#include<iostream>

#include <string>

#include <vector>

using namespace std;

int main(){

    vector<int> arr = {4,6,8,10,12,3,5,7,9,11};

    int s = 0;

    int e = arr.size();

    int mid = (s+e)/2;

    cout << "First Odd Number is :"<<arr[mid] << endl;

    cout << "Last Even Number is :"<<arr[mid-1] << endl;

    cout << "Last odd Number is :" << arr[e-1] << endl;

    cout << "first even Number is :" << arr[0] << endl;

    return 0;

}

#include<iostream>

#include <string>

#include <vector>

using namespace std;

int firstOccurance (vector<int> arr , int k) {

    int s=0 ;

    int e = arr.size()-1;

    int res = -1;

    while(s <= e){

        int mid = (s+e)/2;

        if(arr[mid] == k){

            e = mid - 1;

            res = mid;

        }else if(arr[mid] < k){

            s = mid + 1;

        }else{

            e = mid - 1;

        }

    }

    return res;

}

int lastOccurance (vector<int> arr , int k) {

    int s=0 ;

    int e = arr.size()-1;

    int res = -1;

    while(s <= e){

        int mid = (s+e)/2;

        if(arr[mid] == k){

            s = mid + 1;

            res = mid;

        }else if(arr[mid] < k){

            s = mid + 1;

        }else{

            e = mid - 1;

        }

    }

    return res;

}

int countOccur(vector<int> arr , int k){

    int res =  lastOccurance(arr,k) - firstOccurance(arr , k);

    return res + 1;

}

int main(){

    vector<int> arr = {2,4,4,4,5,5,6,6,6,6,9};

    // int fOccur = firstOccurance(arr , 6);

    // int fOccur = lastOccurance(arr , 6);

    int fOccur = countOccur(arr , 6);

    cout << fOccur << endl;

    return 0;

}

#include<iostream>

#include <string>

#include <vector>

using namespace std;

int findMissingNumber(vector<int> arr1 , vector<int> arr2){

    int s = 0;

    int e = arr2.size() - 1;

    while(s < e){

        int mid = (s+e) / 2;

        if(arr1[mid] == arr2[mid]){

            s++;

        }else{

            e = mid;

        }

    }

    return s;

}

int main(){

    vector<int> arr1 = {1,3,6,8,11,12,16,20,32};

    vector<int> arr2 = {1,3,6,8,11,12,16,32};

    int res = findMissingNumber(arr1 , arr2);

    cout << res << endl;

    return 0;

}

#include<iostream>

#include <string>

#include <vector>

#include <set>

using namespace std;

int arraySum (vector<int> arr){

    int sum = 0;

    for(int n : arr){

        sum += n;

    }

    return sum;

}

int arraySum (set<int> arr){

    int sum = 0;

    for(int n : arr){

        sum += n;

    }

    return sum;

}

int main(){

    vector<int> arr1 = {1,2,3,4,5};

    vector<int> arr2 = {2,1,3,2,5};

    set<int> unique;

    for(int n : arr2){

        unique.insert(n);

    }

    int sum1 = arraySum(arr1);

    int sum2 = arraySum(unique);

    int miss = sum1 - sum2;

    cout << miss << endl;

    return 0;

}