

**Q1.** Given an array of integers `nums` and an integer `target`, return indices of the two numbers such that they add up to `target`.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

**Example:** Input: `nums = [2,7,11,15]`, `target = 9` Output: `[0,1]`

**Explanation:** Because `nums[0] + nums[1] == 9`, we return `[0, 1]`

**Ans:**

```
def twoSum(nums):  
    d = {}  
    for i, j in enumerate(nums):  
        r = target - j  
        if r in d: return [d[r], i]  
        d[j] = i
```

**Q2.** Given an integer array `nums` and an integer `val`, remove all occurrences of `val` in `nums` in-place. The order of the elements may be changed. Then return the number of elements in `nums` which are not equal to `val`.

Consider the number of elements in `nums` which are not equal to `val` be `k`, to get accepted, you need to do the following things:

- Change the array `nums` such that the first `k` elements of `nums` contain the elements which are not equal to `val`. The remaining elements of `nums` are not important as well as the size of `nums`.
- Return `k`.

**Example :** Input: `nums = [3,2,2,3]`, `val = 3` Output: `2`, `nums = [2,2,*,*]`

**Explanation:** Your function should return `k = 2`, with the first two elements of `nums` being `2`. It does not matter what you leave beyond the returned `k` (hence they are underscores)

**Ans:**

```
class RemoveElement:
```

```
    def removeElement(nums: List[int], val: int) -> int:
```

```
        # Counter for keeping track of elements other than val
```

```
        count = 0
```

```
        # Loop through all the elements of the array
```

```
        for i in range(len(nums))
```

```
        if nums[i] != val:
```

```
            # If the element is not val
```

```
            nums[count] = nums[i]
```

```
            count += 1
```

```
        return count
```

**Q3.** Given a sorted array of distinct integers and a target value, return the index if the target is found. If not, return the index where it would be if it were inserted in order.

You must write an algorithm with  $O(\log n)$  runtime complexity.

**Example 1:** Input: nums = [1,3,5,6], target = 5

**Ans:**

```
def searchInsert(self, nums, target):
```

```
    l = 0
```

```
    r = len(nums) - 1
```

```
    while l <= r:
```

```
        mid = (l + r) // 2
```

```
        if nums[mid] < target:
```

```
            l = mid + 1
```

```
        elif nums[mid] > target:
```

```
            r = mid - 1
```

```
        else:
```

```
            return mid
```

```
    return l
```

**Q4.** You are given a large integer represented as an integer array `digits`, where each `digits[i]` is the *i*th digit of the integer. The digits are ordered from most significant to least significant in left-to-right order. The large integer does not contain any leading 0's. Increment the large integer by one and return the resulting array of digits.

**Example 1:**

Input: `digits = [1,2,3]` Output: `[1,2,4]`

**Explanation:**

The array represents the integer 123. Incrementing by one gives  $123 + 1 = 124$ . Thus, the result should be `[1,2,4]`.

**Ans:**

class Solution:

```
def plusOne(digits) :  
    for i in range(len(digits)-1, -1, -1):  
        if digits[i] == 9:  
            digits[i] = 0  
        else:  
            digits[i] += 1  
            return digits  
  
    digits.append(0)  
    digits[0] = 1  
    return digits
```

**Q5.** You are given two integer arrays `nums1` and `nums2`, sorted in non-decreasing order, and two integers `m` and `n`, representing the number of elements in `nums1` and `nums2` respectively.

Merge `nums1` and `nums2` into a single array sorted in non-decreasing order.

The final sorted array should not be returned by the function, but instead be stored inside the array `nums1`. To accommodate this, `nums1` has a length of `m + n`, where the first `m` elements denote the elements that should be merged, and the last `n` elements are set to 0 and should be ignored. `nums2` has a length of `n`.

**Example 1:** Input: `nums1 = [1,2,3,0,0,0]`, `m = 3`, `nums2 = [2,5,6]`, `n = 3` Output: `[1,2,2,3,5,6]`

**Explanation:** The arrays we are merging are `[1,2,3]` and `[2,5,6]`. The result of the merge is `[1,2,2,3,5,6]` with the underlined elements coming from `nums1`.

**Ans**

```
def merge(self, nums1, m, nums2, n):  
    i=0  
  
    for x in range(len(nums1)):  
  
        if i>=n:  
  
            break  
  
        if nums1[x]==0:  
  
            nums1[x]=nums2[i]  
  
            i+=1  
  
    nums1.sort()
```

**Q6.** Given an integer array nums, return true if any value appears at least twice in the array, and return false if every element is distinct.

**Example 1:** Input: nums = [1,2,3,1]

**Ans**

```
def containsDuplicate(self, nums: List[int]) -> bool:  
    counter = {}  
    for num in nums:  
        if num not in counter:  
            counter[num] = 0  
        counter[num] += 1  
    for num, freq in counter.items():  
        if freq > 1:  
            return True  
  
    return False
```

**Q7.** Given an integer array nums, move all 0's to the end of it while maintaining the relative order of the nonzero elements.

Note that you must do this in-place without making a copy of the array.

**Example 1:** Input: nums = [0,1,0,3,12] Output: [1,3,12,0,0]

**Ans**

# Python Program to move all zeros to the end

```
A = [5, 6, 0, 4, 6, 0, 9, 0, 8]
```

```
n = len(A)
```

```
j = 0
```

```
for i in range(n):
```

```
    if A[i] != 0:
```

```
        A[j], A[i] = A[i], A[j]
```

```
        j += 1
```

```
print(A)
```

**Q8.** You have a set of integers s, which originally contains all the numbers from 1 to n. Unfortunately, due to some error, one of the numbers in s got duplicated to another number in the set, which results in repetition of one number and loss of another number.

You are given an integer array nums representing the data status of this set after the error.

Find the number that occurs twice and the number that is missing and return them in the form of an array.

**Example 1:** Input: nums = [1,2,2,4] Output: [2,3].

**Ans:**

```
class Solution:
```

```
    def findErrorNums(self, nums: List[int]) -> List[int]:
```

```
        c=Counter(nums)
```

```
        l=[0,0]
```

```
        for i in range(1,len(nums)+1):
```

```
            if c[i]==2:
```

```
                l[0]=i
```

```
            if c[i]==0:
```

```
                l[1]=i
```

```
        return l
```