CS 303 - Lab 5
October 4, 2019
Maximum Points: 25

Note:

- The answers to questions 1 and 2 need to be shown to the TAs in the lab in order to receive credit.
- The take-home question 3 is due by 11:00 PM, October 10, 2019, on Moodle.

Q1. (in lab question, 5 points) 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. **Hint: you may use the *Sieve of Eratosthenes* to generate the prime numbers.**

Q2. (in lab question, 5 points) 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.

Q3. (take-home question, 15 points): Do the programming project number 1 of chapter 4 of the textbook - “Operating System Concepts by Silberschatz, Gagne, and Galvin, **Ninth Edition**”. This project is called “Sudoku Solution Validator”.
