

2143. Choose Numbers From Two Arrays in Range Premium

Hard Topics Companies Hint

You are given two **0-indexed** integer arrays `nums1` and `nums2` of length `n`.

A range `[l, r]` (**inclusive**) where `0 <= l <= r < n` is **balanced** if:

- For every `i` in the range `[l, r]`, you pick either `nums1[i]` or `nums2[i]`.
- The sum of the numbers you pick from `nums1` equals to the sum of the numbers you pick from `nums2` (the sum is considered to be `0` if you pick no numbers from an array).

Two **balanced** ranges from `[l1, r1]` and `[l2, r2]` are considered to be **different** if at least one of the following is true:

- `l1 != l2`
- `r1 != r2`
- `nums1[i]` is picked in the first range, and `nums2[i]` is picked in the second range or **vice versa** for at least one `i`.

Return *the number of **different** ranges that are balanced*. Since the answer may be very large, return it **modulo** `109 + 7`.

Example 1:

Input: `nums1 = [1,2,5], nums2 = [2,6,3]`
Output: `3`
Explanation: The balanced ranges are:
– `[0, 1]` where we choose `nums2[0]`, and `nums1[1]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `2 = 2`.
– `[0, 2]` where we choose `nums1[0]`, `nums2[1]`, and `nums1[2]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `1 + 5 = 6`.
– `[0, 2]` where we choose `nums1[0]`, `nums1[1]`, and `nums2[2]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `1 + 2 = 3`.
Note that the second and third balanced ranges are different.
In the second balanced range, we choose `nums2[1]` and in the third balanced range, we choose `nums1[1]`.

Example 2:

Input: `nums1 = [0,1], nums2 = [1,0]`
Output: `4`
Explanation: The balanced ranges are:
– `[0, 0]` where we choose `nums1[0]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `0 = 0`.
– `[1, 1]` where we choose `nums2[1]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `0 = 0`.
– `[0, 1]` where we choose `nums1[0]` and `nums2[1]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `0 = 0`.
– `[0, 1]` where we choose `nums2[0]` and `nums1[1]`.
The sum of the numbers chosen from `nums1` equals the sum of the numbers chosen from `nums2`: `1 = 1`.

Constraints:

- `n == nums1.length == nums2.length`
- `1 <= n <= 100`
- `0 <= nums1[i], nums2[i] <= 100`

Seen this question in a real interview before? 1/5

Yes No

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Hint 1

If you know the possible sums you can get for a range `[l, r]`, how can you use this information to calculate the possible sums you can get for a range `[l, r + 1]`?

Hint 2

For the range `[l, r]`, if it is possible to choose elements such that the sum of elements you picked from `nums1` is `x` and the sum of elements you picked from `nums2` is `y`, then `(x + nums1[r + 1], y)` and `(x, y + nums2[r + 1])` are possible sums you can get in the range `[l, r + 1]`.

Hint 3

How can we save the possible sums obtainable at a given index so that we can reuse this information later?

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