Problem 3578: Count Partitions With Max-Min Difference at Most K

Problem Information

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

Problem Description

You are given an integer array

nums

and an integer

k

. Your task is to partition

nums

into one or more

non-empty

contiguous segments such that in each segment, the difference between its

maximum

and

minimum

elements is

at most

k

.

Return the total number of ways to partition

nums

under this condition.

Since the answer may be too large, return it

modulo

10

9

+ 7

.

Example 1:

Input:

nums = [9,4,1,3,7], k = 4

Output:

6

Explanation:

There are 6 valid partitions where the difference between the maximum and minimum elements in each segment is at most

k = 4

:

[[9], [4], [1], [3], [7]]

[[9], [4], [1], [3, 7]]

[[9], [4], [1, 3], [7]]

[[9], [4, 1], [3], [7]]

[[9], [4, 1], [3, 7]]

[[9], [4, 1, 3], [7]]

Example 2:

Input:

nums = [3,3,4], k = 0

Output:

2

Explanation:

There are 2 valid partitions that satisfy the given conditions:

[[3], [3], [4]]

[[3, 3], [4]]

Constraints:

2 <= nums.length <= 5 * 10

4

1 <= nums[i] <= 10

9

0 <= k <= 10

9

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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

Python:

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

```
:type k: int
:rtype: int
"""
```

JavaScript:

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

};
```

TypeScript:

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

};
```

C#:

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

}
}
```

C:

```
int countPartitions(int* nums, int numsSize, int k) {

}
```

Go:

```
func countPartitions(nums []int, k int) int {

}
```

Kotlin:

```
class Solution {
fun countPartitions(nums: IntArray, k: Int): Int {

}
}
```

Swift:

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

}
}
```

Rust:

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

}
}
```

Ruby:

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

end
```

PHP:

```
class Solution {

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

}
```

```
}
```

Dart:

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

}
}
```

Scala:

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

}
}
```

Elixir:

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

end
end
```

Erlang:

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

Racket:

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

Solutions

C++ Solution:

```
/*
* Problem: Count Partitions With Max-Min Difference at Most K
* Difficulty: Medium
* Tags: array, dp, queue
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) or O(n * m) for DP table
*/

class Solution {
public:
int countPartitions(vector<int>& nums, int k) {

}
};
```

Java Solution:

```
/**
* Problem: Count Partitions With Max-Min Difference at Most K
* Difficulty: Medium
* Tags: array, dp, queue
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) or O(n * m) for DP table
*/

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

}
}
```

Python3 Solution:

```
"""
Problem: Count Partitions With Max-Min Difference at Most K
Difficulty: Medium
Tags: array, dp, queue
```

```
Approach: Use two pointers or sliding window technique
Time Complexity: O(n) or O(n log n)
Space Complexity: O(n) or O(n * m) for DP table
"""

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

Python Solution:

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

```
/**
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var countPartitions = function(nums, k) {

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function countPartitions(nums: number[], k: number): number {

};
```

C# Solution:

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

}
}
```

C Solution:

```
/*
* Problem: Count Partitions With Max-Min Difference at Most K
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* Tags: array, dp, queue
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```
* Time Complexity: O(n) or O(n log n)
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*/

int countPartitions(int* nums, int numsSize, int k) {

}
```

Go Solution:

```
// Problem: Count Partitions With Max-Min Difference at Most K
// Difficulty: Medium
// Tags: array, dp, queue
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// Approach: Use two pointers or sliding window technique
// Time Complexity: O(n) or O(n log n)
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func countPartitions(nums []int, k int) int {

}
```

Kotlin Solution:

```
class Solution {
fun countPartitions(nums: IntArray, k: Int): Int {

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

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Ruby Solution:

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

end
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PHP Solution:

```
class Solution {

/**
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