

One dimensional peak

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.

$a[i] \neq a[i + 1]$ for all valid i . (without this peak cannot exist?)

You may imagine that $a[-1] = a[n] = -\text{INFINITY}$

a

0 1 2 3
-∞ 1 2 3 1 -∞
3 is peak(index 2)

a

0 1 2 3 4 5 6
-∞ 1 2 1 3 5 6 4 -∞
2 is a peak(index 1)
6 is a peak(index 5)

a

0
-∞ 1 -∞
1 is a peak(index 0)

-∞

0 1
-∞ 1 3 -∞
3 is a peak (index 1)

0 1
-∞ 3 1 -∞
3 is a peak(index 0)

Peak always exists
because of

-∞ <Any number> -∞
 $a[i] \neq a[i+1]$

peak cannot exist

-∞ 1 1 1 1 -∞