

1. Calculate the sum of the elements of nums between indices left and right inclusive where $\text{left} \leq \text{right}$.

Implement the NumArray class:

NumArray(int[] nums) Initializes the object with the integer array nums.

int sumRange(int left, int right) Returns the sum of the elements of nums between indices left and right inclusive (i.e. $\text{nums}[\text{left}] + \text{nums}[\text{left} + 1] + \dots + \text{nums}[\text{right}]$).

[Leetcode 303]

Example 1:

Input

["NumArray", "sumRange", "sumRange", "sumRange"]

[[[-2, 0, 3, -5, 2, -1], [0, 2], [2, 5], [0, 5]]

Output

[null, 1, -1, -3]

Explanation

NumArray numArray = new NumArray([-2, 0, 3, -5, 2, -1]);

numArray.sumRange(0, 2); // return $(-2) + 0 + 3 = 1$

numArray.sumRange(2, 5); // return $3 + (-5) + 2 + (-1) = -1$

numArray.sumRange(0, 5); // return $(-2) + 0 + 3 + (-5) + 2 + (-1) = -3$

2. Given an array of integers nums, calculate the pivot index of this array.

The pivot index is 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 index's right.

If the index is on the left edge of the array, then the left sum is 0 because there are no elements to the left. This also applies to the right edge of the array.

Return the leftmost pivot index. If no such index exists, return -1. [Leetcode 724]

Example 1:

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

Output: 3

Explanation:

The pivot index is 3.

Left sum = $\text{nums}[0] + \text{nums}[1] + \text{nums}[2] = 1 + 7 + 3 = 11$

Right sum = $\text{nums}[4] + \text{nums}[5] = 5 + 6 = 11$

Example 2:

Input: nums = [1,2,3]

Output: -1

Explanation:

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

Example 3:

Input: nums = [2,1,-1]

Output: 0

Explanation:

The pivot index is 0.

Left sum = 0 (no elements to the left of index 0)

Right sum = $\text{nums}[1] + \text{nums}[2] = 1 + -1 = 0$

3. We define the conversion array `conver` of an array `arr` as follows:
 $\text{conver}[i] = \text{arr}[i] + \max(\text{arr}[0..i])$ where $\max(\text{arr}[0..i])$ is the maximum value of $\text{arr}[j]$ over $0 \leq j \leq i$. We also define the score of an array `arr` as the sum of the values of the conversion array of `arr`.

Given a 0-indexed integer array `nums` of length `n`, return an array `ans` of length `n` where `ans[i]` is the score of the prefix `nums[0..i]`. [Leetcode 2640]

Example 1:

Input: `nums = [2,3,7,5,10]`

Output: `[4,10,24,36,56]`

Explanation:

For the prefix `[2]`, the conversion array is `[4]` hence the score is 4

For the prefix `[2, 3]`, the conversion array is `[4, 6]` hence the score is 10

For the prefix `[2, 3, 7]`, the conversion array is `[4, 6, 14]` hence the score is 24

For the prefix `[2, 3, 7, 5]`, the conversion array is `[4, 6, 14, 12]` hence the score is 36

For the prefix `[2, 3, 7, 5, 10]`, the conversion array is `[4, 6, 14, 12, 20]` hence the score is 56

Example 2:

Input: `nums = [1,1,2,4,8,16]`

Output: `[2,4,8,16,32,64]`

Explanation:

For the prefix `[1]`, the conversion array is `[2]` hence the score is 2

For the prefix `[1, 1]`, the conversion array is `[2, 2]` hence the score is 4

For the prefix `[1, 1, 2]`, the conversion array is `[2, 2, 4]` hence the score is 8

For the prefix `[1, 1, 2, 4]`, the conversion array is `[2, 2, 4, 8]` hence the score is 16

For the prefix `[1, 1, 2, 4, 8]`, the conversion array is `[2, 2, 4, 8, 16]` hence the score is 32

For the prefix `[1, 1, 2, 4, 8, 16]`, the conversion array is `[2, 2, 4, 8, 16, 32]` hence the score is 64

4. There are `n` flights that are labeled from 1 to `n`.

You are given an array of flight bookings `bookings`, where `bookings[i] = [firsti, lasti, seatsi]` represents a booking for flights `firsti` through `lasti` (inclusive) with `seatsi` seats reserved for each flight in the range.

Return an array `answer` of length `n`, where `answer[i]` is the total number of seats reserved for flight `i`. [Leetcode 1109]

Example 1:

Input: `bookings = [[1,2,10],[2,3,20],[2,5,25]]`, `n = 5`

Output: `[10,55,45,25,25]`

Explanation:

Flight labels: 1 2 3 4 5

Booking 1 reserved: 10 10

Booking 2 reserved: 20 20

Booking 3 reserved: 25 25 25 25

Total seats: 10 55 45 25 25

Hence, answer = [10,55,45,25,25]

Example 2:

Input: bookings = [[1,2,10],[2,2,15]], n = 2

Output: [10,25]

Explanation:

Flight labels: 1 2

Booking 1 reserved: 10 10

Booking 2 reserved: 15

Total seats: 10 25

Hence, answer = [10,25]