CSCI 375 Project #1

Due date: June 19, 2025

How to submit: Email your source code and sample result with proper explanation of experiment

In this lab you will simulate simple multithreading application with "producer and consumer" problem.

Modify "Producer and Consumer Problem" from lecture note so that it can use all buffer space, not "*buffersize* -1" as in the lecture note. This program should work as follows:

- 1. The user will run the program and will enter two numbers on the command line. Those numbers will be used for buffersize and counter limit.
- 2. The main program will then create *separate threads, producer and consumer thread.*
- 3. <u>*Producer thread*</u> generates a random number through random number generator function and inserts this into buffer and prints the number. Increment counter.
- 4. *Consumer thread* goes to the buffer and takes a number in the proper order and prints it out. Increment counter.
- 5. After counter reaches its limit, both threads should be terminated and return to main.
- 6. Main program terminates.

You can implement this project in any OS environment of your choice, Windows, Linux, etc. You should use C (C++, although class is not required) programming language, and your program and sample run should clearly show the implementation of subtasks through <u>separate</u> *threads*.

Do not use any language or implementation specific mutual exclusion tools like semaphore, mutex, etc. You are allowed to use only features relative to creating and maintaining threads from the proper library.

You should not copy from outside sources. Violation of this policy will result in automatic fail. (You might need to explain your code and result.)