Clinton Bess

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TivaC Lab 3 - GPIO

CPE 403

Checklist for Lab 3

- ☑ *A text/word document of the initial code with comments*
- ☑ *In the document, for each task submit the modified or included code (only) with highlights and justifications of the modifications. Also include the comments.*
- ☑ *Provide a permanent link to all main and dependent source code files only (name them as LabXX-TYY, XX-Lab# and YY-task#)Screenshots of debugging process along with pictures of actual circuit*
- ☑ *Video link of demonstration.*

Code for Experiment

Task 1:

```
#include <stdint.h>
#include <stdbool.h>
#include "inc/hw_memmap.h"
#include "inc/hw_types.h"
#include "driverlib/sysctl.h"
#include "driverlib/gpio.h"

uint8_t ui8PinData = 2;

int main() {

	// Set to use 16MHz clock divided by 5. Use PLL. with main oscillator is used.
	SysCtlClockSet(SYSCTL_SYSDIV_5 | SYSCTL_USE_PLL | SYSCTL_XTAL_16MHZ |
SYSCTL_OSC_MAIN);

	// Enable the peripheral for GPIO at port F.
	SysCtlPeripheralEnable(SYSCTL_PERIPH_GPIOF);
	// Set the pins 1 through 3 at port F as outputs.
	GPIOPinTypeGPIOOutput(GPIO_PORTF_BASE, GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3);

	while( 1 )
	{
		// Write enable the value of the mask of ui8PinData to the pins 1 - 3.
		GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3,
ui8PinData);
		// Delay of 2M loop cycles.
		SysCtlDelay(2000000);
		GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3,
0x00);
		SysCtlDelay(2000000);
		if (ui8PinData == 8) ui8PinData = 2; else ui8PinData = ui8PinData * 2;
	}

}
```

Task 2:

```
#include <stdint.h>
#include <stdbool.h>
#include "inc/hw_memmap.h"
#include "driverlib/sysctl.h"
#include "driverlib/gpio.h"
```

```
uint8_t ui8pinData[]={2, 4, 8, 6, 10, 12};
uint8_t count = 0;
int main(void)
{
	// Set clock at 16MHz with
	SysCtlClockSet(SYSCTL_SYSDIV_5|SYSCTL_USE_PLL|SYSCTL_XTAL_16MHZ|SYSCTL_OSC_MAI
N);
	// Enable Port F
	SysCtlPeripheralEnable(SYSCTL_PERIPH_GPIOF);
	SysCtlPeripheralEnable(SYSCTL_PERIPH_GPIOD);
	// Set GPIO Pins
	GPIOPinTypeGPIOOutput(GPIO_PORTF_BASE, GPIO_PIN_1|GPIO_PIN_2|GPIO_PIN_3);
	GPIOPinTypeGPIOInput(GPIO_PORTD_BASE, GPIO_PIN_1);
	while(1)
	{
		while(!GPIOPinRead(GPIO_PORTD_BASE, GPIO_PIN_1)){
			count = 0;
		}
		while(GPIOPinRead(GPIO_PORTD_BASE, GPIO_PIN_1))
		{
			// Write Pins High
			GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1|GPIO_PIN_2|GPIO_PIN_3,
ui8pinData[count]);
			SysCtlDelay(2000000);
			// Update Sequence of Pins
			GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1|GPIO_PIN_2|GPIO_PIN_3,
0x00);
			SysCtlDelay(2000000);
			count++;
			if(count == 6)
				count = 0;
//			if(ui8pinData==8) {
//				ui8pinData=2;
//			}
//			else {
//				ui8pinData=ui8pinData*2;
//			}
		}
	}
```

Task 3:

```
#include <stdint.h>
#include <stdbool.h>
#include "inc/hw_memmap.h"
#include "inc/hw_types.h"
#include "driverlib/sysctl.h"
#include "driverlib/gpio.h"
```

```
// Part (a) of task 3: Change sequence. Sequence was reversed.
// uint8_t ui8PinData = 8; // For changing sequence of LED blinking.
// Part (b) of task 3: Blink two LEDs at a time.
uint8_t ui8PinData = 6; // For changing sequence of LED blinking.

int main() {
	// Set to use 16MHz clock divided by 5. Use PLL. with main oscillator is used.
	SysCtlClockSet(
			SYSCTL_SYSDIV_10 | SYSCTL_USE_PLL | SYSCTL_XTAL_16MHZ
					| SYSCTL_OSC_MAIN);
	// Enable the peripheral for GPIO at port F.
	SysCtlPeripheralEnable(SYSCTL_PERIPH_GPIOF);
	// Set the pins 1 through 3 at port F as outputs.
	GPIOPinTypeGPIOOutput(GPIO_PORTF_BASE,
			GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3);
	//clock = SysCtlClockGet();
	while (1) {
		// Write enable the value of the mask of ui8PinData to the pins 1 - 3.
		GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3,
				ui8PinData);
		// Delay of 2M loop cycles.
		SysCtlDelay(2000000);
		GPIOPinWrite(GPIO_PORTF_BASE, GPIO_PIN_1 | GPIO_PIN_2 | GPIO_PIN_3,
				0x00);
		SysCtlDelay(2000000);

		// Part (a) of task 3: Change sequence. Sequence was reversed.
		// if (ui8PinData == 2) ui8PinData = 8; else ui8PinData = ui8PinData /
2;

		// Part (b) of task 3: Blink two LEDs at a time.
		if (ui8PinData == 12)
			ui8PinData = 6;
		else if (ui8PinData == 10)
			ui8PinData = ui8PinData + 2;
		else
			ui8PinData = ui8PinData + 4;
	}
}
```

Video Link to Demo

Task 2: https://www.youtube.com/watch?v=52SrBOkpplY

Task 3: https://www.youtube.com/watch?v=QyYhrPlrXe4