Programming Assignment #1

- In this programming assignment, you must provide the source codes, documents, and examples in detail on Github. They will be counted for the final score.

- You must create your own Github repository and mark it as public.

- For submission in Canvas, please submit the link to the project on Github only.

Requirements:

- You are required to use C/C++ in Linux/Unix. You can consider installing VirtualBox in your non-Linux environment.

- Programs must succeed in compilation and execution as required (80 points)

- Readme, documentation, and examples are required (20 points).

Topic: Producer-Consumer Problem

The producer generates items and puts items onto the table. The consumer will pick up items. The table can only hold two items at the same time. When the table is completed, the producer will wait. When there are no items, the consumer will wait. We use **semaphores** to synchronize the producer and the consumer. **Mutual exclusion** should be considered. We use threads in the producer program and consumer program. **Shared memory** is used for the “table”.

We expect to use these two programs (producer and consumer) like this:

$ gcc producer.c -pthread -lrt -o producer

$ gcc consumer.c -pthread -lrt -o consumer

$ ./producer & ./consumer &