## Algorithm

We assume **list**is an array of **n** elements. We further assume that **swap**function swaps the values of the given array elements.

begin BubbleSort(list)

for all elements of list

if list[i] > list[i+1]

swap(list[i], list[i+1])

end if

end for

return list

end BubbleSort

## Pseudocode

We observe in algorithm that Bubble Sort compares each pair of array element unless the whole array is completely sorted in an ascending order. This may cause a few complexity issues like what if the array needs no more swapping as all the elements are already ascending.

To ease-out the issue, we use one flag variable **swapped** which will help us see if any swap has happened or not. If no swap has occurred, i.e. the array requires no more processing to be sorted, it will come out of the loop.

Pseudocode of BubbleSort

procedure bubbleSort( list : array of items )

loop = list.count;

for i = 0 to loop-1 do:

swapped = false

for j = 0 to loop-1 do: /\* compare the adjacent elements \*/

if list[j] > list[j+1] then

/\* swap them \*/

swap( list[j], list[j+1] )

swapped = true

end if

end for/\*if no number was swapped that means

array is sorted now, break the loop.\*/

if(not swapped) then

break

end if

end for

end procedure return list