442. Find All Duplicates in an Array

Difficulty	medium
☑	☑
Finished	@July 9, 2023
Problem	array
Previously asked company	Microsoft
website	leetcode

Question:

Given an integer array `nums` of length `n` where all the integers of `nums` are in the range `[1, n]` and each integer appears **once** or **twice**, return *an array of all the integers that appears **twice***.

You must write an algorithm that runs in `O(n)` time and uses only constant extra space.

Example 1:

```
Input: nums = [4,3,2,7,8,2,3,1]
Output: [2,3]
```

Example 2:

```
Input: nums = [1,1,2]
Output: [1]
```

Example 3:

```
Input: nums = [1]
Output: []
```

Optimal solution:

Time complexity: O(n)

Space complexity: O(1)

```
class Solution(object):
    def findDuplicates(self, nums):
        res = []
        n = len(nums)
        for i in range(n):
            if nums[abs(nums[i])-1] > 0:
                nums[abs(nums[i])-1] = -abs(nums[abs(nums[i])-1])
            else:
                res.append(abs(nums[i]))
        return res
```