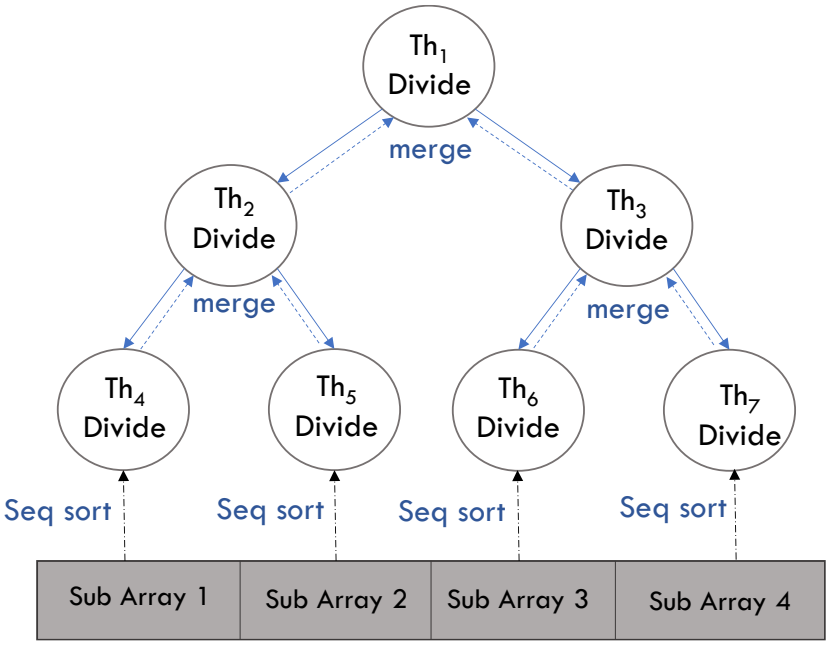
Laboratory #8 – Threads – May 5th 2021

Exercise 1– The merge sort is a very well-known algorithm that works with arrays.
Recursive parallel merge sort can be implemented by using threads. A root thread divides the elements of the array into two and create two new threads to sort each of them. Then, recursively each thread divides its elements into two and creates two new threads to sort them. This thread construction continues until a thread receives an array of only two elements. Each thread in the leaf of recursion tree sorts its sub array. When they are done, non-leaf threads perform merging operation. In the last step, the root thread merges the last two sub sorted elements and produces a sorted array. This algorithm is explained in figure below.



Create a C program that creates an array of N random integer numbers (with N defined as a constant in the program). The program first prints the generated array on screen, then sorts the array using an implementation of the parallel merge sort described above.
Finally, the program prints the sorted array.