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CPE 403

Lab 3

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

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**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);

}

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**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;}
    }
}
```

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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 green 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);
}

```