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

```
 LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
 LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
 LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
  LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
   LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
     LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
      LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
        LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          LLLLLLLLLLLLLLLLLLLLLLLLLLLLL
             LLLLLLLLLLLLLLLLLLLLLLLLLL
                 LLLLLLLLLLLLLLLLLLLLLL
                     LLLLLLLLLLLLLLLLLL
                      LLLLLLLLLLLLLLLLL
                    LLLLLLLLLLLLLLLLLLL
                   LLLLLLLLLLLLLLLLLLLL
                     LLLLLLLLLLLLLLLLLL
                       LLLLLLLLLLLLLLLL
                         LLLLLLLLLLLLLL
                           LLLLLLLLLLLL
                           LLLLLLLLLLLL
                                 LLLLLL
                                       O
                                        R
                                        RR
                                        RRRRR
                                        RRRRRR
                                        RRRRRR
                                        RRRRRRR
                                        RRRRRRRRRR
                                        RRRRRRRRRRR
                                        RRRRRRRRRRRR
                                        RRRRRRRRRRRRR
                                        RRRRRRRRRRRRR
                                        RRRRRRRRRRRRR
                                        RRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
                                        RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR
```