MD. ABU TOWSIF

ID:22-47019-1

SECTION: D

//Program to implement QUICKSORT in c++

#include <bits/stdc++.h>

using namespace std;

inputArr(int \*arr, int s)

{

cout << "Please enter the elements of the array: ";

for (int i = 0; i < s; i++)

{

cin >> arr[i];

}

// cout << endl;

}

// rearrange the elements to get the actual pivot index

int partition(int arr[], int low, int high, int pivot)

{

int PIndex = low;

// Traversing the array from low to high

for (int i = low; i <= high; i++)

{

// If the current element is smaller than the pivot element

if (arr[i] <= pivot)

{

// Swap PIndex element with current element.

swap(arr[PIndex], arr[i]);

// Increment the pointer.

PIndex++;

}

}

PIndex--;

return PIndex;

}

// Dividing the array into two subarrays around

// the pivot and recursively call for them separately.

void quickSort(int arr[], int low, int high)

{

if (low < high)

{

int pivot = arr[high];

// Rearranging and get the actual pivot index

int PIndex = partition(arr, low, high, pivot);

// solve for the left and right subarrays

quickSort(arr, low, PIndex - 1);

quickSort(arr, PIndex + 1, high);

}

}

int main()

{

int n;

cout << "Please enter the size of the array: ";

cin >> n;

int \*arr = new int[n];

inputArr(arr, n);

// Calling the quickSort function

quickSort(arr, 0, n - 1);

cout << "The sorted array is: ";

for (int i = 0; i < n; i++)

{

cout << arr[i] << " ";

}

cout << endl;

return 0;

}

**Screenshot of output:**

**A picture containing text, software, screenshot, display

Description automatically generated**