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## SAP ID:- 53109

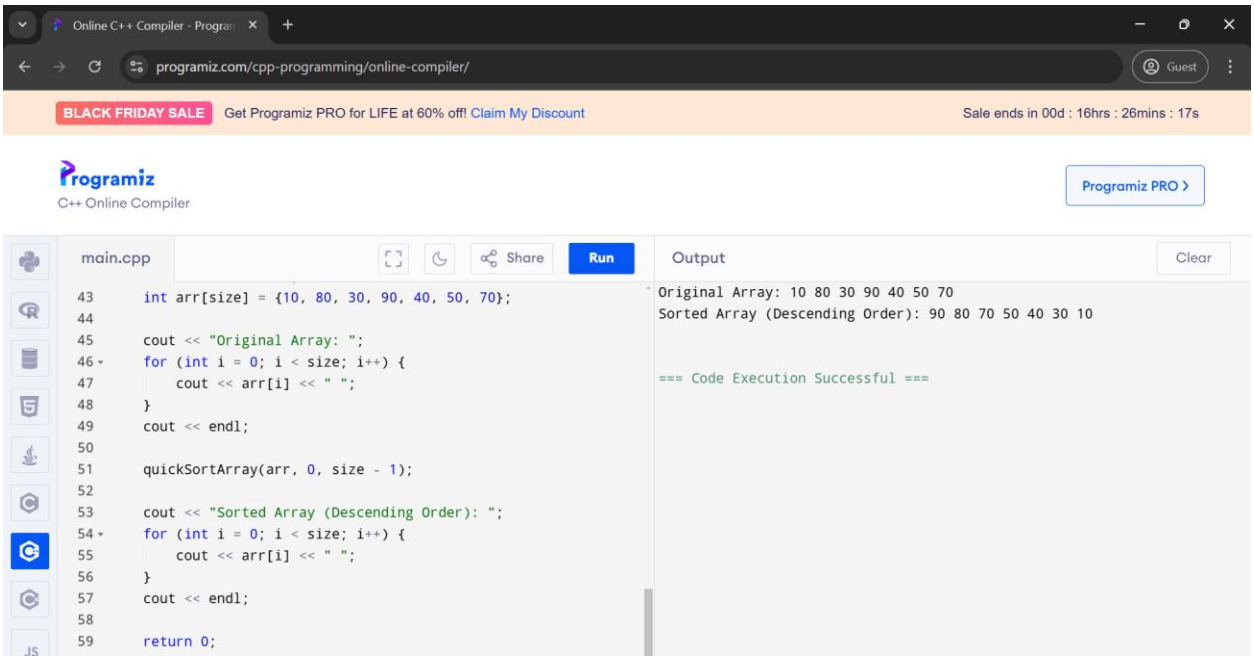
## Subject:- DSA

## //Question no.1

```
#include <iostream>
using namespace std;
void swap(int &a, int &b) {
    int temp = a;
    a = b;
    b = temp;
}
int partitionArray(int arr[], int start, int end) {
    int pivot = arr[start];
    int i = start + 1;
    int j = end;

    while (i <= j) {
        while (i <= end && arr[i] > pivot) {
            i++;
        }
        while (j >= start && arr[j] < pivot) {
            j--;
        }
        if (i < j) {
            swap(arr[i], arr[j]);
        }
    }
```

```
    swap(arr[start], arr[j]);
    return j;
}
void quickSortArray(int arr[], int start, int end) {
    if (start < end) {
        int partitionIndex = partitionArray(arr, start, end);
        quickSortArray(arr, start, partitionIndex - 1);
        quickSortArray(arr, partitionIndex + 1, end);
    }
}

int main() {
    const int size = 7;
    int arr[size] = {10, 80, 30, 90, 40, 50, 70};

    cout << "Original Array: ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;

    quickSortArray(arr, 0, size - 1);

    cout << "Sorted Array (Descending Order): ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;
```

```
    return 0;
}
```

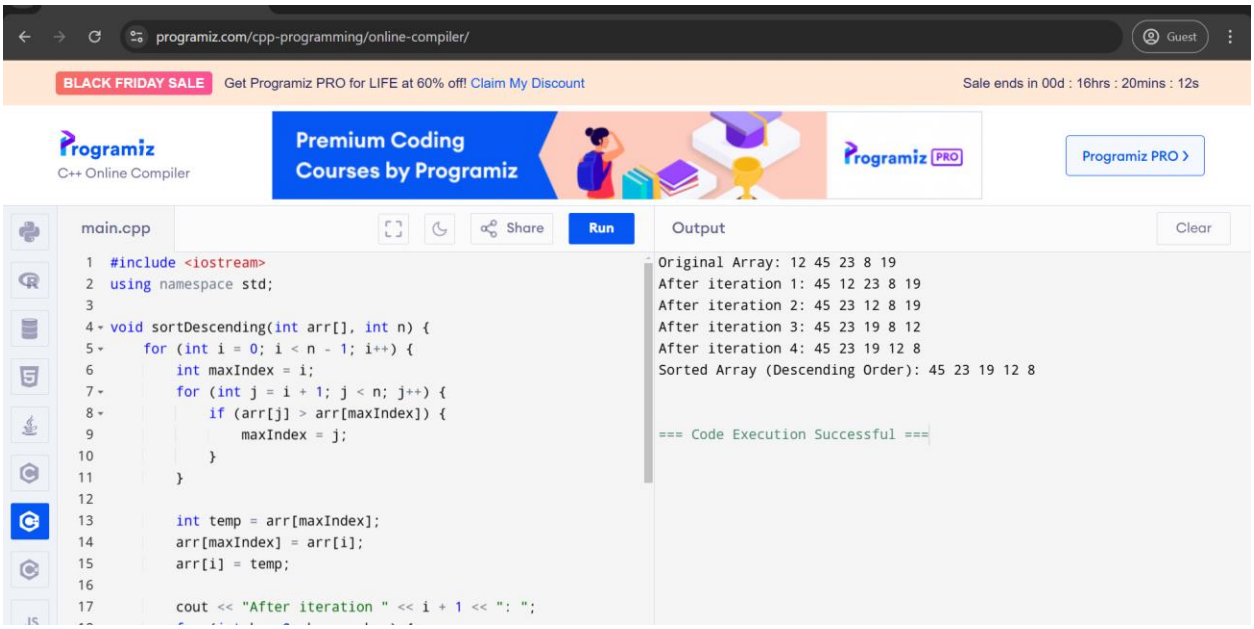



## //Question no.2

```
#include <iostream>
using namespace std;

void sortDescending(int arr[], int n) {
    for (int i = 0; i < n - 1; i++) {
        int maxIndex = i;
        for (int j = i + 1; j < n; j++) {
            if (arr[j] > arr[maxIndex]) {
                maxIndex = j;
            }
        }

        int temp = arr[maxIndex];
```

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

        cout << "After iteration " << i + 1 << ": ";
        for (int k = 0; k < n; k++) {
            cout << arr[k] << " ";
        }
        cout << endl;
    }
}

int main() {
    int arr[5] = {12, 45, 23, 8, 19};
    int size = 5;

    cout << "Original Array: ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;

    sortDescending(arr, size);

    cout << "Sorted Array (Descending Order): ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;
```

```
    return 0;
}
```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main.cpp
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Run
Output
Clear
#include <iostream>
using namespace std;
void sortDescending(int arr[], int n) {
for (int i = 0; i < n - 1; i++) {
int maxIndex = i;
for (int j = i + 1; j < n; j++) {
if (arr[j] > arr[maxIndex]) {
maxIndex = j;
}
}
int temp = arr[maxIndex];
arr[maxIndex] = arr[i];
arr[i] = temp;
cout << "After iteration " << i + 1 << ": ";
Original Array: 12 45 23 8 19
After iteration 1: 45 12 23 8 19
After iteration 2: 45 23 12 8 19
After iteration 3: 45 23 19 8 12
After iteration 4: 45 23 19 12 8
Sorted Array (Descending Order): 45 23 19 12 8
=== Code Execution Successful ===