Problem 3634: Minimum Removals to Balance Array

Problem Information

Difficulty: Medium
Acceptance Rate: 38.03%
Paid Only: No
Tags: Array, Sliding Window, Sorting

Problem Description

You are given an integer array `nums` and an integer `k`.

An array is considered **balanced** if the value of its **maximum** element is **at most** `k` times the **minimum** element.

You may remove **any** number of elements from `nums`■■■■■■■ without making it **empty**.

Return the **minimum** number of elements to remove so that the remaining array is balanced.

Note: An array of size 1 is considered balanced as its maximum and minimum are equal, and the condition always holds true.

Example 1:

Input: nums = [2,1,5], k = 2

Output: 1

Explanation:

* Remove `nums[2] = 5` to get `nums = [2, 1]`. * Now `max = 2`, `min = 1` and `max <= min * k` as `2 <= 1 * 2`. Thus, the answer is 1.

Example 2:

Input: nums = [1,6,2,9], k = 3

Output: 2

Explanation:

* Remove `nums[0] = 1` and `nums[3] = 9` to get `nums = [6, 2]`. * Now `max = 6`, `min = 2` and `max <= min * k` as `6 <= 2 * 3`. Thus, the answer is 2.

Example 3:

Input: nums = [4,6], k = 2

Output: 0

Explanation:

* Since `nums` is already balanced as `6 <= 4 * 2`, no elements need to be removed.

Constraints:

* `1 <= nums.length <= 105` * `1 <= nums[i] <= 109` * `1 <= k <= 105`

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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