

### Third Year B. Tech (EL & CE)

**Semester: V**

**Subject: Object-Oriented Programming Lab**

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**Class: SY**

**Roll No: 52**

**Batch: A3**

### Experiment No: 07

**Name of the Experiment: Bubble sort Algorithm**

**Performed on: 27/09/2023**

**Submitted on: 27/09/2023**

### Problem Statement:

Perform bubble sort operation using the template for integer and floating data types

### Output:

```
Original integer array: 7 10 888 2 3
Sorted integer array: 2 3 7 10 888
Original float array: 3.14 1.23 2.71 0.99 4.56
Sorted float array: 0.99 1.23 2.71 3.14 4.56
```

### Code:

```
#include <iostream>
#include <vector>

template <typename T>
void bubbleSort(std::vector<T> &arr) {
    int n = arr.size();
    bool swapped;

    do {
        swapped = false;
        for (int i = 0; i < n - 1; ++i) {
            if (arr[i] > arr[i + 1]) {
```

```
std::swap(arr[i], arr[i + 1]);
```

```
swapped = true;
```

```
}
```

```
}
```

```
} while (swapped);
```

```
}
```

```
int main() {
```

```
// Sorting integers
```

```
std::vector<int> intArr = {7,10,888,2,3};
```

```
std::cout << "Original integer array: ";
```

```
for (const int &num : intArr) {
```

```
    std::cout << num << " ";
```

```
}
```

```
std::cout << std::endl;
```

```
bubbleSort(intArr);
```

```
std::cout << "Sorted integer array: ";
```

```
for (const int &num : intArr) {
```

```
    std::cout << num << " ";
```

```
}
```

```
std::cout << std::endl;
```

```
// Sorting floats
```

```
std::vector<float> floatArr = {3.14, 1.23, 2.71, 0.99, 4.56};
```

```
std::cout << "Original float array: ";
```

```
for (const float &num : floatArr) {
```

```
    std::cout << num << " ";
```

```
}
```

```
std::cout << std::endl;
```

```
bubbleSort(floatArr);
```

```
std::cout << "Sorted float array: ";
```

```
for (const float &num : floatArr) {
```

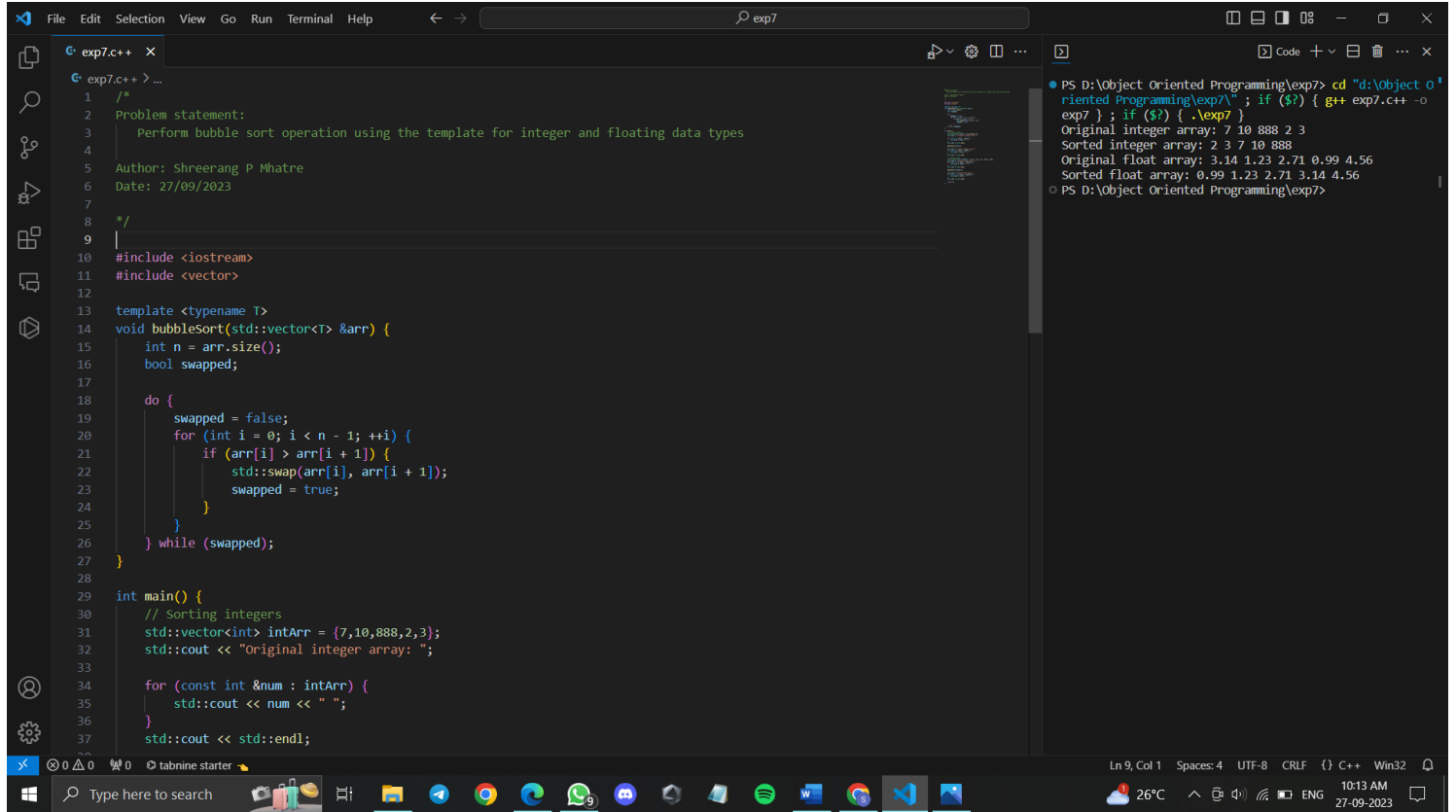
```
    std::cout << num << " ";
```

```
}
```

```
std::cout << std::endl;
```

```
return 0;
```

```
}
```

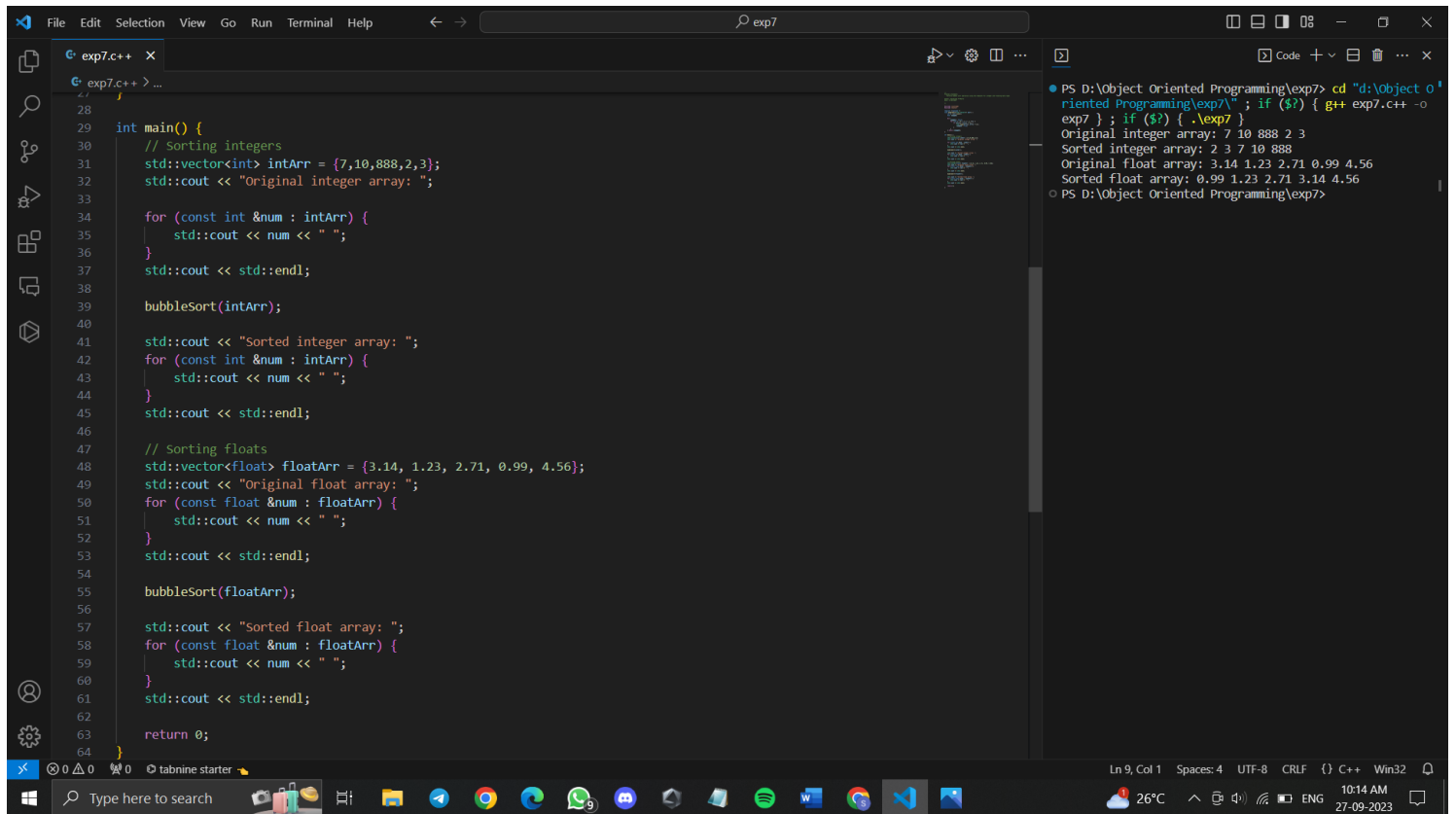


```

1  /*
2  Problem statement:
3  Perform bubble sort operation using the template for integer and floating data types
4
5  Author: Shreerang P Mhatre
6  Date: 27/09/2023
7
8  */
9
10 #include <iostream>
11 #include <vector>
12
13 template <typename T>
14 void bubbleSort(std::vector<T> &arr) {
15     int n = arr.size();
16     bool swapped;
17
18     do {
19         swapped = false;
20         for (int i = 0; i < n - 1; ++i) {
21             if (arr[i] > arr[i + 1]) {
22                 std::swap(arr[i], arr[i + 1]);
23                 swapped = true;
24             }
25         }
26     } while (swapped);
27 }
28
29 int main() {
30     // Sorting integers
31     std::vector<int> intArr = {7,10,888,2,3};
32     std::cout << "Original integer array: ";
33
34     for (const int &num : intArr) {
35         std::cout << num << " ";
36     }
37     std::cout << std::endl;
38 }
  
```

PS D:\Object Oriented Programming\exp7> cd "d:\Object Oriented Programming\exp7\"; if (\$?) { g++ exp7.cpp -o exp7 }; if (\$?) { .\exp7 }

Original integer array: 7 10 888 2 3  
Sorted integer array: 2 3 7 10 888  
Original float array: 3.14 1.23 2.71 0.99 4.56  
Sorted float array: 0.99 1.23 2.71 3.14 4.56



```

28
29 int main() {
30     // Sorting integers
31     std::vector<int> intArr = {7,10,888,2,3};
32     std::cout << "Original integer array: ";
33
34     for (const int &num : intArr) {
35         std::cout << num << " ";
36     }
37     std::cout << std::endl;
38
39     bubbleSort(intArr);
40
41     std::cout << "Sorted integer array: ";
42     for (const int &num : intArr) {
43         std::cout << num << " ";
44     }
45     std::cout << std::endl;
46
47     // Sorting floats
48     std::vector<float> floatArr = {3.14, 1.23, 2.71, 0.99, 4.56};
49     std::cout << "Original float array: ";
50     for (const float &num : floatArr) {
51         std::cout << num << " ";
52     }
53     std::cout << std::endl;
54
55     bubbleSort(floatArr);
56
57     std::cout << "Sorted float array: ";
58     for (const float &num : floatArr) {
59         std::cout << num << " ";
60     }
61     std::cout << std::endl;
62
63     return 0;
64 }
  
```

PS D:\Object Oriented Programming\exp7> cd "d:\Object Oriented Programming\exp7\"; if (\$?) { g++ exp7.cpp -o exp7 }; if (\$?) { .\exp7 }

Original integer array: 7 10 888 2 3  
Sorted integer array: 2 3 7 10 888  
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