CSCI 375 Project #1

Due date: March 11, 2025

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

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

Modify "Producer and Consumer Problem" _**from the 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 producer and consumer threads.**_
3. _**The Producer thread**_ generates a random number through a random number generator function, inserts it into the buffer, prints the number, and increment counter.
4. _**The Consumer thread**_ goes to the buffer, takes a number in the proper order, prints it out, and increment counter.
5. After the counter reaches its limit, both threads should be terminated and returned to the 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 _**separate 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.)