262 - LAB 2
LED Scrolling Pattern with Input

NAME: DUE DATE:

STUDENT ID: POSSIBLE POINTS: 10

COURSE DATE & TIME:

OBJECTIVE:

- To generate a pattern on the LEDs that scrolls to the right at a slow enough rate to be visually perceptible, The 1st Switch changes the pattern and the 2nd Switch changes the speed of scrolling.
- To become familiar with the 4 ports of the 8051, reading digital input from the dip switches and writing digital output to drive the 8 LEDs of the development board.

OPERATION:

Switch 1 in the Off position will generate a pattern of 0xFA and in the On position a pattern of 0x50. Switch 2 in the Off position will generate a slow scrolling rate and in the On position a faster scrolling rate.

THEORY:

Port 0 takes binary Input from the switches while Port 1 drives the LEDs. Scrolling can be achieved using a logical right shift. A delay loop will have to be written in order to slow down the scrolling of the LEDs. Switch 2 will determine how many times the delay loop cycles which will essentially change the scrolling speed. A larger value will take longer than a smaller value. Switch 1 doesn't have to update the new pattern immediately. This can simplify the coding with some implementations. Pattern wrap around is also not necessary.

LAB WRITE-UP:

The lab write-up will include this page as the cover sheet with any questions answered, the source code, a schematic, and a picture of your physical prototype.

Schematic: A schematic should be drawn to show 3 things. The LED and the switch connections to the 8051 and power for the 8051.

DEMO:

When your project is ready, you will demonstrate the functionality to the instructor.

QUESTIONS:

How are the LEDs interfaced to Port 1 of the 8051? Hint: (Just write a description in a few sentences of how the 8051 is driving the LEDs, what are the values being used to turn the LED on or off, etc…)