

Programming Assignment 2 (Threads)

Topic: Pthread API

Resources: Textbook Three easy pieces, chapter 27 (Thread API)

Other resources: <http://www.yolinux.com/TUTORIALS/LinuxTutorialPosixThreads.html#BASICS>

Submission deadline: Nov 12th 11:59pm

Goal: Make familiar students with the POSIX thread (pthread) libraries

Deliverables: A c program. No report required for this assignment.

The Fibonacci sequence is the series of numbers 0, 1, 1, 2, 3, 5, 8, Formally, it can be expressed as:

$$\begin{aligned}\text{fib}_0 &= 0 \\ \text{fib}_1 &= 1 \\ \text{fib}_n &= \text{fib}_{n-1} + \text{fib}_{n-2}\end{aligned}$$

Write a multithreaded program that generates the Fibonacci series using Pthreads thread library. This program should work as follows: The user will enter on the command line the number of Fibonacci numbers that the program is to generate. The program will then create a separate thread that will generate the Fibonacci numbers, placing the sequence in data that is shared by the threads (an array is probably the most convenient data structure). When the thread finishes execution, the parent thread will output the sequence generated by the child thread. Because the parent thread cannot begin outputting the Fibonacci sequence until the child thread finishes, this will require having the parent thread wait for the child thread.

Example of expected outcome: If the name of the executable program is **luis** then you may run the program as follows:

./luis 7

Output:

0 1 1 2 3 5 8