ECGR4101/5101 – Embedded Systems Lab 1 – Fall 2014

You will follow the lab exercise procedure below. Once you have run the exercise, demonstrate flashing board to the lab TA and hand him the Lab Checkout sheet.

After you demonstrate the lab, write a lab report. Submit ***ONE pdf document*** per group – upload it to Moodle. Make sure to include the group participant names in the document. Spelling and grammar COUNT in this graded assignment. Name the document:

ECGR4101-Sectionxxx-Lab1-lastname1-lastname2.pdf

where lastname1 and lastname2 are the last names of the lab partners and xxx is your section number (if over two sections, use 001).

You can use the space in EPIC 2130/2132 for this lab work.

Materials needed:

- MSP430 board & cable (we provide)
- PC with Code Composer Studio (either you provide, or use the ones in EPIC2130)

Objective of lab

In this lab exercise you will program the MSP 430 board to flash the two built-in LEDs with a period of 2 seconds (each of the LEDs is on for one second, then off for one second). Only one LED should be on at a time. Also, if Switch 2 is pressed, then pause the LED flashing until Switch 2 is released. Your group must show/demonstrate the board working and answer any questions the TA has. ***During the lab check-out, hand in the lab check out form*** (include your names on it!) and hand in the MSP430 board, cable, parts, and box.

Steps

1. (Optional) if you are using your own PC, download and install Texas Instruments' Code Composer Studio on your own PC. Alternatively, you can use the PCs in EPIC 2130/2132.
2. Open Code Composer Studio.
3. Create and new CCS project (Project -> New CCS Project)
4. On the pop-up window, create a name for your project (i.e. Lab1), select the correct Variant (MSP430Gxxx Family, MSP430G2553), Connect USB1, Project template "Empty Project (with empty main.c).
5. You will be given a mostly empty main.c file with the #include and the stop Watchdog code provided. You will write your code inside the main function. Remember, the LED flashing is to be done forever, so what line of code (along with its closing bracket "}") do you need to add?
6. Save the file.
7. Compile your code by clicking on the "hammer" icon (build). Fix any errors you find. Ignore the warning on unreachable code - you want that! Ignore the suggestion of the delay.
8. Download your code to your board, click on the "bug" icon (debug). Ignore the box about low-power suggestions.
9. You will need to click on the "Resume" icon (or press F8 to run).
10. While running the code, verify the LEDs are flashing with a period of 2 seconds (1 second on, 1 second off). Note only one LED should be on at a time. Also ensure the flashing stops while Switch 2 is pressed.
11. If your code does not work, examine the operation, then stop execution. Correct the code. Repeat steps 6 through 10 until it runs correctly.