COMPSCI 3SH3 Winter, 2021
February 18, 2021

Lab report due date: March 5th 2021, 11:59:59 pm

Lab Assignment 3 - Threads

You need to create two C multithreaded programs. The implementation has to be completed during lab time.

a) Show your solution to TA and run it on Linux VM

b) Answer all questions related to the implementation details

Your lab report should contain a short description the implementation and source code. The report should be submitted on Avenue.

a) **Textbook Question 4.22**
Write a multithreaded program that calculates various statistical values for a list of numbers. This program will be passed a series of numbers on the command line and will then create three separate worker threads. One thread will determine the average of the numbers, the second will determine the maximum value, and the third will determine the minimum value. For example, suppose your program is passed the integers
`90 81 78 95 79 72 85`
The program will report
```
The average value is 82
The minimum value is 72
The maximum value is 95
```
The variables representing the average, minimum, and maximum values will be stored globally. The worker threads will set these values, and the parent thread will output the values once the workers have

exited. (We could obviously expand this program by creating additional threads that determine other statistical values, such as median and standard deviation.)

b) **Textbook Question 4.23**

Write a multithreaded program that outputs **prime numbers**. This program should work as follows: The user will run the program and will enter a number on the command line. The program will then create a separate thread that outputs all the prime numbers less than or equal to the number entered by the user.