

3109. Find the Index of Permutation Premium

Medium 🔖 Topics 💡 Hint

Given an array `perm` of length `n` which is a permutation of `[1, 2, ..., n]`, return the index of `perm` in the **lexicographically sorted** array of all of the permutations of `[1, 2, ..., n]`.

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

Example 1:

Input: `perm = [1,2]`

Output: `0`

Explanation:

There are only two permutations in the following order:

`[1,2]`, `[2,1]`

And `[1,2]` is at index 0.

Example 2:

Input: `perm = [3,1,2]`

Output: `4`

Explanation:

There are only six permutations in the following order:

`[1,2,3]`, `[1,3,2]`, `[2,1,3]`, `[2,3,1]`, `[3,1,2]`, `[3,2,1]`

And `[3,1,2]` is at index 4.

Constraints:

- `1 <= n == perm.length <= 105`
- `perm` is a permutation of `[1, 2, ..., n]`.

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

Yes No

Accepted **509** | Submissions **1.3K** | Acceptance Rate **40.3%**

🔖 Topics

ArrayBinary SearchDivide and ConquerBinary Indexed TreeSegment TreeMerge SortOrdered Set

💡 Hint 1

If `perm[0]` is `x`, there are at least `(x - 1) * (n - 1)!` permutations before `perm`. (All the ones starting with numbers less than `x`)

💡 Hint 2

Can you find out what happens for `perm[1]` onwards?

💡 Hint 3

Think about the count of the numbers that can be in place of `perm[i]` and come before it.

💬 Discussion (1)