Given an unsorted integer array, find the smallest missing positive integer.

**Example 1:**

Input: [1,2,0]

Output: 3

**Example 2:**

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

Output: 2

**Example 3:**

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

Output: 1

**Note:**

Your algorithm should run in *O*(*n*) time and uses constant extra space.