

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 `i`th 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:
```