

Problem 2966: Divide Array Into Arrays With Max Difference

Problem Information

Difficulty: Medium

Acceptance Rate: 78.88%

Paid Only: No

Tags: Array, Greedy, Sorting

Problem Description

You are given an integer array `nums` of size `n` where `n` is a multiple of 3 and a positive integer `k`.

Divide the array `nums` into `n / 3` arrays of size 3^{**} satisfying the following condition:

* The difference between $**\text{any}**$ two elements in one array is $**\text{less than or equal}**$ to `k`.

Return a $**\text{2D}**$ array containing the arrays. If it is impossible to satisfy the conditions, return an empty array. And if there are multiple answers, return $**\text{any}**$ of them.

Example 1:

Input: nums = [1,3,4,8,7,9,3,5,1], k = 2

Output: [[1,1,3],[3,4,5],[7,8,9]]

Explanation:

The difference between any two elements in each array is less than or equal to 2.

Example 2:

Input: nums = [2,4,2,2,5,2], k = 2

****Output:**** []

****Explanation:****

Different ways to divide `nums` into 2 arrays of size 3 are:

* [[2,2,2],[2,4,5]] (and its permutations) * [[2,2,4],[2,2,5]] (and its permutations)

Because there are four 2s there will be an array with the elements 2 and 5 no matter how we divide it. since $5 - 2 = 3 > k$, the condition is not satisfied and so there is no valid division.

****Example 3:****

****Input:**** nums = [4,2,9,8,2,12,7,12,10,5,8,5,5,7,9,2,5,11], k = 14

****Output:**** [[2,2,2],[4,5,5],[5,5,7],[7,8,8],[9,9,10],[11,12,12]]

****Explanation:****

The difference between any two elements in each array is less than or equal to 14.

****Constraints:****

* `n == nums.length` * `1 <= n <= 105` * `n` is a multiple of 3 * `1 <= nums[i] <= 105` * `1 <= k <= 105`

Code Snippets

C++:

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

Java:

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

Python3:

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