 \leq i < n - 1$ and replace either of `nums[i]` or `nums[i+1]` with their gcd value.

Return **the minimum** number of operations to make all elements of `nums` equal to `1`. If it is impossible, return `-1`.

The gcd of two integers is the greatest common divisor of the two integers.

Example 1:

Input: `nums = [2,6,3,4]` **Output:** `4` **Explanation:** We can do the following operations: -
Choose index `i = 2` and replace `nums[2]` with $\text{gcd}(3,4) = 1$. Now we have `nums = [2,6,1,4]`. -
Choose index `i = 1` and replace `nums[1]` with $\text{gcd}(6,1) = 1$. Now we have `nums = [2,1,1,4]`. -
Choose index `i = 0` and replace `nums[0]` with $\text{gcd}(2,1) = 1$. Now we have `nums = [1,1,1,4]`. -
Choose index `i = 2` and replace `nums[3]` with $\text{gcd}(1,4) = 1$. Now we have `nums = [1,1,1,1]`.

Example 2:

Input: `nums = [2,10,6,14]` **Output:** `-1` **Explanation:** It can be shown that it is impossible to make all the elements equal to 1.

Constraints:

*`2 <= nums.length <= 50` *`1 <= nums[i] <= 106`

Code Snippets

C++:

```
class Solution {  
public:  
    int minOperations(vector<int>& nums) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int minOperations(int[] nums) {  
  
    }  
}
```

Python3:

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