

# Rajalakshmi Engineering College

Name: shyam ganesh

Email: 241801266@rajalakshmi.edu.in

Roll no: 241801266

Phone: 9342892812

Branch: REC

Department: I AI & DS FD

Batch: 2028

Degree: B.E - AI & DS

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 6\_COD\_Question 4

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

Kavya, a software developer, is analyzing data trends. She has a list of integers and wants to identify the  $n$ th largest number in the list after sorting the array using QuickSort.

To optimize performance, Kavya is required to use QuickSort to sort the list before finding the  $n$ th largest number.

##### ***Input Format***

The first line of input consists of an integer  $n$ , representing the size of the array.

The second line consists of  $n$  space-separated integers, representing the elements of the array `nums`.

The third line consists of an integer  $k$ , representing the position of the largest

number you need to print after sorting the array.

### **Output Format**

The output prints the k-th largest number in the sorted array (sorted in ascending order).

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 6

-1 0 1 2 -1 -4

3

Output: 0

### **Answer**

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

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

```
// You are using GCC
```

```
int partition(int arr[], int low, int high) {
```

```
    //Type your code here
```

```
    int pivot=arr[high];
```

```
    int i=low-1;
```

```
    for(int j=low ;j<high;j++){
```

```
        if(arr[j]<pivot){
```

```
            i++;
```

```
            int temp=arr[i];
```

```
            arr[i]=arr[j];
```

```
            arr[j]=temp;
```

```
        }
```

```
    }
```

```
    int temp=arr[i+1];
```

```
    arr[i+1]=arr[high];
```

```
    arr[high]=temp;
```

```
    return i+1;
```

```
}
```

```
void quickSort(int arr[], int low, int high) {  
    //Type your code here  
    if(low<high){  
        int pi=partition(arr,low,high);  
        quickSort(arr,low,pi-1);  
        quickSort(arr,pi+1,high);  
    }  
}
```

```
void findNthLargest(int* nums, int n, int k) {  
    //Type your code here  
    quickSort(nums,0,n-1);  
    printf("%d",nums[n-k]);  
}
```

```
int main() {  
    int n, k;  
    scanf("%d", &n);  
    int* nums = (int*)malloc(n * sizeof(int));  
    for (int i = 0; i < n; i++) {  
        scanf("%d", &nums[i]);  
    }  
    scanf("%d", &k);  
    findNthLargest(nums, n, k);  
    free(nums);  
    return 0;  
}
```

**Status :** Correct

**Marks :** 10/10