

Lab 5: Intro to LC-3 Programming Environment

Worth 10 points.

Submit all sources by Sunday, November 8th @11:55PM

You can do a check off the following week

Lab Objective:

Since there is a midterm this week here is a simple lab. ☺

In this first assembly programming lab you will learn how to set up the programming environment for the LC-3 architecture in Windows. You will use the Windows assembler, **LC3Edit**, and simulator, **Simulate**, to complete this lab programming assignment. The purpose of this lab is to walk you through a simple example so you will get a feel of how the tools work. You will also be shown some of the debugging features. We have not covered yet in class how to do to the details of programming with the LC-3 yet, we will get to this, we just want you to jump in and start becoming familiar with the environment and tools.

Lab5 Preparation:

1. Read through this Lab assignment.
2. Read through the textbook chapters 5 & 7.
3. Review the lecture notes on the LC-3 Architecture and ISA.

Part A:

Get the **Code_partA.asm** and load it up in the LC-3 Assembler. There are some problems with it. You want to find out what they are. You will do this as a group with your TA/tutor. This will demonstrate to you how to assemble your code, how to check it for syntax errors, how to simulate it, and how to find “bugs”.

Part B:

This is pretty simple. Write a program that prints out “Hello World, this is *your name here*”, 5 times using a loop.

Things to note:

- Create a flow chart for the program first.
- Use this line of code for your message: `HELLO .STRINGZ “Hello World, this is ...!”`

- Use this line of code to print the message: TRAP x22 (Be sure to have the address of HELLO in R0)

The tutors will go over the basics of what these code lines mean. We will spend a lot of time in lecture going over the syntax of the language, so don't worry if it does not make sense right now. It is just more fun to dive right in and start playing with programming then sitting in class trying to stay awake.

Collaboration:

You are allowed to discuss this lab with other.

Example of possible output:

Hello World, this is Joe Bob!
Hello World, this is Joe Bob!
Hello World, this is Joe Bob!
Hello World, this is Joe Bob!
Hello World, this is Joe Bob!

Files to Submit:

- **Lab5.asm**
- **Lab5_flow_chart.pdf/.jpg (can be scan/picture of hand draw diagram)**
- **Lab5_report.pdf**

Please ask the tutor or see the class newsgroup for information on how to submit these files.

Report/Code comments Requirement:

- Please put minimal block comments in the beginning of both files including your name, UCSC email address. You should also include more information such as Due Date, Lab number (Lab5), lab title, and your section and TA/tutor.
- You need to list your register usage in your code after the initial block comment.
- Please comment your code neatly and succinctly. Repeating comments are not necessary.

Check-off: In general you should always demonstrate your lab when it is finished. The TA or tutors can tell you if it looks correct and give you feedback if not.

Grading template:

2 pts for the lab report

A: 7-8 pts: Completely functional with good coding comments and a complete header

B: 6 pts: Completely functional with poor to minimal comments and header

C: 5 pts: Pretty complete and correct functioning and poor to non-existent comments/header

D: 4 pts or less: Turned in something that does not function

Happy Coding!!