**CS 3305A: Operating Systems**
**Department of Computer Science**
**Western University**
**Assignment 3**
**Fall 2020**
**Due Date: October 23th 2020**

## Purpose:

The goals of this assignment are the following:

- Gain more experience with the C programming language from an OS's *process/thread*.
- Get hands-on experience with the process/thread related *function calls.*

## Process vs Thread

You will be writing a C program to test the data sharing ability of a *thread* and *process*. Your C program will do the following:

1. Your *parent* program will have three variables: *int x,y,z;* which to be initialized as 10, 20, and 0, respectively.

2. *parent* creating *child*: *parent* will create a *child* by *fork()* and the child will perform $z = x+y$ (i.e., add x and y and store the results in z). *parent* will wait for *child* to complete before parent proceeds. Upon completion of *child*, *parent* will print out the value of z. (50 points)

3. *parent* creating *thread*: After (2) above is completed, *parent* process will now create a *thread* by *pthread_create()* which will do the exact same task done by *child* above (i.e., z = x+y). *parent* will wait for its *thread* to complete before *parent* proceeds. Upon completion of the *thread*, *parent* will print out the value of z. (50 points)

### Provided Files

- One C file is provided: "assignment3.c"
- Your code should only be inside the provided C file "assignment3.c"
- Hints and the necessary statements that need to be outputted have been included in "assignment3.c" file
- If you have any questions regarding the code provided to you, contact the TAs and/or the Instructor

### Computing Platform for Assignments

You are responsible for ensuring that your program compiles and runs without error on the computing platform mentioned on below. **Marks will be deducted** if your program fails to compile or your program runs into errors on the specified computing platform (see below).

- Students have virtual access to the MC 244 lab, which contains 30 Fedora 28 systems. Linux machines available to you are: **linux01.gaul.csd.uwo.ca** through **linux30.gaul.csd.uwo.ca**.
- It is your responsibility to ensure that your code compiles and runs on the above systems. You can SSH into MC 244 machines.
- If you are off campus, you have to SSH to **compute.gaul.csd.uwo.ca** first (this server is also known as sylvia.gaul.csd.uwo.ca, in honour of Dr. Sylvia Osborn), and then to one of the MC 244 systems **(linux01.gaul.csd.uwo.ca** through **linux30.gaul.csd.uwo.ca**).
- https://wiki.sci.uwo.ca/sts/computer-science/gaul

**Assignment Submission**

You must submit your Assignment through OWL. Be sure to test your code on one of MC 244 systems (see "Computing Platform for Assignments" section above). **Marks will be deducted** if your program fails to compile or your program runs into errors on the computing platform mentioned above.

Assignment 3 FAQ will be made available on OWL. Also, consult TAs, and the Instructor for any question you may have regarding this assignment.