42. Trapping Rain Water

Created	@October 9, 2022 3:43 PM
Difficulty	Medium
LC Url	https://leetcode.com/problems/trapping-rain-water/
Importance	
Tag	Two pointers
Video	https://www.youtube.com/watch?v=ZI2z5pq0TqA

Given `n` non-negative integers representing an elevation map where the width of each bar is `1`, compute how much water it can trap after raining.

Example 1:


```
Input: height = [0,1,0,2,1,0,1,3,2,1,2,1]
Output: 6
Explanation: The above elevation map (black section) is represented by array [0,1,0,2,1,0,
1,3,2,1,2,1]. In this case, 6 units of rain water (blue section) are being trapped.
```

Example 2:

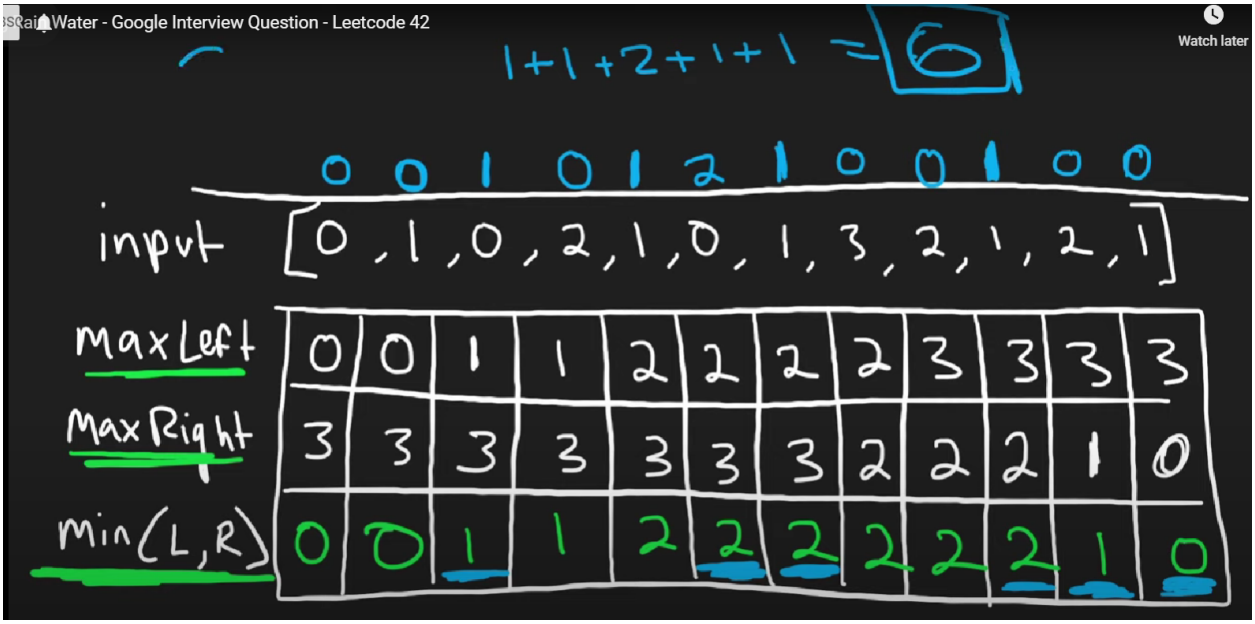
```
Input: height = [4,2,0,3,2,5]
Output: 9
```

Constraints:

- `n == height.length`
- `1 <= n <= 2 * 10 4`
- `0 <= height[i] <= 10 5`

Solution

O(n)




```
class Solution:
    def trap(self, height: List[int]) -> int:
        if not height:
            return 0

        left, right = 0, len(height) - 1
        leftMax, rightMax = height[left], height[right]
        res = 0

        while left < right:
            if leftMax <= rightMax:
                left += 1
                leftMax = max(leftMax, height[left])
                res += leftMax - height[left]
            else:
                right -= 1
```

```
                rightMax = max(rightMax, height[right])
                res += rightMax - height[right]
        return res
```