Problem 2302: Count Subarrays With Score Less Than K

Problem Information

Difficulty: Hard
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

The

score

of an array is defined as the

product

of its sum and its length.

For example, the score of

[1, 2, 3, 4, 5]

is

(1 + 2 + 3 + 4 + 5) * 5 = 75

.

Given a positive integer array

nums

and an integer

k

, return

the

number of non-empty subarrays

of

nums

whose score is

strictly less

than

k

.

A

subarray

is a contiguous sequence of elements within an array.

Example 1:

Input:

nums = [2,1,4,3,5], k = 10

Output:

6

Explanation:

The 6 subarrays having scores less than 10 are: - [2] with score 2 * 1 = 2. - [1] with score 1 * 1 = 1. - [4] with score 4 * 1 = 4. - [3] with score 3 * 1 = 3. - [5] with score 5 * 1 = 5. - [2,1] with score (2 + 1) * 2 = 6. Note that subarrays such as [1,4] and [4,3,5] are not considered because their scores are 10 and 36 respectively, while we need scores strictly less than 10.

Example 2:

Input:

nums = [1,1,1], k = 5

Output:

5

Explanation:

Every subarray except [1,1,1] has a score less than 5. [1,1,1] has a score (1 + 1 + 1) * 3 = 9, which is greater than 5. Thus, there are 5 subarrays having scores less than 5.

Constraints:

1 <= nums.length <= 10

5

1 <= nums[i] <= 10

5

1 <= k <= 10

15

Code Snippets

C++:

```
class Solution {
public:
long long countSubarrays(vector<int>& nums, long long k) {

}
};
```

Java:

```
class Solution {
public long countSubarrays(int[] nums, long k) {

}
}
```

Python3:

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

Python:

```
class Solution(object):
def countSubarrays(self, nums, k):
"""
:type nums: List[int]
:type k: int
:rtype: int
"""
```

JavaScript:

```
/**
* @param {number[]} nums
* @param {number} k
* @return {number}
*/
var countSubarrays = function(nums, k) {

};
```

TypeScript:

```
function countSubarrays(nums: number[], k: number): number {

};
```

C#:

```
public class Solution {
public long CountSubarrays(int[] nums, long k) {

}
}
```

C:

```
long long countSubarrays(int* nums, int numsSize, long long k) {

}
```

Go:

```
func countSubarrays(nums []int, k int64) int64 {

}
```

Kotlin:

```
class Solution {
fun countSubarrays(nums: IntArray, k: Long): Long {

}
}
```

Swift:

```
class Solution {
func countSubarrays(_ nums: [Int], _ k: Int) -> Int {

}
}
```

Rust:

```
impl Solution {
pub fn count_subarrays(nums: Vec<i32>, k: i64) -> i64 {

}
}
```

Ruby:

```
# @param {Integer[]} nums
# @param {Integer} k
# @return {Integer}
def count_subarrays(nums, k)

end
```

PHP:

```
class Solution {

/**
* @param Integer[] $nums
* @param Integer $k
* @return Integer
*/
function countSubarrays($nums, $k) {

}
}
```

Dart:

```
class Solution {
int countSubarrays(List<int> nums, int k) {

}
}
```

Scala:

```
object Solution {
def countSubarrays(nums: Array[Int], k: Long): Long = {

}
```

```
}
```

Elixir:

```
defmodule Solution do
@spec count_subarrays(nums :: [integer], k :: integer) :: integer
def count_subarrays(nums, k) do

end
end
```

Erlang:

```
-spec count_subarrays(Nums :: [integer()], K :: integer()) -> integer().
count_subarrays(Nums, K) ->
.
```

Racket:

```
(define/contract (count-subarrays nums k)
(-> (listof exact-integer?) exact-integer? exact-integer?)
)
```

Solutions

C++ Solution:

```
/*
* Problem: Count Subarrays With Score Less Than K
* Difficulty: Hard
* Tags: array, search
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(1) to O(n) depending on approach
*/

class Solution {
public:
long long countSubarrays(vector<int>& nums, long long k) {
```

```
}
};
```

Java Solution:

```
/**
* Problem: Count Subarrays With Score Less Than K
* Difficulty: Hard
* Tags: array, search
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(1) to O(n) depending on approach
*/

class Solution {
public long countSubarrays(int[] nums, long k) {

}
}
```

Python3 Solution:

```
"""
Problem: Count Subarrays With Score Less Than K
Difficulty: Hard
Tags: array, search

Approach: Use two pointers or sliding window technique
Time Complexity: O(n) or O(n log n)
Space Complexity: O(1) to O(n) depending on approach
"""

class Solution:
def countSubarrays(self, nums: List[int], k: int) -> int:
# TODO: Implement optimized solution
pass
```

Python Solution:

```
class Solution(object):
def countSubarrays(self, nums, k):
"""
:type nums: List[int]
:type k: int
:rtype: int
"""
```

JavaScript Solution:

```
/**
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/**
* @param {number[]} nums
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var countSubarrays = function(nums, k) {

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*/

function countSubarrays(nums: number[], k: number): number {
```

```
};
```

C# Solution:

```
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public class Solution {
public long CountSubarrays(int[] nums, long k) {

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C Solution:

```
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long long countSubarrays(int* nums, int numsSize, long long k) {

}
```

Go Solution:

```
// Problem: Count Subarrays With Score Less Than K
// Difficulty: Hard
```

```
// Tags: array, search
//
// Approach: Use two pointers or sliding window technique
// Time Complexity: O(n) or O(n log n)
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func countSubarrays(nums []int, k int64) int64 {

}
```

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```
class Solution {
fun countSubarrays(nums: IntArray, k: Long): Long {

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impl Solution {
pub fn count_subarrays(nums: Vec<i32>, k: i64) -> i64 {

}
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Ruby Solution:

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# @param {Integer[]} nums
# @param {Integer} k
# @return {Integer}
def count_subarrays(nums, k)

end
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PHP Solution:

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class Solution {

/**
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Dart Solution:

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