**CECS 326 Sec01**

Operating Systems

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Assignment 3

Due Date: 11/9/2023

Submission Date: 11/11/2023

**Program Description**

**1. What all the programs together are designed to do?**

The program suite is designed to demonstrate inter-process communication and synchronization in a UNIX/Linux environment. It uses shared memory for communication and POSIX semaphores for synchronization between processes. The suite comprises a master process **master.c** that creates a shared memory segment and multiple child processes, and slave processes **slave.c** that interact with this shared memory.

**2. What each individual program does?**

* **master.c:** This program initiates the shared memory segment and semaphore, creates multiple child processes, and waits for them to complete their execution. It handles the creation and cleanup of shared resources (shared memory and semaphore) and prints the contents of the shared memory after all child processes have finished.
* **slave.c:** Each instance of this program, created by **master.c**, accesses the shared memory segment and semaphore. It writes its child process number into the shared memory and increments an index in the shared memory to manage the writing position. This program demonstrates how to safely access and modify shared memory using semaphores to avoid race conditions.