CPE301 – FALL 2019

Midterm2

Student Name: Worku Tafara
Student #: 2001245644
Student Email: tafarw1@unlv.nevada.edu
Primary Github address: https://github.com/WorkuT1226/CPE301.git
Directory:

Submit the following for all Labs:

- In the document, for each task submit the modified or included code (only) with highlights and justifications of the modifications. Also, include the comments.
- Use the previously create a Github repository with a random name (no CPE/301, Lastname, Firstname). Place all labs under the root folder ESD301/DA, sub-folder named LABXX, with one document and one video link file for each lab, place modified asm/c files named as LabXX-TYY.asm/c.
- If multiple asm/c files or other libraries are used, create a folder LabXX-TYY and place these files inside the folder.
- The folder should have a) Word document (see template), b) source code file(s) and other include files, c) text file with youtube video links (see template).

- **COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS**

List of Components used
Block diagram with pins used in the Atmega328P

- **INITIAL/MODIFIED/DEVELOPED CODE OF TASK 1/A**

```
#define F_CPU 16000000UL
#include <avr/io.h>
#include <util/delay.h>
#include <stdio.h>
#include "i2c_master.h"
#include "uart.h"
#include "apds.h"

FILE UART_string = FDEV_SETUP_STREAM(uart_putchar, NULL , _FDEV_SETUP_WRITE);
char result[512];
int main(void){
	uint16_t R = 0, G = 0, B= 0;
	i2c_init();
	init_uart();
	stdout = &UART_string;
	APDS_init();
	_delay_ms(2500);
```

```
        printf("AT\r\n");
        _delay_ms(2500);
        printf("AT+CWMODE=1\r\n");
        _delay_ms(2500);
        printf("AT+CWJAP=\"hello world\"\r\n");
        while (1){
        _delay_ms(2500);
        printf("AT+CIPMUX=0\r\n");
        _delay_ms(2500);
        printf("AT+CIPSTART=\"TCP\",\"api.thingspeak.com\",80\r\n");
        _delay_ms(2500);
        RGB_reader(&R, &G, &B);
        printf("AT+CIPSEND=104\r\n");
        printf("GET
https://api.thingspeak.com/update?api_key=5H30LGDINC9QIK32&field1=0\r\n", R,G,B);
        _delay_ms(2500);
        }
}
```

- **SCREENSHOTS OF EACH TASK OUTPUT (ATMEL STUDIO OUTPUT)**

```
#define F_CPU 16000000UL
#include <avr/io.h>
#include <util/delay.h>
#include <stdio.h>
#include "i2c_master.h"
#include "uart.h"
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FILE UART_string = FDEV_SETUP_STREAM(uart_putchar, NULL , _FDEV_SETUP_WRITE);
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    stdout = &UART_string;
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    _delay_ms(2500);
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    _delay_ms(2500);
    RGB_reader(&R, &G, &B);
    printf("AT+CIPSEND=104\r\n");
    printf("GET https://api.thingspeak.com/update?api_key=5H30LGDINC9QIK32&field1=0\r\n", R,G,B);
    _delay_ms(2500);
    }
}
```
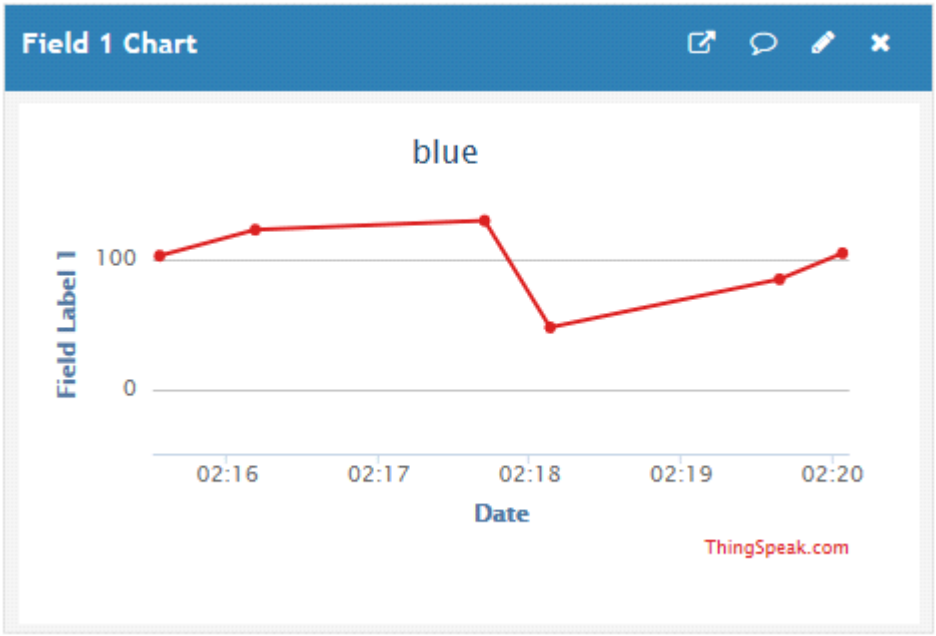
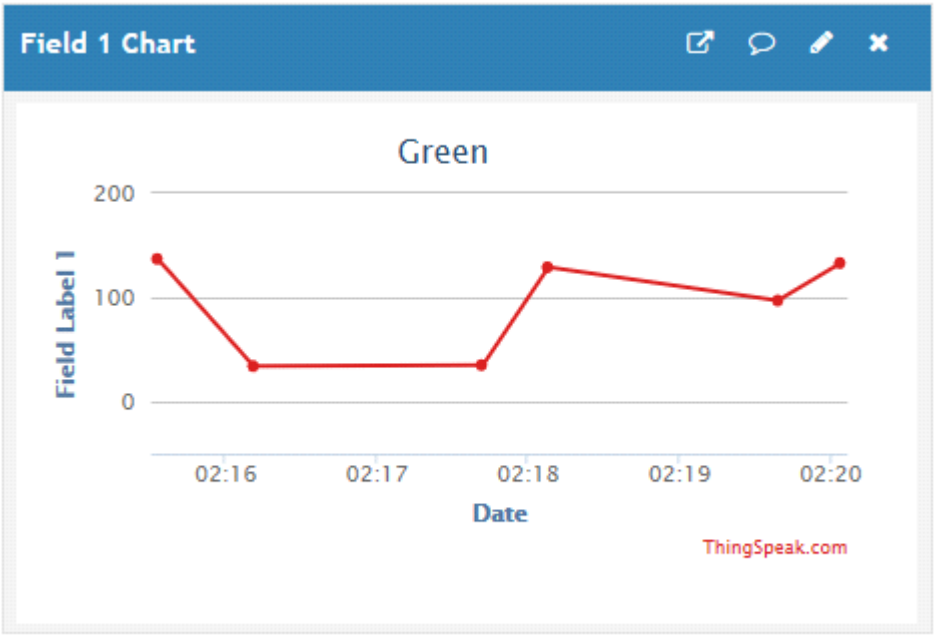


Field 1 Chart
blue
100
0
Field Label 1
02:16
02:17
02:18
02:19
02:20
Date
ThingSpeak.com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Green
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0
Field Label 1
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02:18
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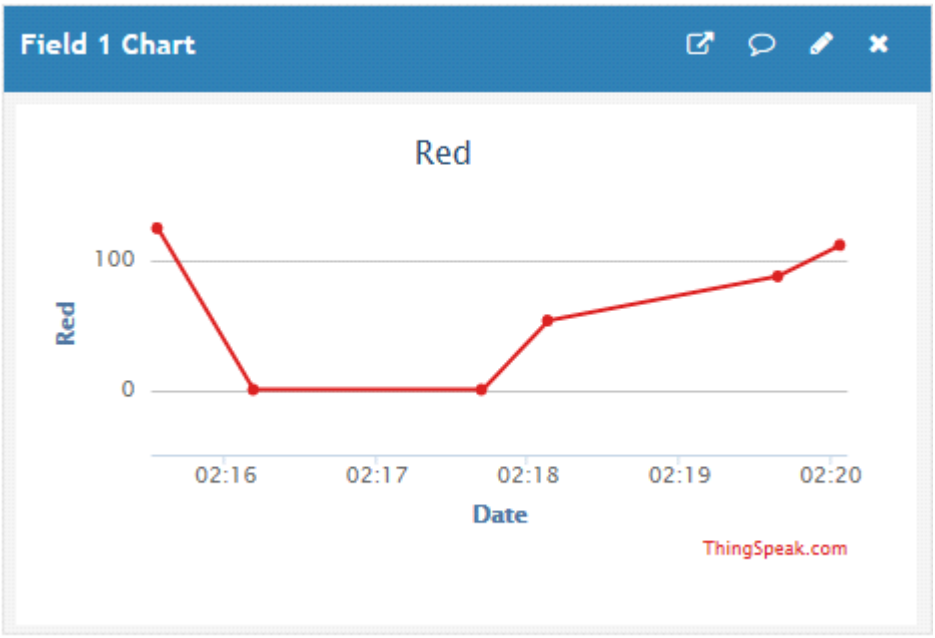
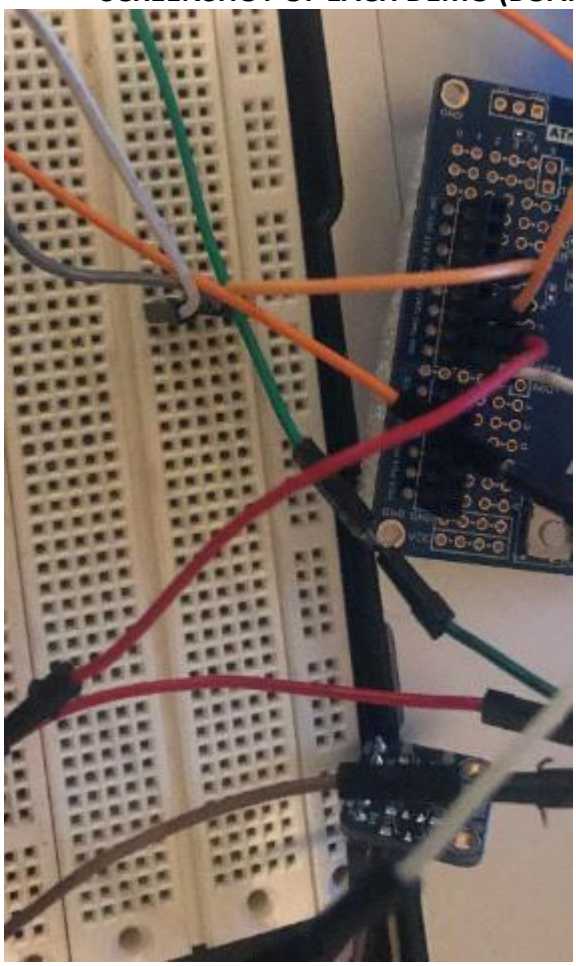
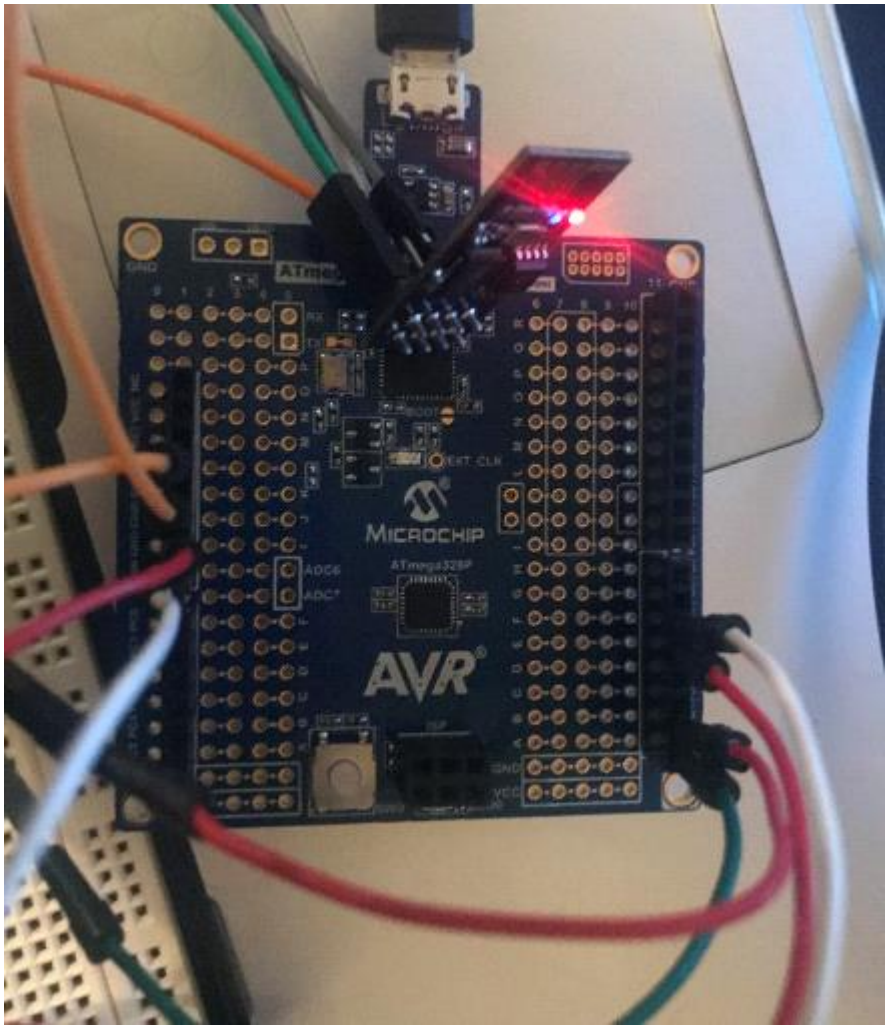
Date
ThingSpeak.com



- **SCREENSHOT OF EACH DEMO (BOARD SETUP)**





- **VIDEO LINKS OF EACH DEMO**
- **GITHUB LINK OF THIS DA**

Student Academic Misconduct Policy
http://studentconduct.unlv.edu/misconduct/policy.html

"*This assignment submission is my own, original work*".
Worku Tafara