EE 468 Homework 4

Total points = 15 pts

Problem 6.11 parts a and b (skip part c) (1 pt)

Problem 6.15 (1 pt)

Problem 6.16 (2 pts)

Problem 6.17 (2 pts)

Problem 6.19 (1 pt)

Problem 6.20 (1 pt)

Problem 6.22 (1 pt)

Problem 6.30 (1 pt)

Problem 6.31 (1 pt)

**Problem A ( 4 pts**) Consider a mergesort program merge468.c that’s included with this homework. The numbers to be sorted are N integers in an array “a[ ]”, and for simplicity it’s assumed that N is a power of 2.

Rewrite merge468.c so that the merging is done with threads using pthreads. For example if there are N = 16 elements in the array a[ ] then the program will operate as follows:

1. Create 8 threads where each thread merges two elements into a subarray of size 2, where these 8 threads could be run in parallel
2. Wait until all the threads are done.
3. Create 4 threads where each thread merges two subarrays of size 2 into a subarray of size 4, where these 4 threads could be run in parallel
4. Wait until all the threads are done
5. Create 2 threads where each thread merges two subarrays of size 4 into a subarray of size 8, where these 2 threads can be run in parallel
6. Wait until all the threads are done
7. Create 1 thread which merges two subarrays of size 8 into an array of size 16

Be sure at the beginning of your file you have a comment with your name. Upload your program into laulima for the homework.

Go over the following tutorial on pthreads: <https://computing.llnl.gov/tutorials/pthreads/>

In particular, read Sections 1, 2, 3, 4, and Sections 5.1 through 5.3. You can skip Why Pthreads (Section 2.3).