

# 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 **any** two elements in one array is **less than or equal** to `k`.

Return a **2D** array containing the arrays. If it is impossible to satisfy the conditions, return an empty array. And if there are multiple answers, return **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` \*  $1 \leq n \leq 105$  \* `n` is a multiple of 3 \*  $1 \leq \text{nums}[i] \leq 105$  \*  $1 \leq k \leq 105$

## 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]]:
```