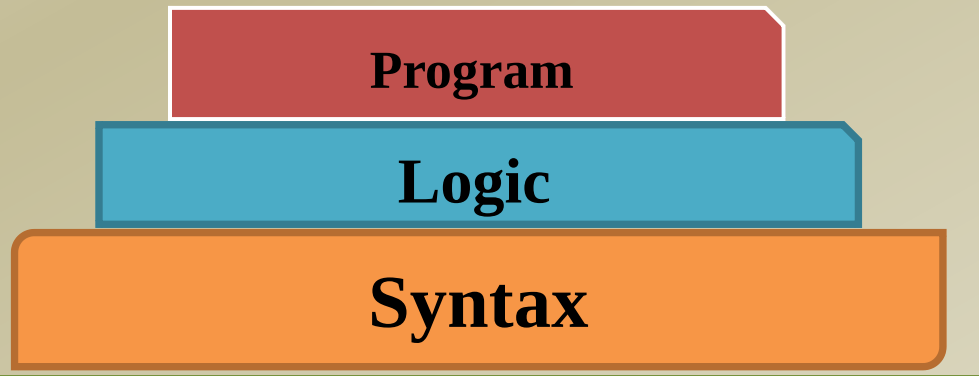
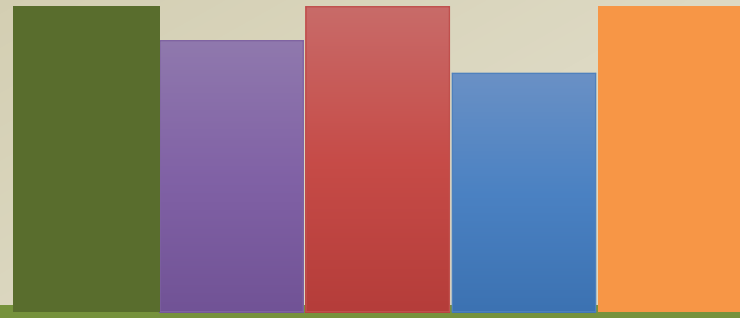
Code at Random
(OPC) PVT. LTD.

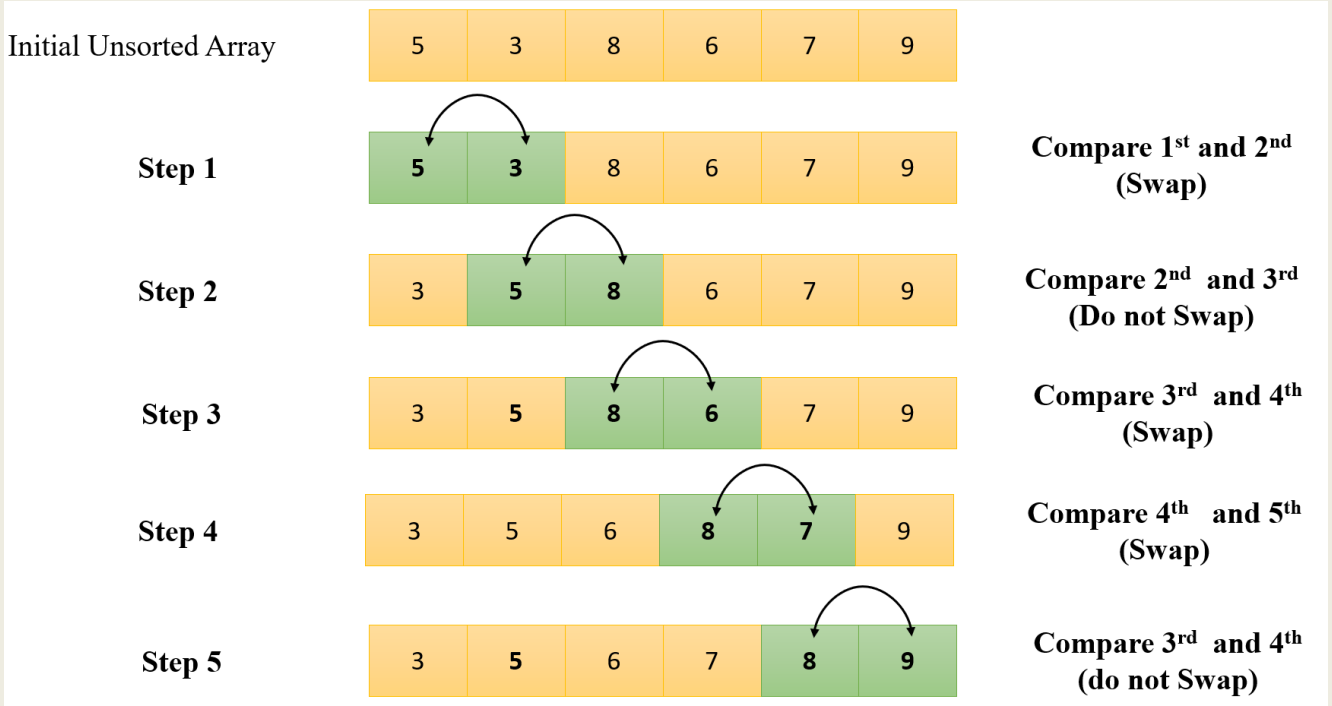
Bubble Sort in JAVA





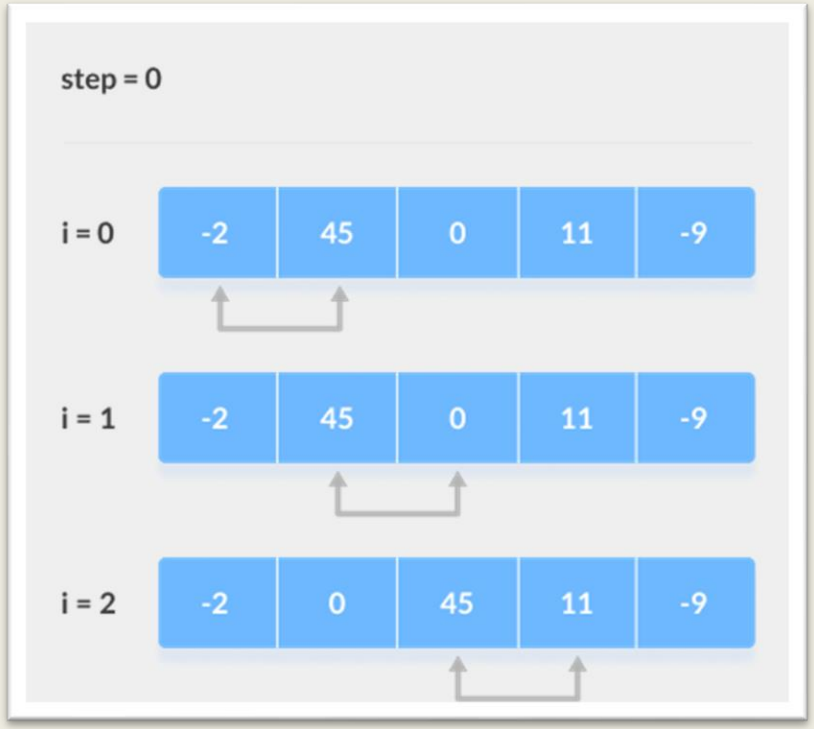
Bubble Sort

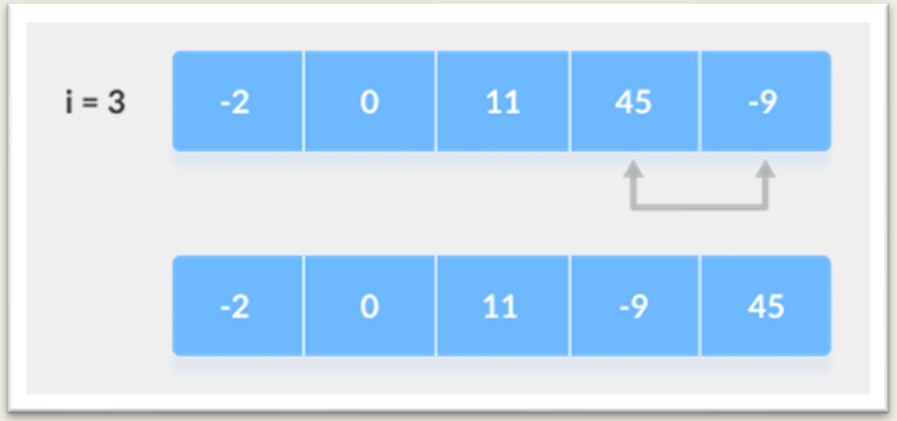
- Bubble sort is a sorting algorithm that compares two adjacent elements and swaps them until they are not in the particular order.
- Just like the movement of air bubbles in the water that rise up to the surface, each element of the array move to the end in each iteration. Therefore, it is called a bubble sort.



Working of Bubble Sort

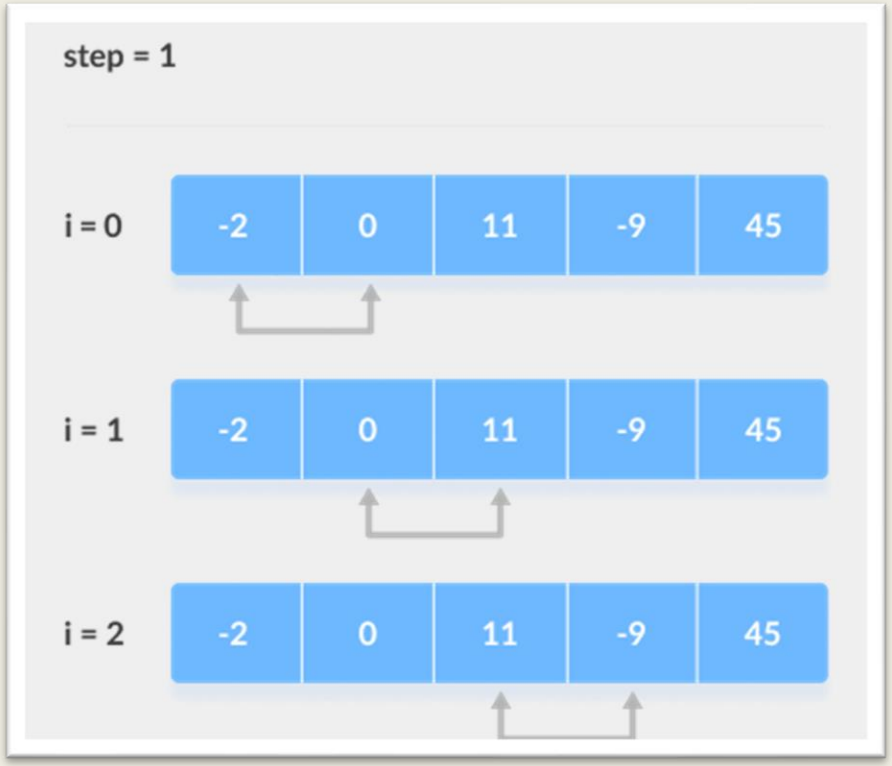
1. First Iteration (Compare and Swap)
   - *Starting from the first index, compare the first and the second elements.*
   - *If the first element is greater than the second element, they are swapped.*
   - *Now, compare the second and the third elements. Swap them if they are not in order.*
   - *The above process goes on until the last element.*

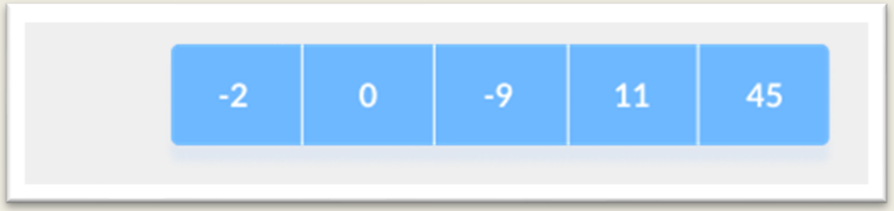




Remaining Iterations

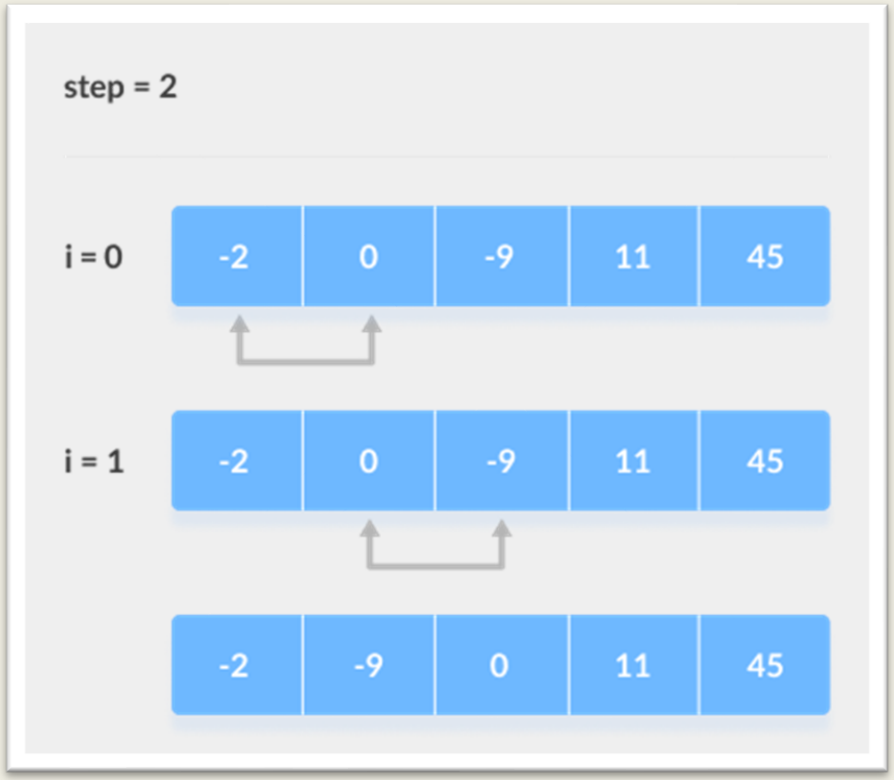
- ✓ Remaining Iteration
  - *The same process goes on for the remaining iterations.*
  - *After each iteration, the largest element among the unsorted elements is placed at the end.*

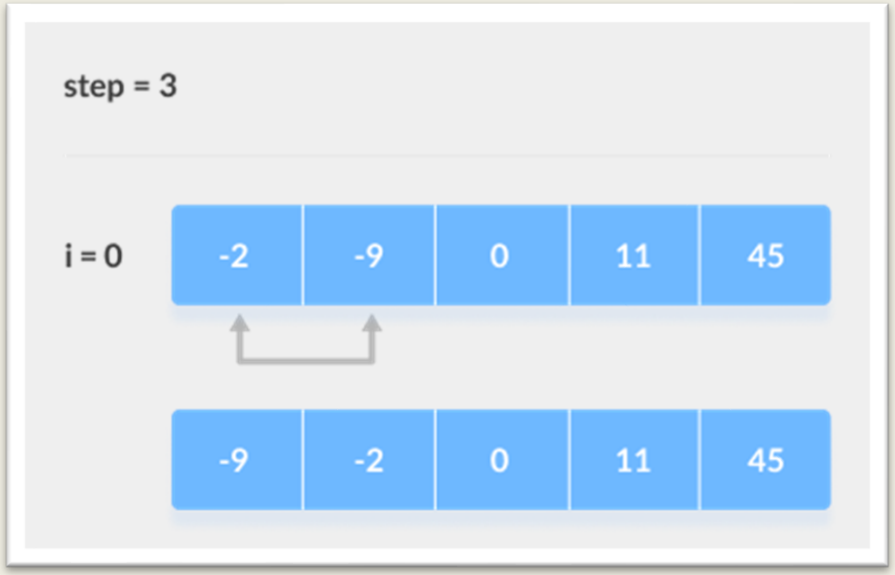




Other Steps

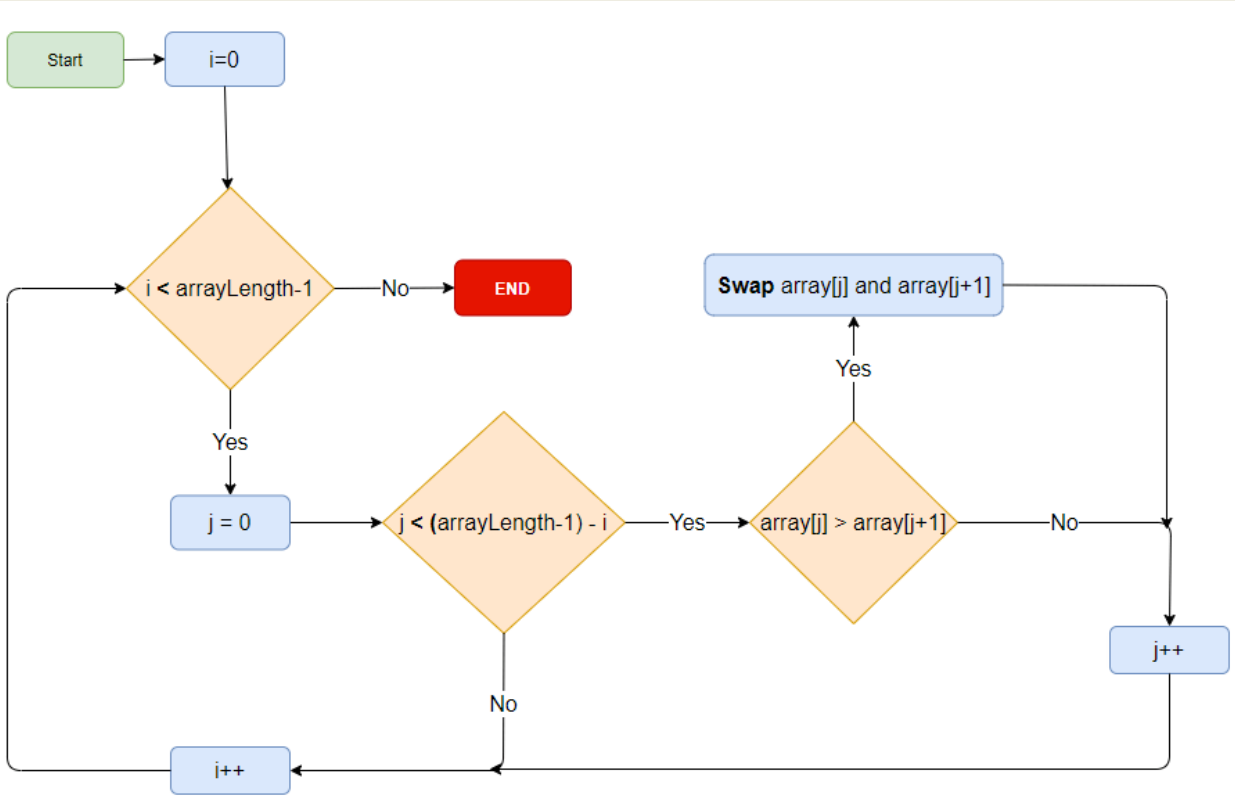
- ✓ In each iteration, the comparison takes place up to the last unsorted element.





Algorithm of Bubble Sort

```
function bubbleSort(array)
  for i <- 1 to indexOfLastUnsortedElement-1
    if leftElement > rightElement
      swap leftElement and rightElement
end bubbleSort
```



WAP to input n numbers in an array. Perform the **Bubble Sort** and sort the array in ascending order using user-defined function.

```
import java.util.*;
class bubble_sort {
  public static void bubbleSort(int array[]) {
    int size = array.length;
    for (int i = 0; i < size - 1; i++){
      for (int j = 0; j < size - i - 1; j++){
        if (array[j] > array[j + 1]) {
          int temp = array[j];
          array[j] = array[j + 1];
          array[j + 1] = temp;
        }
    }
  }
}
 public static void main(String args[]) {
    int[] data = { -2, 45, 0, 11, -9 };
    bubbleSort(data);
    System.out.println("Sorted Array in Ascending Order:");
    for(int i=0; i<data.length; i++)
      System.out.println(data[i]);
  }
}
```