41. First Missing Positive

Given an unsorted integer array nums. Return the *smallest positive integer* that is *not present* in nums.

You must implement an algorithm that runs in O(n) time and uses O(1) auxiliary space.

Example 1:

Input: nums = [1,2,0]

Output: 3

Explanation: The numbers in the range [1,2] are all in the array.

Example 2:

Input: nums = [3,4,-1,1]

Output: 2

Explanation: 1 is in the array but 2 is missing.

Example 3:

Input: nums = [7,8,9,11,12]

Output: 1

Explanation: The smallest positive integer 1 is missing.

Constraints:

$1 <= nums.length <= 10^5$

$-2^{31} <= nums[i] <= 2^{31} - 1$