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CSE-A

1.

AIM-

Find Duplicate in Array.

Given a read only array of n integers between 1 and n, find one number that repeats.

CODE-

```c
#include<stdio.h>
int main()
{
    int n;
    scanf("%d",&n);
    int a[n];
    for(int i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
            if(a[i]==a[j])
            {
                printf("%d",a[i]);
            }
        }
    }


}
```

INPUT-

First Line - Number of elements

n Lines - n Elements

OUTPUT-

Element x - That is repeated

	Input	Expected	Got	
✔	11 10 9 7 6 5 1 2 3 8 4 7	7	7	✔
✔	5 1 2 3 4 4	4	4	✔
✔	5 1 1 2 3 4	1	1	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

2.

AIM-

Find Duplicate in Array.

Given a read only array of n integers between 1 and n, find one number that repeats.

CODE-

```c
#include<stdio.h>

int main() {
    int n;
    scanf("%d",&n);
    int a[n];
    for(int i=0;i<n;i++) {
        scanf("%d",&a[i]);
    }
    int index=0;
    for(int i=0;i<n;i++) {
        index = a[i] % n;
        a[index] += n;
    }
    for(int i=0;i<n;i++) {
        if(a[i]/n >= 2) {
            printf("%d\n", i);
        }
    }
    return 0;
}

```

INPUT-

First Line - Number of elements

n Lines - n Elements

OUTPUT-

Element x - That is repeated

	Input	Expected	Got	
✔	11 10 9 7 6 5 1 2 3 8 4 7	7	7	✔
✔	5 1 2 3 4 4	4	4	✔
✔	5 1 1 2 3 4	1	1	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

3.

AIM-

Find the intersection of two sorted arrays.

OR in other words,

Given 2 sorted arrays, find all the elements which occur in both the arrays.

CODE-

```c
#include<stdio.h>

int intersection(int arr1[],int n1,int arr2[],int n2)
{
    int i=0,j=0;
    while(i<n1&&j<n2)
    {
        if(arr1[i]==arr2[j])
        {
            printf("%d ",arr1[i]);
            i++;
            j++;
        }
        else if(arr1[i]<arr2[j])
        {
           i++;
        }
        else
        {
            j++;
        }
    }
    return 0;
}

int main()
{
    int t;
    scanf("%d",&t);
    while(t--)
    {
        int n1;
        scanf("%d",&n1);
        int arr1[n1];
        for(int i=0;i<n1;i++)
        {
        scanf("%d",&arr1[i]);

        }
        int n2;
        scanf("%d",&n2);
        int arr2[n2];
        for(int i=0;i<n2;i++)
        {
        scanf("%d",&arr2[i]);

        }
        intersection(arr1,n1,arr2,n2);

    }
    return 0;
}
```

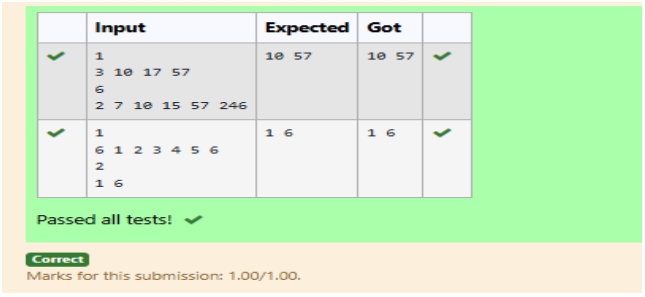
INPUT-

The first line contains T, the number of test cases. Following T lines contain:

1. Line 1 contains N1, followed by N1 integers of the first array
2. Line 2 contains N2, followed by N2 integers of the second array

OUTPUT-

The intersection of the arrays in a single line



	Input	Expected	Got	
✔	1 3 10 17 57 6 2 7 10 15 57 246	10 57	10 57	✔
✔	1 6 1 2 3 4 5 6 2 1 6	1 6	1 6	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

4.

AIM-

Find the intersection of two sorted arrays.

OR in other words, Given 2 sorted arrays, find all the elements which occur in both the arrays.

CODE-

```c
#include <stdio.h>

void findintersection(int arr1[], int n1, int arr2[], int n2)
{
    int i = 0, j = 0;
    while (i < n1 && j < n2)
    {
        if (arr1[i] == arr2[j])
        {
            printf("%d ", arr1[i]);
            i++;
            j++;
        }
        else if (arr1[i] < arr2[j])
        {
            i++;
        }
        else
        {
            j++;
        }
    }
    printf("\n");
}

int main()
{
    int t;
    scanf("%d", &t);
    while (t--) {
        int n1, n2;
        scanf("%d", &n1);
        int arr1[n1];
        for (int i = 0; i < n1; i++)
        {
            scanf("%d", &arr1[i]);
        }
        scanf("%d", &n2);
        int arr2[n2];
        for (int i = 0; i < n2; i++)
        {
            scanf("%d", &arr2[i]);
        }

        findintersection(arr1, n1, arr2, n2);
    }

}
```

INPUT-

· The first line contains T, the number of test cases. Following T lines contain:

1. Line 1 contains N1, followed by N1 integers of the first array
2. Line 2 contains N2, followed by N2 integers of the second array

OUTPUT-

The intersection of the arrays in a single line

	Input	Expected	Got	
✓	1 3 10 17 57 6 2 7 10 15 57 246	10 57	10 57	✓
✓	1 6 1 2 3 4 5 6 2 1 6	1 6	1 6	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

5.

AIM-

Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that A[j] - A[i] = k, i != j.

CODE-

```c
#include<stdio.h>
int main()
{
    int n;
    scanf("%d",&n);
    int arr[n];
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    int k;
    scanf("%d",&k);
    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
            if(arr[j]-arr[i]==k)
            {
                printf("1\n");
                return 0;
            }
        }
    }
    printf("0\n");
}
```

INPUT-

First Line n - Number of elements in an array

Next n Lines - N elements in the array

k - Non - Negative Integer

OUTPUT-

1 - If pair exists

0 - If no pair exists

	Input	Expected	Got	
✔	3 1 3 5 4	1	1	✔
✔	10 1 4 6 8 12 14 15 20 21 25 1	1	1	✔
✔	10 1 2 3 5 11 14 16 24 28 29 0	0	0	✔
✔	10 0 2 3 7 13 14 15 20 24 25 10	1	1	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

6.

AIM-

Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that A[j] - A[i] = k, i != j.

CODE-

```c
#include <stdio.h>
int main()
{
    int n;
    scanf("%d", &n);

    int arr[n];
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &arr[i]);
    }

    int k;
    scanf("%d", &k);
    int i = 0, j = 0;
    while (j < n)
    {

        if (i != j && arr[j] - arr[i] == k)
        {
            printf("1\n");
            return 0;
        }
        if (arr[j]-arr[i] < k)
        {
            j++;
        }
        else
        {
            i++;
            if (i == j)
            {
                j++;
            }
        }
    }

    printf("0\n");
}
```

INPUT-

First Line n - Number of elements in an array

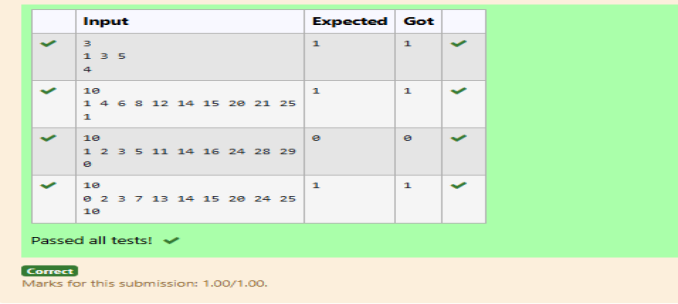
Next n Lines - N elements in the array

k - Non - Negative Integer

OUTPUT-

1 - If pair exists

0 - If no pair exists



	Input	Expected	Got	
✓	3 1 3 5 4	1	1	✓
✓	10 1 4 6 8 12 14 15 20 21 25 1	1	1	✓
✓	10 1 2 3 5 11 14 16 24 28 29 0	0	0	✓
✓	10 0 2 3 7 13 14 15 20 24 25 10	1	1	✓

Passed all tests! ✓

Correct

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