Lab Number and Title: Lab 4 Decoding the Morse Code

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Purpose of Lab

The purpose of this lab was to learn how to input delays into our code when using the LED flash. In this lab, we were to instruct the AVR Microcontroller to display “Go Aggies” using Morse code, using a long flash of the LED light to represent a dash and a short blink to represent the dot. We then wrote a program that decodes Morse code inputted by a user and output the ascii character(s) equivalent to the Morse code.

Description of Solution(s)

For the problem of getting the LED to display ‘Go Aggies’, I used a simple approach of calling functions for each letter we had to display and in the correct order. First, I used calls to ‘dot’ and ‘dash’ for each letter which had their own calls to ‘on’ and ‘off’ as well as the delay for each blink. In the ‘on’ and ‘off’ labels I simply turned on and off the LED light, then in the delay labels for dot and dash I used push and pop instructions to load the delay into the registers since I was already using those registers.

Test Results

*Write one paragraph for each program describing how you tested it. For simple programs you can say the actual inputs used, but for more complex programs, give a general description of each test. Describe any bugs found during testing, or state that no bugs were found.*

 I tested the GoAggies.S by inputting a two-digit value and seeing if the LED outputted the correct blinking for the Morse code. For the decoder, I simply entered different characters and messages in binary and seeing if the output was the correct characters for which I entered. I had a few bugs in my code and in the GoAggies it was a pretty simple fix. I was using the push and pop instructions incorrectly but then I realized that I had to call the delay and it started working. For the Morse code decoder, I had an error message saying, “zero assumed for missing expression” and “Error: junk at end of line, first unrecognized character is’0’” which I didn’t know what it meant. After some debugging and trial and error I realized that

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 logic on paper. I learned how to use push and pop instructions, use a delay function, and how to do comparisons a lot better.

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 during class instead of taking up time during lab time 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