1-Number of Zeros in a Given Array

Started on	Wednesday, 8 October 2025, 10:15 AM
State	Finished
Completed on	Wednesday, 8 October 2025, 10:19 AM
Time taken	3 mins 7 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100%**)

Question 1 Correct Mark 1.00 out of 1.00 Flag question

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 count_zeroes(int arr[], int left, int right, int size) {
    if (right < left) {
        return 0;
    }
    int mid = left + (right - left) / 2;
    if (arr[mid] == 0 && (mid == 0 || arr[mid - 1] == 1)) {
        return size - mid;
    }
    if (arr[mid] == 1) {
        return count_zeroes(arr, mid + 1, right, size);
    }
    return count_zeroes(arr, left, mid - 1, size);
}
int main() {
    int m;
    scanf("%d", &m);
    int arr[m];
    for (int i = 0; i < m; i++) {
        scanf("%d", &arr[i]);
    }
    int zero_count = count_zeroes(arr, 0, m - 1, m);
    printf("%d\n", zero_count);
    return 0;
}
```

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

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Finish review

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2-Majority Element

Started on	Wednesday, 8 October 2025, 10:24 AM
State	Finished
Completed on	Wednesday, 8 October 2025, 10:31 AM
Time taken	7 mins 11 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 Correct Mark 1.00 out of 1.00 Flag question

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 find_majority_element(int arr[], int n) {
    int count = 0, candidate = -1;
    for (int i = 0; i < n; i++) {
        if (count == 0) {
            candidate = arr[i];
            count = 1;
        } else {
            if (arr[i] == candidate)
                count++;
            else
                count--;
        }
    }
    return candidate;
}
int main() {
    int n;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }
    int majority = find_majority_element(arr, n);
    printf("%d\n", majority);
    return 0;
}
```

	Input	Expected	Got	
✔	3 3 2 3	3	3	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Finish review

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3-Finding Floor Value

Started on	Wednesday, 8 October 2025, 10:32 AM
State	Finished
Completed on	Wednesday, 8 October 2025, 10:39 AM
Time taken	7 mins
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100%**)

Question 1 | Correct Mark 1.00 out of 1.00 Flag question

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 find_floor(int arr[], int left, int right, int x) {
    if (left > right) {
        return -1;
    }
    int mid = left + (right - left) / 2;
    if (arr[mid] == x) {
        return arr[mid];
    }
    else if (arr[mid] > x) {
        return find_floor(arr, left, mid - 1, x);
    }
    else {
        int floor_right = find_floor(arr, mid + 1, right, x);
        if (floor_right == -1) {
            return arr[mid];
        } else {
            return floor_right;
        }
    }
}
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 floor_val = find_floor(arr, 0, n - 1, x);
    printf("%d\n", floor_val);
    return 0;
}
```

	Input	Expected	Got	
✔	6 1 2 8 10 12 19 5	2	2	✔
✔	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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4-Two Elements sum to x

Started on	Wednesday, 8 October 2025, 10:40 AM
State	Finished
Completed on	Wednesday, 8 October 2025, 10:49 AM
Time taken	8 mins 34 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1 | Correct Mark 1.00 out of 1.00 Flag question

Problem Statement:

Given a sorted array of integers say arr[] and a number x. Write a recursive program using divide and conquer strategy to check if there exist two elements in the array whose sum = x. If there exist such two elements then return the numbers, otherwise print as "No".

Note: Write a Divide and Conquer Solution

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 – Sum Value

Output Format

First Line Contains Integer – Element1

Second Line Contains Integer – Element2 (Element 1 and Elements 2 together sums to value "x")

Answer: (penalty regime: 0 %)

```c
#include <stdio.h>

int findPair(int arr[], int l, int r, int x, int *a, int *b) {
    if (l >= r) return 0;
    if (arr[l] + arr[r] == x) {
        *a = arr[l];
        *b = arr[r];
        return 1;
    } else if (arr[l] + arr[r] < x)
        return findPair(arr, l + 1, r, x, a, b);
    else
        return findPair(arr, l, r - 1, x, a, b);
}

int main() {
    int n, x;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++) scanf("%d", &arr[i]);
    scanf("%d", &x);
    int a, b;
    if (findPair(arr, 0, n - 1, x, &a, &b))
        printf("%d\n%d", a, b);
    else
        printf("No");
    return 0;
}
```

	Input	Expected	Got	
✔	4 2 4 8 10 14	4 10	4 10	✔
✔	5 2 4 6 8 10 100	No	No	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

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5-Implementation of Quick Sort

Started on	Wednesday, 8 October 2025, 10:49 AM
State	Finished
Completed on	Wednesday, 8 October 2025, 10:56 AM
Time taken	6 mins 38 secs
Marks	1.00/1.00
Grade	**10.00** out of 10.00 (**100%**)

Question 1 | Correct Mark 1.00 out of 1.00 Flag question

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>

void swap(int *a, int *b) {
    int t = *a;
    *a = *b;
    *b = t;
}

int partition(int arr[], int low, int high) {
    int pivot = arr[high];
    int i = low - 1;
    for (int j = low; j < high; j++) {
        if (arr[j] <= pivot) {
            i++;
            swap(&arr[i], &arr[j]);
        }
    }
    swap(&arr[i + 1], &arr[high]);
    return i + 1;
}

void quickSort(int arr[], int low, int high) {
    if (low < high) {
        int pi = partition(arr, low, high);
        quickSort(arr, low, pi - 1);
        quickSort(arr, pi + 1, high);
    }
}

int main() {
    int n;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++) scanf("%d", &arr[i]);
    quickSort(arr, 0, n - 1);
    for (int i = 0; i < n; i++) printf("%d ", arr[i]);
    return 0;
}
```

	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.

Finish review

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