

## Find the element that appears once in a sorted array

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

int getElementAppearsOnce(int *arr, int start, int end)
{
    if(start < end)
    {
        int middle = (start + end) / 2;
        if(middle % 2 == 0)
            return (arr[middle] == arr[middle+1]) ? getElementAppearsOnce(arr,
middle+2, end) : getElementAppearsOnce(arr, start, middle);
        else
            return (arr[middle] == arr[middle - 1])? getElementAppearsOnce(arr, middle
- 2, end): getElementAppearsOnce(arr, start, middle - 1);
    }
    return (start == end)? start : -1;
}

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

    printf("Enter Array elements ");
    for(int index = 0; index < size; index++)
        scanf("%d", &arr[index]);
    ele = getElementAppearsOnce(arr, 0, size - 1);
    if(ele > -1)
        printf("The element appears once in a given sorted array is = %d\n",
arr[ele]);
    return 0;
}
```

Time Complexity:  $O(\log n)$

Space Complexity:  $O(\log n)$