**Assignment # 3**

**Data Structures and Algorithms**

**BSCS – 4A**

**3rd May, 2017**

Implement the standard algorithms of the following sorting techniques in C++.

* Bubble Sort
* Insertion Sort
* Selection Sort
* Merge Sort
* Quick Sort

Generate a random array of size ‘N’ (for given values of ‘N’) and sort the array using the aforementioned sorting techniques. Compute the time taken by each algorithm for different values of ‘N’ and plot a graph (in MS excel) showing a comparative analysis of different algorithms as a function of the list size ‘N’.

The following values of ‘N’ are to be used, N={10, 100, 500, 1000, 2500, 5000, 10,000}.

In addition, also plot similar graphs if an already sorted list is given as input to the above algorithms. Likewise, plot graphs if completely reversed list is given as input to the mentioned sorting functions. (Hint: First sort the list in descending order using any algorithm and then give that sorted list to the different algorithms for sorting in ascending order).

Analyze the graphs and state your findings.

**Submission Procedure**

You need to submit a printed copy of your working program. Late or individual submissions will be accepted with a penalty of 10% per day. **NO CREDIT** for copied assignments.

**Submission Date**

Tuesday, 9th May , 2017 respectively.

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