SLIIT
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BSc (Hons) in Information Technology
Year 2
Data Structures and Algorithms – IT2070

Lab Exercise 7 – Bubble Sort and Selection Sort 2020

Question 1

Bubble Sort is a popular sorting algorithm. It works by repeatedly swapping adjacent elements that are out of order.

BUBBLESORT(A)

```
1.  for i = 1 to A.length – 1
2.      for j = A.length downto i + 1
3.          if A[j] < A[j – 1]
4.              exchange A[j] with A[j – 1]
```

a) Read 8 numbers from the keyboard and store them in an array. Sort the numbers using the bubble sort algorithm.

b) Find out the time complexity of bubble sort in Big O Notation.

Question 2

Consider the selection sort algorithm given below. Selection sort algorithm sorts n numbers stored in array A by first finding the smallest element of A and exchanging it with the element in A[1]. Then find the second smallest element of A, and exchange it with A[2]. Continue in this manner for the first n - 1 elements of A.

SELECTION-SORT*(A)*

```
1.  n = A.length
2.  for j = 1 to n − 1
3.      smallest = j
4.      for i = j + 1 to n
5.          if A[i ] < A[smallest]
6.              smallest = i
7.      exchange A[ j ] with A[smallest]
```

Write a program to sort a set of numbers using selection sort algorithm