Lab Number and Title: Lab 3 Nonlinear Program Execution and Body Fat Monitor

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Purpose of Lab

The purpose of the lab was to learn to program conditionals on assembly language using the equivalent of if else statements, except they don’t run linearly. In assembly, branch instructions are used to jump from one location to somewhere else in the program, instead of executing linearly down the set of instructions. The program was used to display whether your body fat was low, good, high, or very high, depending on your gender, age and BMI. The Arduino board would then display the categories by a yellow, green, red, or all LEDs, respectively.

Description of Solution(s)

The method I used to solve this program was to create the function for one specific category, for instance a mid-aged female that has a good body fat level and then create the rest based off the code for that function. I also noticed that the code needed ‘jumps’ across the program in order for the branching to work.

Test Results

 I tested my program by inputting random values for the age and body fat level then making sure it was outputting the correct ‘level’ of their body fat and turning on the expected LED. I also tested it using the table provided in the lab file and making sure the output was as expected. Bugs I had included branches being too many lines away, the LEDs not blinking, and also not calling functions correctly.

Answers to Questions

*If the lab has questions on it, answer them here. Use one paragraph for each answer (the HTML <p> tag).*

 N/A

Discussion

I definitely learned a lot in this lab. At the beginning, I wasn’t sure how to start my code and what methods to use. The TA had to give me some beginning pointers then I was able to figure it out after some working out the problems on paper. I learned how to branch, compare registries to form a sort of if else statement, and how to make the LEDs turn off/on and blink. After getting the idea and concept down, the lab wasn’t too bad but I would definitely say that we weren’t prepared for the lab much. I would suggest giving us some previous knowledge on how to actually code but, as I said, it wasn’t very hard once you had the basics down.

Contribution to Team Work

*If this is a team lab, please describe the following when applicable: whether you designed the software on paper before coding, what part of coding is done by you (point out file name and line numbers), what bugs you have fixed, what hardware setup you have done, and any other work that consumed substantial thinking and time.*

N/A

References

*Document any sources you used in completing the lab, outside of the normal course material (website, textbook, manuals). Perhaps you found an algorithm on the web or some other insight somewhere else?*

N/A