# Problem 2865: Beautiful Towers I

## Problem Information

**Difficulty:** Medium
**Acceptance Rate:** 43.94%
**Paid Only:** No
**Tags:** Array, Stack, Monotonic Stack

## Problem Description

You are given an array `heights` of `n` integers representing the number of bricks in `n` consecutive towers. Your task is to remove some bricks to form a **mountain-shaped** tower arrangement. In this arrangement, the tower heights are non-decreasing, reaching a maximum peak value with one or multiple consecutive towers and then non-increasing.

Return the **maximum possible sum** of heights of a mountain-shaped tower arrangement.

**Example 1:**

**Input:** heights = [5,3,4,1,1]

**Output:** 13

**Explanation:**

We remove some bricks to make `heights = [5,3,3,1,1]`, the peak is at index 0.

**Example 2:**

**Input:** heights = [6,5,3,9,2,7]

**Output:** 22

**Explanation:**

We remove some bricks to make `heights = [3,3,3,9,2,2]`, the peak is at index 3.

**Example 3:**

**Input:** heights = [3,2,5,5,2,3]

**Output:** 18

**Explanation:**

We remove some bricks to make `heights = [2,2,5,5,2,2]`, the peak is at index 2 or 3.

**Constraints:**

* `1 <= n == heights.length <= 103` * `1 <= heights[i] <= 109`

## Code Snippets

**C++:**

```
class Solution {
public:
long long maximumSumOfHeights(vector<int>& heights) {

}
};
```

**Java:**

```
class Solution {
public long maximumSumOfHeights(int[] heights) {

}
}
```

**Python3:**

```
class Solution:
def maximumSumOfHeights(self, heights: List[int]) -> int:
```