**CECS 262**

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**Lab 7: Parallel I/O Programming   
& Modular Programming**

**Purpose:**

The purpose of this lab is to help students learn how to program 8051 I/O Port and to learn how to implement programs modularly.

**Tasks:**

Modify the previous lab code to implement the following main function, i.e. prototype and code the BounceLED, CountUpLED, and CountDownLED functions in support of this main function. The parameters that are passed to the functions are to be determined (TBD) by the student.

void main()

{

while (1) {

// Bouncing Mode

if (PIN0 == 1) BounceLED(TBD);

// Count Up Mode

else if (PIN1 == 1) CountUpLED(TBD);

// Count Down Mode

else if (PIN2 == 1) CountDownLED(TBD);

}

}

Then add the following functionality:

1. When the on-board dip switch pin 3 is on and pin 0, 1 and 2 are off, the on-board LEDs display the following pattern. οοοοοοοο, •οοοοοοο, ••οοοοοο, •••οοοοο, ••••οοοο, •••••οοο, ••••••οο, •••••••ο, ••••••••, •••••••ο, ••••••οο, •••••οοο, ••••οοοο, •••οοοοο, ••οοοοοο, •οοοοοοο, then repeat.
2. When the on-board dip switch pin 4 is on and pin 0, 1, 2 and 3 are off, the on-board LEDs display the following two-way shooting pattern. οοο••οοο, οο•οο•οο, ο•οοοο•ο, •οοοοοο•, then repeat.
3. Implement the following priority mode selection: Lower index pins have higher priority. For example, if both P0.0 and P0.3 is on, display Mode 1 instead of Mode 4.
4. When all 5 pins, pins 0,1,2,3,4, are off, flash all LEDs: turn on all LEDs for a fixed delay, then turn off all LEDs for the same delay, and then repeat.

