Dated: October 24, 2018

OS LAB 7: Problem Statement

Assignment is for 2 weeks starting with October 22, 2018.

---

1. Use pthreads and semaphore to implement a producer-consumer algorithm. Here we have three threads: one producer and two consumers.
   The producer reads characters one by one from a string stored in a file named "string.txt", and then writes sequentially these characters into a circular queue.
   Meanwhile, two consumer threads read one after the other from the queue and store them in two different arrays. While reading the characters from queue make sure every 3rd character is read by 2nd consumer thread. So give appropriate sleep time to threads.
   On completion, print the content of both arrays on screen.
   In the program, use #define to specify the size of the queue.
   For example, #define QUEUE_SIZE 5.

   Example- Input
   string.txt – "abcdefgh"
   Output
   Thread1:-abdegh
   Thread2:-cf

2. Write a program using C and pthreads to perform a parallel matrix multiplication routine. The goal is to multiply an MxN matrix called A by an NxP matrix called B and then store the result into the MxP matrix called C. You can design your program in such a manner that each thread does an equal share of the work or you can have the threads run in a loop that computes single rows of the result, C. Also print time taken by each thread and compare the time taken by c program with and without pthreads.

3. Write a program using C and pthreads to computes the Nth prime number.