

22.4.5

Analyze the following sorting algorithm

```
for( int i=0; i<list.length - 1; i++ ) {  
    if( list[i] > list[i+1] ) {  
        swap list[i] with list[i+1];  
        i = -1;  
    }  
}
```

$\Theta(n)$

Whenever a swap is made, it goes back to the beginning of the loop. In the worst case, there will be  $O(n^2)$  swaps. For each swap,  $\Theta(n)$  number of comparisons will be made. So, the total is  $O(n^3)$  in the worst case.