



# Programming Fundamentals

Aamina Batool

## Display Largest Element of an array

```
int main()
{   int i, n;
    float arr[100];
    cout << "Enter total number of elements(1 to 100):
";
    cin >> n;
    cout << endl;
    for(i = 0; i < n; ++i)
    {   cout << "Enter Number " << i + 1 << " : ";
        cin >> arr[i];}
    for(i = 1; i < n; ++i)
    { // Change < to > if you want to find the smallest
      element
        if(arr[0] < arr[i])
            arr[0] = arr[i];}
    cout << "Largest element = " << arr[0];
    return 0;}
```

# Bubble Sort

list

list[0]

10

list[1]

7

list[2]

19

list[3]

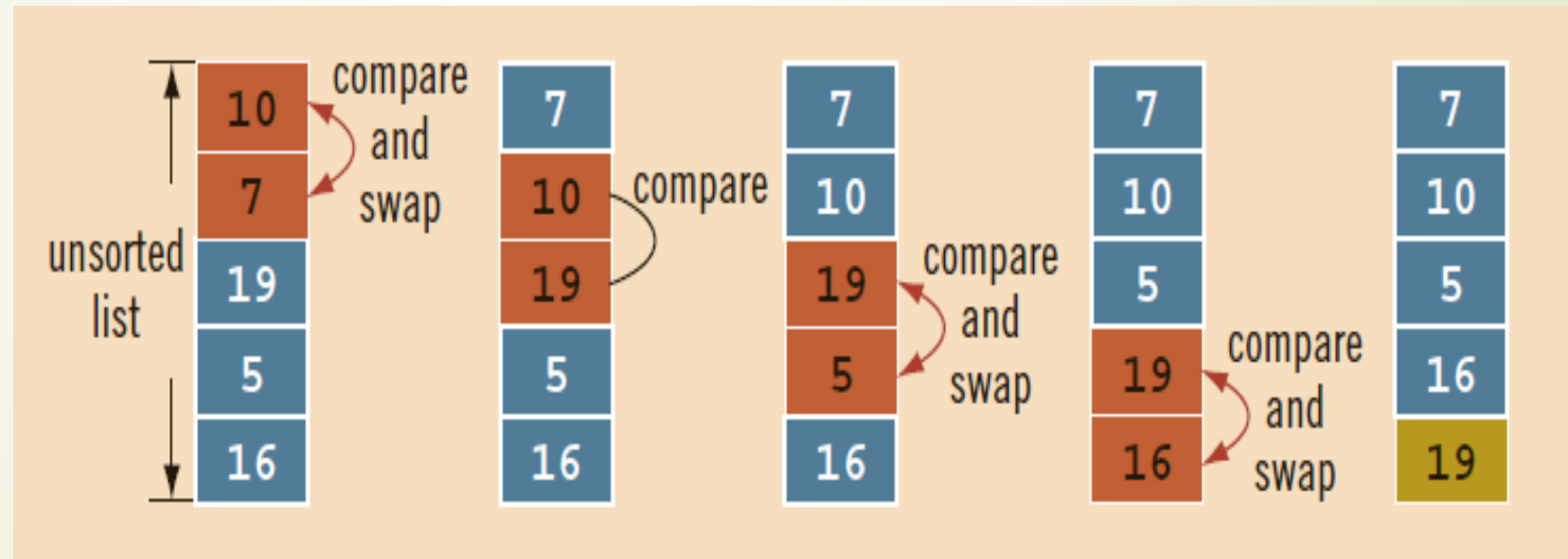
5

list[4]

16

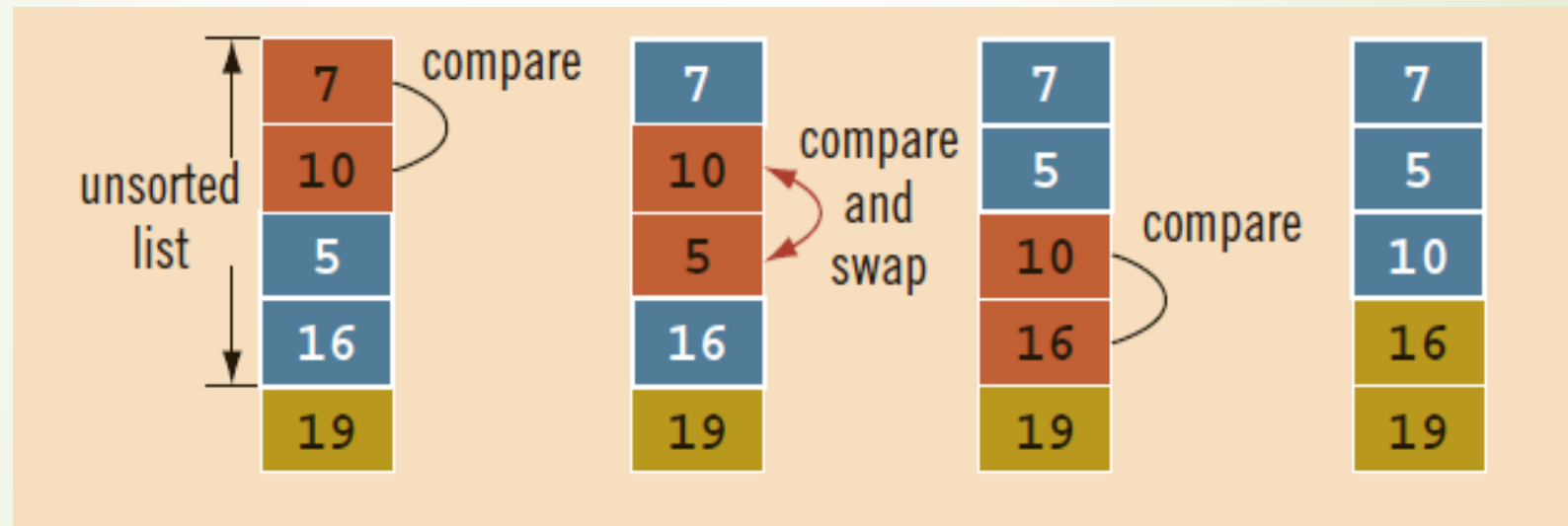
# Example

➤ **Iteration 1: Sort `list[0...4]`.**



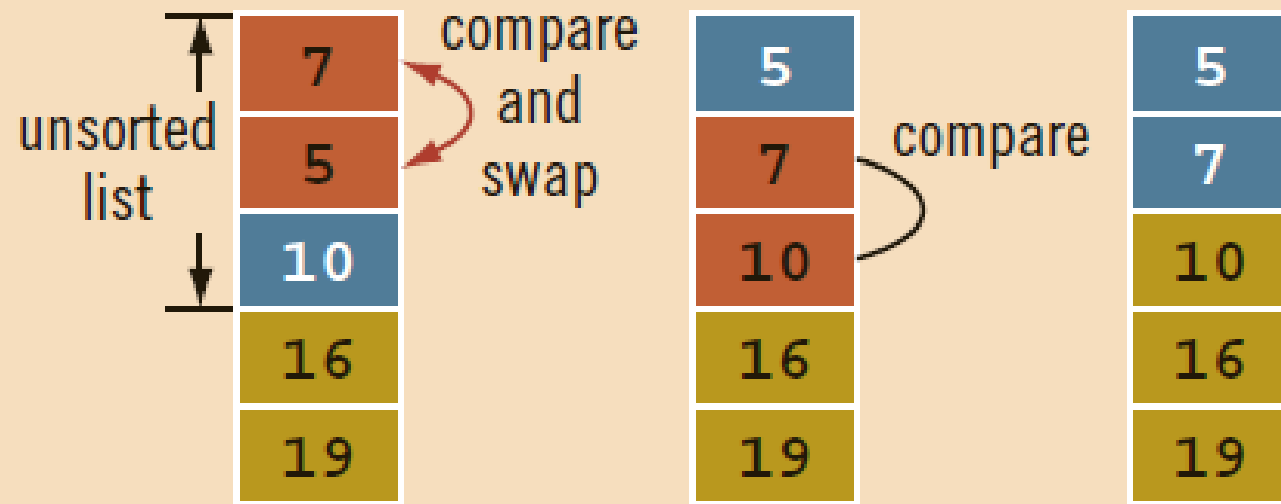
# Example

➡ **Iteration 2: Sort `list[0...3]`.**



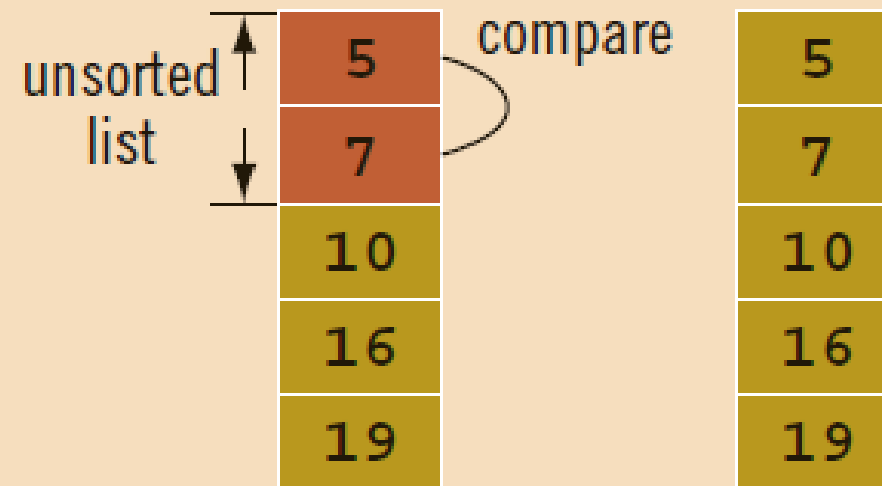
# Example

➤ **Iteration 3: Sort `list[0...2]`.**



# Example

➤ **Iteration 4: Sort `list[0...1]`.**



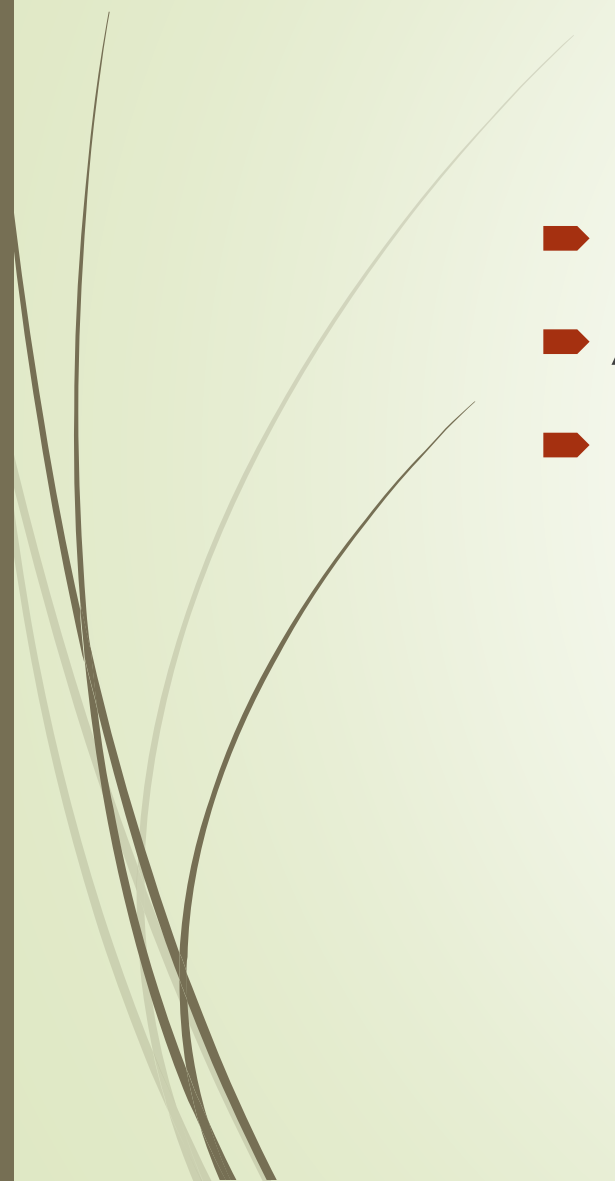
# Bubble Sort - Algorithm

```
void bubbleSort(elemType list[], int length)
{
    for (int iteration = 1; iteration < length; iteration++)
    {
        for (int index = 0; index < length - iteration;
              index++)
        {
            if (list[index] > list[index + 1])
            {
                elemType temp = list[index];
                list[index] = list[index + 1];
                list[index + 1] = temp;
            }
        }
    }
} //end bubbleSort
```





# Exercise

- Implement Bubble sort for sorting an array in:
  - Ascending order
  - Descending order
- 



# Merging Sorted Arrays

- Array1 = {1, 4, 6, 8, 10}
- Array2 = { 0, 5, 9, 15, 20}
- Merged Sorted Array:
- Array3 = { 0, 1, 4, 5, 6, 9, 10, 15, 20}



# References



1. C++ Programming: From Problem Analysis to Program Design, Third Edition
2. <https://www.just.edu.jo/~yahya-t/cs115/>