

162. Find Peak Element

- A peak element is an element that is strictly greater than its neighbors.
- Given a 0-indexed integer array `nums`, find a peak element, and return its index. If the array contains multiple peaks, return the index to any of the peaks.
- You may imagine that `nums[-1] = nums[n] = -∞`. In other words, an element is always considered to be strictly greater than a neighbor that is outside the array.
- You must write an algorithm that runs in $O(\log n)$ time.

Example 1:

- **Input:** `nums = [1,2,3,1]`
- **Output:** 2
- **Explanation:** 3 is a peak element and your function should return the index number 2.

Example 2:

- **Input:** `nums = [1,2,1,3,5,6,4]`
- **Output:** 5
- **Explanation:** Your function can return either index number 1 where the peak element is 2, or index number 5 where the peak element is 6.

Constraints:

- $1 \leq \text{nums.length} \leq 1000$
- $-231 \leq \text{nums}[i] \leq 231 - 1$
- $\text{nums}[i] \neq \text{nums}[i + 1]$ for all valid i .