

## EXPERIMENT - 5

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**Semester:** 6<sup>th</sup>

**Subject Code:** 22ITP-351

### PROBLEM-1

#### AIM:-

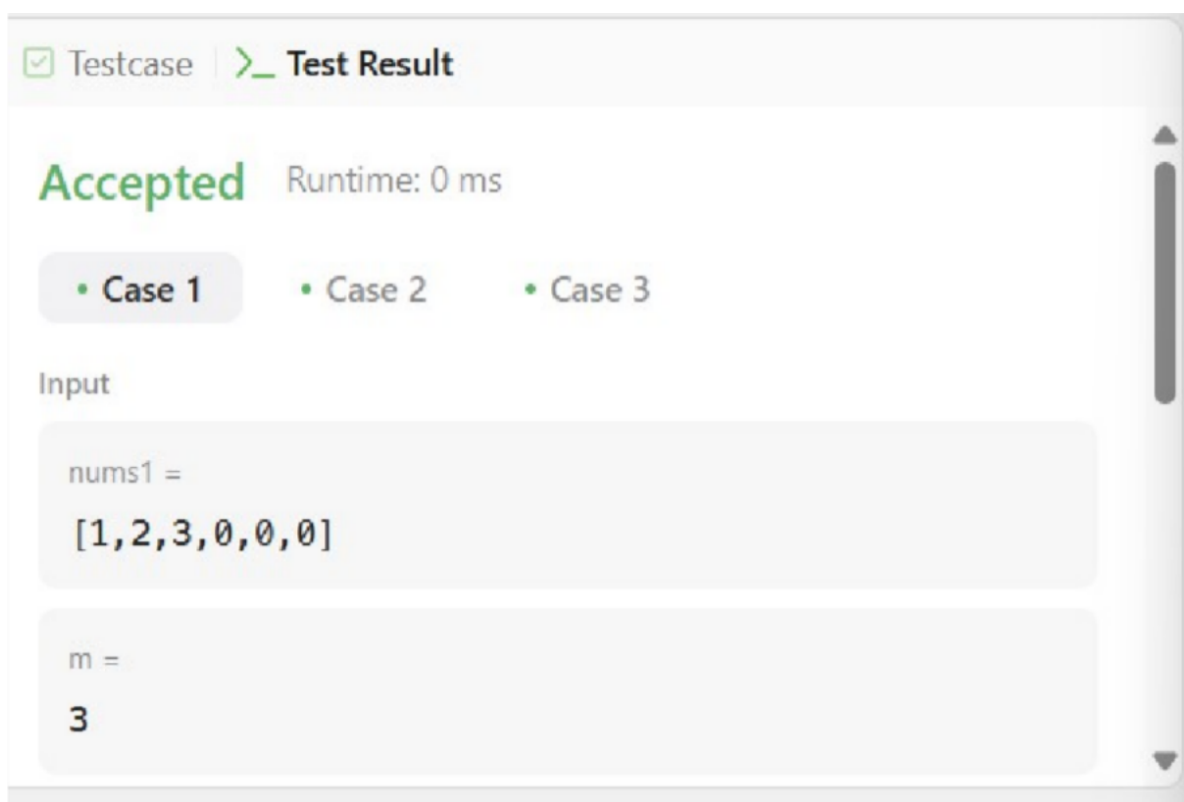
Merge Sorted Array

#### CODE:-

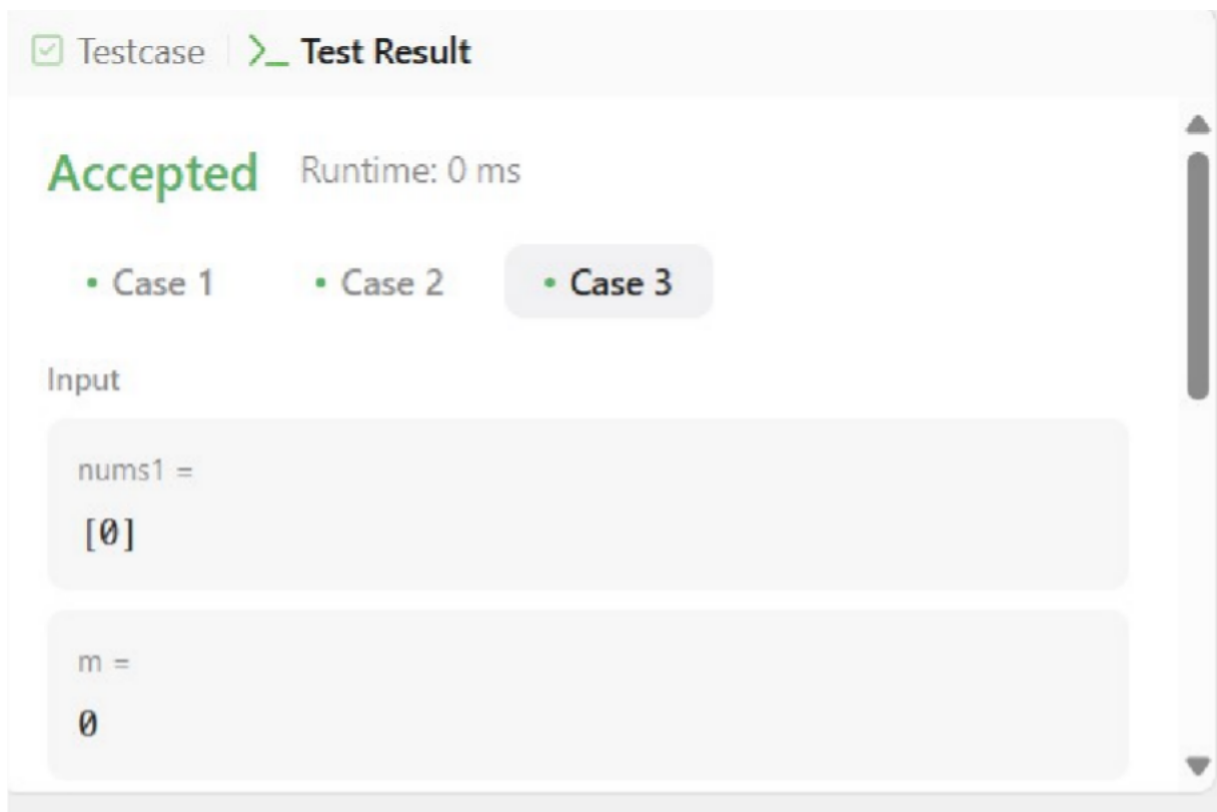
```
class Solution
{ public:
    void merge(vector<int>& nums1,
int m, vector<int>& nums2, int n) {
        for (int j = 0, i = m; j<n;
            j++){ nums1[i] = nums2[j];
                i++;
            }

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

#### OUTPUT:-



The screenshot shows a test result interface with a tab labeled 'Test Result'. The status 'Accepted' is displayed in green, along with 'Runtime: 0 ms'. Below this, there are three tabs: 'Case 1', 'Case 2', and 'Case 3', with 'Case 1' being the active tab. Under the 'Input' section, the input is shown as 'nums1 =' followed by the array '[1,2,3,0,0,0]' and 'm =' followed by the value '3'.



## 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:-

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]

☒ 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]

✓ Testcase >\_ Test Result

**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+1;
```

```
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



**Accepted** Runtime: 0 ms

- Case 1
- Case 2

Input

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

Output

1

Expected

5