EE 444/645

01/26/2017

Lab #0: MSP430: Digital I/O

Report due: *02/02/2017 by 2:00 (but, try to submit the report by the end of lab period on 1/26.)*

INTRODUCTION

The main goal of this laboratory is to get familiar with the Texas Instruments MSP-EXP430F5438a experimenter's board, CrossStudio programming environment from Rowley, and the process of downloading, executing, and debugging programs on MSP430-based boards. In addition, you will use Digital I/O capabilities of MSP430.

EQUIPMENT:

CrossStudio for MSP430
TI MSP-EXP430F5438A board
Agilent mixed-signal oscilloscope

ASSIGNMENT:

Use an oscilloscope to measure and capture the results of your execution. Check carefully the datasheet for MSP-EXP430F5438A board to determine which of the pins (ports) are used for switches, LEDs and which pins are available for general-purpose use (i.e., not used for something else).

1. Set the MCLK of MSP430 as close as possible to 4 MHz; check the actual frequency using the oscilloscope.

2. Generate a square wave signal with a period of approximately 100 us and 50% positive duty cycle on one of the general purpose pins. *Do not use interrupts or timers for this part of the lab assignment*. Capture the signal using the oscilloscope, showing all the relevant measurements. Import the captured image into a Word document and include it in your report. Do not print the report. All the reports in this class will be submitted through Blackboard. All reports must be submitted in a format compatible with MS Word.

OPTIONAL:

3. Write an *interrupt service routine* that will turn on and off (toggle) the square signal from part 2, as well as toggle one of the LEDs on the board each time a push button switch (for example, S1) is pressed.

NOTES:

- Demonstrate the functionality of the program to the instructor/TA.
- Follow the template for EE444/645 reports, available on Blackboard.
- Submit the report through Blackboard.