

Search Insert Position

Since the array is sorted and we need $O(\log n)$ runtime, we use binary search.

Algorithm:

1. Initialize $left = 0$, $right = \text{nums.size()} - 1$.
2. Perform standard binary search:
 - If $\text{nums}[mid] == \text{target}$, return mid .
 - If $\text{nums}[mid] < \text{target}$, move $left = mid + 1$.
 - Else move $right = mid - 1$.
3. If not found, return $left$ (correct insertion point).

Complexity:

- Time: $O(\log n)$
- Space: $O(1)$