WORKSHEET-5

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Branch:CSE	**Section/Group:**NTPP-603-B
Semester:6th	**DateofPerformance:**20/2/25
SubjectName:AP-2	**SubjectCode:**22CSP-351

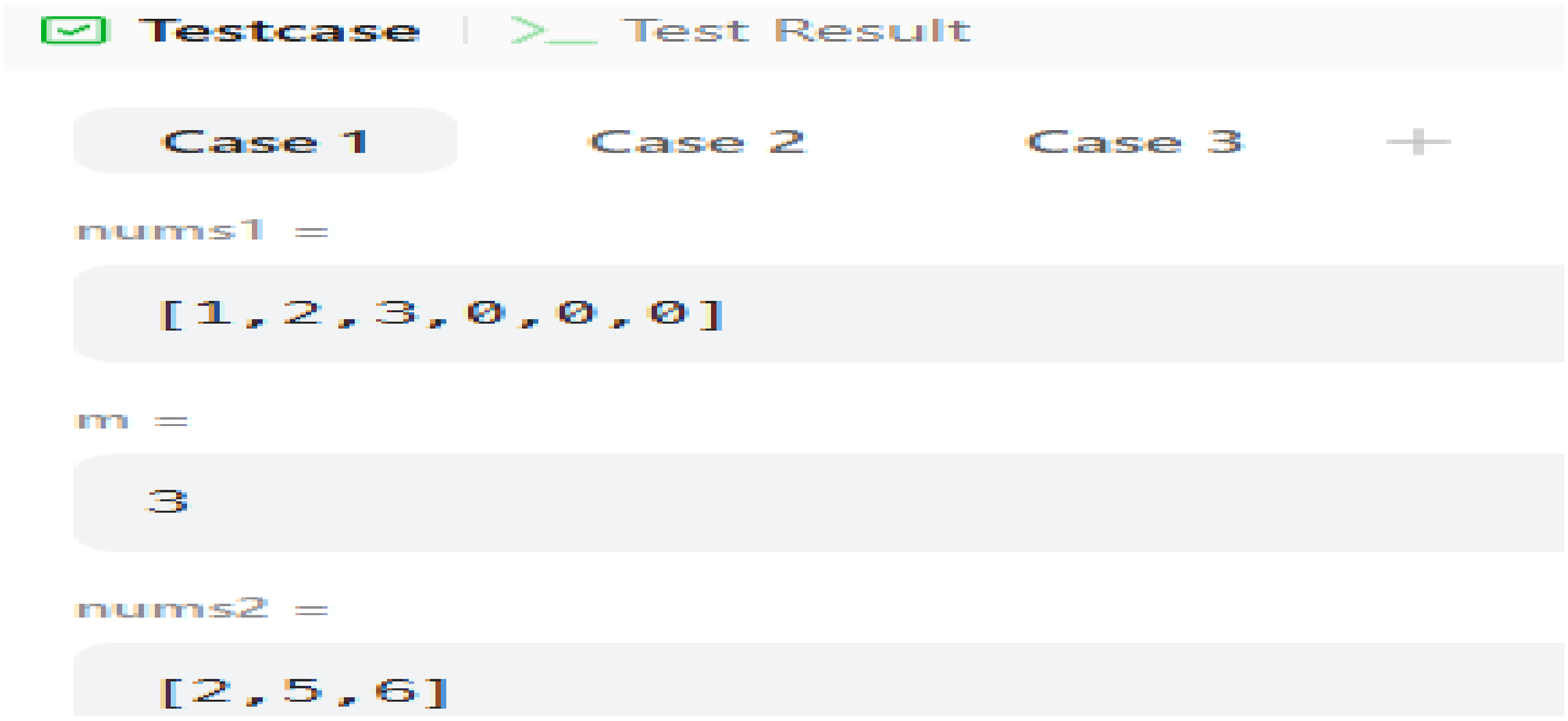
Aim(i):88.Youaregiventwointegerarraysnums1andnums2,sortedinnon-decreasing order, and two integers m and n,representingthenumberofelementsin nums1 and nums2 respectively. Merge nums1 and nums2 into a single array sorted in non-decreasing order.

SourceCode:

```
classSolution{
public:
    voidmerge(vector<int>&nums1,intm,vector<int>&nums2,intn){ int
        midx = m - 1;
        intnidx=n-1;
        intright=m+n-1;

        while(nidx>=0){
            if(midx>=0&&nums1[midx]>nums2[nidx]){ nums1[right] =
                nums1[midx];
                midx--;
            }else{
                nums1[right]=nums2[nidx];
                nidx--;
            }
            right--;}          }};
```

OUTPUT:


Testcase | >_ Test Result

Case 1 Case 2 Case 3 +

nums1 =

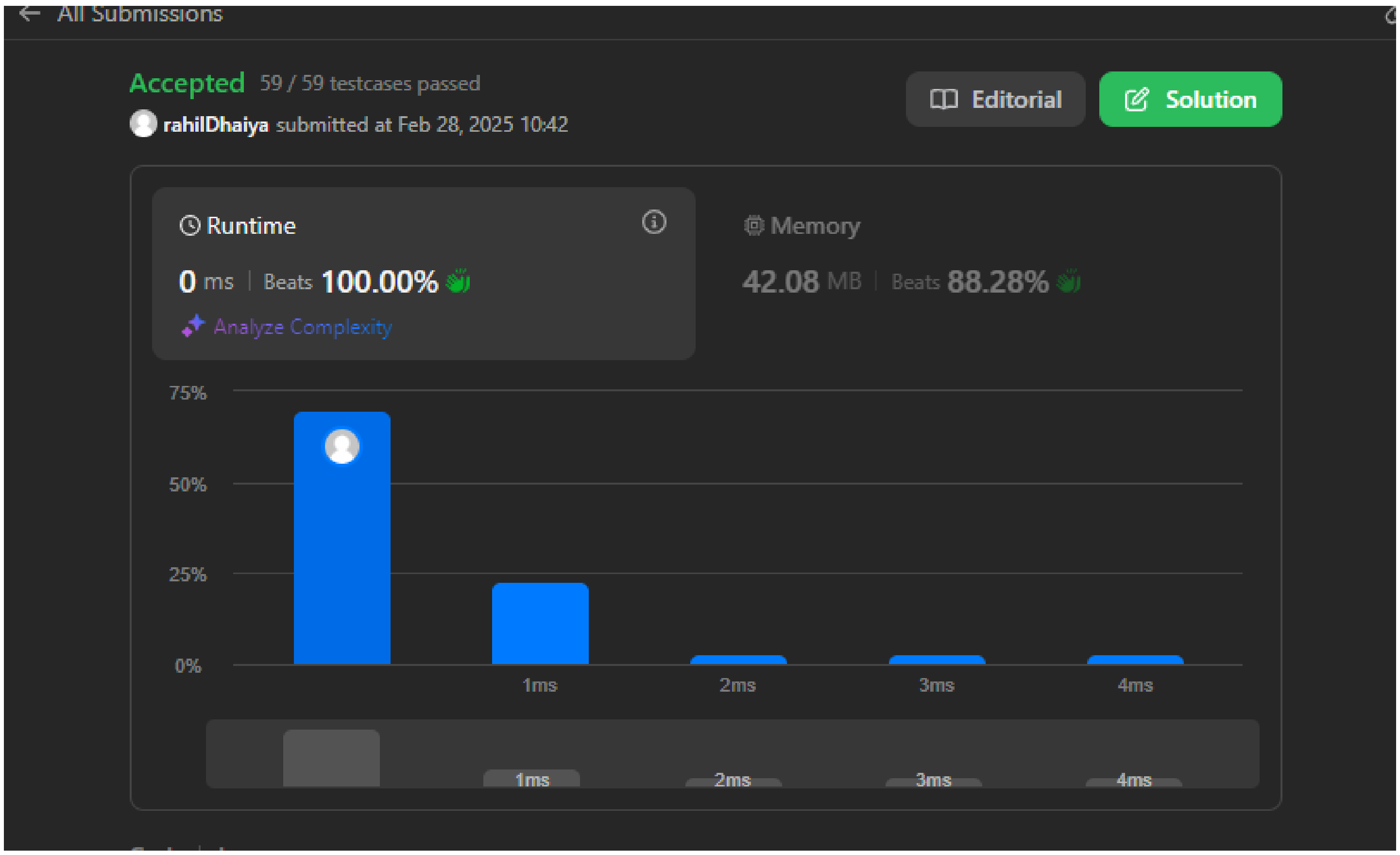
[1,2,3,0,0,0]

m =

3

nums2 =

[2,5,6]


← All Submissions

Accepted 59 / 59 testcases passed

rahilDhaiya submitted at Feb 28, 2025 10:42

Editorial Solution

Runtime

0 ms | Beats 100.00%

Analyze Complexity

Memory

42.08 MB | Beats 88.28%

LEARNING OUTCOME:

1. WelearntMergeSort.
2. WelearnthowtosortArrays.

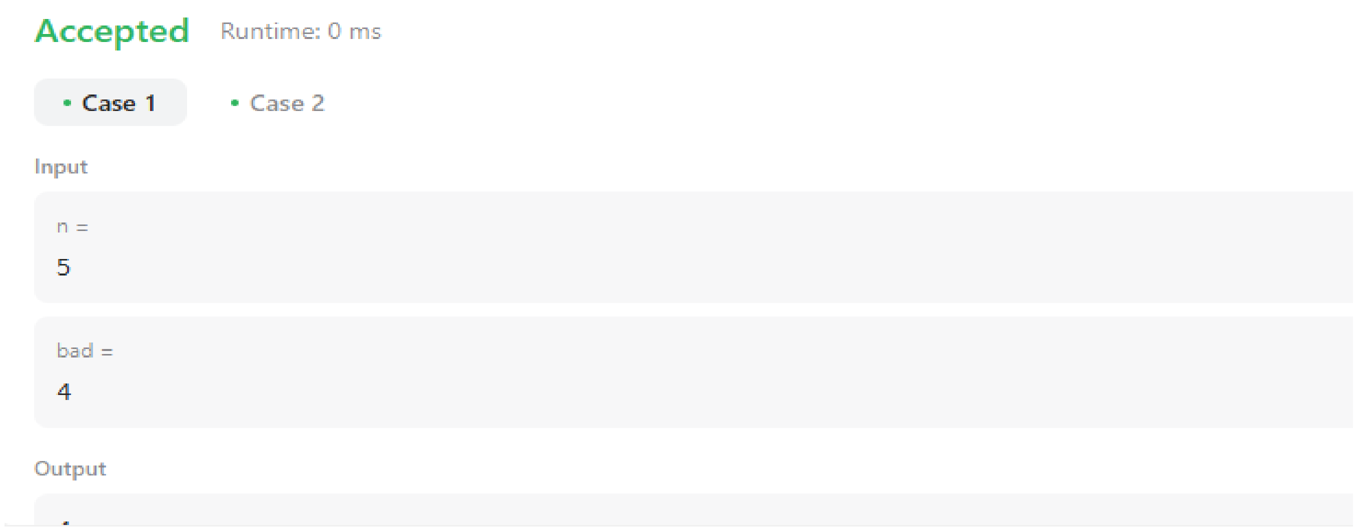
Aim(ii): 278. Suppose you have n versions [1, 2, ..., n] and you want to find out the first bad one, which causes all the following ones to be bad.

You are given an API bool isBadVersion(version) which returnswhetherversionisbad. Implement a function to find the first bad version. You should minimize the number of calls to the API.

SourceCode:

```
classSolution{
public:
    intfirstBadVersion(intn){
        long long l = 1, r = n;
        long long m, res = n;
        while(l <= r){
            m = l + (r - l) / 2;
            if(isBadVersion(m)==1){
                r=m-1;
                res=min(res,m);
            }else{
                l=m+1;
            }
        }
        returnres;
    }
};
```

OUTPUT:


Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

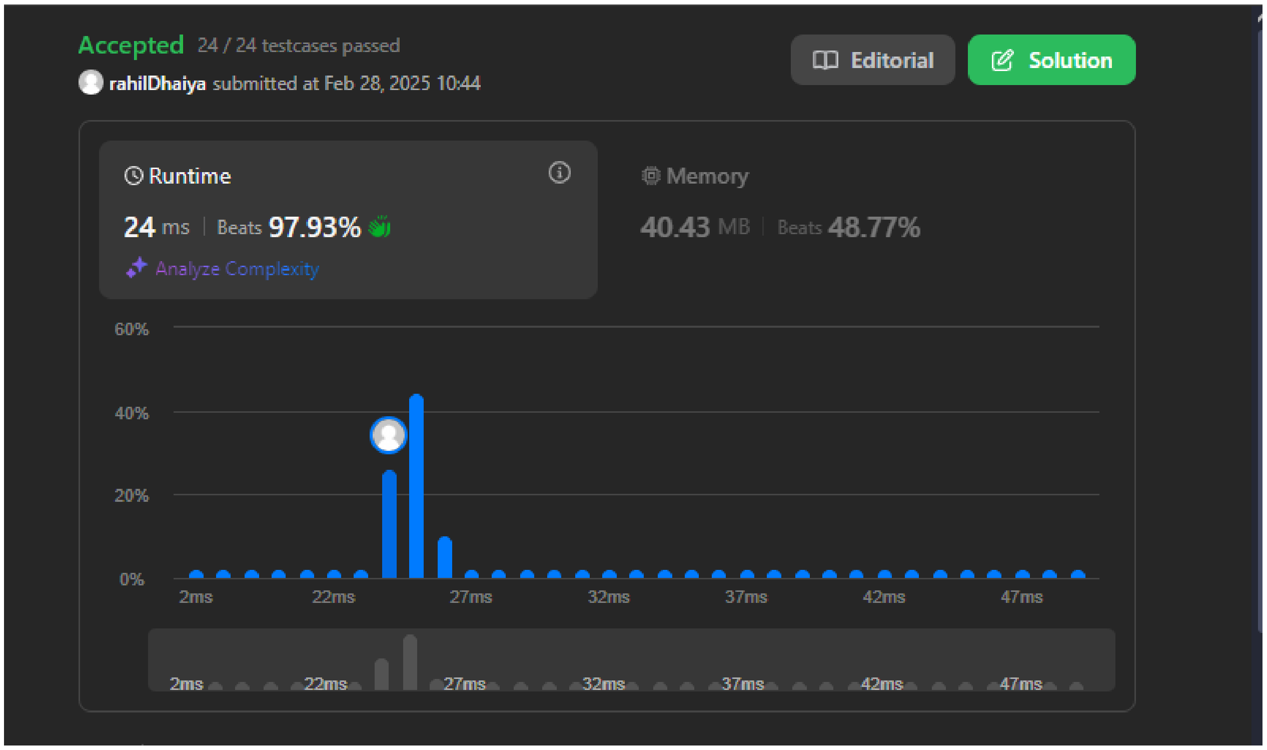
n =
5

bad =
4

Output

LearningOutcomes

1. WelearnthowtouseBinarySearch.
2. WelearntEdgecaseHandling.


Accepted 24 / 24 testcases passed

rahilDhaiya submitted at Feb 28, 2025 10:44

Aim(iii): Given an array nums with n objects colored red, white, or blue, sort them in-placesothatobjectsofthesamecolorareadjacent,withthecolorsintheorder red, white, and blue.

Wewillusetheintegers0,1,and2torepresentthecolorred,white,andblue, respectively.

Youmustsolvethisproblemwithoutusingthelibrary'ssortfunction.

.

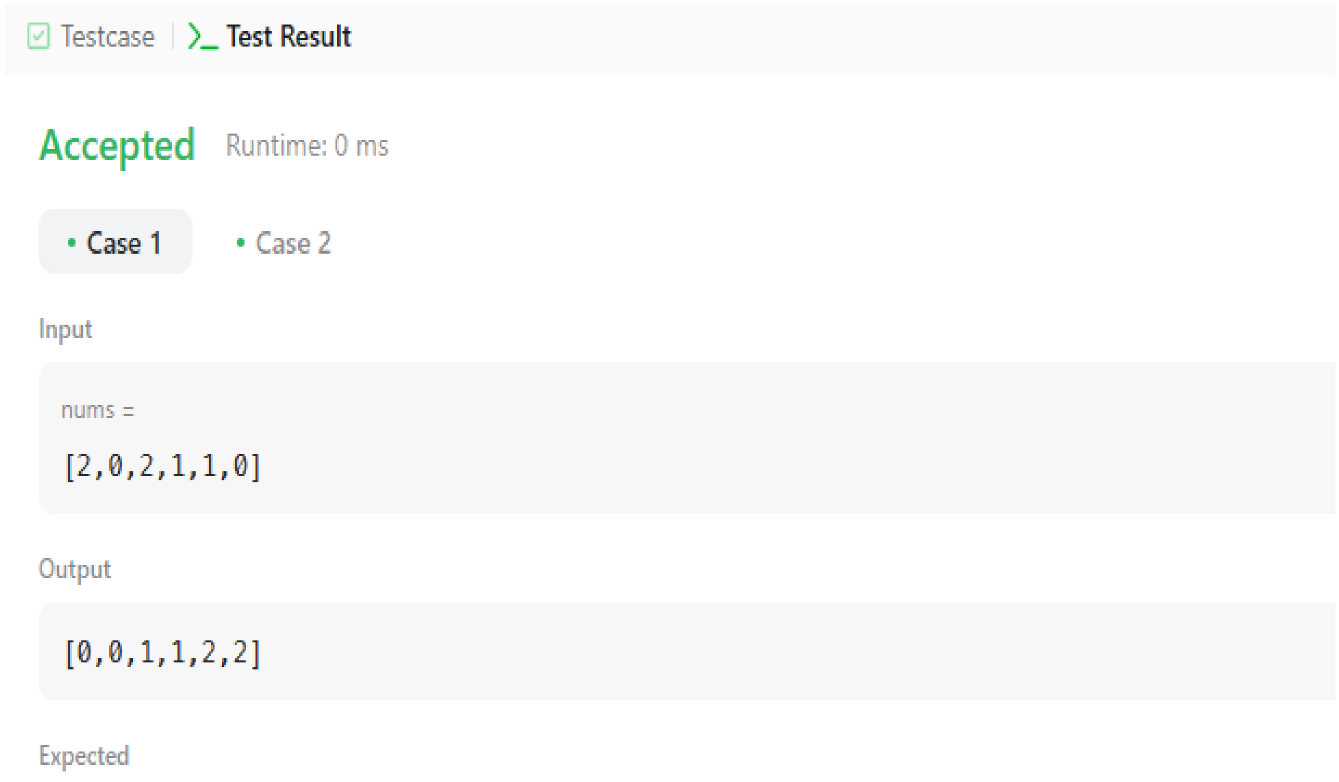
SourceCode:

```
classSolution{ public:
   voidsortColors(vector<int>&nums) {
      unordered_map<int,int>count={{0,0},{1,0},{2,0}};

      for(intnum:nums){ count[num]++;
      }

      intidx=0;
      for(intcolor=0;color<3;color++){ int
         freq = count[color];
         for(intj=0;j<freq;j++){
            nums[idx] = color;idx++;
         }
      }
   }
};
```

OUTPUT:



Testcase | Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

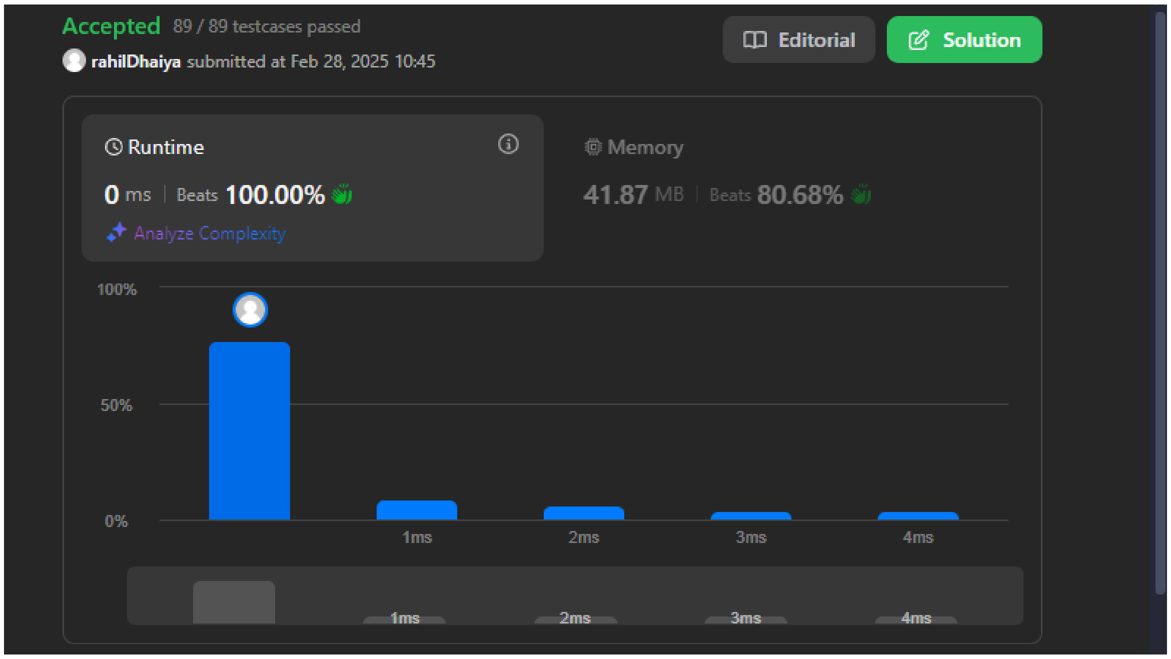
nums =

```
[2,0,2,1,1,0]
```

Output

```
[0,0,1,1,2,2]
```

Expected



Accepted 89 / 89 testcases passed

rahilDhaiya submitted at Feb 28, 2025 10:45

Runtime

0 ms | Beats 100.00%

Memory

41.87 MB | Beats 80.68%

LearningOutcomes

1. WelearntCountingSort.
2. UsageofaHashMap.