

Rajalakshmi Engineering College

Name: srisanjay RD
Email: 240801332@rajalakshmi.edu.in
Roll no: 240801332
Phone: 8667212915
Branch: REC
Department: I ECE AF
Batch: 2028
Degree: B.E - ECE

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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>
```

```
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++;
```

```
            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)
```

```
{
```

```
    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)
```

```
{
```

```
    quickSort(nums, 0, n - 1);  
    printf("%d\n", 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