ECEN 5623

Homework set 2

Due 2018/03/01

These problems should be done individually, not with your project partner.

From the text, do problems 2.5, 3.5, 4.2, and 4.4:

2.5 Implement a Linux process that is executed at the default priority for a user-level application and waits on a binary semaphore to be given by another application. Run this process and verify its state using the ps command to list its process descriptor. Now, run a separate process to give the semaphore causing the first process to continue execution and exit. Verify completion.

3.5 If EDF can be shown to meet deadlines and potentially has 100% CPU resource utilization, then why is it not typically the hard real-time policy of choice? That is, what are drawbacks to using EDF compared to RM/DM? In an overload situation, how will EDF fail?

4.2 If a system must complete frame processing so that 100,000 frames are completed per second and the instruction count per frame processed is 2,120 instructions on a 1 GHz processor core, what is the CPI required for this system? What is the overlap between instructions and IO time if the intermediate IO time is 4.5 microseconds?

4.4 Review the DVD code (also on D2L) for heap\_mq.c and posix\_mq.c. Write a brief paragraph describing how these two message queue applications are similar and how they are different. Make sure you not only read the code but also build it, load it, and execute it to make sure you understand how both applications work.