# TWO POINTERS

# Problem – 11. Container With Most Water

Medium

LeetCode leetcode.com/problems/container-with-most-water

## Problem Statement

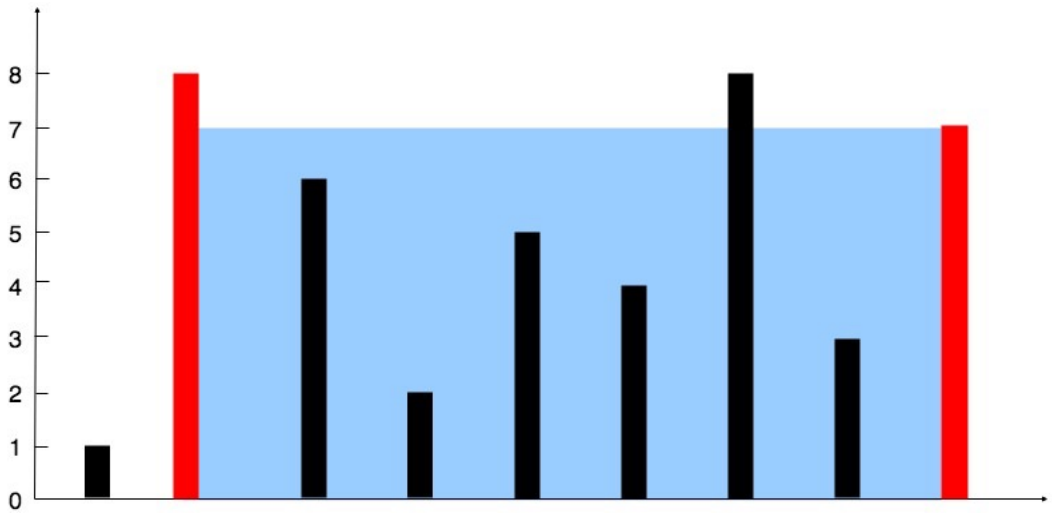
- You are given an integer array **height**
- Find two lines that together with x-axis form a container with most water
- Example:

**Input:**

height = [1,8,6,2,5,4,8,3,7]

**Output:**

49



# Solution – Container With Most Water

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## Solution

- Initialize the maximum area **maxArea = 0**
- Initialize two pointers, **left = 0** and **right  = height.size – 1**
- Loop while pointer **left < right**
- Calculate the area:

  **area = min(height[left], height[right]) * (right – left)**
- Update the global maximum area:

  **maxArea = max(maxArea, area)**
- Move the smallest pointer (increment **left** or decrement **right**)
- Return **maxArea**

# Code – Container With Most Water

Medium

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## Code

```
int maxArea(vector<int>& height) {
    // initialize the two pointers (left and right)
    int left = 0;
    int right = height.size() - 1;
    int maxArea = 0;
    while (left < right) {
        // calculate the area, think about the x-axis and y-axis
        int area = min(height[left], height[right]) * (right - left);
        // update maximum area
        maxArea = max(area, maxArea);
        // is the left pointer (y) smaller than right?
        if (height[left] < height[right]) {
            // move left pointer to right
            left++;
        } else {
            // otherwise, move right pointer to left
            right--;
        }
    }
    return maxArea;
}
```