1 - Bubble Sort

Wednesday, 20 April, 2022 1:30 PM

Bubble Sort

array = < 5, 1, 12, -5, 16 >

5 1 12 -5 16

current > next ? ✓ swap

1 5 12 -5 16

current > next ? X stay

i = 4

1 5 12 -5 16

current > next ? ✓ swap

1 5 -5 12 16

current > next ? X stay

---

1 5 -5 12 16

current > next ? X stay

i = 3

1 5 -5 12 16

current > next ? ✓ swap

1 -5 5 12 16

current > next ? X stay

---

1 -5 5 12 16

current > next ? ✓ swap

i = 2

-5 1 5 12 16

current > next ? X stay

-5 1 5 12 16

current > next ? X stay

i = 1

Pseudocode

```
void bubbleSort(int[] arr) {
    for (int i = arr.length-1; i >= 0; i--) {          ... O(n)
        for (int j = 1; j <= i; j++) {                 ... O(n)
            if (arr[j-1] > arr[j]) {                   ... O(1)
                temp = arr[j];
                arr[j] = arr[j-1];
                arr[j-1] = temp;
            }
        }
    }
}
```

time complexity = $O(n) * O(n) * O(1)$

= $O(n^2)$