# Department of Computing

**CS250: Data Structure and Algorithms**

**Class: BSCS-6C**

**Lab 11: Sorting Algorithms**

**Date: Dec 22, 2017**

**Time: 0900 to 1200**

**Instructor: Mr. Abid Rauf**

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**Lab 11: Sorting Algorithms**

**Introduction**

In this lab, you will implement two sorting algorithms and compare them.

**Objectives**

Objective of this lab is to implement insertion sort and merge sort and compare the running times for both sorting algorithms.

**Tools/Software Requirement**

Visual Studio C++

**Description**

**Insertion Sort:**

Insertion sort is a popular sorting algorithm, which is quite simple to implement. The pseudo code can be obtained from the lecture slides.

**Merge Sort:**

Merge sort is another important sorting algorithm that we have seen. Unlike insertion sort, it is not an in-place sorting algorithm. The pseudo code for merge sort can be obtained from the lecture slides:

**Lab Tasks**

**Task 1:**

Implement Insertion sort and Merge sort algorithms in C++.

**Task 2:**

The next step is to compare the two algorithms. You are provided with three text files.

* RandomNumbers.txt contains a list of 100,000 random numbers.
* SortedRandomNumberA.txt contains an already sorted list of 100,000 numbers sorted in ascending order.
* SortedRandomNumberD.txt contains a list of 100,000 numbers sorted in the descending order.

Run both algorithms on all three lists. Compare the running times for both algorithms on each list. How do they compare? Are the results what you expected, and why? Answer the questions in an end of word file.

**Deliverable**

Students are required to upload the lab task on LMS before the deadline. Compile a single Word document by filling in the solution/answer part and submit this Word file on LMS.

This lab is graded. Min marks: 0. Max marks: 10.