**Title: Find out the time and space complexity of the Merge Sort approach and compare it with the performance of Quick sort algorithm for (i) Best (ii) Average and (iii) Worst cases.**

**[Note: Consider only the no of exchange operations].**

**Task Description**: Sort a given set of elements using the **Merge and Quick sort** methods and determine the time required to sort the elements. Repeat the experiment for different values of *n.* The elements can be read from a file where the random numbers are generated and the no of elements should not be less than 4000 in any case. Plot the number of exchange operations required for different number of elements (i.e. T(*n*) vs *n*).

**Input**: At least 4000 random numbers should read from data file **sort\_i.in.** Do the same test using more input data having at least 1000 elements higher from previous cases.

**Output**: Output should be the sorted list and amount of exchanges/time required for running only the sorting algorithms

**Sample output:**

Sorted list:

-10 20 30 …

**No of exchange operations: ???**

**Required Times: 20.00ms**

**Required Space: ?B/KB/MB**

**Your report should contain**

1. **Title and page numbering**
2. **Report should be hand written**
3. **Introduction**
4. **Description**
5. **Algorithm**
6. **Flow chart**
7. **Sample input Output and/or Graph**
8. **Conclusion**

\*\*\* All drawing should be sketched by using pencil (2B, HB etc.) and measuring scale. Use of different colors is highly recommended