**TITLE**

**DS4 Equalizer**

**LAB # 07**

**SECTION # 08**

**FULL NAME**

**Adam Jennissen**

**SUBMISSION DATE:**

**10/27/2022**

**DATE**

**10/25/2022**

# Problem

For this lab, I was tasked to create a program that would output a bar graph of the pitch, roll, and joystick values in real time. I chose to do both bonus problems, which involved making it switch with a single button, instead of three different buttons, and the second bonus problem involved having the graph print L and R for roll and joystick, and F and B for pitch. The graph also had to be “centered” on the output terminal, assuming the center of the screen is 40 characters in.

# Analysis

This lab required us to work off of a skeleton code and we couldn’t add more functions or global variables. This meant that I had to work with what was given and I had to adapt my first thoughts on how to do it. For the output I had to use a for loop in order to determine how much of each character to output, after scaling the variables to properly fit the screen.

# Design

The first thing I did on this lab was get the input function to work correctly. Once I had that, I moved onto the scaling functions, for both of my scaling functions, I got the variable in terms of -1 to 1 (for the joystick scaling I divided by the maximum to get it in terms of 1), and then multiplied by 39. After the scaling functions I created a simple state machine in order to switch between which graph to output, then moved onto the print function. For the print function I just used a for loop to output the character. Lastly I set up the graph\_line function. I used a for loop to determine how many of each character to output. For figuring out weather to use L and R or F and B, I just added 80 to the pitch variable and then checked the bounds in my graph\_line function.

# Testing

When testing this lab, I had to make sure that all three of my graphs worked correctly, which meant a lot of testing. The first time I tested, nothing worked correctly, I found out that my controller was not properly connected to the computer, after fixing that, and a few bugs, my program kind of worked. The program did not properly output the graph when the value was zero, I fixed this by adding an if statement, and then after some more testing, my program worked properly. I noticed that towards the limits of the function, the graph would bounce between full and one character short of full.

# Comments

I learned that I dislike working off of a skeleton code. This lab felt restricting in what I could do, and caused me to have to think about the lab in a specific way, which I did not enjoy. I prefer having the freedom to come up with my own solution, and this lab felt like it railroaded me onto a set solution with no really creativity.

# Screen Shots

