Theory: Bubble sort in Java

12 minutes 0 / 3 problems solved

Skip this topic Start practicing

Bubble sort is one of the simplest sorting algorithms. It repeatedly steps through the array to be sorted, compares each pair of adjacent array elements and swaps them if they are in the wrong order.

The wrong and correct orders depend on the required sorting order. If an array must be sort in the ascending order, the wrong order is the case when the previous element is greater than the next one. And if an array must be sort in the descending order, the wrong order is the case when the previous element is less than the next one.

The algorithm is not suitable for large arrays as its average and worst-case time complexity is $O(n^2)$, where n is the array length.

The algorithm is **stable**, i.e. it doesn't change the relative order of identical elements.

§1. Implementation in Java

In the following code, the bubble sort is implemented as a static method that takes an array of ints and returns the sorted one.

```
public static int[] bubbleSort(int[] array) {
    for (int i = 0; i < array.length - 1; i++) {
        for (int j = 0; j < array.length - i - 1; j++) {

    /* if a pair of adjacent elements has the wrong order it swaps them
*/
            if (array[j] > array[j + 1]) {
                int temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }

        }

    }



    return array;

}
```

As you can see, the algorithm has a very clear implementation.

Let's test the method passing different arrays:

```
bubbleSort(new int[] { 21, 23, 19, 30, 11, 28 }); // { 11, 19, 21, 23, 28, 30 }
bubbleSort(new int[] { 30, 28, 23, 21, 19, 11 }); // { 11, 19, 21, 23, 28, 30 }
```

You can start the implemented algorithm in the debug mode to understand it better.

31 users liked this theory. **1** didn't like it. **What about you?**

Start practicing

362 users completed this topic.
Latest completion was
about 16 hours ago.

Current topic:

Bubble sort in Java

Topic depends on

Bubble sort

Algorithms in Java

Table of contents:

↑ Theory: Bubble sort in Java

§1. Implementation in Java

Feedback & Comments

Show discussion (0)