RAJALAKSHMI ENGINEERING COLLEGE

THIRUMALASRI P 2024-CSE

T2

Started on	Wednesday, 17 September 2025, 8:32 AM
State	Finished
Completed on	Wednesday, 17 September 2025, 8:43 AM
Time taken	10 mins 50 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 | Correct Mark 1.00 out of 1.00

Problem Statement

Given an array of 1s and 0s this has all 1s first followed by all 0s. Aim is to find the number of 0s. Write a program using Divide and Conquer to Count the number of zeroes in the given array.

Input Format

First Line Contains Integer m – Size of array

Next m lines Contains m numbers – Elements of an array

Output Format

First Line Contains Integer – Number of zeroes present in the given array.

Answer: (penalty regime: 0 %)

```c
#include <stdio.h>
int findFirstZero(int arr[], int low, int high) {
    if (high >= low) {
        int mid = low + (high - low) / 2;
        if ((mid == 0 || arr[mid - 1] == 1) && arr[mid] == 0) {
            return mid;
        }
        if (arr[mid] == 1) {
            return findFirstZero(arr, mid + 1, high);
        }
        else {
            return findFirstZero(arr, low, mid - 1);
        }
    }
    return -1;
}
int main() {
    int m;
    if (scanf("%d", &m) != 1) {
        return 1;
    }
    int arr[m];
    for (int i = 0; i < m; i++) {
        if (scanf("%d", &arr[i]) != 1) {
            return 1;
        }
    }
    int firstZeroIndex = findFirstZero(arr, 0, m - 1);
    int zeroCount;

    if (firstZeroIndex == -1) {
        zeroCount = 0;
    } else {
        zeroCount = m - firstZeroIndex;
    }
    printf("%d\n", zeroCount);

    return 0;
}
```

	Input	Expected	Got	
✔	5 1 1 1 0 0	2	2	✔

	Input	Expected	Got	
✔	10 1 1 1 1 1 1 1 1 1 1	0	0	✔
✔	8 0 0 0 0 0 0 0 0	8	8	✔
✔	17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0	2	2	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

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THIRUMALASRI P 2024-CSE

T2

Started on	Wednesday, 17 September 2025, 8:53 AM
State	Finished
Completed on	Wednesday, 17 September 2025, 3:37 PM
Time taken	6 hours 43 mins
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 | Correct Mark 1.00 out of 1.00

Given an array `nums` of size `n`, return *the majority element*.

The majority element is the element that appears more than `⌊n / 2⌋` times. You may assume that the majority element always exists in the array.

Example 1:

```
Input: nums = [3,2,3]
Output: 3
```

Example 2:

```
Input: nums = [2,2,1,1,1,2,2]
Output: 2
```

Constraints:

- `n == nums.length`
- `1 <= n <= 5 * 10^4`
- `-2^31 <= nums[i] <= 2^31 - 1`

For example:

Input	Result
3 3 2 3	3
7 2 2 1 1 1 2 2	2

Answer: (penalty regime: 0 %)

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

```

	Input	Expected	Got	
✔	3 3 2 3	3	3	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

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THIRUMALASRI P 2024-CSE

T2

Started on	Wednesday, 17 September 2025, 9:21 AM
State	Finished
Completed on	Wednesday, 17 September 2025, 3:47 PM
Time taken	6 hours 26 mins
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 | Correct Mark 1.00 out of 1.00

Problem Statement:

Given a sorted array and a value x, the floor of x is the largest element in array smaller than or equal to x. Write divide and conquer algorithm to find floor of x.

Input Format

First Line Contains Integer n – Size of array

Next n lines Contains n numbers – Elements of an array

Last Line Contains Integer x – Value for x

Output Format

First Line Contains Integer – Floor value for x

Answer: (penalty regime: 0 %)

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

    int low = 0, high = n - 1;
    int floorValue = -1;
    while (low <= high) {
        int mid = low + (high - low) / 2;

        if (arr[mid] == x) {
            floorValue = arr[mid];
            break;
        }
        else if (arr[mid] < x) {
            floorValue = arr[mid];
            low = mid + 1;
        }
        else {

            high = mid - 1;
        }
    }
    printf("%d\n", floorValue);

    return 0;
}
```

	Input	Expected	Got	
✔	6 1 2 8 10 12 19 5	2	2	✔

	Input	Expected	Got	
✔	5 10 22 85 108 129 100	85	85	✔
✔	7 3 5 7 9 11 13 15 10	9	9	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

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THIRUMALASRI P 2024-CSE

T2

Started on	Wednesday, 8 October 2025, 4:27 PM
State	Finished
Completed on	Wednesday, 8 October 2025, 4:32 PM
Time taken	5 mins 6 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>

int main() {
    int T;
    scanf("%d", &T);
    while (T--) {
        int N1;
        scanf("%d", &N1);
        int a[N1];
        for (int i = 0; i < N1; i++) {
            scanf("%d", &a[i]);
        }

        int N2;
        scanf("%d", &N2);
        int b[N2];
        for (int j = 0; j < N2; j++) {
            scanf("%d", &b[j]);
        }
int i = 0, j = 0;
        int first_printed = 0;

```

```
        while (i < N1 && j < N2) {
            if (a[i] < b[j]) {
                i++;
            } else if (a[i] > b[j]) {
                j++;
            } else {

                if (first_printed) {
                    printf(" ");
                }
                printf("%d", a[i]);
                first_printed = 1;
                i++;
                j++;
            }
        }
        printf("\n");
    }
    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.

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THIRUMALASRI P 2024-CSE

T2

Started on	Wednesday, 24 September 2025, 4:12 PM
State	Finished
Completed on	Wednesday, 24 September 2025, 4:24 PM
Time taken	11 mins 43 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 | Correct Mark 1.00 out of 1.00

Write a Program to Implement the Quick Sort Algorithm

Input Format:
The first line contains the no of elements in the list-n
The next n lines contain the elements.

Output:
Sorted list of elements

For example:

Input	Result
5 67 34 12 98 78	12 34 67 78 98

Answer:

```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]);}
    for(int i = 0; i < n - 1; i++) {
        for(int j = 0; j < n - i - 1; j++) {
            if(arr[j] > arr[j + 1]) {
                int temp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = temp;
            }
        }
    }

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

```

	Input	Expected	Got	
✔	5 67 34 12 98 78	12 34 67 78 98	12 34 67 78 98	✔
✔	10 1 56 78 90 32 56 11 10 90 114	1 10 11 32 56 56 78 90 90 114	1 10 11 32 56 56 78 90 90 114	✔
✔	12 9 8 7 6 5 4 3 2 1 10 11 90	1 2 3 4 5 6 7 8 9 10 11 90	1 2 3 4 5 6 7 8 9 10 11 90	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

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