CST 334 (Operating Systems)

Dr. Glenn Bruns

# Lab: Intro to pthreads

The purpose of this lab is to give you exposure to the low-level interleaving of programs.

1. Login to mlc104 and copy this file to a directory of your own:

/home/CLASSES/brunsglenn/cst334/labs/concurrency/t0.c

1. Read the file and understand what it does. Write down your answers to these questions:
   * Is a pthreads library include file used? What is its name?
   * Which pthreads library functions are called in this program?
   * How many threads are created, and what are their names?
2. Compile the program like this:

$ gcc -o t0 t0.c -pthread

1. Run the program. What do you get as output? Run the program a few more times. Do you get the same output?
2. Create a Makefile that will compile t0. Your Makefile should include a target t0, and that target should depend on t0.c.
3. Here’s an example bash ‘for loop’, to remind you of what they look like:

$ for i in {1..10}; do echo $i; done

Run this code yourself at the command line.

1. Write a loop to run program t0 100 times and write the output to file temp.txt. Do you see examples where A runs before B, and B runs before A?
2. Write some awk code to count how many times A was printed before B. You can modify t0.c to make your life easier.
3. If you have time, add a third process, and print ‘C’ when it executes.
4. If you still have time, read the Wikipedia pages on 'pthreads', 'POSIX', and 'Native POSIX Thread Library'.

Hints:

5. This Makefile will work:

t0: t0.c

gcc -o t0 t0.c -pthread