

334. Increasing Triplet Subsequence

Given an integer array `nums`, return `true` if there exists a triple of indices (i, j, k) such that $i < j < k$ and $nums[i] < nums[j] < nums[k]$. If no such indices exists, return `false`.

Example 1:

- **Input:** `nums = [1,2,3,4,5]`
- **Output:** `true`
- **Explanation:** Any triplet where $i < j < k$ is valid.

Example 2:

- **Input:** `nums = [5,4,3,2,1]`
- **Output:** `false`
- **Explanation:** No triplet exists.

Example 3:

- **Input:** `nums = [2,1,5,0,4,6]`
- **Output:** `true`
- **Explanation:** The triplet $(3, 4, 5)$ is valid because `nums[3] == 0 < nums[4] == 4 < nums[5] == 6`.

Constraints:

- $1 \leq \text{nums.length} \leq 5 * 10^5$
- $-2^{31} \leq \text{nums}[i] \leq 2^{31} - 1$

Follow up: Could you implement a solution that runs in $O(n)$ time complexity and $O(1)$ space complexity?