Experiment 5

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Branch: CSE **Section/Group: 604-B**
Semester: 6 **Date of Performance:**
Subject Name: AP LAB-II **Subject Code: 22CSP-351**

1. Aim:

- Top K Frequent Elements
- Sort Colors
- Merge Sorted Array

2. Objective:

- Understand the fundamentals Searching and Sorting.
- Writing some good code.
- Understanding some Java concepts.

3. Implementation/Code:

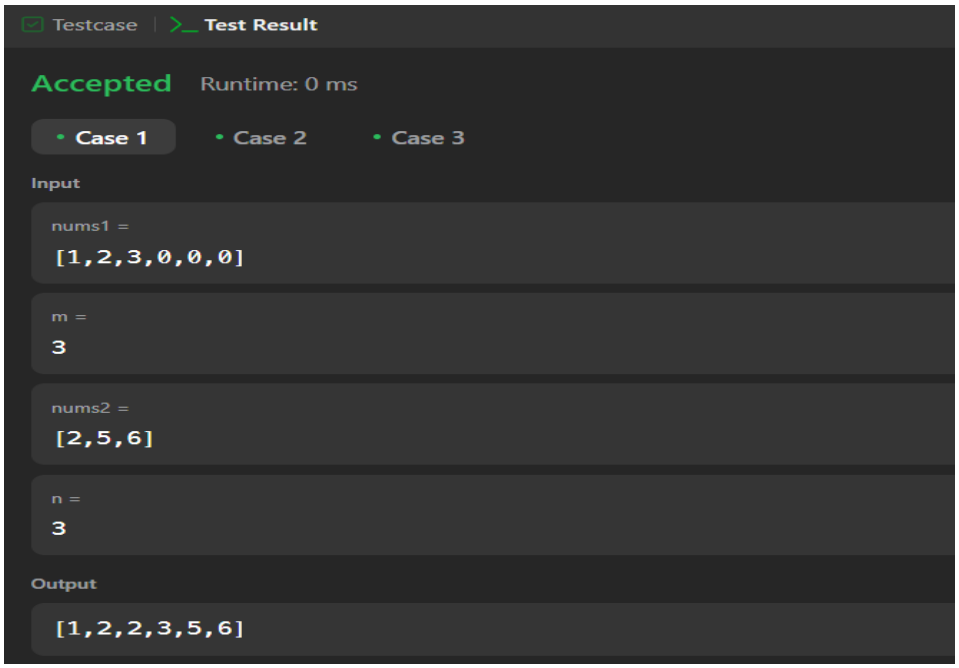
```
import java.util.*;

class Main

{

  public int[] topKFrequent(int[] nums, int k)

  {

    final int n = nums.length;

    List<Integer> ans = new ArrayList<>();

    List<Integer>[] bucket = new List[n + 1];

    Map<Integer, Integer> count = new HashMap<>();

    for (final int num : nums)

      count.merge(num, 1, Integer::sum);
```

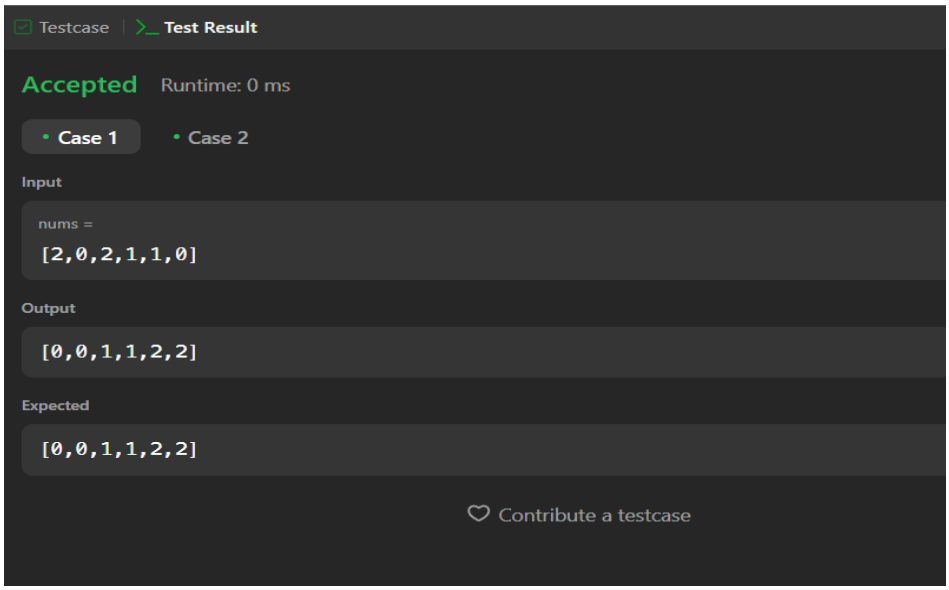
```
    for (final int num : count.keySet())
    {
      final int freq = count.get(num);
      if (bucket[freq] == null)
        bucket[freq] = new ArrayList<>();
      bucket[freq].add(num);
    }
    for (int freq = n; freq > 0; --freq)
    {
      if (bucket[freq] != null)
        ans.addAll(bucket[freq]);
      if (ans.size() == k)
        return ans.stream().mapToInt(Integer::intValue).toArray();
    }
    throw new IllegalArgumentException();
  }
    }


class Solution
{
  public void sortColors(int[] nums)
  {
    int l = 0;
```

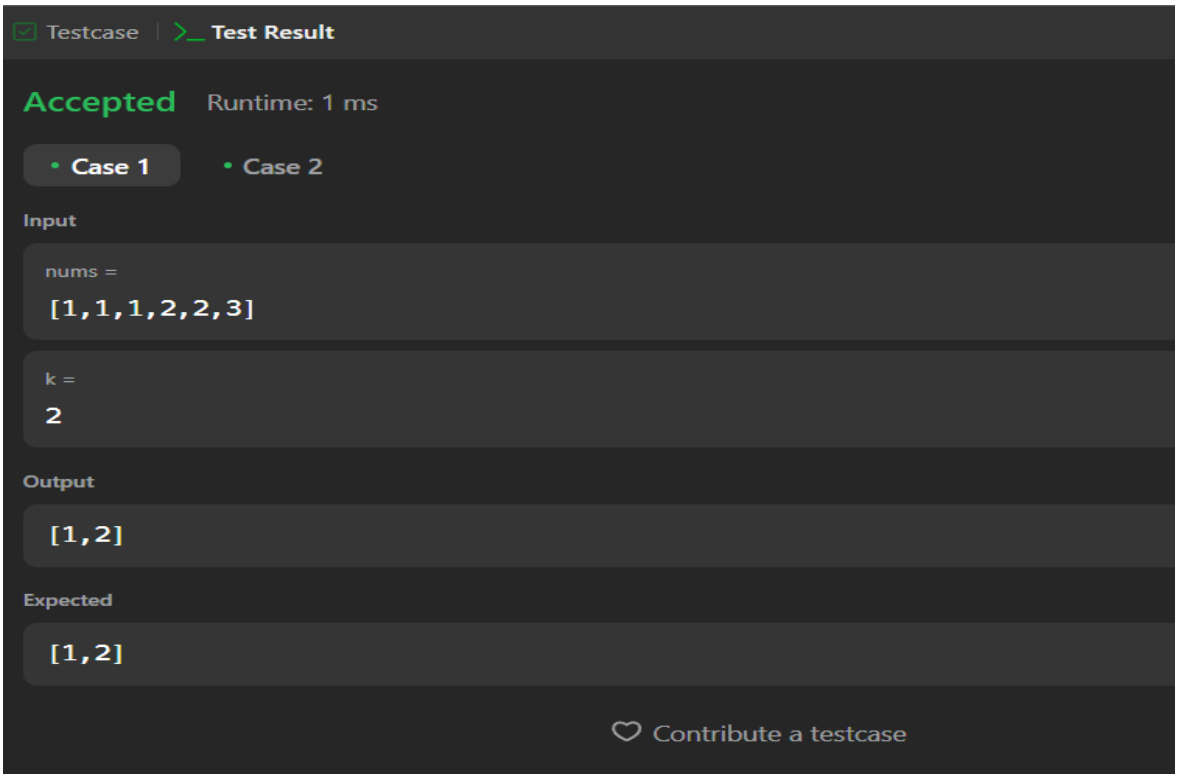
```
    int r = nums.length - 1;
    for (int i = 0; i <= r;)
      if (nums[i] == 0)
        swap(nums, i++, l++);
      else if (nums[i] == 1)
        ++i;
      else
        swap(nums, i, r--);
  }
  private void swap(int[] nums, int i, int j)
  {
    final int temp = nums[i];
    nums[i] = nums[j];
    nums[j] = temp;
  }
     }



class Solution
{
  public void merge(int[] nums1, int m, int[] nums2, int n) {
    int i = m - 1;
    int j = n - 1;
```

```
    int k = m + n - 1;
    while (j >= 0)
      if (i >= 0 && nums1[i] > nums2[j])
        nums1[k--] = nums1[i--];
      else
        nums1[k--] = nums2[j--];
  }
    }
```

4. Output:




Testcase
Test Result
Accepted
Runtime: 0 ms
Case 1
Case 2
Input
nums =
[2,0,2,1,1,0]
Output
[0,0,1,1,2,2]
Expected
[0,0,1,1,2,2]
Contribute a testcase


Testcase
Test Result
Accepted
Runtime: 1 ms
Case 1
Case 2
Input
nums =
[1,1,1,2,2,3]
k =
2
Output
[1,2]
Expected
[1,2]
Contribute a testcase

5. Learning Outcome:

- Learn how to use divide and conquer approach.
- Login to leetcode solution page for submitting solution.