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04/13/2021

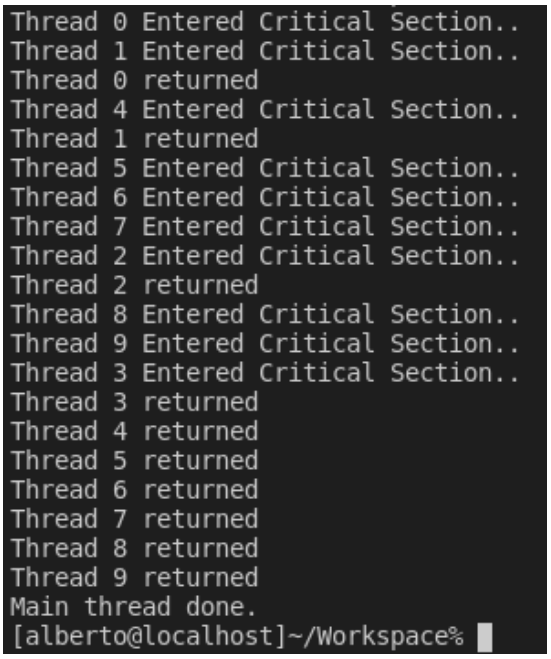
CST334

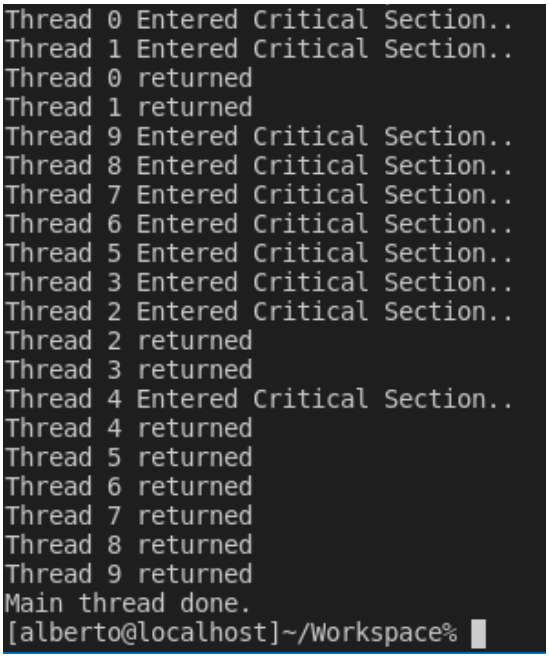
Lab 6 Report

Step 1: Explain what happens when you run the threadSync.c program?

- The threadSync.c program shows how semaphores control access to critical sections of code. The program starts by initializing the mutex semaphore to 1. Next, NTHREADS number of threads are created. Each thread runs the go() function when created. This function simply causes the thread to decrement the semaphore, print that it is in the critical section, then increment the semaphore. The semaphore oscillates between the values of 0 and 1 (binary semaphore), ultimately causing the semaphore to behave like a lock around the critical section of code. After each thread runs through this function, the threads are joined by the main thread and the program ends.

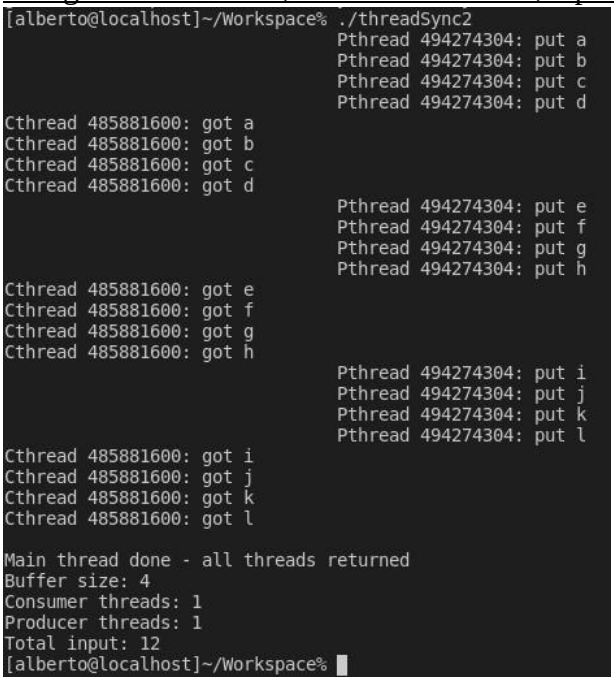
- Proof of execution:



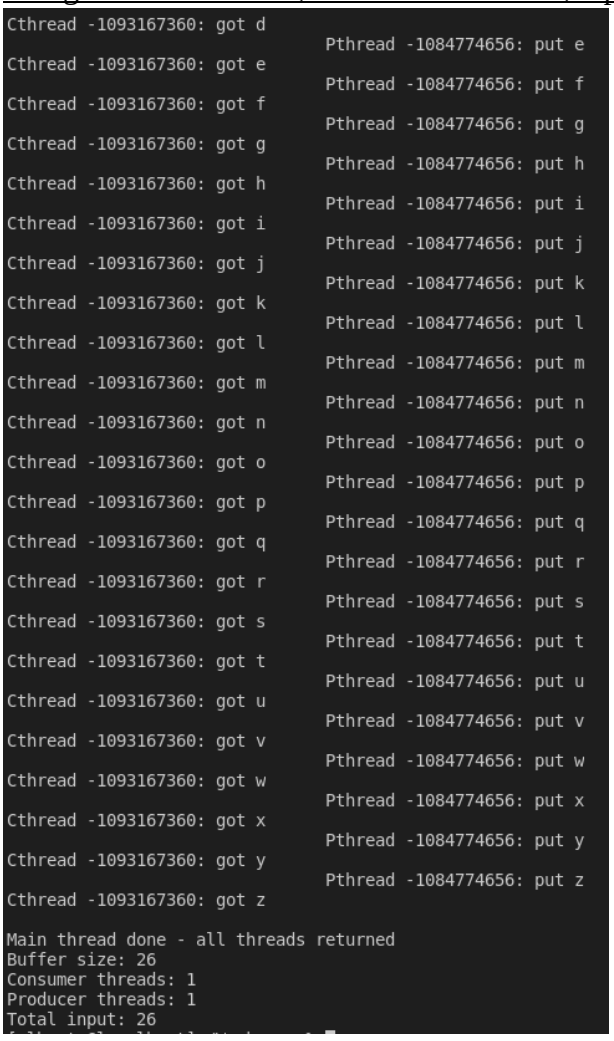


Step 2: Proof of execution:

1. Using buffer size of 4, 1 consumer thread, 1 producer thread, 12 total inputs



2. Using buffer size of 26, 1 consumer threads, 1 producer threads, 26 total inputs



3. Using buffer size 100, 5 consumer threads, 5 producer threads, 5000 total input

```
Cthread 1157752576: got q
Cthread 1157752576: got r
Cthread 1157752576: got s
Cthread 1157752576: got t
Cthread 1157752576: got u
Cthread 1157752576: got v
Cthread 1157752576: got w
Cthread 1157752576: got x
Cthread 1157752576: got y
Cthread 1157752576: got z
Cthread 1157752576: got a
Cthread 1157752576: got b
Cthread 1157752576: got c
Cthread 1157752576: got d
Cthread 1157752576: got e
Cthread 1157752576: got f
Cthread 1157752576: got g
Cthread 1157752576: got h
Cthread 1157752576: got i
Cthread 1157752576: got j
Cthread 1157752576: got k
Cthread 1157752576: got l
Cthread 1157752576: got m
Cthread 1157752576: got n
Cthread 1157752576: got o
Cthread 1157752576: got p
Cthread 1157752576: got q
Cthread 1157752576: got r
Cthread 1157752576: got s
                                Pthread 1207957248: put h
Cthread 1157752576: got t
Cthread 1157752576: got u
Cthread 1157752576: got v
Cthread 1157752576: got w
Cthread 1157752576: got x
Cthread 1157752576: got y
Cthread 1157752576: got z
Cthread 1157752576: got a
Cthread 1157752576: got b
Cthread 1157752576: got c
Cthread 1157752576: got d
Cthread 1157752576: got e
Cthread 1157752576: got f
Cthread 1157752576: got g
Cthread 1157752576: got h

Main thread done - all threads returned
Buffer size: 100
Consumer threads: 5
Producer threads: 5
Total input: 5000
[alberto@localhost]~/Workspace%
```