

## Lab 1 – Tool Time

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### Objectives

The objective for this lab was really was to get refamiliarized with the MSP432 board if you had previously taken the EE embedded sequence, or in my case, become more familiar with the board because I had not taken the EE embedded sequence. In the process we also had to get the development environment setup and verify our LCD works as expected.

### Description

In this lab, I programmed the onboard pushbutton as a GPIO input that when toggled, causes the onboard LED (configured as GPIO Output) to light up. Additionally I printed out the status of the pushbutton along with my first/last name to the LCD and updated it accordingly as the pushbutton was pressed/released. The top line of the LCD contained the static course code, second line with the status of the LED (ON/OFF), and third line my first/last name.

### Conclusions

encountered and how you overcame them, any surprises you encountered, etc.

I think this lab was a good introduction to both the board, and the environment including the provided libraries. I got familiar with some of the provided functions as well as the pin naming scheme which will drastically help as we progress through the quarter. Finally, probably most important, I got more familiar with the documentation which includes interpreting how to do some required functions and where to find some basic info.

### Attachments

main.c

```

1// main.c
2// Runs on MSP432
3// Lab 1 - Tool Time
4// Draven Schilling
5// 12/7/19
6// display course number at the top of the lcd
7// when toggle pushbutton, turn on led and display last name
8// when pushbutton off, display first name and led off
9// *****
10
11#include <stdint.h>
12#include "msp.h"
13#include "msoe_lib_clk.h"
14#include "msoe_lib_lcd.h"
15#include "msoe_lib_delay.h"
16
17
18// initialize port P1.1 GPIO IN for pushbutton
19// initialize port 1.0 GPIO OUT for led
20void init_gpio(void);
21
22int main(void){
23
24    if(Clock_Init_48MHz())
25        P3->OUT |= BIT5; // ***** debug
26
27    // setup lcd 28 init_gpio();
28    LCD_Config();
29    LCD_clear();
30    LCD_home();
31    LCD_contrast(10);
32
33    LCD_print_str("EE4930");
34    uint8_t pushbutton = 0;
35
36
37    while(1){
38        pushbutton = (P1->IN & 0b10) >> 1;
39
40        if(pushbutton){
41            //print to lcd
42            LCD_goto_xy(0,1);
43            LCD_print_str("OFF    ");
44            LCD_goto_xy(0,2);
45            LCD_print_str("Draven  ");
46            P1->OUT &= ~0b1; // led off
47        } else {
48            //print to lcd
49            LCD_goto_xy(0,1);

```

```

50         LCD_print_str("ON      ");
51         LCD_goto_xy(0,2);
52         LCD_print_str("Schilling ");
53         P1->OUT |= 0b1; // led on
54     }
55 }
56}
57

58void init_gpio(void)
59{
60     // P1.0
61     P1->SEL0 &= ~0b1; // use GPIO function
62     P1->SEL1 &= ~0b1;
63     P1->DIR |= 0b1; // make output
64     P1->OUT &= ~0b1; // setup output low to start
65     // P1.1
66     P1->SEL0 &= ~0b10; // use GPIO function
67     P1->SEL1 &= ~0b10;
68     P1->DIR &= ~0b10; // make input
69     P1->REN |= 0b10; // allow pull up/down
70     P1->OUT |= 0b10; // setup as pull up
71     return;
72}

```

