

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 $\text{nums}[-1] = \text{nums}[n] = -\infty$. 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:

- $1 \leq \text{nums.length} \leq 1000$
- $-2^{31} \leq \text{nums}[i] \leq 2^{31} - 1$
- $\text{nums}[i] \neq \text{nums}[i + 1]$ for all valid i .