

Sample Assignment 5
Discussed on 2020-10-05,
Not graded

Question 1 (Running time).

Find the best-case and worst-case running times for the algorithms below, by analyzing how many times each line is evaluated, in terms of the input size. The input size is n , which is the length of the input list A .

One sorting algorithm for array A :

```
BUBBLESORT-ONE( $A$ )
1  for  $m = A.length$  downto 2
2    for  $i = 1$  to  $m - 1$ 
3      if  $A[i] > A[i + 1]$ 
4         $swap(A[i], A[i + 1])$ 
```

Another sorting algorithm for array A :

```
BUBBLESORT-TWO( $A$ )
1  for  $m = A.length$  downto 2
2     $sorted = true$ 
3    for  $i = 1$  to  $m - 1$ 
4      if  $A[i] > A[i + 1]$ 
5         $swap(A[i], A[i + 1])$ 
6         $sorted = false$ 
7    if  $sorted = true$ 
8      return
```