

Problem 1589: Maximum Sum Obtained of Any Permutation

Problem Information

Difficulty: Medium

Acceptance Rate: 39.91%

Paid Only: No

Tags: Array, Greedy, Sorting, Prefix Sum

Problem Description

We have an array of integers, `nums`, and an array of `requests` where `requests[i] = [starti, endi]`. The `ith` request asks for the sum of `nums[starti] + nums[starti + 1] + ... + nums[endi - 1] + nums[endi]`. Both `starti` and `endi` are _0-indexed_.

Return _the maximum total sum of all requests** among all permutations** of_ `nums`.

Since the answer may be too large, return it **modulo** `109 + 7`.

Example 1:

Input: nums = [1,2,3,4,5], requests = [[1,3],[0,1]] **Output:** 19 **Explanation:** One permutation of nums is [2,1,3,4,5] with the following result: requests[0] -> nums[1] + nums[2] + nums[3] = 1 + 3 + 4 = 8 requests[1] -> nums[0] + nums[1] = 2 + 1 = 3 Total sum: 8 + 3 = 11. A permutation with a higher total sum is [3,5,4,2,1] with the following result: requests[0] -> nums[1] + nums[2] + nums[3] = 5 + 4 + 2 = 11 requests[1] -> nums[0] + nums[1] = 3 + 5 = 8 Total sum: 11 + 8 = 19, which is the best that you can do.

Example 2:

Input: nums = [1,2,3,4,5,6], requests = [[0,1]] **Output:** 11 **Explanation:** A permutation with the max total sum is [6,5,4,3,2,1] with request sums [11].

Example 3:

****Input:**** nums = [1,2,3,4,5,10], requests = [[0,2],[1,3],[1,1]] ****Output:**** 47 ****Explanation:**** A permutation with the max total sum is [4,10,5,3,2,1] with request sums [19,18,10].

****Constraints:****

```
* `n == nums.length` * `1 <= n <= 105` * `0 <= nums[i] <= 105` * `1 <= requests.length <= 105`  
* `requests[i].length == 2` * `0 <= starti <= endi < n`
```

Code Snippets

C++:

```
class Solution {  
public:  
    int maxSumRangeQuery(vector<int>& nums, vector<vector<int>>& requests) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int maxSumRangeQuery(int[] nums, int[][] requests) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def maxSumRangeQuery(self, nums: List[int], requests: List[List[int]]) ->  
        int:
```