Find Pivot index in an Array LeetCode

Given an array of integers nums, you need to find the pivot index. The pivot index is defined as the index where the sum of all the numbers strictly to the left of the index is equal to the sum of all the numbers strictly to the right of the index. If there is no such index, you should return -1.

Input: nums = [1,7,3,6,5,6]

Output: 3

Explanation:

The pivot index is 3.

Left sum = nums[0] + nums[1] + nums[2] = 1 + 7 + 3 = 11

Right sum = nums[4] + nums[5] = 5 + 6 = 11

Input: nums = [1,2,3]

Output: -1

Explanation:

There is no index that satisfies the conditions in the problem statement.

Approach 1: Brute force approach to find the pivot index.

The findPivotBruteForce function implements the brute force approach. It iterates through each index of the array and calculates the sum of elements on the left side and the sum of elements on the right side. If the left sum is equal to the right sum, it returns the current index as the pivot index.

This approach has a time complexity of O(n^2) as it involves nested loops. The outer loop iterates through each index, and for each index, there is an inner loop to calculate the sums.

The space complexity is O(1) as it uses only a few additional variables to store the sums.

Approach 2: Optimized approach to find the pivot index

The findPivot function implements the optimized approach. It calculates the total sum of the array in a single pass using a for-each loop. Then, it iterates through the array, keeping track of the left sum and calculating the right sum. If the left sum is equal to the right sum, it returns the current index as the pivot index.

This approach has a time complexity of O(n) as it performs two passes over the array.

The space complexity is O(1) as it uses only a few additional variables to store the sums.