//PROBLEM 1(WEEK 5)

#include<iostream>

#include<limits.h>

using namespace std;

void count\_sort(char arr[], int n)

{

int temp[26] = {0};

for(int i = 0; i < n; i++)

temp[arr[i]-97]++;

int maxi = 0;

char res = '$';

for(int i = 0; i < 26; i++)

{

if(temp[i] > maxi)

{

maxi = temp[i];

res = i+97;

}

}

if(maxi == 1)

cout<<"No Duplicate Found"<<endl;

else

cout<<res<<" - "<<maxi<<endl;

}

int main()

{

int t;

cout<<"Enter number of test cases: ";

cin>>t;

while(t--)

{

int n;

cout<<"Enter the size of array: ";

cin>>n;

char arr[n];

cout<<"Enter the elements of array: ";

for(int i = 0; i < n; i++)

cin>>arr[i];

count\_sort(arr, n);

}

return 0;

}

***OUTPUT:***

Enter number of test cases: 1

Enter the size of array: 5

Enter the elements of array: a e u y e

e - 2

//PROBLEM 2(WEEK 5)

#include<stdio.h>

#define MAX 100

void find(int A[], int n, int key)

{

int flag = 0;

int lb = 0, ub = n;

while(lb<ub)

{

if(A[lb]+A[ub] == key)

{

flag = 1;

printf("%d\t%d,",A[lb], A[ub]);

lb++;

ub--;

}

else if(A[lb]+A[ub] < key)

lb++;

else

ub--;

}

if(flag == 0)

printf("No sequence found");

}

void merge(int A[], int lb, int mid, int ub)

{

int n1 = mid+1-lb;

int n2 = ub-mid;

int L[MAX], R[MAX];

for(int i = 0; i < n1; i++)

L[i] = A[lb+i];

for(int j = 0; j < n2; j++)

R[j] = A[mid+j+1];

int i = 0, j = 0, k = lb;

while(i<n1 && j<n2)

{

if(L[i] <= R[j])

{

A[k] = L[i];

i++;

}

else

{

A[k] = R[j];

j++;

}

k++;

}

while(i<n1)

{

A[k] = L[i];

i++;

k++;

}

while(j<n2)

{

A[k] = R[j];

j++;

k++;

}

}

void merge\_sort(int A[], int lb, int ub)

{

if(lb < ub)

{

int mid = lb+(ub-lb)/2;

merge\_sort(A, lb, mid);

merge\_sort(A, mid+1, ub);

merge(A, lb, mid, ub);

}

}

int main()

{

int key;

int t, n, A[MAX];

printf("Enter the number of test cases: ");

scanf("%d",&t);

while(t--)

{

printf("Enter the size of array: ");

scanf("%d",&n);

printf("Enter the elements of array: ");

for(int i = 0; i < n; i++)

{

scanf("%d",&A[i]);

}

}

printf("Enter the key: ");

scanf("%d",&key);

merge\_sort(A, 0, n-1);

find(A, n, key);

}

***OUTPUT:***

Enter the number of test cases: 1

Enter the size of array: 5

Enter the elements of array: 1 0 23 26 58

Enter the key: 35

No sequence found

//PROBLEM 3(WEEK 5)

#include<stdio.h>

#define MAX 100

void common(int A1[], int A2[], int m, int n)

{

int i = 0, j = 0;

while(i < m && j < n)

{

if(A1[i] < A2[j])

{

i++;

}

else if(A1[i] > A2[j])

{

j++;

}

else

{

printf("%d\t",A2[j++]);

i++;

}

}

}

int main()

{

int t, A1[MAX], A2[MAX], n, m;

printf("Enter the number of test cases: ");

scanf("%d",&t);

while(t--)

{

printf("Enter size of A1: ");

scanf("%d",&m);

printf("Enter the elements of array: ");

for(int i = 0; i < m; i++)

{

scanf("%d",&A1[i]);

}

printf("Enter size of A2: ");

scanf("%d",&n);

printf("Enter the elements of array: ");

for(int i = 0; i < n; i++)

{

scanf("%d",&A2[i]);

}

}

***OUTPUT:***

Enter the number of test cases: 1

Enter size of A1: 4

Enter the elements of array: 34 56 78 90

Enter size of A2: 4

Enter the elements of array: 45 78 90 98

78 90