Producer-Consumer Problem

A simple implementation of the classic Producer-Consumer problem using shared memory and semaphores in C.

Requirements

- Linux/Unix operating system
- GCC compiler
- POSIX threads and real-time extensions

Environment

This project has been successfully tested on:

- Mac terminal
- University's Linux environment (WASP)

Compilation & Running

Compile both programs

gcc producer.c -pthread -lrt -o producer

gcc consumer.c -pthread -lrt -o consumer

Run both programs

./producer & ./consumer &

Project Description

This implementation features:

- A shared table that holds 2 items maximum
- Producer generates 10 random items (waits when table is full)
- Consumer processes all 10 items (waits when table is empty)
- Synchronization with semaphores
- Thread-based implementation
- Shared memory for inter-process communication

Sample Output

PRODUCER: Starting production of 10 items

Producer: Produced item 18 at position 0

CONSUMER: Starting consumption of 10 items

Consumer: Consumed item 18 from position 0

...

PRODUCER: Finished producing 10 items

...

CONSUMER: Finished consuming 10 items

Project Structure

- producer.c: Creates shared resources and generates items
- consumer.c: Connects to shared resources and consumes items