EXPERIMENT - 5

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Semester: 6th **Subject Code: 22ITP-351**

PROBLEM-1

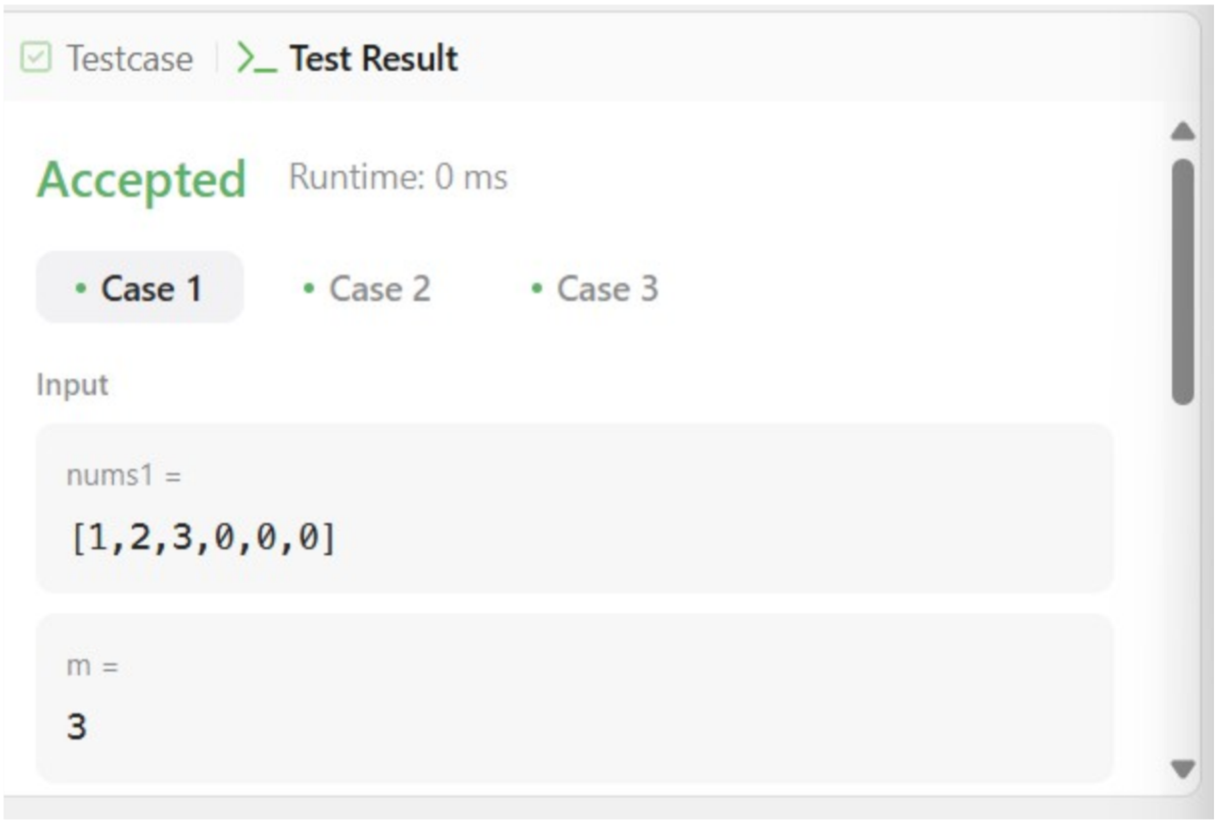
AIM:-

Merge SortedArray

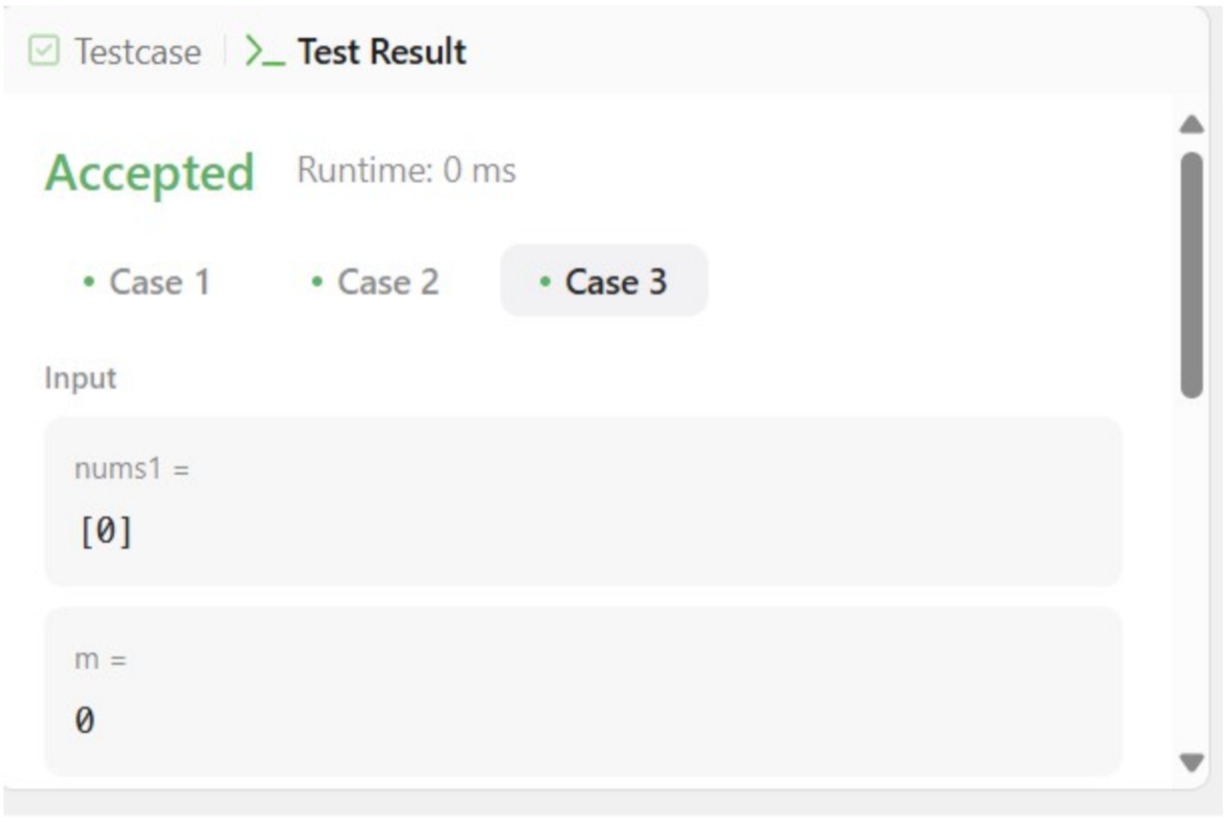
CODE:-

```
class Solution
{ public:
   void merge(vector<int>& nums1,
int m, vector<int>& nums2, int n) {
      for (int j = 0, i = m; j<n; j++){
      nums1[i] = nums2[j]; i++;
      }

sort(nums1.begin(),nums1.end());
   }
};
```

OUTPUT:-



```
Accepted    Runtime: 0 ms

• Case 1    • Case 2    • Case 3

Input

nums1 =
[1,2,3,0,0,0]

m =
3
```


Testcase | Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2 • Case 3

Input

nums1 =

[0]

m =

0

PROBLEM-2

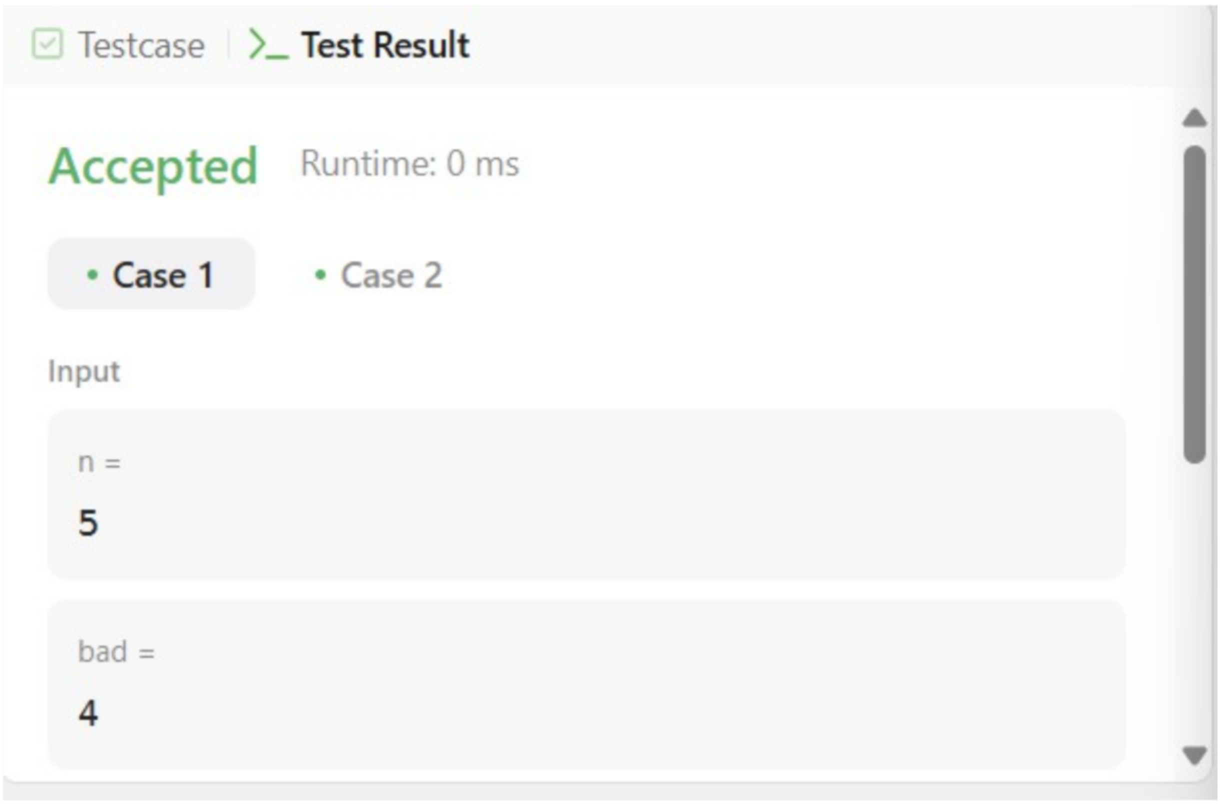
AIM:-

First Bad Version

CODE:-

```
// The API isBadVersion is defined for
you.

// bool isBadVersion(int version);


class Solution
{ public:
    int firstBadVersion(int
        n){ 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;
           } }
        return
        res;
    }
};
```

OUTPUT:-



Testcase | Test Result

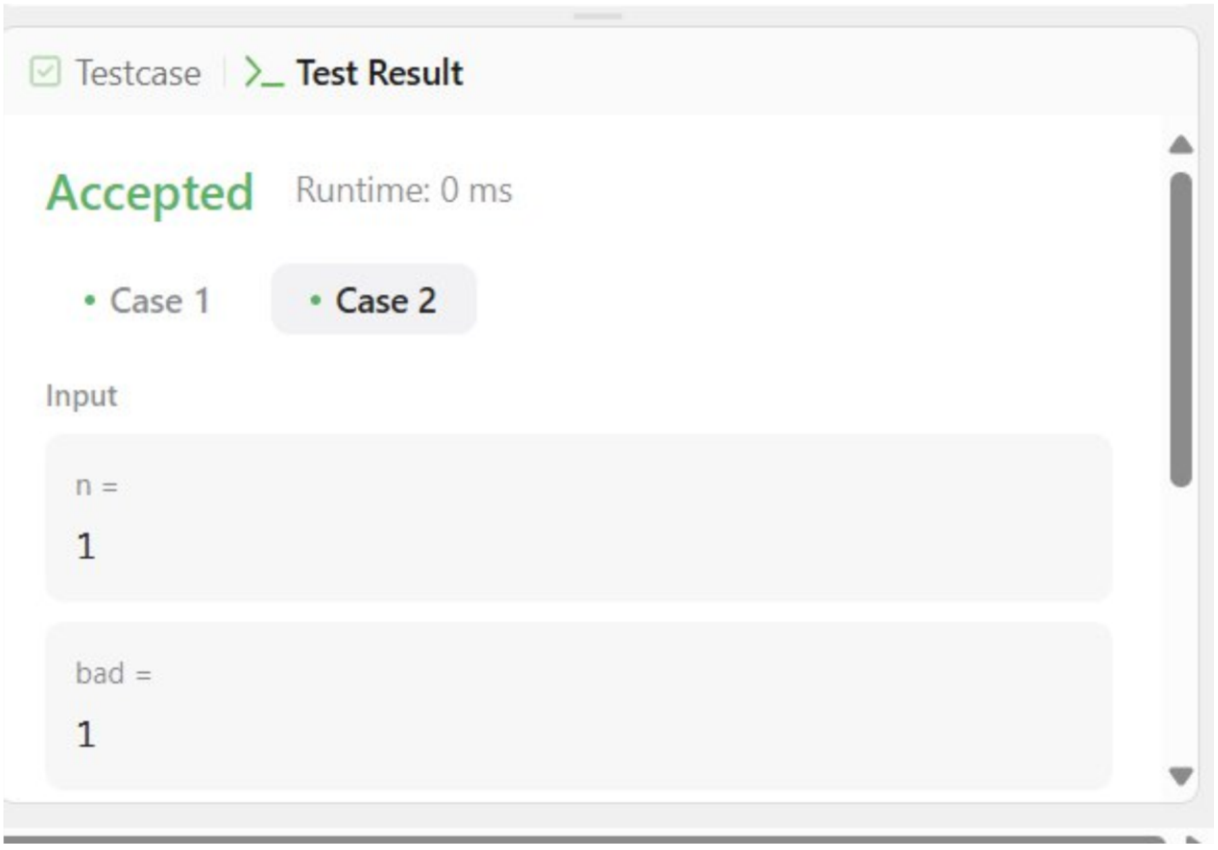
Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

n =
5

bad =
4



Testcase | Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

n =
1

bad =
1

PROBLEM-3

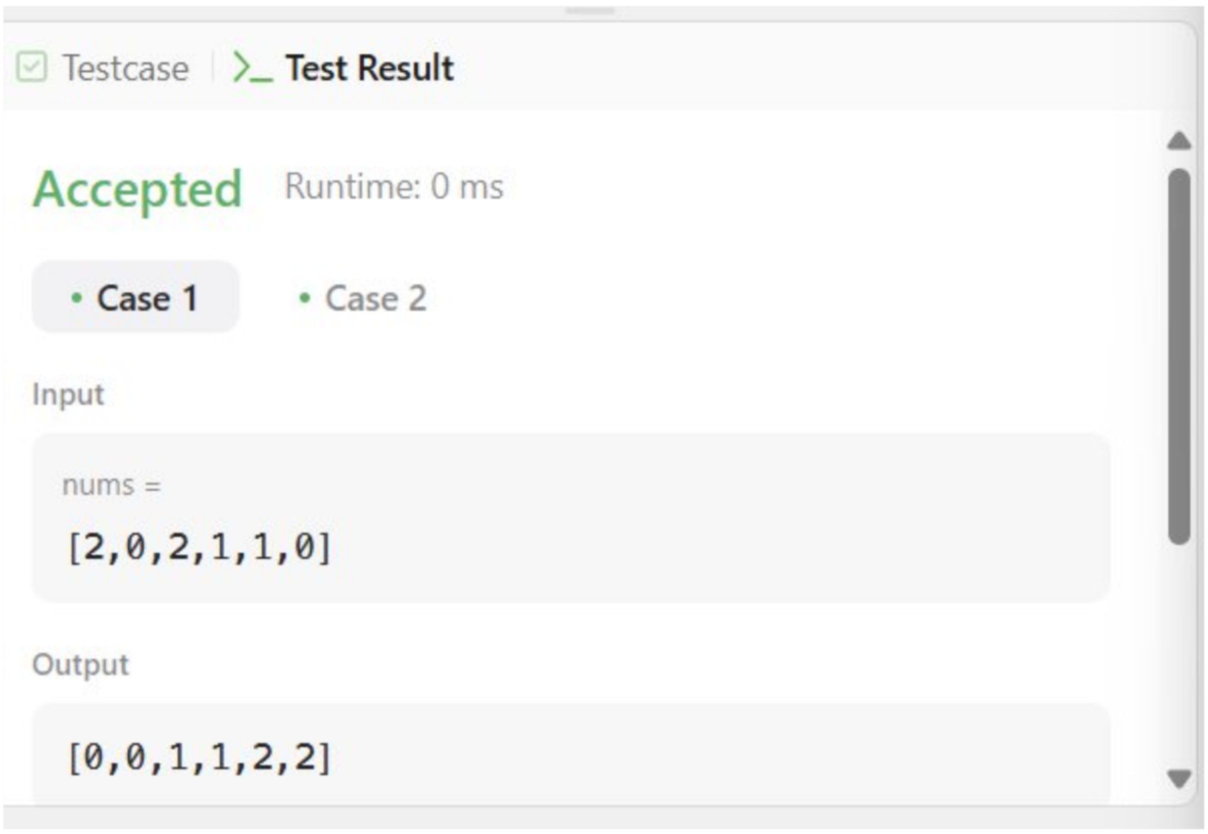
AIM:-

Sort Colors

CODE:class

```
    Solution      {
    public:
       void sortColors(vector<int>& nums) {
         int  low  =  0,  mid  =  0,  high  =  nums.size()-1;
         while(mid <= high){
           if(nums[mid]     ==     0){
           swap(nums[low],
           nums[mid]);       low++;
           mid++;        }        else
           if(nums[mid]     ==     1){
           mid++; } else{
              swap(nums[mid], nums[high]); high--
              ;
           }
         }
       }
    };
```

OUTPUT:-



Accepted Runtime: 0 ms

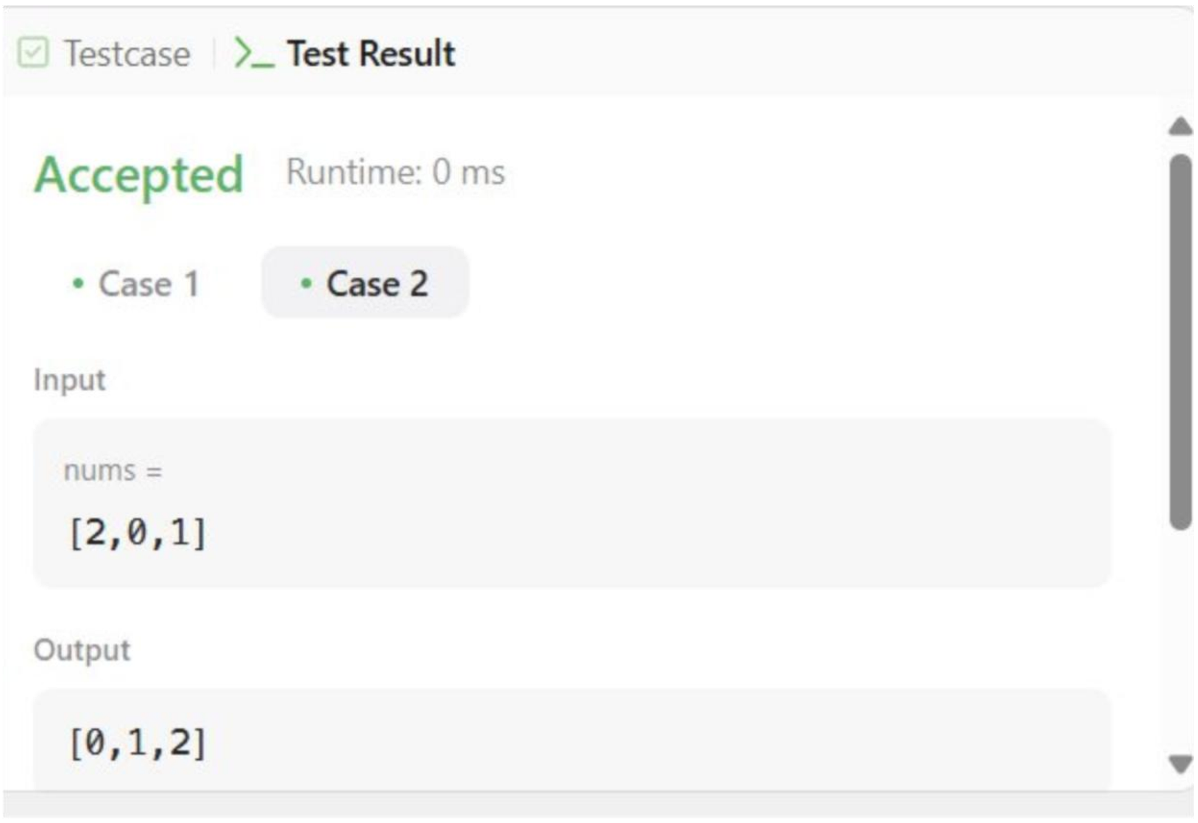
Input

nums =

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

Output

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


Testcase | >_ Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

nums =

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

Output

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

PROBLEM-4

AIM:-

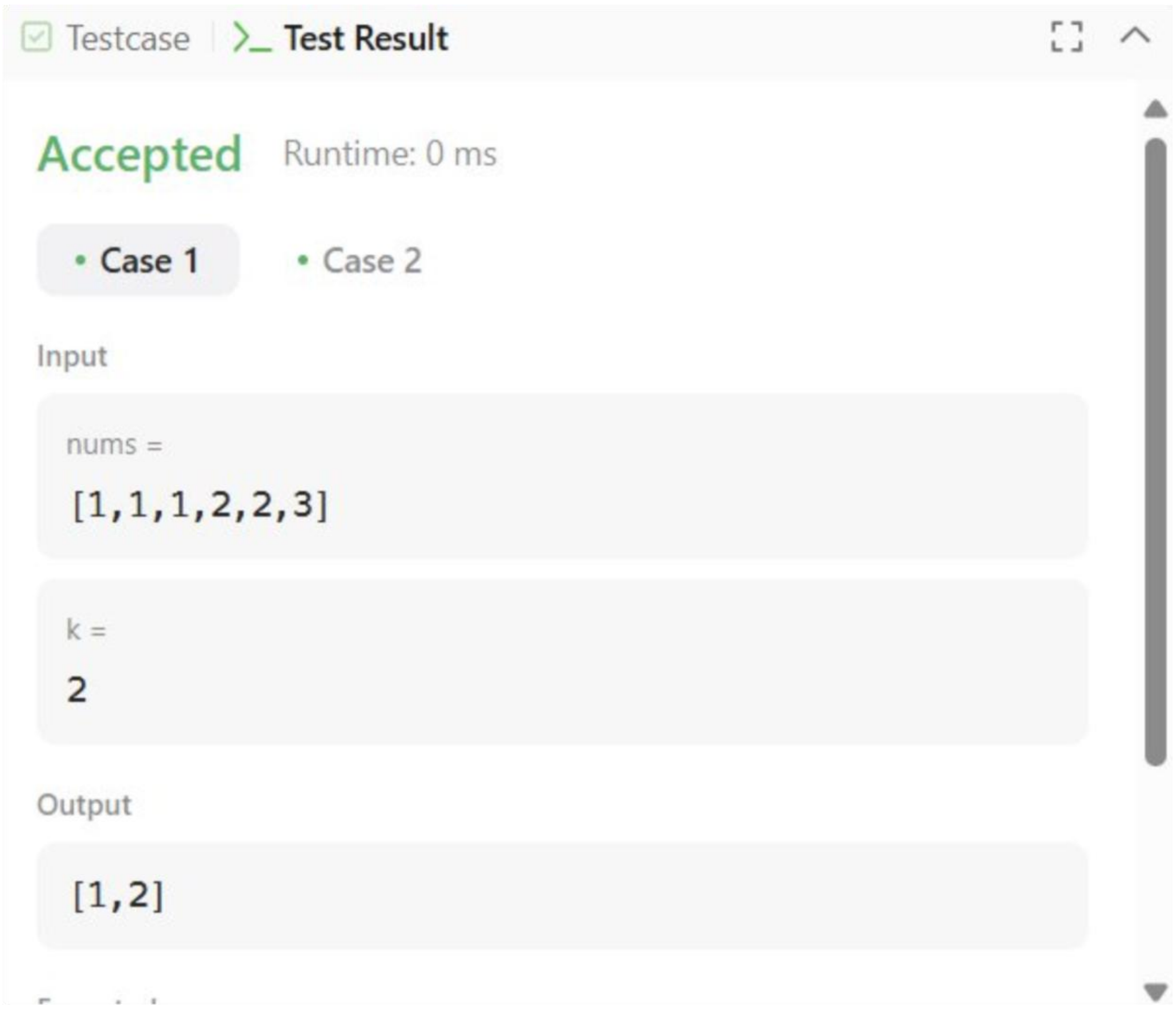
Top K Frequency Element

CODE:-

```
class Solution { public:
vector<int>
topKFrequent(vector<int>&
nums, int k) {
unordered_map<int, int> ump;

        for(int i:
           nums){ ump[i]++;
        }

        priority_queue<pair<int,
int>>pq;

        for(auto i: ump){

pq.push({i.second,i.first});
        }
        vector<int> res;
```

```
            while(k--){ auto [elem,
                count] =
pq.top();
            res.push_back(count);
            pq.pop(); }


            return res;
        }
    };
```

OUTPUT:-



Testcase | Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

nums =

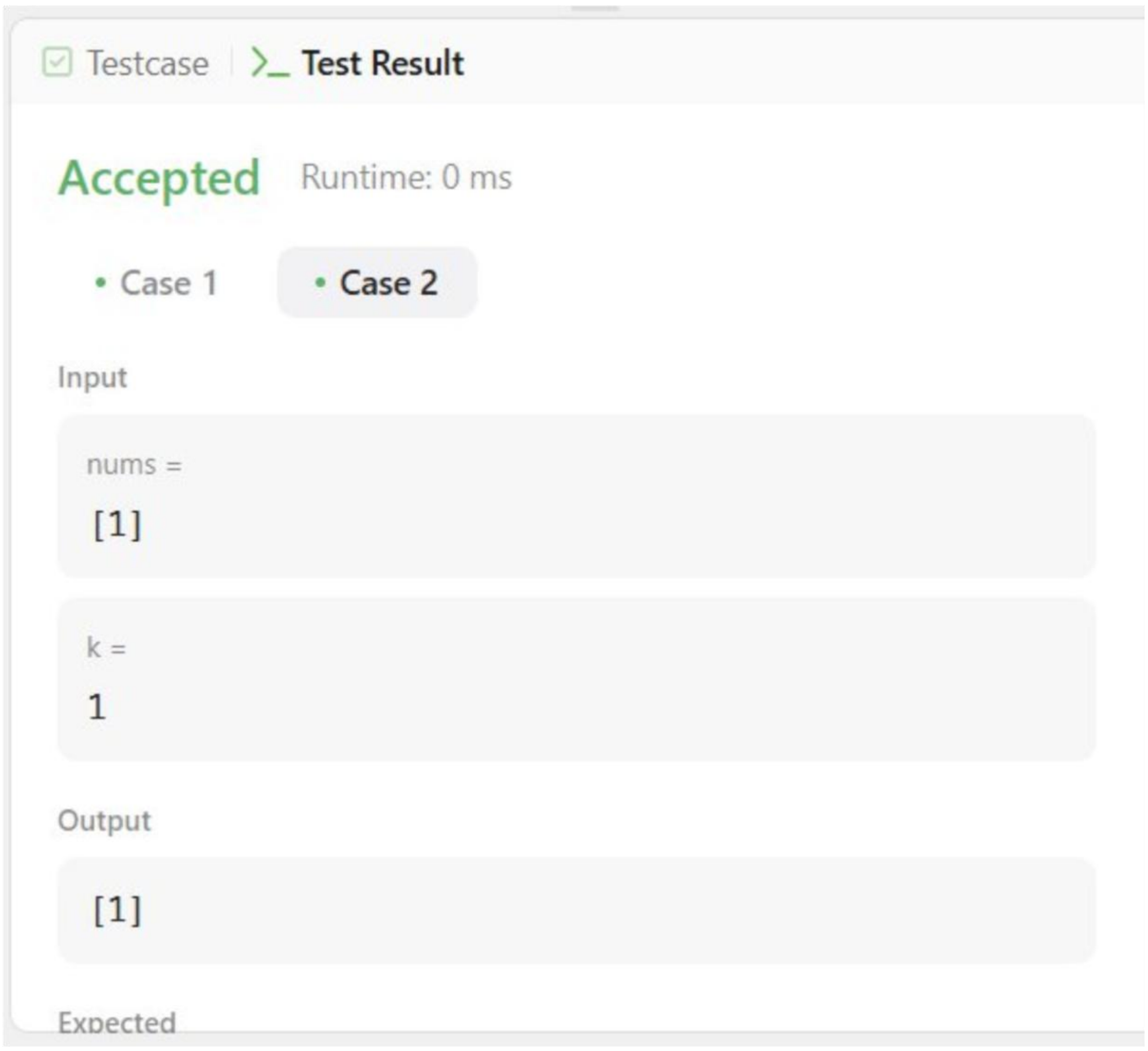
```
[1,1,1,2,2,3]
```

k =

```
2
```

Output

```
[1,2]
```



Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

nums =
[1]

k =
1

Output

[1]

Expected

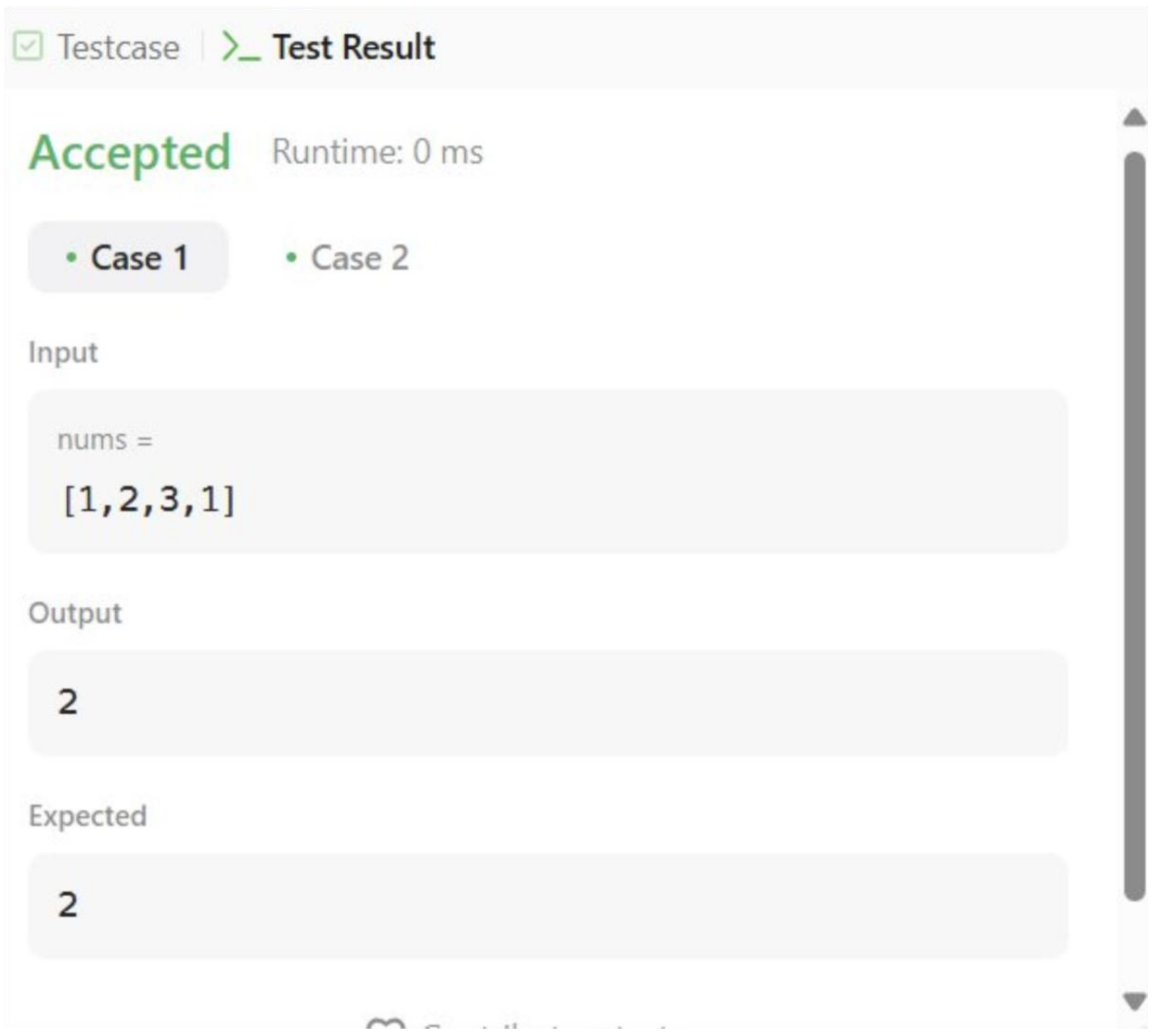
PROBLEM-5

AIM:- Find Peak Element

CODE:-

```
class Solution {

public:

    void solve(vector<int>&nums,int l,int r,

        int&ans){ if(l>r || ans>-1) return ; int

        m=(r-l)/2+l;

        if(!(m-1>=0 && nums[m]<nums[m-1]) &&
!(m+1<nums.size() && nums[m]<nums[m+1])) ans=m;

        solve(nums, l, m-1, ans); solve(nums, m+1, r, ans);

        return ;
    }     int     findPeakElement(vector<int>&
    nums) { int ans=-1, l=0, r=nums.size()-1;
    solve(nums, l, r, ans); return ans;
    }
};
```

OUTPUT:-



Testcase | Test Result

Accepted Runtime: 0 ms

Case 1 Case 2

Input

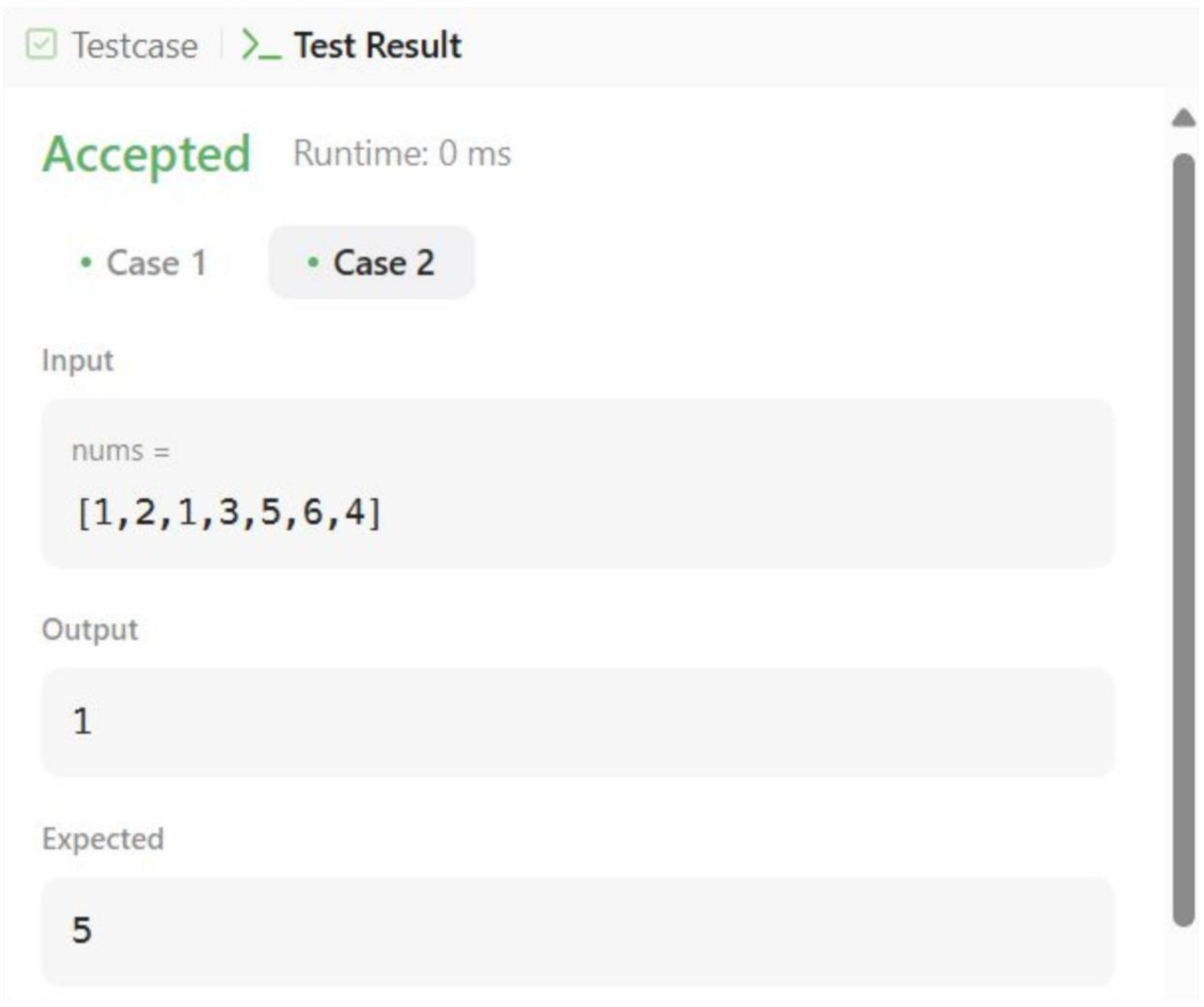
```
nums =
[1,2,3,1]
```

Output

```
2
```

Expected

```
2
```


Testcase | Test Result

Accepted Runtime: 0 ms

• Case 1 • Case 2

Input

nums =
```
[1,2,1,3,5,6,4]
```

Output
```
1
```

Expected
```
5
```