

# 3073. Maximum Increasing Triplet Value Premium

Medium Topics Companies Hint

Given an array `nums`, return *the **maximum value of a triplet**  $(i, j, k)$  such that  $i < j < k$  and  $nums[i] < nums[j] < nums[k]$* .

The **value** of a triplet  $(i, j, k)$  is  $nums[i] - nums[j] + nums[k]$ .

## Example 1:

**Input:** `nums = [5,6,9]`

**Output:** 8

**Explanation:** We only have one choice for an increasing triplet and that is choosing all three elements. The value of this triplet would be  $5 - 6 + 9 = 8$ .

## Example 2:

**Input:** `nums = [1,5,3,6]`

**Output:** 4

**Explanation:** There are only two increasing triplets:  
  
 $(0, 1, 3)$ : The value of this triplet is  $nums[0] - nums[1] + nums[3] = 1 - 5 + 6 = 2$ .  
  
 $(0, 2, 3)$ : The value of this triplet is  $nums[0] - nums[2] + nums[3] = 1 - 3 + 6 = 4$ .  
  
Thus the answer would be 4.

## Constraints:

- $3 \leq nums.length \leq 10^5$
- $1 \leq nums[i] \leq 10^9$
- The input is generated such that at least one triplet meets the given condition.

Seen this question in a real interview before? 1/5

Yes No

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Hint 1

For each element, define `right[i]` as the value of the greatest element with an index greater than `i`.

Hint 2

Start iterating from the beginning, define a set containing the elements seen so far.

Hint 3

When you are at index `i`, use binary search on the set to find the greatest element on the left of index `i` that is smaller than `nums[i]` and name it `greatest_left`.

Hint 4

Also check that  $nums[i] < right[i]$ .

Hint 5

If the above conditions hold, then  $ans = \max(ans, greatest\_left - nums[i] + right[i])$ .

Discussion (0)