**Lab 3**

**Task 1**

//The purpose of this program is to alternated between the three available colors on the TIVA C board

//The lights will change every 50 milliseconds

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/hw\_types.h"

**#include** "inc/hw\_memmap.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/gpio.h"

**int** **main**(**void**)

{

uint8\_t ui8LED = 2;

**SysCtlClockSet**(SYSCTL\_SYSDIV\_4|SYSCTL\_USE\_PLL|SYSCTL\_XTAL\_16MHZ|SYSCTL\_OSC\_MAIN); //set the clock to be 40 MHz

// (Uses PLL = 400 MHz) => 400MHz / (2 \* 5) = 40 MHz

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF); //Enable the GPIO PORTF pins

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3); //Set pin 1, 2,3 at PORT F at outputs

**while**(1)

{

// Turn on the LED

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3, ui8LED);

// Delay for a bit

**SysCtlDelay**(2000000);

// Cycle through Red, Green and Blue LEDs

**if** (ui8LED == 8) {ui8LED = 2;} **else** {ui8LED = ui8LED\*2;}

}

}

**Task 2**

//The purpose of this program is to alternated between the three available colors on the TIVA C board

//The lights will change every 20 seconds

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/hw\_types.h"

**#include** "inc/hw\_memmap.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/gpio.h"

**int** **main**(**void**)

{

uint8\_t ui8LED = 2;

**SysCtlClockSet**(SYSCTL\_SYSDIV\_33|SYSCTL\_USE\_PLL|SYSCTL\_XTAL\_16MHZ|SYSCTL\_OSC\_MAIN); //set the clock to be 40 MHz

//Set clock to 6 MHz => 400MHz / (33\*2) = 6MHz

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF); //Enable the GPIO PORTF pins

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3); //Set pin 1, 2,3 at PORT F at outputs

**while**(1)

{

// Turn on the LED

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3, ui8LED);

// Delay for a bit

**SysCtlDelay**(2000000); //Sets a delay of 2000000 clock ticks

// Cycle through Red, Green and Blue LEDs

**if** (ui8LED == 8) {ui8LED = 2;} **else** {ui8LED = ui8LED\*2;}

}

}

**Task 3a**

//This program will blink the LEDs in a different sequence and will light more than one at a time

//The base 50 ms delay will be used

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/hw\_types.h"

**#include** "inc/hw\_memmap.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/gpio.h"

**int** **main**(**void**)

{

uint8\_t ui8LED = 8;

**SysCtlClockSet**(SYSCTL\_SYSDIV\_33|SYSCTL\_USE\_PLL|SYSCTL\_XTAL\_16MHZ|SYSCTL\_OSC\_MAIN); //set the clock to be 40 MHz

//Set clock to 6 MHz => 400MHz / (33\*2) = 6MHz

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF); //Enable the GPIO PORTF pins

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3); //Set pin 1, 2,3 at PORT F at outputs

**while**(1)

{

// Turn on the LED

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3, ui8LED);

// Delay for a bit

**SysCtlDelay**(2000000);

// Cycle through Red, Green and Blue LEDs

**if** (ui8LED == 2) {ui8LED = 8;} **else** {ui8LED = ui8LED/2;}

}

}

**Task 3b**

//This program will blink the LEDs in a different sequence and will light more than one at a time

//The base 50 ms delay will be used

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/hw\_types.h"

**#include** "inc/hw\_memmap.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/gpio.h"

**int** **main**(**void**)

{

uint8\_t ui8LED = 0; //output pin data

uint8\_t colorValues[3] = { 6, 12, 10 }; //array to hold the pattern of the output values

**int** i = 0; //index of the array

**SysCtlClockSet**(SYSCTL\_SYSDIV\_33|SYSCTL\_USE\_PLL|SYSCTL\_XTAL\_16MHZ|SYSCTL\_OSC\_MAIN); //set the clock to be 40 MHz

//Set clock to 6 MHz => 400MHz / (33\*2) = 6MHz

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF); //Enable the GPIO PORTF pins

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3); //Set pin 1, 2,3 at PORT F at outputs

**while**(1)

{

**for** (i = 0; i < 3; i++)

{

ui8LED = colorValues[i]; //Assign the value of the pin to output

// Turn on the LED

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3, ui8LED);

// Delay for a bit

**SysCtlDelay**(2000000);

}

i = 0;

}

}