

# CECS 326-01

## Operating Systems

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### Assignment 2

Due Date: 10/15/2024

Submission Date: 10/19/2024

### Program Description

1. Unity
  - a. The three programs master.cpp, sender.cpp, and receiver.cpp are designed to work together to demonstrate interprocess communication using message queues in a Linux environment. The objective is to create a parent process (master.cpp) that launches multiple child processes. One child process acts as the sender, and multiple child processes act as receivers. The sender collects messages from the user, sends them to specific receivers through a message queue.. The receivers retrieve their messages, acknowledge receipt by sending a response back through the message queue, and then terminate. The master process orchestrates the creation and management of these processes, ensuring communication and proper termination.
2. What each program does individually.
  - a. **master.cpp:** Creates and manages processes, including a sender and multiple receivers. It sets up a message queue, forks the necessary child processes, and passes required information via command-line arguments. The master waits for all processes to complete, removes the message queue, and terminates.
  - b. **sender.cpp:** Prompts the user for a message and intended receiver, sends the message to the queue with the receiver's ID, and waits for acknowledgment from the receivers to confirm successful delivery.

- c. **receiver.cpp:** Retrieves messages from the queue based on its ID, displays the message, and sends an acknowledgment back to the sender. It processes messages meant for it and terminates after acknowledgment