

Problem 1642: Furthest Building You Can Reach

Problem Information

Difficulty: Medium

Acceptance Rate: 50.58%

Paid Only: No

Tags: Array, Greedy, Heap (Priority Queue)

Problem Description

You are given an integer array `heights` representing the heights of buildings, some `bricks`, and some `ladders`.

You start your journey from building `0` and move to the next building by possibly using bricks or ladders.

While moving from building `i` to building `i+1` (**0-indexed**),

* If the current building's height is **greater than or equal** to the next building's height, you do **not** need a ladder or bricks. * If the current building's height is **less than** the next building's height, you can either use **one ladder** or `(h[i+1] - h[i])` **bricks**.

Return the furthest building index (0-indexed) you can reach if you use the given ladders and bricks optimally.

Example 1:

 (<https://assets.leetcode.com/uploads/2020/10/27/q4.gif>)

Input: heights = [4,2,7,6,9,14,12], bricks = 5, ladders = 1 **Output:** 4 **Explanation:** Starting at building 0, you can follow these steps: - Go to building 1 without using ladders nor bricks since $4 \geq 2$. - Go to building 2 using 5 bricks. You must use either bricks or ladders because $2 < 7$. - Go to building 3 without using ladders nor bricks since $7 \geq 6$. - Go to building 4 using your only ladder. You must use either bricks or ladders because $6 < 9$. It is impossible to go beyond building 4 because you do not have any more bricks or ladders.

****Example 2:****

****Input:**** heights = [4,12,2,7,3,18,20,3,19], bricks = 10, ladders = 2 ****Output:**** 7

****Example 3:****

****Input:**** heights = [14,3,19,3], bricks = 17, ladders = 0 ****Output:**** 3

****Constraints:****

* `1` <= heights.length <= 105` * `1` <= heights[i] <= 106` * `0` <= bricks <= 109` * `0` <= ladders <= heights.length`

Code Snippets

C++:

```
class Solution {
public:
    int furthestBuilding(vector<int>& heights, int bricks, int ladders) {

    }
};
```

Java:

```
class Solution {
    public int furthestBuilding(int[] heights, int bricks, int ladders) {

    }
}
```

Python3:

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