Comp 3761 Algorithm Design Lab 4

Due date:

This file contains Lab4. You must submit your answers to the D2L Dropbox "Lab-4" prior to the indicated due date.

Lab 4 requires Java programming. You can work in pairs (but you must still submit your own work to D2L).

**Note that late assignments will not be graded.**

Please do not zip or compress your submissions. D2L allows you to upload multiple files

You need to hand in the following to D2L:

1. Your java codes.
2. Print screen of your output.

Comp 3761 Algorithm Design Lab 4

1- Design and implement a **divide and conquer** algorithm for finding a position of the largest number in an array of n numbers. For example, if the input array A[1..9] = [2,5,8,3,6,9,1,6,5], your algorithm should return 6. [4 mark]

2- Consider the Mergesort algorithm, which is a **divide and conquer** sorting algorithm. The pseudocode for Mergesort is given in your textbook. Your task is to implement the algorithm, and know exactly how it works. [6 mark]

1. Create a java file with a main() and a method mergeSort().
2. In main() initialize an unsorted array A.
3. Call mergeSort() with A() as input.
4. mergeSort() should return a sorted array.
5. Main outputs the original and sorted arrays.
6. Submit your final program to D2L. Do your own work… do not submit someone else’s program!

**This question is optional (ie: not included in grade for the lab).**

3- Given a sorted array of distinct integers A[0..n-1], design and implement a **decrease and** **conquer** algorithm that find out whether there exists an index i for which A[i]=i.