ICSI 333 – Systems Fundamentals

Lab 10 – Threads and Semaphores

For each of these tasks, use the "time" command line program to run your program. Note the times.

Your Assignment:

Write a program that creates an array of 1,000,000 random integers 0-9.

Sum those integers and print the sum.

It should then create two threads, which iterate over ½ of the integers, summing them using a single global variable.

When both threads complete, the main thread should print the global variable
Hint – the threaded sums should be less than the "real" answer.

In the threads, wrap the access to the single global variable with a semaphore. Rerun.

Change the threads to use a local variable for summing, and then update the global with the semaphore lock. Rerun.

Write a short (< 1 page) document indicating what happened. Include times, what was wrong, what happened, why the suggested solution was correct.

Hints:
Don't forget to compile with –lpthread
Make your semaphore global, your pthread structures local.