Programming Fundamentals

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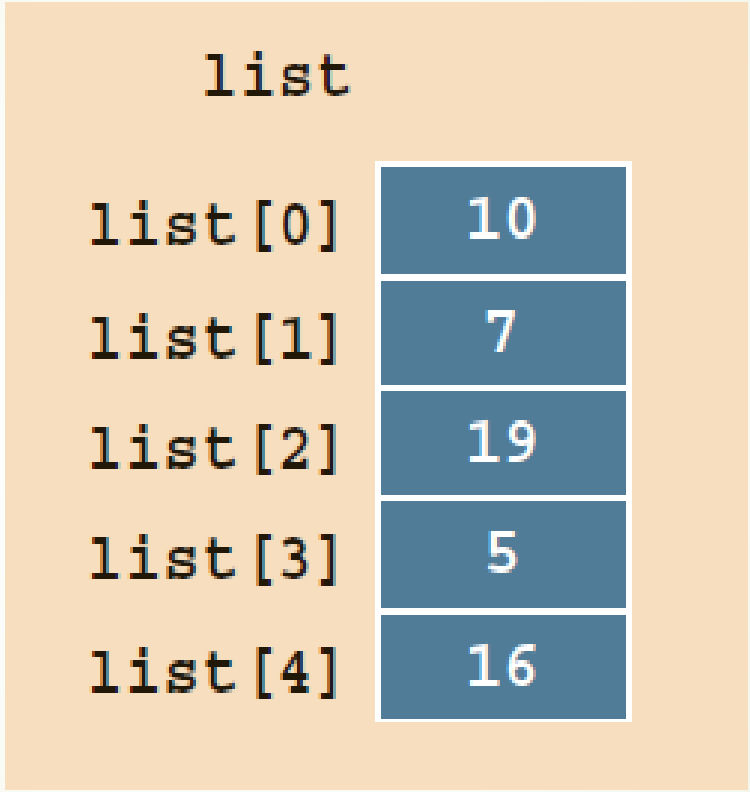
Display Largest Element of an array

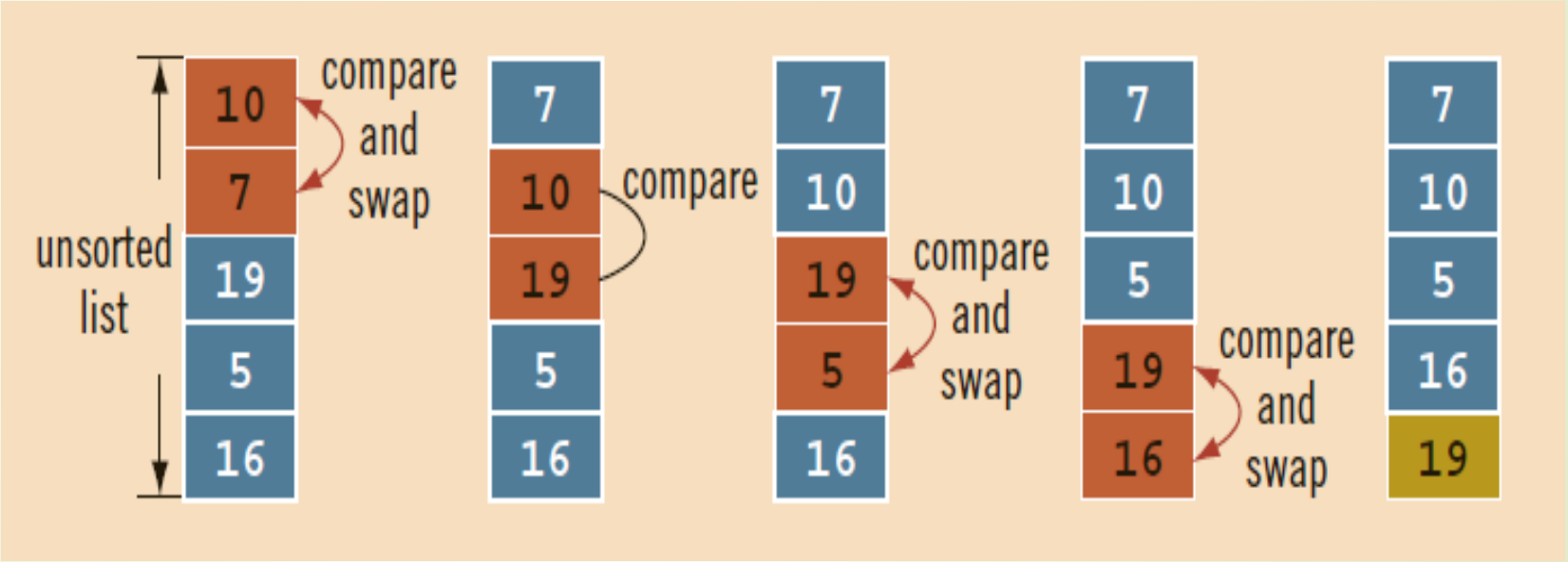
```
int main()
{   int i, n;
    float arr[100];
    cout << "Enter total number of elements(1 to 100): 
";
    cin >> n;
    cout << endl;
    for(i = 0; i < n; ++i)
    {  cout << "Enter Number " << i + 1 << " : ";
       cin >> arr[i];}
   for(i = 1;i < n; ++i)
    { // Change < to > if you want to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

Bubble Sort



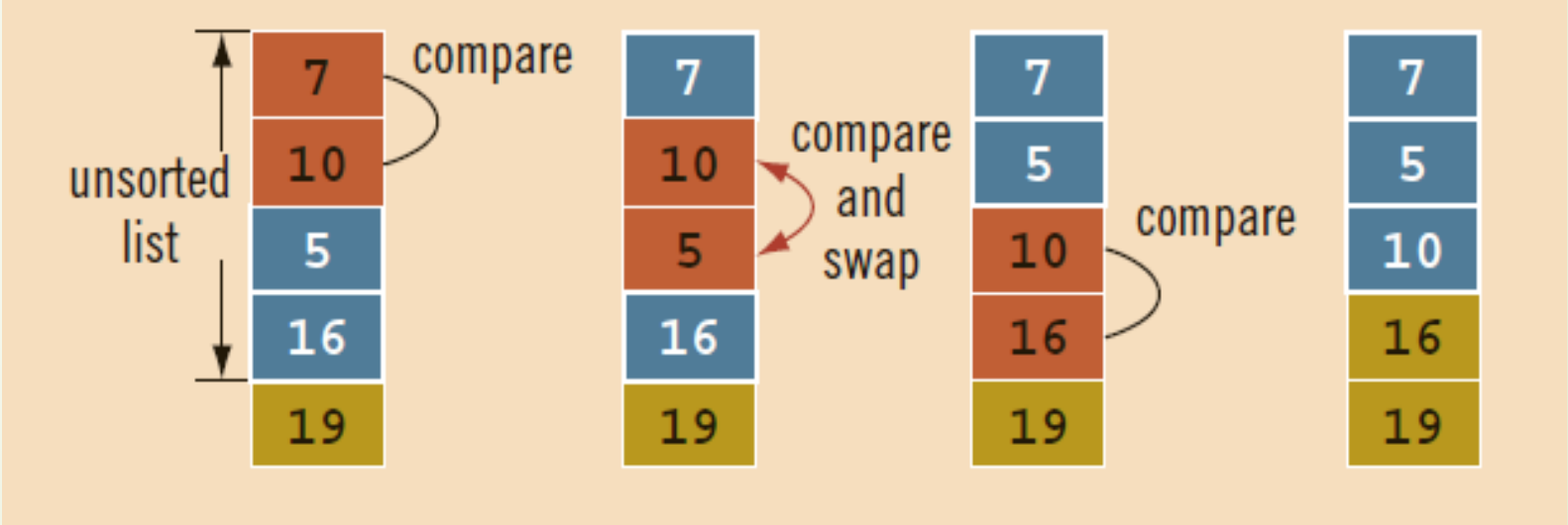
Example

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



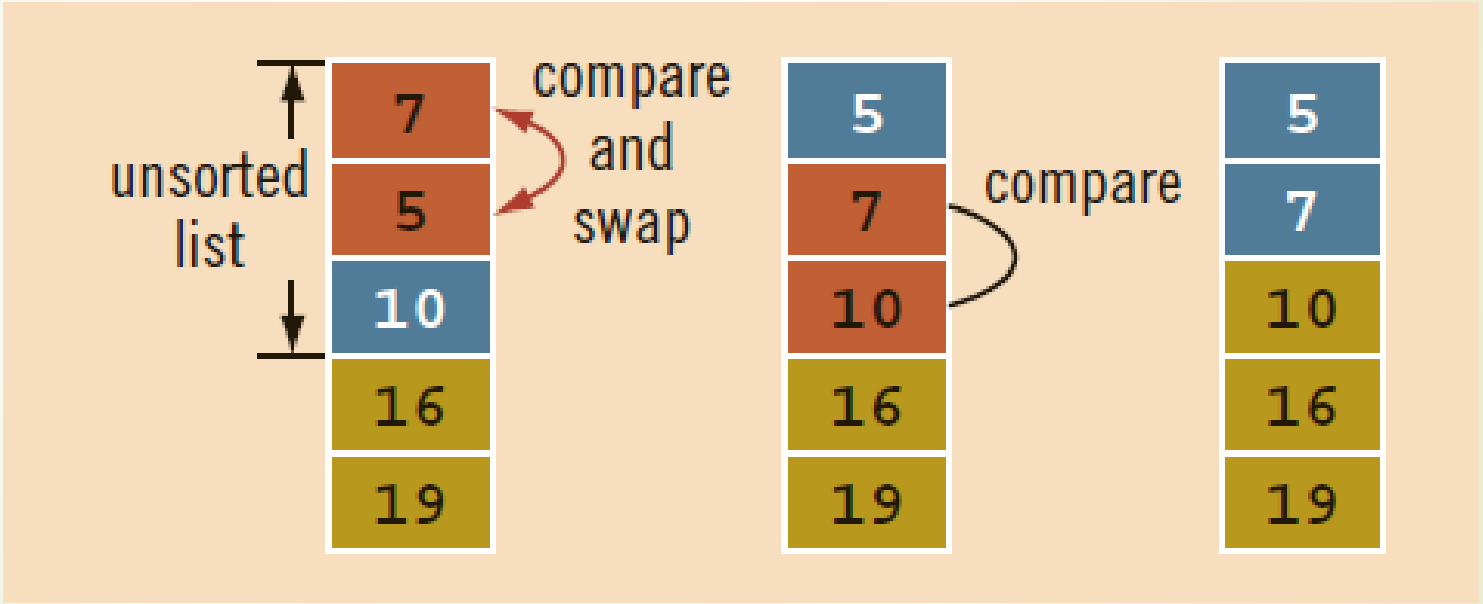
Example

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



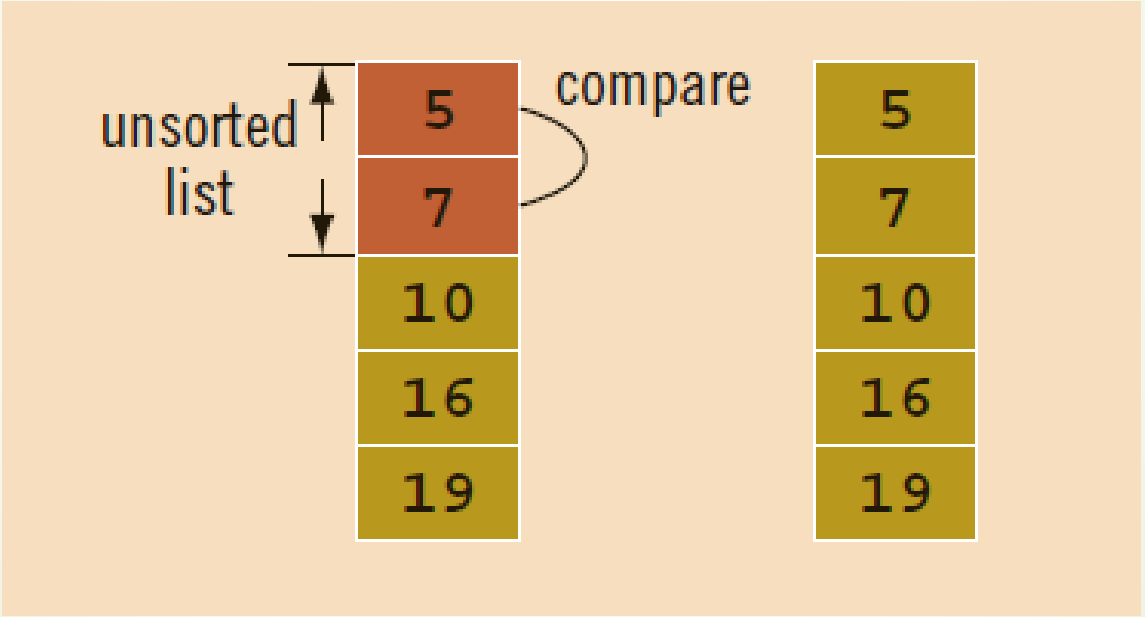
Example

- **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/