ECE 375 LAB 2

Lab session: 010

Time: 4:00

Author name: Carl Jeffri Resurreccion

Programming partner name: N/A

INTRODUCTION

The purpose of the lab is to introduce the debugging tool in Microchip studio. This introduction taught me how to utilize breakpoints in the source code in order to analyze memory/register values at certain points of the program. Additionally, the lab taught me how to insert values in memory in order to manipulate the program. This lab is setting up future labs where debugging is required. I learned how to analyze every aspect of the microcontroller, and the simulator is preparation for analyzing real hardware in future labs.

STUDY QUESTIONS

1. What is the initial value of DDRB?
    a. 0x00
2. What is the initial value of PORTB?
    a. 0x00
3. Based on the initial value of DDRB and PORTB, what is Port B's default I/O configuration?
    a. As DDRB is 0x00, the pins of Port B are initialized as inputs.
4. What 16-bit address (in hexadecimal) is the stack pointer initialized to?
    a. 0x10FF
5. What are the contents of register r0 after it is initialized?
    a. 0xFF
6. How many times did the code inside of LOOP end up running?
    a. 4
7. Which instruction would you modify if you wanted to change the number of times that the loop runs?
    a. ldi i,$04, first line of loop
8. What are the contents of register r1 after it is initialized?
    a. 0xAA
9. What are the contents of register r2 after it is initialized?
    a. 0x0F
10. What are the contents of register r3 after it is initialized?
    a. 0x0F

11. What is the value of the stack pointer when the program execution is inside the FUNCTION subroutine?
    a. 0x10FD
12. What is the final result of FUNCTION? (What are the hexadecimal contents of memory locations $0105:$0104)?
    a. $0105:$0104 = ba:0e
    b. The little-endian interpretation would be 0e:ba

DIFFICULTIES

The difficulties I had involved the sample code file and including it into Microchip studio. While it was added in the solution explorer, it would not open when clicked. I fixed this bug by removing the file entirely, redownloading it, and adding it back into the project.

CONCLUSION

This lab taught me the basics of debugging within Microchip studio. The lab instructions were clear and concise, and I did not need the tutorial video.