Novak, Kevin

Torres, Jorge

CS 433

November 19, 2013

Assignment 4 report

The included files in **novak009\_n\_torre129** are:

* Makefile - Our makefile
* Assignment4.o - The executable, as generated by the Makefile
* main.cpp - The main file
* buffer.c - The buffer class, with functions for adding, removing, and printing from buffer
* buffer.h - The buffer class, with full and empty semaphores as well as a mutex.
* thread.c - The functions that the producer and consumer threads will perform.

To run our program, type **make** and that will execute the Makefile. The result will be **Assignment4.o**. To execute the program, type **./Assignment4.o** <timeout duration> <number of producers> <number of consumers>. For example, to simulate for 20 seconds, with 4 producers and 1 consumer, type **./Assignment4.o 20 4 1**.

Everything in this program works as expected. The main file will take in the initial arguments, create the proper number of threads, and timeout. The producer threads will, in random intervals, try to write to the buffer with a random value. If there is no room, it waits until there is room. The consumers will, in random intervals, try to consume from the buffer. If the buffer is empty, it waits until there is content in the buffer. After each step from either side, a print function is called to show the current buffer and what the latest action was.

Here are some sample runs:

[novak009@cs433 novak009\_n\_torre129]$ ./Assignment4.o 10 5 5

Produced: 21 Current buffer - [ 21 ]

Produced: 31 Current buffer - [ 21 31 ]

Produced: 33 Current buffer - [ 21 31 33 ]

Produced: 5 Current buffer - [ 21 31 33 5 ]

Consumed 21 Current buffer - [ 31 33 5 ]

Consumed 31 Current buffer - [ 33 5 ]

Consumed 33 Current buffer - [ 5 ]

Produced: 27 Current buffer - [ 5 27 ]

Produced: 46 Current buffer - [ 5 27 46 ]

Consumed 5 Current buffer - [ 27 46 ]

Produced: 28 Current buffer - [ 27 46 28 ]

Consumed 27 Current buffer - [ 46 28 ]

Produced: 20 Current buffer - [ 46 28 20 ]

Consumed 46 Current buffer - [ 28 20 ]

Produced: 23 Current buffer - [ 28 20 23 ]

Consumed 28 Current buffer - [ 20 23 ]

Consumed 20 Current buffer - [ 23 ]

Produced: 23 Current buffer - [ 23 23 ]

Produced: 10 Current buffer - [ 23 23 10 ]

Consumed 23 Current buffer - [ 23 10 ]

Produced: 31 Current buffer - [ 23 10 31 ]

Consumed 23 Current buffer - [ 10 31 ]

Produced: 34 Current buffer - [ 10 31 34 ]

Consumed 10 Current buffer - [ 31 34 ]

Produced: 38 Current buffer - [ 31 34 38 ]

Consumed 31 Current buffer - [ 34 38 ]

Consumed 34 Current buffer - [ 38 ]

Consumed 38 Current buffer - [ Empty ]

Produced: 15 Current buffer - [ 15 ]

Consumed 15 Current buffer - [ Empty ]

[novak009@cs433 novak009\_n\_torre129]$ ./Assignment4.o 5 1 1

Produced: 35 Current buffer - [ 35 ]

Consumed 35 Current buffer - [ Empty ]

[novak009@cs433 novak009\_n\_torre129]$ ./Assignment4.o asdf 5 1

Invalid sleep time (must be an integer greater than 0)

[novak009@cs433 novak009\_n\_torre129]$ ./Assignment4.o

Invalid input. Proper usage: ./Assignment4.o <sleep time> <#producers> <#consumers>