East West University
Department of Computer Science and Engineering

CSE 245(3): ALGORITHMS
Course Instructor: Dr. Mohammad Rezwanul Huq

Theoretical Assignment: 1

BUBBLESORT (A, n)

```
1. for i = 1 to n-1
2.         for j = n downto i+1
3.                 if A[j] < A[j-1]
4.                         swap A[j] with A[j-1]
```

SELECTIONSORT (A, n)

```
1. for i = 1 to n-1
2.         k = i
3.         for j = i+1 to n
4.                 if A[j] < A[k]
5.                         k = j
6.                 swap A[i] with A[k]
```

For both Bubble sort and Selection sort algorithms as shown above, answer the followings:

a) State the Loop Invariant.
b) Prove the correctness of the algorithm.
c) Show the detail computation of running time complexity.

Submission Format: Handwritten with a cover page.
Submission Deadline: Sunday (class time), 25 September 2016.