**Extend the OS with More Features**

Xuebin Yan, Zirui Wang

**Goals:**

– Efficient with 20 threads

– Multiple Mailboxes

– Multiple FIFOs

– Multiple periodic interrupts

– Path expression for LCD and serial port

– Semaphores with timeout

– Kill foreground threads that finish

* Add monitor to the OS
* Priority donation
* Banker’s Algorithm

**Starter Files:**

Lab3.c, OS.c, etc.

**Descriptions:**

This project involving the design, implementation and testing of an embedded system with a real-time operating system, and is with equivalent complexity of previous labs. This project aims to add more features to the Lab3 OS, so that the OS is capable to run tens of threads concurrently, with more robustness. Several new features should be included. The multiple Mailboxes and FIFOs enable data transferring between threads. The multiple periodic interrupts enables more periodic tasks. Path expression adds to the robustness of the OS with permitted sequences of execution. New semaphore with timeout, killing finished foreground threads, monitor and priority donation can enhance the performance of OS and avoid deadlocks.