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**CPE 403**

**Lab 3**

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**Task 00: Execute the provided code, no submission is required.**

**------------------------------------------------------------------------------------**

**Task 01: Determine the current period and on-time of the LED blinking (of task 00). Change the delay of the LED blink (approx. 0.5 sec) by changing the delay and clock source and configuration– determine the CLK frequency– verify the delay to be approx. 0.5 sec.**

Youtube Link: <https://youtu.be/Yh5P13G6N2g>

**Modified Code:**

**// Insert code here**

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

{

.

.

.

//1/(400Mhz/(2\*10)) = 50 ns delay

//50 ns \* 10,000,000 = 0.5s

//Because the period is 0.5 seconds, the on and off time must be 0.25s each so

//the final delay is 5,000,000

**SysCtlClockSet**(SYSCTL\_SYSDIV\_10 | SYSCTL\_USE\_PLL | SYSCTL\_XTAL\_16MHZ | SYSCTL\_OSC\_MAIN);

.

.

.

//Both delays are changed to 5,000,000

**SysCtlDelay(5000000);**

}

**--------------------------------------------------------------------------------------------------------------------------------------------------------**

**Task 02: Change the a) sequence of LED blinking(from RGB sequence to BGR), and b) blink one LED, two LED, and three LED at an instance and with a sequence (sequence of blinking with delay –R, G, B, RG, RB, GB, RGB, R, G, ...).**

Youtube Link: <https://youtu.be/rYalUwJeMfg>

**Modified Code:**

**// Insert code here**

**Part A**

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

{

.

.

.

**while**(1)

{

//When ui8PinData = 2, LED is red

//When ui8PinData = 4, LED is blue

//When ui8PinData = 8, LED is green

GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3,

ui8PinData);

SysCtlDelay(5000000);

GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

SysCtlDelay(5000000);

**if**(ui8PinData == 8) {ui8PinData = 2;} **else** {ui8PinData = ui8PinData \* 2;}

}

}

**--------------------------------------------------------------------------------------------------------------------------------------------------------**

**Part B**

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

{

.

.

.

**while**(1) {

//When ui8PinData = 2, LED is red

ui8PinData = 2;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//When ui8PinData = 8, LED is green

ui8PinData = 8;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//When ui8PinData = 4, LED is blue

ui8PinData = 4;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//At 6 LED is a mix of blue and red to show purple

ui8PinData = 6;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//At 10, LED is a mix of greed and red to show yellow

ui8PinData = 10;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//At 12, LED is a mix of blue and green to show the light blue

ui8PinData = 12;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

//At 14, RGB is all lit to show white

ui8PinData = 14;

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

ui8PinData);

**SysCtlDelay**(5000000);

**GPIOPinWrite**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1 | GPIO\_PIN\_2 | GPIO\_PIN\_3, 0x00);

**SysCtlDelay**(5000000);

}