Problem 3301: Maximize the Total Height of Unique Towers

Problem Information

Difficulty: Medium
Acceptance Rate: 37.00%
Paid Only: No
Tags: Array, Greedy, Sorting

Problem Description

You are given an array `maximumHeight`, where `maximumHeight[i]` denotes the **maximum** height the `ith` tower can be assigned.

Your task is to assign a height to each tower so that:

1. The height of the `ith` tower is a positive integer and does not exceed `maximumHeight[i]`.
2. No two towers have the same height.

Return the **maximum** possible total sum of the tower heights. If it's not possible to assign heights, return `-1`.

Example 1:

Input: maximumHeight = [2,3,4,3]

Output: 10

Explanation:

We can assign heights in the following way: `[1, 2, 4, 3]`.

Example 2:

Input: maximumHeight = [15,10]

Output: 25

Explanation:

We can assign heights in the following way: `[15, 10]`.

Example 3:

Input: maximumHeight = [2,2,1]

Output: -1

Explanation:

It's impossible to assign positive heights to each index so that no two towers have the same height.

Constraints:

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

Code Snippets

C++:

```
class Solution {
public:
long long maximumTotalSum(vector<int>& maximumHeight) {

}
};
```

Java:

```
class Solution {
public long maximumTotalSum(int[] maximumHeight) {

}
}
```

Python3:

```
class Solution:
def maximumTotalSum(self, maximumHeight: List[int]) -> int:
```