Problem 4: Given an array of N integers. Find the elements that appear more than **N/3** times in the array. If no such element exists, return an empty vector.

```
def majority_element(nums):
    candidate1, candidate2 = None, None
    count1, count2 = 0, 0

    for num in nums:
        if candidate1 == num:
            count1 += 1
        elif candidate2 == num:
            count2 += 1
        elif count1 == 0:
            candidate1, count1 = num, 1
        elif count2 == 0:
            candidate2, count2 = num, 1
        else:
            count1 -= 1
            count2 -= 1

    count1, count2 = 0, 0
    for num in nums:
        if num == candidate1:
            count1 += 1
        elif num == candidate2:
            count2 += 1
```

```
    n = len(nums)
    result = []
    if count1 > n // 3:
        result.append(candidate1)
    if count2 > n // 3:
        result.append(candidate2)

    return result


nums1 = [1, 2, 2, 3, 2]
print(majority_element(nums1))


nums2 = [11, 33, 33, 11, 33, 11]
print(majority_element(nums2))
```