ALGORITHM LAB

Divide and Conquer Method-II

PROGRAM EXERCISE-6

Lab. Exercise(LE):

6.1) Write a program to sort a list of n elements using the **Merge Sort** method and determine the time required to sort the elements. Repeat the experiment for different values of n and different nature of data (random data, sorted data, reversely sorted data) in the list. n is the user input and n integers can be generated randomly. Finally plot a graph of the time taken versus n.

6.2) The **quick sort** algorithm is an efficient and popular sorting technique that sorts a list of keys recursively by choosing a pivot key. A pivot may be chosen as the first or last or mean or median or any random element of the list. Write a program to implement this sorting algorithm and execute the sorting programs for the following sets of data.

i. Ordered List
ii. Reverse order List
iii. A list containing the same value through out
iv. Random List
v. 50% of the List sorted

Also measure CPU time, number of partitions and number of comparisons for data sizes 1K, 50K, 1L, 1.5L, 2L, 2.5L, 3L, 3.5L, 4L, 4.5L and 1M. Present your results using tables and graphs.