

```
1 // sample of arrays to sort
2 const arrayRandom = [9, 2, 5, 6, 4, 3, 7, 10, 1, 8];
3 const arrayOrdered = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];
4 const arrayReversed = [10, 9, 8, 7, 6, 5, 4, 3, 2, 1];
5
6 // be careful: this is a very basic implementation which is nice to understand the
  deep principle of bubble sort (going through all comparisons) but it can be greatly
  improved for performances
7 function bubbleSortBasic(array) {
8   let countOuter = 0;
9   let countInner = 0;
10  let countSwap = 0;
11
12  for(let i = 0; i < array.length; i++) {
13    countOuter++;
14    for(let j = 1; j < array.length; j++) {
15      countInner++;
16      if(array[j - 1] > array[j]) {
17        countSwap++;
18        [array[j - 1], array[j]] = [array[j], array[j - 1]];
19      }
20    }
21  }
22
23  console.log('outer:', countOuter, 'inner:', countInner, 'swap:', countSwap);
24  return array;
25 }
26
27 bubbleSortBasic(arrayRandom.slice()); // => outer: 10 inner: 90 swap: 21
28 bubbleSortBasic(arrayOrdered.slice()); // => outer: 10 inner: 90 swap: 0
29 bubbleSortBasic(arrayReversed.slice()); // => outer: 10 inner: 90 swap: 45
30
31 // correct implementation: this is the usual implementation of the bubble sort
  algorithm. Some loops execution are avoided if not they are not needed
32 function bubbleSort(array) {
33   let countOuter = 0;
34   let countInner = 0;
35   let countSwap = 0;
36
37   let swapped;
38   do {
39     countOuter++;
40     swapped = false;
41     for(let i = 0; i < array.length; i++) {
42       countInner++;
43       if(array[i] && array[i + 1] && array[i] > array[i + 1]) {
44         countSwap++;
45         [array[i], array[i + 1]] = [array[i + 1], array[i]];
46         swapped = true;
47       }
48     }
49   } while(swapped);
50
51   console.log('outer:', countOuter, 'inner:', countInner, 'swap:', countSwap);
52   return array;
53 }
54
55 bubbleSort(arrayRandom.slice()); // => outer: 9 inner: 90 swap: 21
56 bubbleSort(arrayOrdered.slice()); // => outer: 1 inner: 10 swap: 0
57 bubbleSort(arrayReversed.slice()); // => outer: 10 inner: 100 swap: 45
```

