EGR326 Lab10 F22

Watchdog timer demo

The LAB assignment for this week will involve writing a test routine that will demonstrate how the watchdog timer on the MSP432 can be used in dashboard. This is a feature that you need to implement in your design project to keep your program from “hanging” due to a software or hardware “bug”. Review information on the MSP432 watchdog timer in chapter 15 of the MSP432P4xx Family Technical Reference Manual and the lecture slides.

Your program should configure the watchdog timer for a 4s timeout interval and it should be configured in the soft reset mode that will cause a system reset upon timeout (try configuring clock source to ACLK set up to use the REFOCLK source as in the example demonstrated in lecture, the SMCLK will not be useful as it needs to run at 12 MHz for your LCD). Your program should configure a 1s timer (you can use a timer peripheral or your RTC), keep a counter with the seconds elapsed since the last watchdog reset, display the counter to your LCD, and monitor an external pushbutton for input from the user.

To test the program, each time user input is detected prior to the watchdog timeout, the watchdog timer will be reset and the counter will also be reset. The counter should be displayed each second and will indicate how much time has elapsed since program startup or the last reset. If the watchdog timer is allowed to expire, the watchdog timer should perform the soft reset.

The counter should never go beyond the watchdog timeout. Flash an LED at the very beginning of your program so that you can verify the program is executing startup code upon initial power up and following a watchdog reset.

Submit

1. a description of the watchdog timer operation
2. a copy of the test program
3. a description of how it works.
4. Schematic of your circuit

To get full credit, you need to demonstrate your program during your lab session.