262 - LAB 3
LED Scrolling Pattern with Timer

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COURSE DATE & TIME: 11/05/21 @9AM

OBJECTIVE:

To take Lab 2 and change the hard coded delay into a Timer based delay
To add one more push button switch that changes the pattern.

OPERATION:

Timer 0 in 16bit mode will now create the delay instead of the previous hard-coded for loop delay we used in Lab 2. BTN0 will change the speed the same as last lab except now it will be down with precise timing, 0.5 sec per shift when the button is not pressed and 1 sec per shift when the button is held. A 2nd pushbutton BTN1 will be added on your breadboard. This BTN1 will change the pattern on the LEDs. When the pushbutton is not pressed, the original pattern from Lab 2 will be used, when BTN1 is held down a pattern of 0xFE should scroll from right to left and once 7 shifts has occurred, the pattern should shift to the right 7 times.

LAB WRITE-UP:

The lab write-up will include this page as the cover sheet and all materials in one document submitted on beachboard dropbox.

Any questions answered

A schematic properly done in a professional grade schematic entry tool like CircuitMaker.

The source code

A picture of your physical prototype.

Schematic: A schematic should be drawn to show 3 things. The 8 LEDs interfaced to Port 1 and the switch/pushbutton with all necessary circuitry connected to the 8051 along with power for the 8051.

DEMO:

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

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8051

P0.x -------- BTN0

Can be any
value 1 to 7

Speed

Breadboard

Pattern

Reset   BTN1

2 push BTNs Added

5v

P0.X

10K-4.7K

BTN0

Breadboard

8051

P1.0

Reset

BTN1

P1.7

P0.X   BTN0

5v