EXPERIMENT - 5

Student Name: Ashish Kumar **UID:** 22BET10194

Branch: BE -IT **Section/Group:**22BET_IOT-703(A)

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

PROBLEM-1

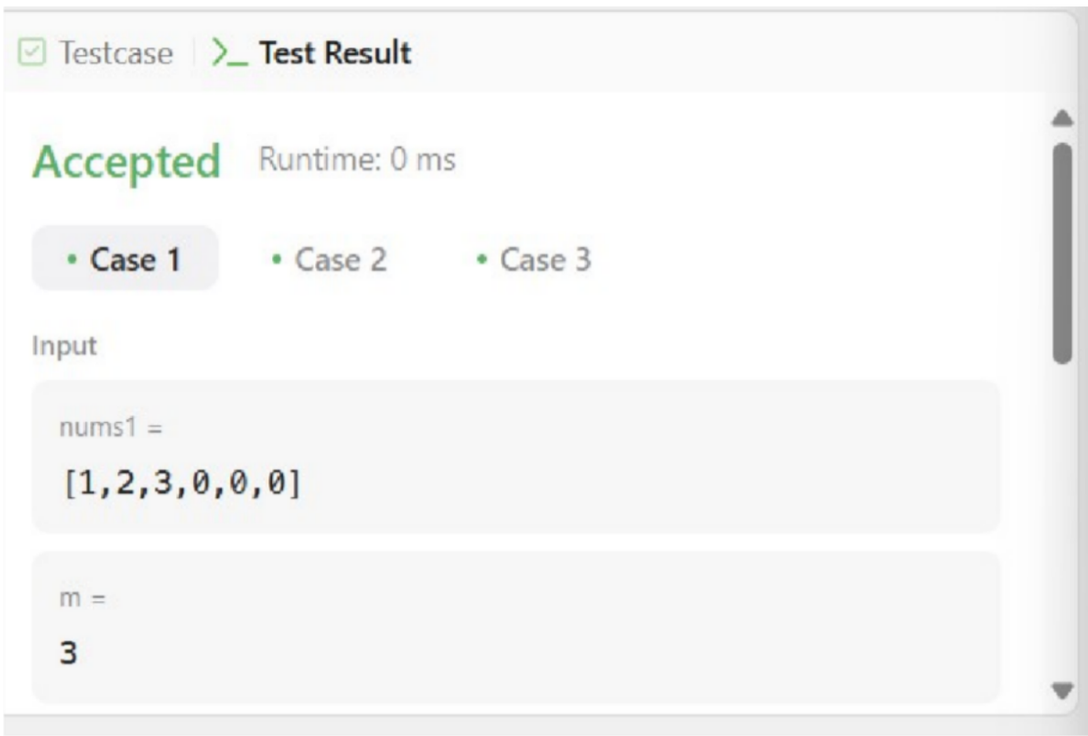
AIM:-

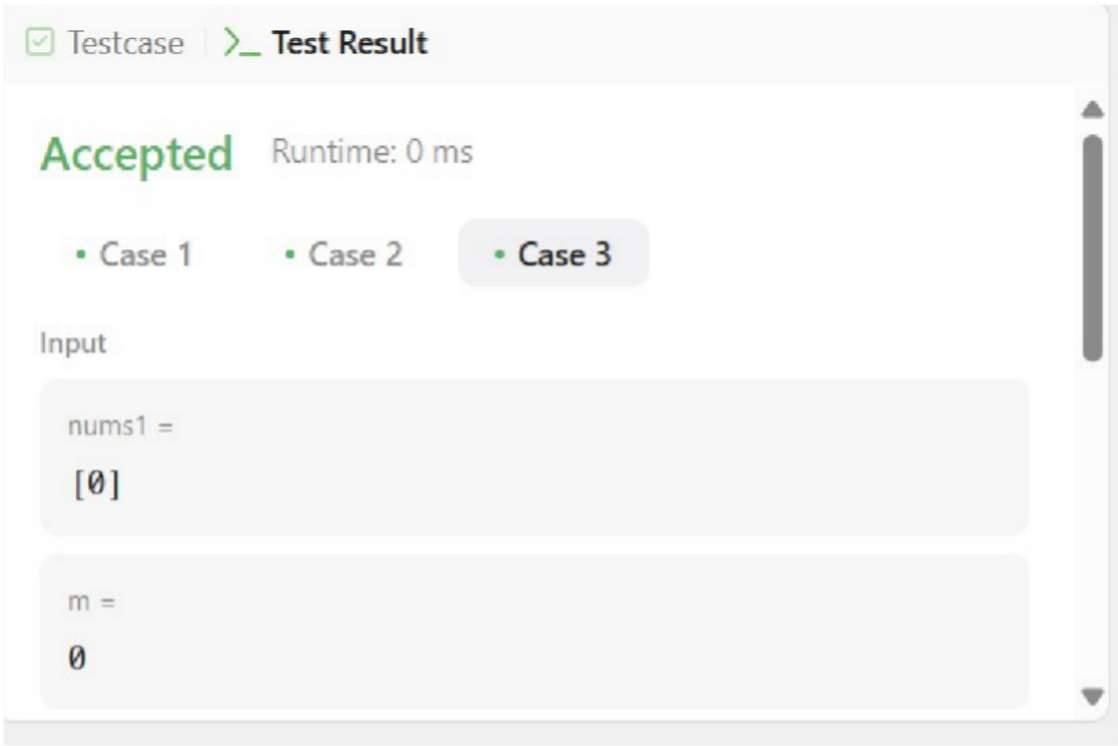
Merge Sorted Array

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:-





PROBLEM-2

AIM:-

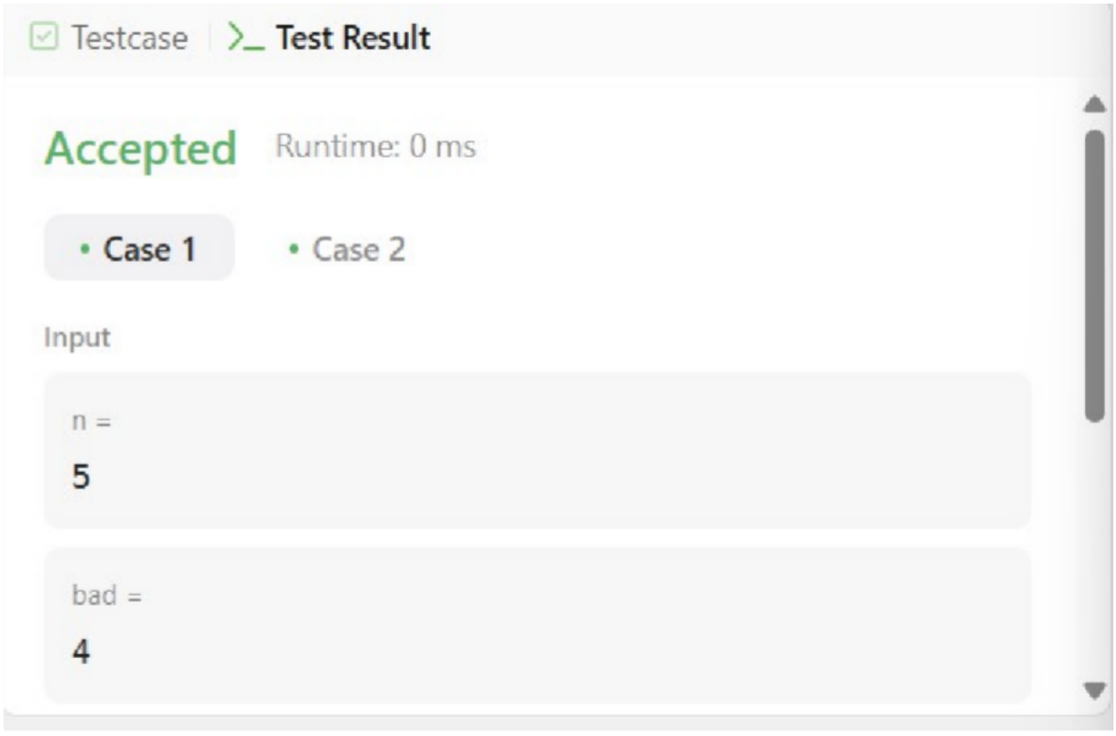
First Bad Version

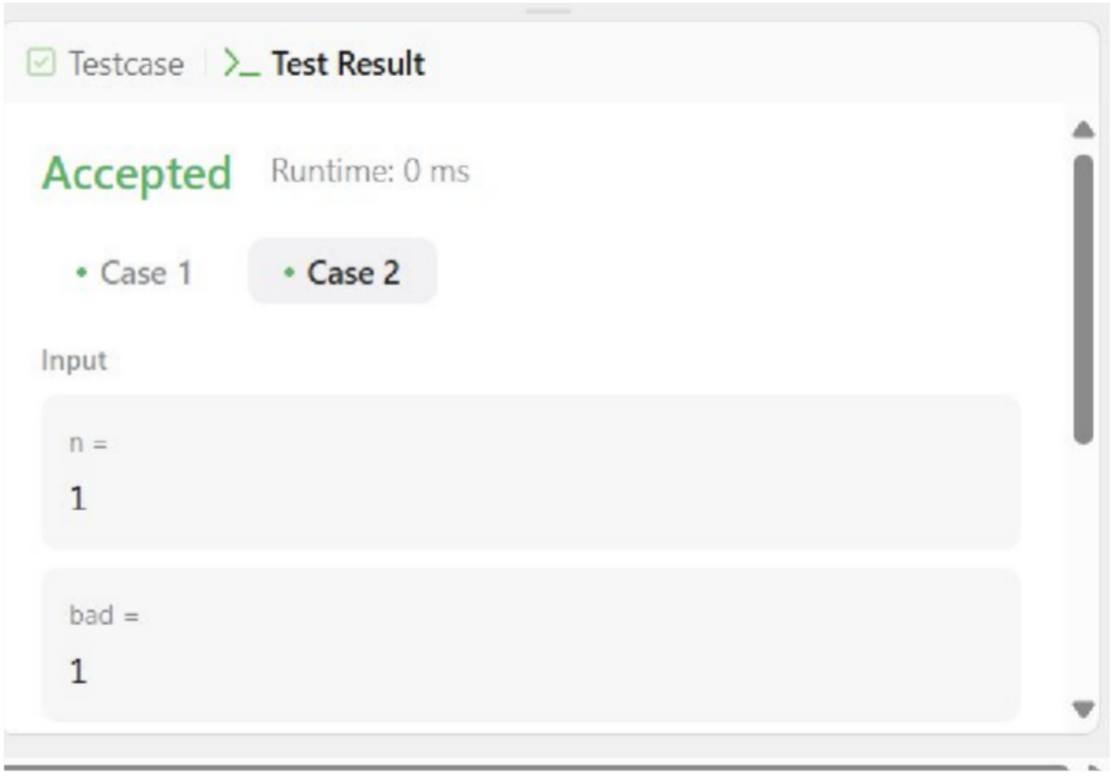
CODE:-

```
// 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

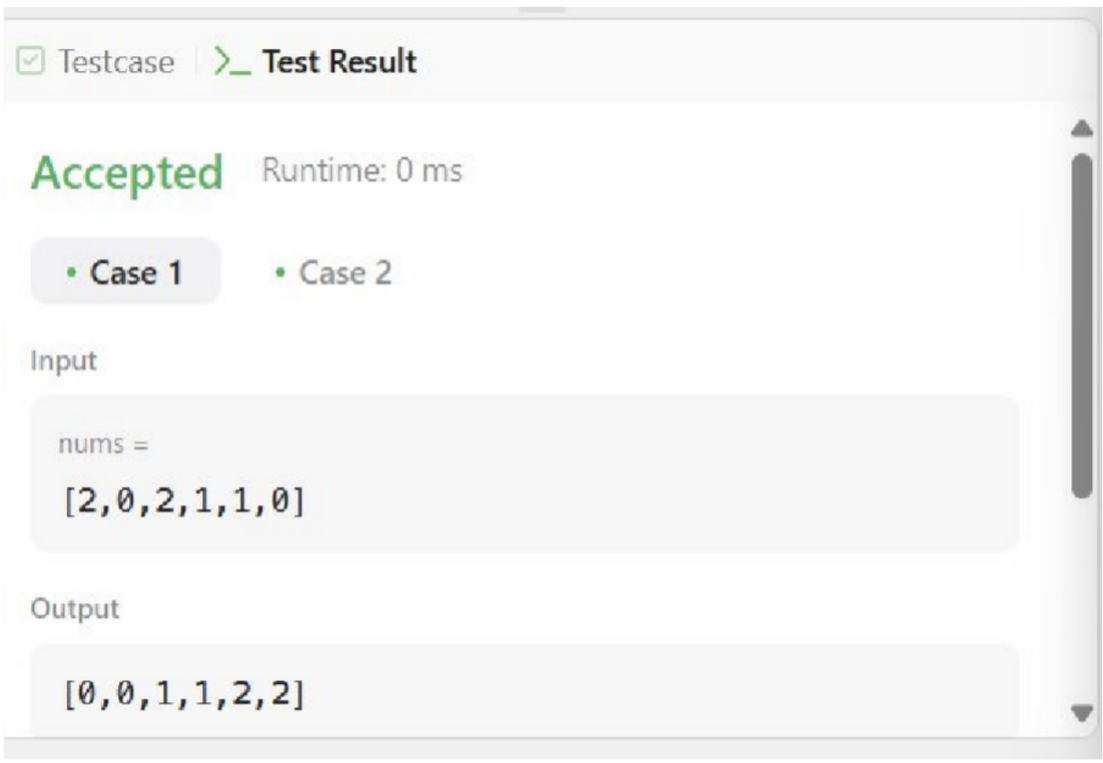
AIM:-

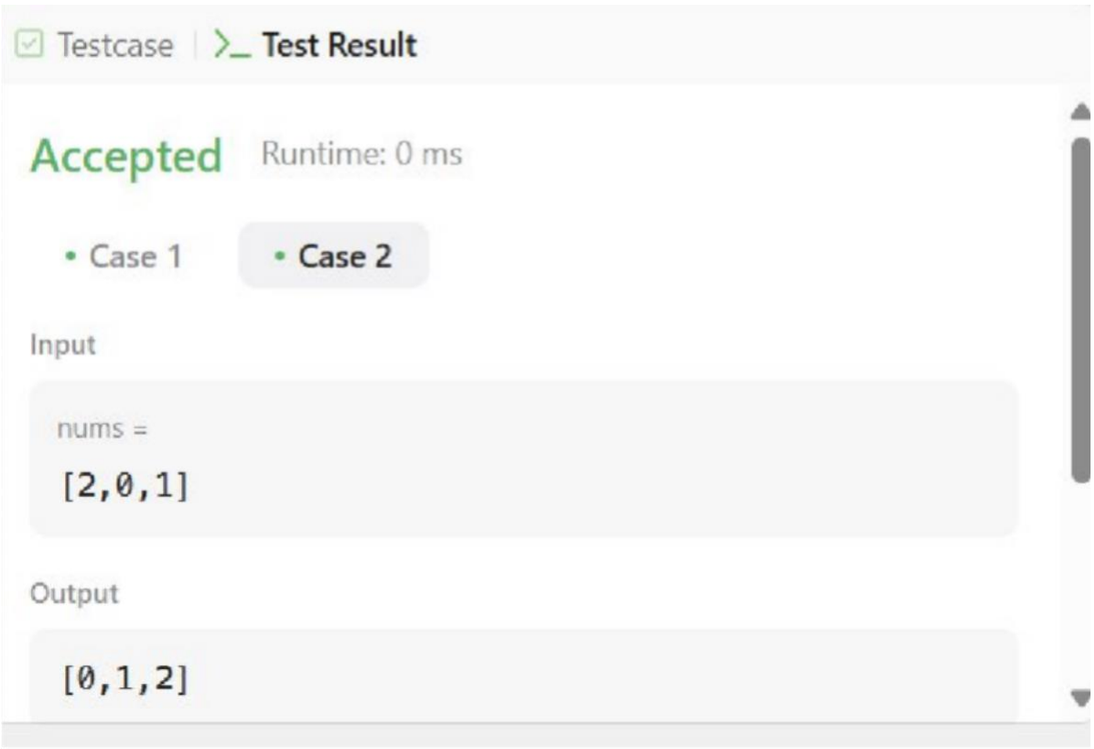
Sort Colors

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:-





PROBLEM-4

AIM:-

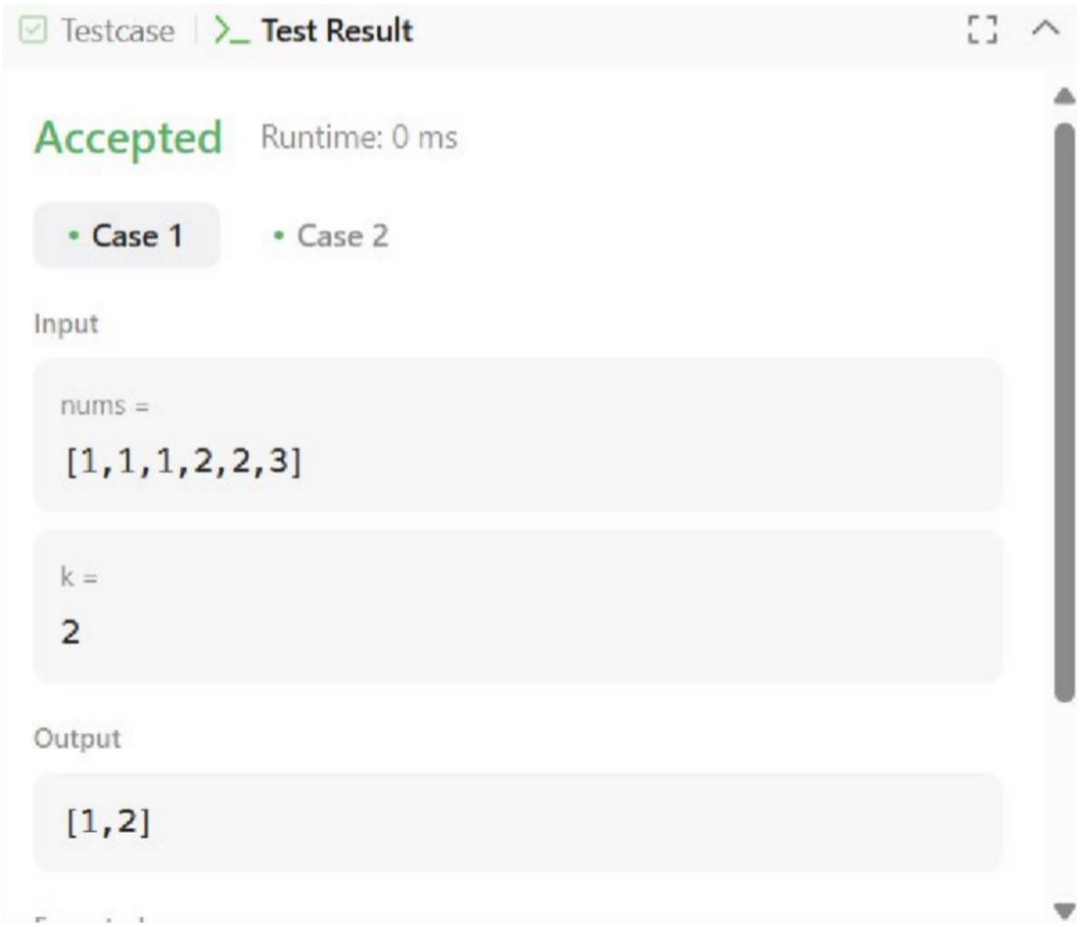
Top K Frequency Element

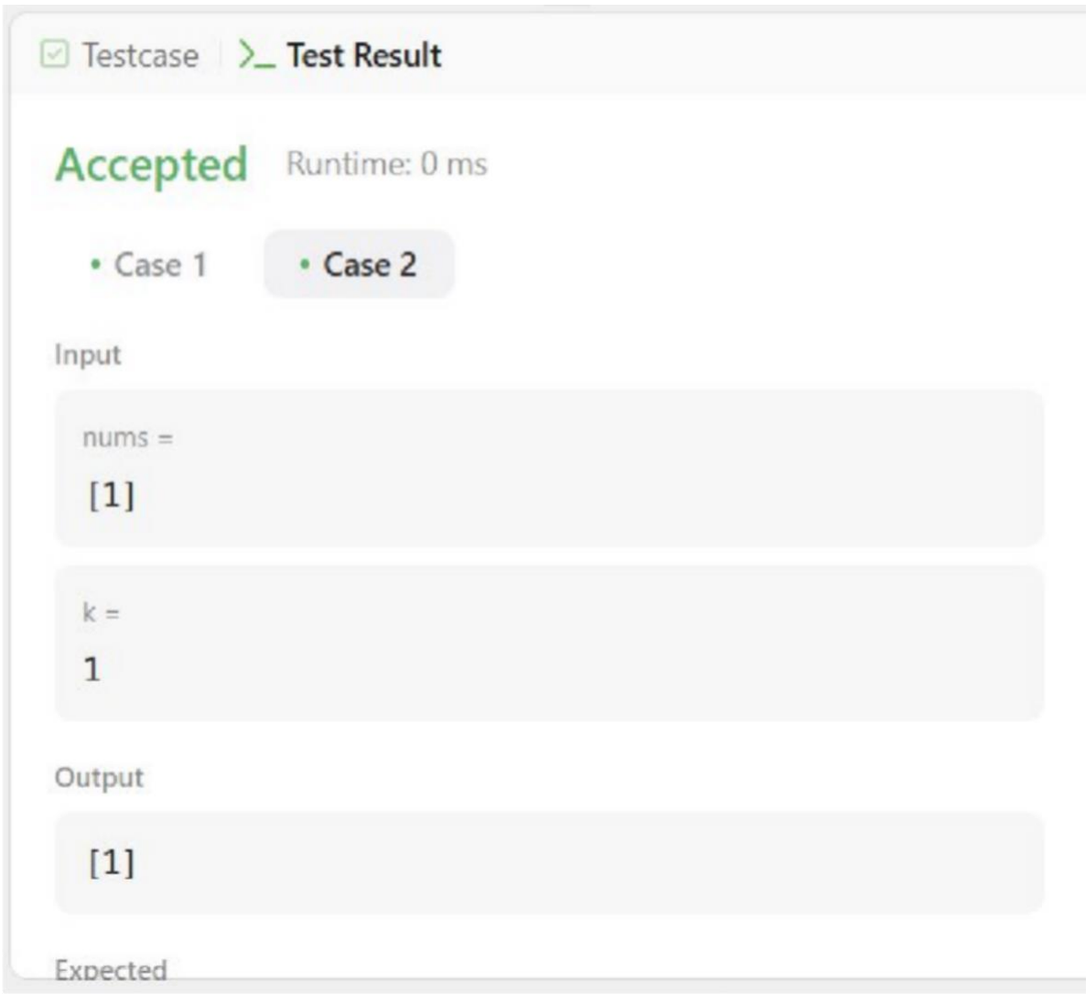
CODE:-

```
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:-





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 =

[1,2,1,3,5,6,4]

Output

1

Expected

5