Problem 2059: Minimum Operations to Convert Number

Problem Information

Difficulty: Medium
Acceptance Rate: 51.20%
Paid Only: No
Tags: Array, Breadth-First Search

Problem Description

You are given a **0-indexed** integer array `nums` containing **distinct** numbers, an integer `start`, and an integer `goal`. There is an integer `x` that is initially set to `start`, and you want to perform operations on `x` such that it is converted to `goal`. You can perform the following operation repeatedly on the number `x`:

If `0 <= x <= 1000`, then for any index `i` in the array (`0 <= i < nums.length`), you can set `x` to any of the following:

* `x + nums[i]` * `x - nums[i]` * `x ^ nums[i]` (bitwise-XOR)

Note that you can use each `nums[i]` any number of times in any order. Operations that set `x` to be out of the range `0 <= x <= 1000` are valid, but no more operations can be done afterward.

Return _the**minimum** number of operations needed to convert _`x = start` _into_`goal` _, and_`-1` _if it is not possible_.

Example 1:

Input: nums = [2,4,12], start = 2, goal = 12 **Output:** 2 **Explanation:** We can go from 2 -> 14 -> 12 with the following 2 operations. - 2 + 12 = 14 - 14 - 2 = 12

Example 2:

Input: nums = [3,5,7], start = 0, goal = -4 **Output:** 2 **Explanation:** We can go from 0 -> 3 -> -4 with the following 2 operations. - 0 + 3 = 3 - 3 - 7 = -4 Note that the last operation sets x out of the range 0 <= x <= 1000, which is valid.

Example 3:

Input: nums = [2,8,16], start = 0, goal = 1 **Output:** -1 **Explanation:** There is no way to convert 0 into 1.

Constraints:

* `1 <= nums.length <= 1000` * `-109 <= nums[i], goal <= 109` * `0 <= start <= 1000` * `start != goal` * All the integers in `nums` are distinct.

Code Snippets

C++:

```
class Solution {
public:
int minimumOperations(vector<int>& nums, int start, int goal) {

}
};
```

Java:

```
class Solution {
public int minimumOperations(int[] nums, int start, int goal) {

}
}
```

Python3:

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