

Check For Majority element in a sorted array

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#include <stdio.h>
#include <stdlib.h>

int isMajority(int *arr, int size, int X)
{
    //get last index according to even or odd
    int lastIndex = size % 2 ? (size / 2 + 1) : (size / 2);

    for(int index = 0; index < lastIndex; index++)
        if(arr[index] == X && arr[index+size/2] == X)
            return 1;
    return 0;
}

int main()
{
    int *arr, size, X;
    printf("Enter size of an array\n");
    scanf("%d", &size);
    //allocate memory for array
    arr = (int *)malloc(size * sizeof(int));

    printf("Enter Array elements in sorted order");
    for(int index = 0; index < size; index++)
        scanf("%d", &arr[index]);

    printf("Enter element to check\n");
    scanf("%d", &X);
    if(isMajority(arr, size, X))
        printf("The %d appears more than n/2 times\n", X);
    else
        printf("The %d is not appears more than n/2 times \n", X);
    return 0;
}
```

Time Complexity: $O(\log n)$

Space Complexity: $O(1)$