Department of Electrical and Computer Engineering

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Title: C Programming

Date: 3/1/2017

Time spent: 4.5 Hrs

1. Lab4_t1 file worked

```
/*
 * Author: Zainab Hussein
 */

#include "ece212.h"
int main() {
    ece212_setup();

    int mask = 0x1;
    int wrap_left = 0x1;
    int wrap_right = 0x8;
    int dir = 0;

    writeLEDs(mask);

    while(1) {
        //for right direction
        if( dir == 1){
            delayms(500);
            mask >>= 1;
            if( mask < 0x1)
                mask = wrap_right;

            writeLEDs(mask);
        }
        //for left direction
        if( dir == 0){
            delayms(500);
            mask = mask << 1;
            if(mask > 0x8)
                mask = wrap_left;

            writeLEDs(mask);
        }
        if(SW3){
            dir = 1;    //right
        }
        if(SW4){
            dir = 0;    //left
```

```
        }
    }
    return(EXIT_SUCCESS);
}
```

2. Lab4_t2 file worked although after 2 Hz it takes a couple of presses to go back to solid led

```
/*
 * Author: Zainab Hussein
 */
#include "ece212.h"
int main() {
    ece212_setup();

    int mask = 0x1;
    int wrap_left = 0x1;
    int wrap_right = 0x8;
    int dir = 0;
    int blink_rate = 0;

    writeLEDs(mask);

    while(1) {
        if(SW3){
            dir = 1;    //right
            delayms(500);
            mask >>= 1;
            if( mask < 0x1)
                mask = wrap_right;

            writeLEDs(mask);
        }
        if(SW4){
            dir = 0;    //left
            delayms(500);
            mask = mask << 1;
            if(mask > 0x8)
                mask = wrap_left;

            writeLEDs(mask);
        }
        if(SW5){      //blink rate
            delayms(500);
            if (blink_rate == 0)
                blink_rate = 500;   // 1 Hz blink

            else if (blink_rate == 500)
                blink_rate = 1000;  // 2 Hz blink

            else if (blink_rate == 1000)
```

```
                blink_rate = 0; //solid led
            }

            //blink routine
            delayms(blink_rate);    //wait specified time
            writeLEDs(mask);    //led on
            delayms(blink_rate);    //wait specified time
            writeLEDs(0x0);   //led off
        }
        return (EXIT_SUCCESS);
    }
```

3. After figuring out how to write to the LEDs and control the direction of the shifts using a button, software coding of lab 1 takes much less time and code to implement because all logic functions are easily performed by simple if and while loops. It took a bit of time to warm up to C. Compiling software is so much faster than vivado too!

4. For the t1 part, the LEDs would not respond to the buttons at all and would immediately jump from the set LSB LED to the LSB+1 LED upon any run. After much anguish, and Prof. Schmult's extra pair of eyes we realized that the final return statement was within the while loop. Thus, the loop only happened once! For the t2 part, I still do not know why the blink rate does not go back to solid immediately after the 2 Hz mode.