

COMP3000 - Exercise 6 (Individual)

Multi-threaded Server - Mutexes - Semaphores

February 12, 2018

Modify the multi-threaded server (file `server.c`) such that it is created with a pool of `N` threads and a buffer of `M` ints. The sever validates the argument:

```
$ ./server
usage: ./server N-threads M-items
```

When the buffer has reached its full capacity, inputs are ignored until room is available. In the following scenario, inputs 5 and 6 are lost because the buffer is full:

```
$ ./server 2 2
*** 2 threads, 2 buffered items
1 2
Processing: 1
Processing: 2
3 4
5 6
buffer is full!
buffer is full!
Done with: 1
Processing: 3
Done with: 2
Processing: 4
7
Done with: 3
Processing: 7
Done with: 4
Done with: 7
```

Here is another normal execution:

```
./server 5 10
*** 5 threads, 10 buffered items
1 2 3 4 5
```

```
Processing: 1
Processing: 2
Processing: 3
Processing: 4
Processing: 5
6 7 8 9 10 11 12 13 14 15
Done with: 1
Done with: 2
Processing: 7
Done with: 3
Done with: 5
Processing: 8
Processing: 6
Processing: 9
Done with: 4
Processing: 10
Done with: 7
Done with: 9
Processing: 12
Processing: 11
Done with: 6
Processing: 13
Done with: 8
Processing: 14
Done with: 10
Processing: 15
Done with: 12
Done with: 11
Done with: 13
Done with: 14
Done with: 1
```

Due date: March 11. Submit your work on cuLearn. This exercise must be done in the C programming language under Linux (make sure it runs on Ubuntu 16.04). Submit a single *tar.gz* file. Submit source code and makefile. You are responsible for the completeness of your submission. You are responsible for submitting your work on time. Submissions that do not compile are not accepted.