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Programming Assignment 1

The producer file (producer.c) creates a structure with a count and an array of 2 integers. Then it creates a shared memory location that contains an instance of this object. Then it creates a semaphore for accessing this memory location. Then, a while loop waits until the array is not full, and then it calls the semaphore wait and inserts the number 26 into the array and increments count. Then the post function is called when the critical section is done. Then it waits one second before continuing the while loop.

The consumer file (consumer.c) creates the same structure with the same count and array of 2 integers. It then accesses the same shared memory location as the producer file. It then creates the same semaphore if it has not already been created. Then, in the while loop, it waits until the array is not empty to call the wait function and removes an element from the array. After the critical section is done, the post function is called and then it waits one second before looping again.

**The programs can be compiled and ran using the following commands:**

gcc producer.c -pthread -lrt -o producer

gcc consumer.c -pthread -lrt -o consumer

A screenshot of a computer

Description automatically generated ./producer & ./consumer &