```c
/* Given an already sorted array of positive integers, design an algorithm and implement it using a
program to find whether given key element is present in the array or not. Also, find total number
of comparisons for each input case. (Time Complexity = O(nlogn), where n is the size of input). */
#include <stdio.h>
int comparisons = 0;
int binarysearch(int arr[], int n, int key) {
    int start = 0, end = n - 1;

    while (start <=end) {
        comparisons++;
        int mid = start + (end - start) / 2;
        if (arr[mid] == key)
        {
            return mid;
        }
        else if (arr[mid] < key)
        {
            start = mid + 1;
        }
        else
        {
            end = mid - 1;
        }
    }
    return -1;
}

int main()
{
    int n, key;
    printf("enter the size of the sorted array: ");
    scanf("%d", &n);
    int arr[n];
    printf("enter the sorted array elements:\n");
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &arr[i]);
    }
    printf("enter the key to be searched: ");
    scanf("%d", &key);
    int result = binarysearch(arr, n, key);
    if (result != -1)
    {
        printf("key found at index %d\n", result);
    } else {
        printf("key not found in the array\n");
    }
    printf("total number of comparisons: %d\n", comparisons);
    return 0;
}
```