MW 2411 Lab #1
LCD Module and LEDs

Demonstrations will occur at the beginning of next lab (in your own section). Code submissions are due by Wednesday of next week, at 11:59pm (through Moodle). Only one member of the group must upload the code (all .c and .h files that your project uses compressed in one zip file).

1 Overview

In this lab you will be introduced to programming the dsPIC board. You must write a program that does all of the following:

1. Display the name of each group member on the LCD.

2. Use a counter variable and print its current value to the LCD.

3. Print the current counter value to all the 5 LEDs in binary form. Make sure to add a delay after you turn the LEDs on (long enough to see the counting).

2 Procedure

1. Before getting started, read sections 2, 3.1, 3.2, 4.1 - 4.5, 4.7, 5 in the Laboratory Manual (available on Moodle).

2. A demo version of the solution for Lab 01 is provided in compiled form.

3. You can find an MPLAB X IDE project with template code on the Moodle course page.

4. Finally upload the full MPLAB X IDE directory as a zip file into the respective Moodle assignment.

5. Some hints for solving the assignment:

   (a) You can find an MPLAB X IDE project on Moodle. Use adapt the project (main.c) to fulfill the requirements of this assignment.

   (b) Printing text to the LCD can be a relatively slow process. Therefore, static text should be printed only once outside of the main program loop. In the provided demo of Lab 01, the first few lines of text are all static.

   (c) Be careful when performing port operations and be sure to insert Nop statements where appropriate (consecutive write accesses to port registers like TRISA, PORTA need a Nop() in between).

   (d) Declare your counter variable as a local variable of the main function and pass it to the function that turns the LEDs on.

    (e) Try to organize your code in well structured functions.

At the start of Lab 2, each lab group will be asked to demonstrate and explain their Lab 1 code.

3 Questions to Ponder

The following questions are provided for your lab group to think about. No written response is required.

1. What is the maximum value (MAX) you can print using the 5 LEDs?

2. What happens when the MAX+1 value is printed?

3. You may have used an empty loop as a delay. Is there any other alternative, which is more efficient?