DSA Lab Assignment 2 - (53457) M. Abdullah

Problem:

Sort an Array in Descending Order Using Quick Sort

Problem: Modify the Quick Sort function to sort an array of integers in descending order.

- Input: An unsorted array of integers.
- Output: Sorted array of integers in descending order.

Hint: Change the comparison in the partition() function to arrange elements in reverse order

Problem Solving

Dived right into the code.

Code

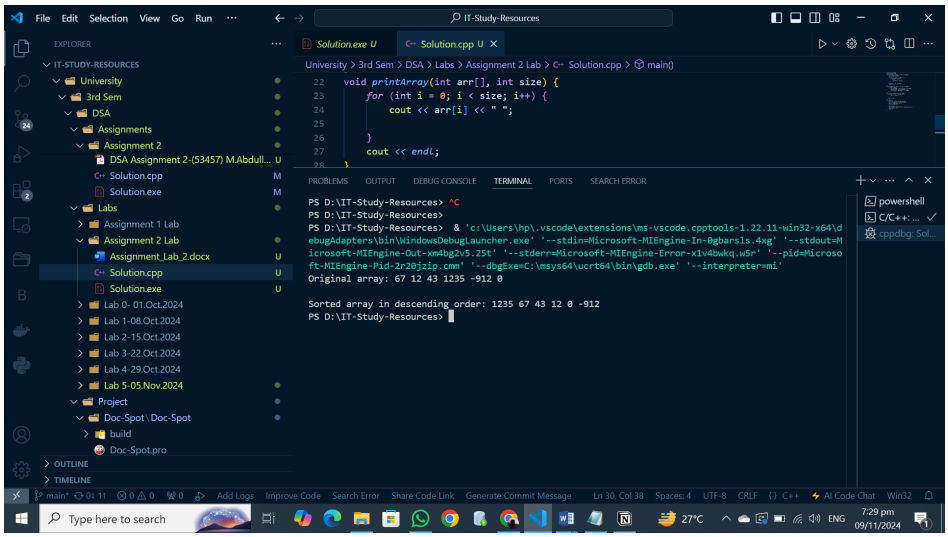
```
#include <iostream>
using namespace std;
int partition(int arr[], int low, int high) {
    int pivot = arr[high];
    int i = low - 1;
    for (int j = low; j < high; j++) {
        if (arr[j] > pivot) {
            i++;
            swap(arr[i], arr[j]);
        }
    }
    swap(arr[i + 1], arr[high]);
```

```
    return i + 1;
}
void quickSort(int arr[], int low, int high) {
    if (low < high) {
        int pivotIndex = partition(arr, low, high);
        quickSort(arr, low, pivotIndex - 1);
        quickSort(arr, pivotIndex + 1, high);
    }
}
void printArray(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";

    }
    cout << endl;
}
int main() {
    int arr[] = {67,12,43,1235,-912,0};
    int n = sizeof(arr) / sizeof(arr[0]);
    cout << "Original array: ";
    printArray(arr, n);

    quickSort(arr, 0, n - 1);
    cout <<endl<< "Sorted array in descending order: ";
    printArray(arr, n);
    return 0;
}
```

Output


File Edit Selection View Go Run
IT-Study-Resources
Solution.exe U
Solution.cpp U
University > 3rd Sem > DSA > Labs > Assignment 2 Lab > Solution.cpp > main()
void printArray(int arr[], int size) {
for (int i = 0; i < size; i++) {
cout << arr[i] << " ";
}
cout << endl;
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR
PS D:\IT-Study-Resources> ^C
PS D:\IT-Study-Resources>
PS D:\IT-Study-Resources> & 'c:\Users\hp\.vscode\extensions\ms-vscode.cpptools-1.22.11-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-0gbarsls.4xg' '--stdout=Microsoft-MIEngine-Out-xm4bg2v5.25t' '--stderr=Microsoft-MIEngine-Error-x1v4bwkq.w5r' '--pid=Microsoft-MIEngine-Pid-2r20jzip.cmm' '--dbgExe=C:\msys64\ucrt64\bin\gdb.exe' '--interpreter=mi'
Original array: 67 12 43 1235 -912 0
Sorted array in descending order: 1235 67 43 12 0 -912
PS D:\IT-Study-Resources>
powershell
C/C++: ...
cppdbg: Sol...
Type here to search
27°C
ENG
7:29 pm
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