

Description

Solution

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Python O(n) Same as next Greater element.



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4

What we want is to find the next smaller element in the array(which is similar as: <https://leetcode.com/problems/next-greater-element-i/>), the index of next smaller element minus current index is the number of target array we can form(which is equal to the longest target arr we can form start with current index).

For example: given [2,3,4,5,1], the next smaller element of 2 is 1. $\text{index}(2) = 0$, $\text{index}(1) = 4$. And the number of target array we can form is 4: [[2,3,4,5],[2,3,4],[2,3],[2]].

And we can always assume there is a smallest element at the end of the array. So for those element which we can't find a smaller element in the array, we can use $\text{len}(\text{arr})$ as the index of its next smaller element.

```
class Solution:
    def validSubarrays(self, nums: List[int]) -> int:
        stack = []
        nextSmaller = [len(nums)] * len(nums)
        for i, v in enumerate(nums):
            while stack and stack[-1][1] > v:
                nextSmaller[stack.pop()[0]] = i
            stack.append([i, v])
        return sum([v - i for i, v in enumerate(nextSmaller)])
```

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