Dashbo... / My cour... / CS23331-DAA-2023-... / Competitive Program... / 1-Finding Duplicates-O(n^2) Time Complexity,O(1) Space Co...

Started on	Saturday, 16 November 2024, 8:02 PM
State	Finished
Completed on	Saturday, 16 November 2024, 8:05 PM
Time taken	3 mins 53 secs
Marks	1.00/1.00
Grade	**4.00** out of 4.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Find Duplicate in Array.

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

Input Format:

First Line - Number of elements

n Lines - n Elements

Output Format:

Element x - That is repeated

For example:

Input	Result
5 1 1 2 3 4	1

Answer: (penalty regime: 0 %)

```c
#include <stdio.h>

int findDuplicate(int arr[], int n) {

    int slow = arr[0];
    int fast = arr[0];

    do {
        slow = arr[slow];
        fast = arr[arr[fast]];
    } while (slow != fast);


    slow = arr[0];
    while (slow != fast) {
        slow = arr[slow];
        fast = arr[fast];
    }

    return slow;
}

int main() {
    int n;
    scanf("%d", &n);

    int arr[n];

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

    int duplicate = findDuplicate(arr, n);
    printf("%d\n", duplicate);

    return 0;
}

```

	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	✓

	Input	Expected	Got	
✓	5 1 1 2 3 4	1	1	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

◄ 4-DP-Longest non-decreasing Subsequence

Jump to...

2-Finding Duplicates-O(n) Time Complexity,O(1) Space Complexity ►

Started on	Saturday, 16 November 2024, 8:06 PM
State	Finished
Completed on	Saturday, 16 November 2024, 8:10 PM
Time taken	4 mins 29 secs
Marks	1.00/1.00
Grade	**4.00** out of 4.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Find Duplicate in Array.

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

Input Format:

First Line - Number of elements

n Lines - n Elements

Output Format:

Element x - That is repeated

For example:

Input	Result
5 1 1 2 3 4	1

Answer: (penalty regime: 0 %)

```
#include <stdio.h>
int findDuplicate(int arr[], int n) {

    int slow = arr[0];
    int fast = arr[0];

    do {
        slow = arr[slow];
        fast = arr[arr[fast]];
    } while (slow != fast);


    slow = arr[0];
    while (slow != fast) {
        slow = arr[slow];
        fast = arr[fast];
    }

    return slow;
}

int main() {
    int n;

    scanf("%d", &n);
    int arr[n];

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

    return 0;
}

```

	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	✓

	Input	Expected	Got	
✓	5 1 1 2 3 4	1	1	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

◄ 1-Finding Duplicates-O(n^2) Time Complexity,O(1) Space Complexity

Jump to...

3-Print Intersection of 2 sorted arrays-O(m*n)Time Complexity,O(1) Space Complexity ►

Started on	Saturday, 16 November 2024, 8:51 PM
State	Finished
Completed on	Saturday, 16 November 2024, 8:59 PM
Time taken	7 mins 14 secs
Marks	1.00/1.00
Grade	**30.00** out of 30.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

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.

Input Format

- 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 Format

The intersection of the arrays in a single line

Example

Input:

1

3 10 17 57

6 2 7 10 15 57 246

Output:

10 57

Input:

1

6 1 2 3 4 5 6

2 1 6

Output:

1 6

For example:

Input	Result

1
3 10 17 57
6
2 7 10 15 57 246
	10 57

Answer: (penalty regime: 0 %)

```
#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]) {
                       i++;
        } else if (arr1[i] > arr2[j]) {
                       j++;
        } else {
                      printf("%d ", arr1[i]);
            i++;
            j++;
        }
    }
    printf("\n");
}

int main() {
    int t;

    scanf("%d", &t);
```

```c
    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);
    }

    return 0;
}
```

	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.

◄ 2-Finding Duplicates-O(n) Time Complexity,O(1) Space Complexity

Jump to...

4-Print Intersection of 2 sorted arrays-O(m+n)Time Complexity,O(1) Space Complexity ►

Started on	Saturday, 16 November 2024, 8:59 PM
State	Finished
Completed on	Saturday, 16 November 2024, 9:09 PM
Time taken	9 mins 48 secs
Marks	1.00/1.00
Grade	**30.00** out of 30.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

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.

Input Format

- 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 Format

The intersection of the arrays in a single line

Example

Input:

1

3 10 17 57

6 2 7 10 15 57 246

Output:

10 57

Input:

1

6 1 2 3 4 5 6

2 1 6

Output:

1 6

For example:

Input	Result

1
3 10 17 57
6
2 7 10 15 57 246
	10 57

Answer: (penalty regime: 0 %)

```
#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]) {
            i++;
        } else if (arr1[i] > arr2[j]) {
            j++;
        } else {
            printf("%d ", arr1[i]);
            i++;
            j++;
        }
    }
    printf("\n");
}

int main() {
    int t;
    scanf("%d", &t);

    while (t--) {
        int n1, n2;
        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);
    }

    return 0;
}
```

	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.

◄ 3-Print Intersection of 2 sorted arrays-O(m*n)Time Complexity,O(1) Space Complexity

Jump to...

5-Pair with Difference-O(n^2)Time Complexity,O(1) Space Complexity ►

Dashbo… / My cour… / CS23331-DAA-2023-… / Competitive Program… / 5-Pair with Difference-O(n^2)Time Complexity,O(1) Space Co…

Started on	Saturday, 16 November 2024, 9:09 PM
State	Finished
Completed on	Saturday, 16 November 2024, 9:15 PM
Time taken	5 mins 31 secs
Marks	1.00/1.00
Grade	**4.00** out of 4.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

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.

Input Format:

First Line n - Number of elements in an array

Next n Lines - N elements in the array

k - Non - Negative Integer

Output Format:

1 - If pair exists

0 - If no pair exists

Explanation for the given Sample Testcase:

YES as 5 - 1 = 4

So Return 1.

For example:

Input	Result

3
1 3 5
4
	1

Answer: (penalty regime: 0 %)

```c
#include <stdio.h>
int findPairWithDifference(int arr[], int n, int k) {
    int i = 0, j = 1;
    while (i < n && j < n) {
        if (i != j && arr[j] - arr[i] == k) {
            return 1;
        } else if (arr[j] - arr[i] < k) {
            j++;
        } else {
            i++;
        }
    }
    return 0;
}

int main() {
    int n, k;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }
    scanf("%d", &k);
    int result = findPairWithDifference(arr, n, k);
    printf("%d\n", result);

    return 0;
}

```

	Input	Expected	Got	
✓	3 1 3 5 4	1	1	✓

	Input	Expected	Got	
✓	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.

◄ 4-Print Intersection of 2 sorted arrays-O(m+n)Time Complexity,O(1) Space Complexity

Jump to...

6-Pair with Difference -O(n) Time Complexity,O(1) Space Complexity ►

Started on	Saturday, 16 November 2024, 9:15 PM
State	Finished
Completed on	Saturday, 16 November 2024, 9:26 PM
Time taken	11 mins 2 secs
Marks	1.00/1.00
Grade	**4.00** out of 4.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

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.

Input Format:

First Line n - Number of elements in an array

Next n Lines - N elements in the array

k - Non - Negative Integer

Output Format:

1 - If pair exists

0 - If no pair exists

Explanation for the given Sample Testcase:

YES as 5 - 1 = 4

So Return 1.

For example:

Input	Result

3
1 3 5
4
	1

Answer: (penalty regime: 0 %)

```c
#include <stdio.h>
int findPairWithDifference(int arr[], int n, int k) {
    int i = 0, j = 1;
    while (i < n && j < n) {
        if (i != j && arr[j] - arr[i] == k) {
            return 1;
        } else if (arr[j] - arr[i] < k) {
            j++;
        } else {
            i++;
        }
    }

    return 0;
}
int main() {
    int n, k;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }
    scanf("%d", &k);
    int result = findPairWithDifference(arr, n, k);
    printf("%d\n", result);
    return 0;
}

```

	Input	Expected	Got	
✓	3 1 3 5 4	1	1	✓

	Input	Expected	Got	
✓	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.

◄ 5-Pair with Difference-O(n^2)Time Complexity,O(1) Space Complexity

Jump to...