

Bubble Sort

- ▶ Time Complexity
 - ▶ Best: $O(n)$
 - ▶ Average: $O(n^2)$
 - ▶ Worst: $O(n^2)$
- ▶ Memory: 1
- ▶ Stable: Yes

BUBBLE-SORT(A)

```
1: for  $i = 1$  to  $A.length - 1$  do  
2:    $noswap = TRUE$   
3:   for  $j = A.length - 1$  downto  $i$  do  
4:     if  $A[j + 1] < A[j]$  then  
5:        $A[j] \leftrightarrow A[j + 1]$   
6:        $noswap = FALSE$   
7:   if  $noswap$  then break
```