Problem 3469: Find Minimum Cost to Remove Array Elements

Problem Information

Difficulty: Medium
Acceptance Rate: 20.63%
Paid Only: No
Tags: Array, Dynamic Programming

Problem Description

You are given an integer array `nums`. Your task is to remove **all elements** from the array by performing one of the following operations at each step until `nums` is empty:

* Choose any two elements from the first three elements of `nums` and remove them. The cost of this operation is the **maximum** of the two elements removed. * If fewer than three elements remain in `nums`, remove all the remaining elements in a single operation. The cost of this operation is the **maximum** of the remaining elements.

Return the **minimum** cost required to remove all the elements.

Example 1:

Input: nums = [6,2,8,4]

Output: 12

Explanation:

Initially, `nums = [6, 2, 8, 4]`.

* In the first operation, remove `nums[0] = 6` and `nums[2] = 8` with a cost of `max(6, 8) = 8`. Now, `nums = [2, 4]`. * In the second operation, remove the remaining elements with a cost of `max(2, 4) = 4`.

The cost to remove all elements is `8 + 4 = 12`. This is the minimum cost to remove all elements in `nums`. Hence, the output is 12.

Example 2:

Input: nums = [2,1,3,3]

Output: 5

Explanation:

Initially, `nums = [2, 1, 3, 3]`.

* In the first operation, remove `nums[0] = 2` and `nums[1] = 1` with a cost of `max(2, 1) = 2`. Now, `nums = [3, 3]`. * In the second operation remove the remaining elements with a cost of `max(3, 3) = 3`.

The cost to remove all elements is `2 + 3 = 5`. This is the minimum cost to remove all elements in `nums`. Hence, the output is 5.

Constraints:

* `1 <= nums.length <= 1000` * `1 <= nums[i] <= 106`

Code Snippets

C++:

```cpp
class Solution {
public:
    int minCost(vector<int>& nums) {


    }
};
```

Java:

```java
class Solution {
    public int minCost(int[] nums) {
```

```
        }
    }
}
```

Python3:

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