Algorithm 1 Bubble Sort with Flag

Input: *Array*

Output: *Sorted   Array*

 1: $time \leftarrow len(Array)$
 2: $end \leftarrow len(Array) - 1$
 3: **for** $i = 0; i < time - 1; i + +$ **do**
 4:     $flag \leftarrow False$
 5:     **for** $j = 0; j < end; j + +$ **do**
 6:         **if** $Array[j] > Array[j + 1]$ **then**
 7:             swap $Array[j], Array[j + 1]$
 8:             $flag \leftarrow True$
 9:         **end if**
10:     **end for**
11:     **if** $flag == False$ **then**
12:         **return** *Array*
13:     **end if**
14:     $end \leftarrow end - 1$
15: **end for**
16: **return** *Array*

Algorithm 2 Bubble Sort with Interval

Input: *Array*

Output: *Sorted   Array*

 1: $length \leftarrow len(Array)$
 2: $interval \leftarrow int(len(Array)//1.3)$
 3: **while** $interval \geq 1$ **do**
 4:     $i \leftarrow 0$
 5:     **while** $i + interval < length$ **do**
 6:         **if** $Array[i] > Array[i + interval]$ **then**
 7:             swap $Array[i], Array[i + interval]$
 8:         **end if**
 9:         $i \leftarrow i + 1$
10:     **end while**
11:     $interval \leftarrow int(interval//1.3)$
12: **end while**
13: **return** *Array*