3247. Number of Subsequences with Odd Sum Premium

Medium Topics Hint

Given an array `nums`, return the number of subsequences with an odd sum of elements.

Since the answer may be very large, return it **modulo** `10^9 + 7`.

Example 1:

> **Input:** `nums = [1,1,1]`
>
> **Output:** 4
>
> **Explanation:**
>
> The odd-sum subsequences are: `[1, 1, 1]`, `[1, 1, 1]`, `[1, 1, 1]`, `[1, 1, 1]`.

Example 2:

> **Input:** `nums = [1,2,2]`
>
> **Output:** 4
>
> **Explanation:**
>
> The odd-sum subsequences are: `[1, 2, 2]`, `[1, 2, 2]`, `[1, 2, 2]`, `[1, 2, 2]`.

Constraints:

- `1 <= nums.length <= 10^5`
- `1 <= nums[i] <= 10^9`

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

Yes No

Accepted **560** | Submissions **1K** | Acceptance Rate **53.4%**

Topics

Array Math Dynamic Programming Combinatorics

Hint 1

Define `dp[i][0]` as the answer for the subarray `[0, i]`.

Hint 2

Similarly define `dp[i][1]` as the answer for the subarray `[0, i]` if we wanted to count even-sum subsequences.

Hint 3

If `nums[i]` is odd, `dp[i][x] = 2^i`.

Hint 4

Otherwise, `dp[i][x] = dp[i - 1][x] * 2`.

Hint 5

`dp[0][1] = 1` if `nums[0]` is odd, and 0 otherwise.

Hint 6

`dp[0][0] = 2` if `nums[0]` is even, and 1 otherwise (since an empty subsequence has an even sum).

Discussion (1)