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Prof. Wolfe
ELEN 121L Tuesday 2:15 p.m.
9 April 2024

Lab 1 - Writing and debugging some simple C programs

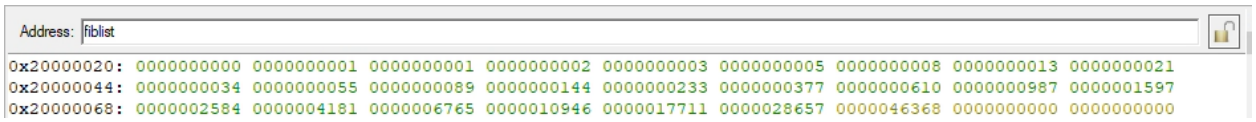
Lab Procedure:

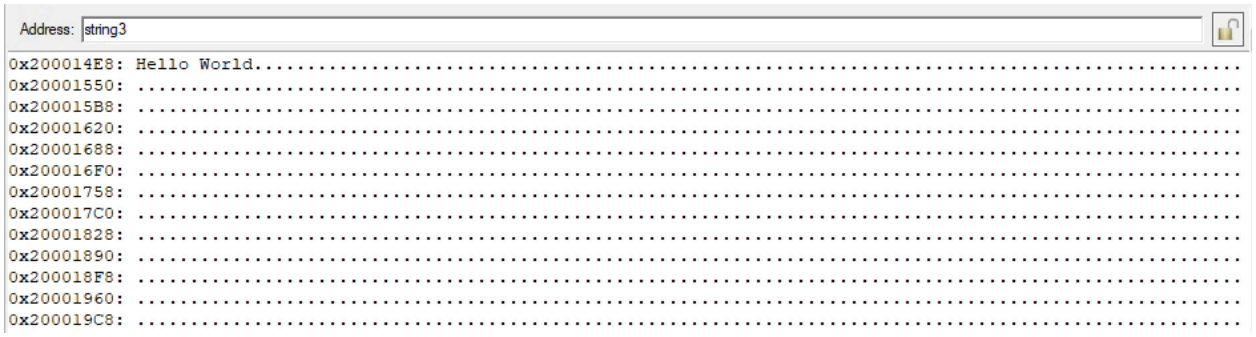
Part 1:

```
#include "stm32l476xx.h"
#include "SysClock.h"
#include <string.h>

int fiblist[25];
char string1[15]="Hello";
char string2[15]="World";
char string3[255]="\0";
int main(void){

	System_Clock_Init(); // Switch System Clock = 80 MHz
	// Fib Stuff
	int i=1;
	int j=0;
	fiblist[0]=0;
	fiblist[1]=1;
	for(i=1; i<24; i++){
		fiblist[i+1]=fiblist[i]+fiblist[j];
		j++;
	}
	// Hello World Stuff
	strcat(strcat(string1, " "),string2);
	strcat(string3, string1);
```

```
        while(1) {


}
}
```

Screenshots:





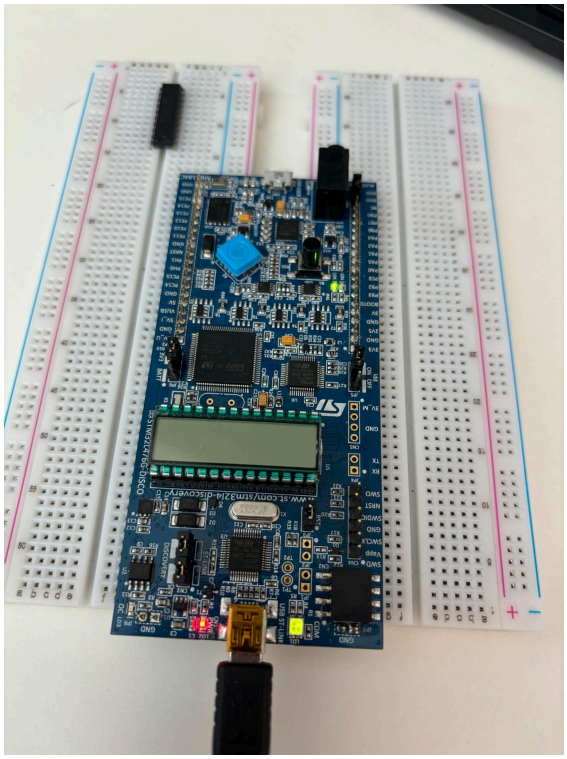
Part 2:

```
#include "stm32l476xx.h"
#include "SysClock.h"
#include <string.h>
int clock(){
        RCC->AHB2ENR |= RCC_AHB2ENR_GPIOBEN;
        RCC->AHB2ENR |= RCC_AHB2ENR_GPIOEEN;
}
int PUPDR(){
        GPIOB->PUPDR &= ~GPIO_PUPDR_PUPDR2;
        GPIOE->PUPDR &= ~GPIO_PUPDR_PUPDR8;
}
int MODER(){
        GPIOB->MODER &= GPIO_MODER_MODER2_0;
        GPIOE->MODER &= GPIO_MODER_MODER8_0;
}
int Red_LED_On(){
```

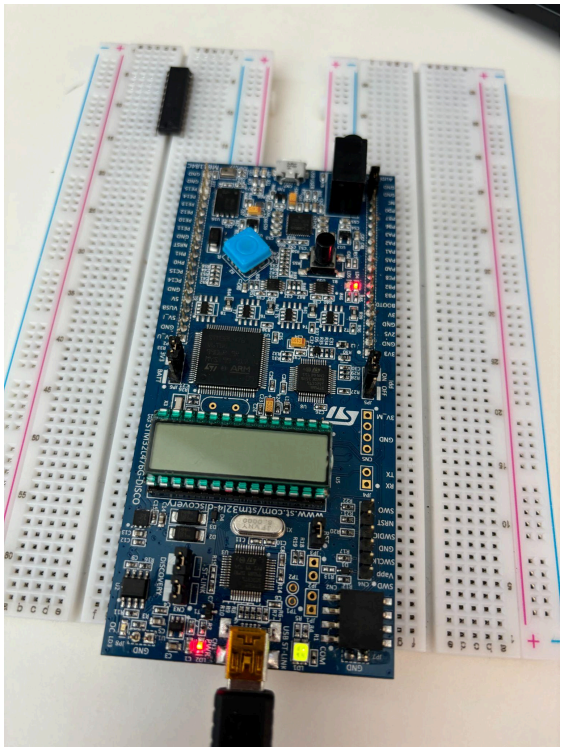
```
	GPIOB->ODR |= GPIO_ODR_ODR_2;
}
int Red_LED_Off(){
	GPIOB->ODR &= ~GPIO_ODR_ODR_2;
}
int Red_LED_Toggle(){
	GPIOB->ODR ^= GPIO_ODR_ODR_2;
}

int Green_LED_On(){
	GPIOE->ODR |= GPIO_ODR_ODR_8;
}

int Green_LED_Off(){
	GPIOE->ODR &= ~GPIO_ODR_ODR_8;
}

int Green_LED_Toggle(){
	GPIOE->ODR ^= GPIO_ODR_ODR_8;
}

int delaymicro(unsigned int x){
	int i=0;
	for(i=0; i<x*4; i++){
		i=i+1;
	}
}

int main(void){

	System_Clock_Init(); // Switch System Clock = 80 MHz
```

```
	clock();
	PUPDR();
	MODER();



	Red_LED_On();
	Red_LED_Off();

	Green_LED_On();
	Green_LED_Off();

	while(1) {
		Red_LED_Toggle();
		delaymicro(10000000);
		Red_LED_Toggle();
		delaymicro(10000000);
		Green_LED_Toggle();
		delaymicro(10000000);
		Green_LED_Toggle();
		delaymicro(10000000);
	}
}
```

Red LED On:



Green LED On:



In your lab report, explain how you determined the timing of the delaymicro() function.

We calculated the delay by first noticing that the clock speed is 80 MHz. Then we added a 40 million delay value to turn the led on, then an additional 40 million value to turn it back off, thus filling the entire 80 million.