CSE 379
Lab #4
Part #1
Spring 2022

Objective
In this part of the lab, you will learn to use general purpose I/O to interface hardware with the ARM processor. You will utilize one of the two momentary push buttons on the Tiva board along with the RGB LED.

Description
Write and test two ARM assembly language subroutines, called *read_from_push_btn* and *illuminate_RGB_LED*. The details for each subroutine are provided below.

Subroutine Details
- *read_from_push_btn* reads from the momentary push button (SW1) on the Tiva board, and returns a one (1) in *r0* if the button is currently being pressed, and a zero (0) if it is not.
- *illuminate_RGB_LED* illuminates the RBG LED on the Tiva board. The color to be displayed is passed into the routine in *r0*. How the individual colors are encoded when passed into the routine in *r0* is up to you. You should provide for the RGB LED to be illuminated red, blue, green, purple, yellow, and white.

Skeleton Code
A C wrapper and assembly language skeleton code are provided on the course website to get you started. They are shown below for your convenience.

The assembly language skeleton code is shown below.

```
        .text
        .global lab4

lab4:
        PUSH {lr}

            ; Your code is placed here

        POP {lr}
        MOV pc, lr

read_from_push_btn:
        PUSH {lr}

            ; Your code is placed here

        POP {lr}
        MOV pc, lr

illuminate_RGB_LED:
        PUSH {lr}

            ; Your code is placed here

        POP {lr}
        MOV pc, lr

        .end
```

The C wrapper is shown below.

```
extern int lab4(void);

int main()
{
   lab4();
}
```


Partners

You will work with a partner in this lab. Your partner *MUST* be the same partner you worked with on lab #3.

Submissions

You should finish this part of the lab ***BEFORE*** the end of your regularly scheduled lab on ***Monday, March 8, 2022*** or ***Tuesday, March 9, 2022.*** No formal submission is required for Part #1 of this lab.