How to run my code

gcc -pthread -o main main.c

./main arg[1] arg[2] arg[3]

In this project we are doing the producer and consumer problem. In which we have a common buffer between the producer and consumer, and we need to consume when there is a thing to consume or produce if there is an empty space available. The problem in this problem is that 2 threads can share the buffer at the same instant and by that we will lose some data because one can increase the counter while the other is decreasing the counter before it was increased then by this we will have a problem and inconsistent counter. To solve this problem, we place the buffer which we access in the insert or delete function in critical section code in which if a consumer or producer are using this part they lock it for other threads so they will have to wait until the one that locked it finished then they can enter after the lock is signalled. By that we make sure that every thread reaches the code and that the data that we get is consistent. I divided my code into 5 mains parts

The first is the main in which I create the threads and initialize them

The second and third is the consumer and producer threads that will be running in those threads one function will produce as long as there is an empty space while the other will consume as long as there is a thing to consume in the buffer. And those are the 2 last functions which create random number to be inserted in the buffer or to delete the last element that was placed in the buffer.

Some of the difficulties that I faced.

Knowing how to initialize mutex and semaphores and the parameters of their functions.

Understanding how to run the code and face the parameters of the input in the command

Understanding that I cannot run the code normally and that I should include pthread library with gcc command so the code can compile and run

The code still gives me a warning that I cannot understand while using the function sleep.