Problem 3730: Maximum Calories Burnt from Jumps

Problem Information

Difficulty: Medium
Acceptance Rate: 75.30%
Paid Only: Yes
Tags: Array, Two Pointers, Greedy, Sorting

Problem Description

You are given an integer array `heights` of size `n`, where `heights[i]` represents the height of the `ith` block in an exercise routine.

You start on the ground (height 0) and **must** jump onto each block **exactly once** in any order.

* The **calories burned** for a jump from a block of height `a` to a block of height `b` is `(a - b)2`. * The **calories burned** for the first jump from the ground to the chosen first block `heights[i]` is `(0 - heights[i])2`.

Return the **maximum** total calories you can burn by selecting an optimal jumping sequence.

Note: Once you jump onto the first block, you cannot return to the ground.

Example 1:

Input: heights = [1,7,9]

Output: 181

Explanation:

The optimal sequence is `[9, 1, 7]`.

* Initial jump from the ground to `heights[2] = 9`: `(0 - 9)2 = 81`. * Next jump to `heights[0] = 1`: `(9 - 1)2 = 64`. * Final jump to `heights[1] = 7`: `(1 - 7)2 = 36`.

Total calories burned = `81 + 64 + 36 = 181`.

Example 2:

Input: heights = [5,2,4]

Output: 38

Explanation:

The optimal sequence is `[5, 2, 4]`.

* Initial jump from the ground to `heights[0] = 5`: `(0 - 5)2 = 25`. * Next jump to `heights[1] = 2`: `(5 - 2)2 = 9`. * Final jump to `heights[2] = 4`: `(2 - 4)2 = 4`.

Total calories burned = `25 + 9 + 4 = 38`.

Example 3:

Input: heights = [3,3]

Output: 9

Explanation:

The optimal sequence is `[3, 3]`.

* Initial jump from the ground to `heights[0] = 3`: `(0 - 3)2 = 9`. * Next jump to `heights[1] = 3`: `(3 - 3)2 = 0`.

Total calories burned = `9 + 0 = 9`.

Constraints:

* `1 <= n == heights.length <= 105` * `1 <= heights[i] <= 105`

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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