CS/CE 4348: Operating Systems Concepts
Section 004
Programming Project 3

Instructor: Neeraj Mittal

Assigned on: Wednesday April 3, 2019
Due date: Wednesday, April 17, 2019 (at midnight)

This is an individual assignment. Each student is expected to work independently and submit only their own work. Copying or using work not your own will result in disciplinary action being taken. You can use C, C++ or Java for this assignment.

1 Project Description

Consider the problem of finding k numbers in a given range $[a, b]$, where $0 < a \leq b$ and $k \leq b - a + 1$ that have the largest number of divisors. Write a program that uses multiple threads to solve the above problem. Your program should take the following parameters as inputs:

(i) the range $[a, b]$,

(ii) the value k, and

(iii) the number of threads n used to solve the problem (depending on your design you may have a separate main thread).

At the end of the program, output the elapsed time, the top k numbers that have the largest number of divisors, and the number of divisors that each of them have. For this assignment, you should simply divide up the problem into parts and create one thread to do each part.

2 Grading Criteria

As such, projects will be graded with these criteria in mind:

- Solutions must adequately address the problem at hand. Specifically:
  - The solution represents a good-faith attempt to actually address the requirements for the assignment.
  - The program complies and executes.
  - The program runs correctly.
- The solution constitutes a high quality product expected of a professional. Specifically:

- The program is easy to read and to understand, that is, it is well commented. In addition, method and variable names are meaningful, all potentially confusing/complex code is well documented.
- The general design of the program is clear and reasonable.
- All procedure and function headers include comments explaining what the method is supposed to do (not how it does it) and the purpose of each formal parameter. Be as precise and careful as you can be.
- The program is robust and handles important errors and exceptions properly.

3 Submission Information

You have to submit your project through eLearning. Along with all the source files, submit a README file that contains instructions to compile and run your program(s).