ImPlement all the programs in C++ language

Assignment -1

1. Sort a given set of elements using the Quick sort method and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the lIst to be sorted and plot a graph of the time taken versus n. The elements can be read from a file or can be generated using the random number generator.

2. Using Open, implement a parallelized Merge Sort algorithm to sort a given set of elements and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n. The elements can be read from a file or can be generated using the random number generator.

3. Divide and Conquer

i. Given a sorted array of integers, find index of first and last occurrence of a given number. If the element is not found in an array, report that as well.

ii. Given a sorted array, find a given element in O (Log n) time.

iii. Given an Array, find peack element in it. A Peack elements is the element that is greater than its neighbours.

iv. Given an Array, find the number of inversions of it. If (i and A (i) >A (j)) then the pair (i, j) is called the inversion of the array. We need to count all such pairs of inversions of Array.

v. Given an array of integers, find the minimum and maximum elements presents in it by doing minimum comparisons by using divide and conquer approach.