Lab 1: Introduction to Raspberry Pi, Basic I/O and ADC

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Exercise 1

1.1: Setup the Raspi

Exercise 1 was setting up the Raspi, connecting to Wifi and SSH into Raspi

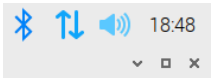

Figure 1: Wifi Connection

Exercise 2

2.1 Screenshots of Linux History

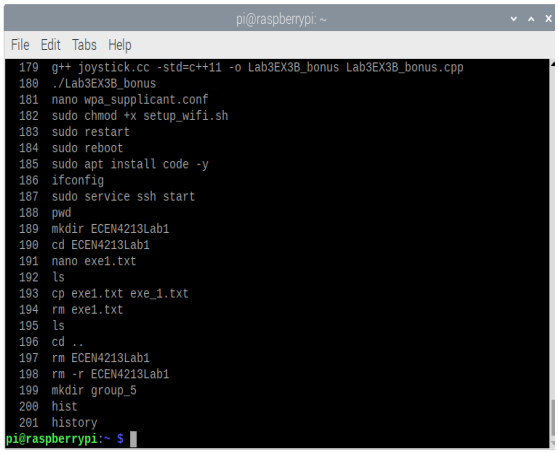

Figure 2: Linux Command History

Exercise 3

3.1 Circuit

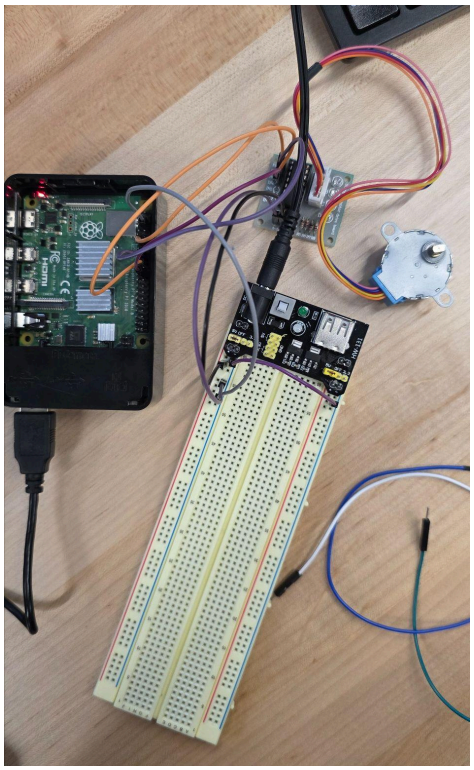

Figure 3: Circuit to control Stepper Motor

Exercise 4

4 Circuit

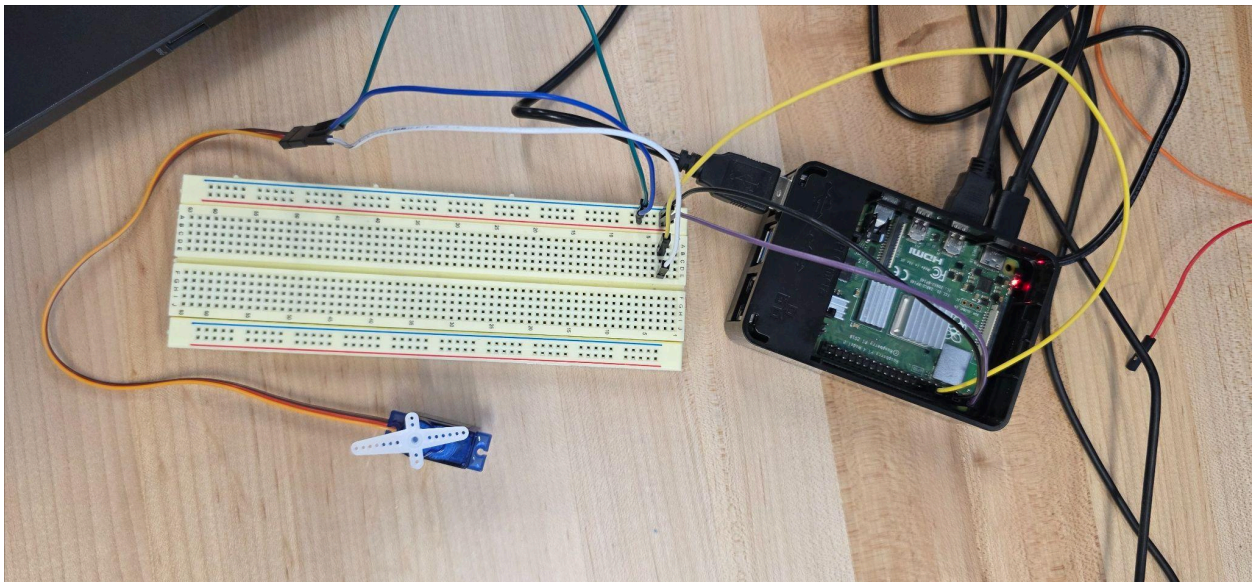

Figure 5: circuit for exercise 4

Exercise 5

5 Circuit

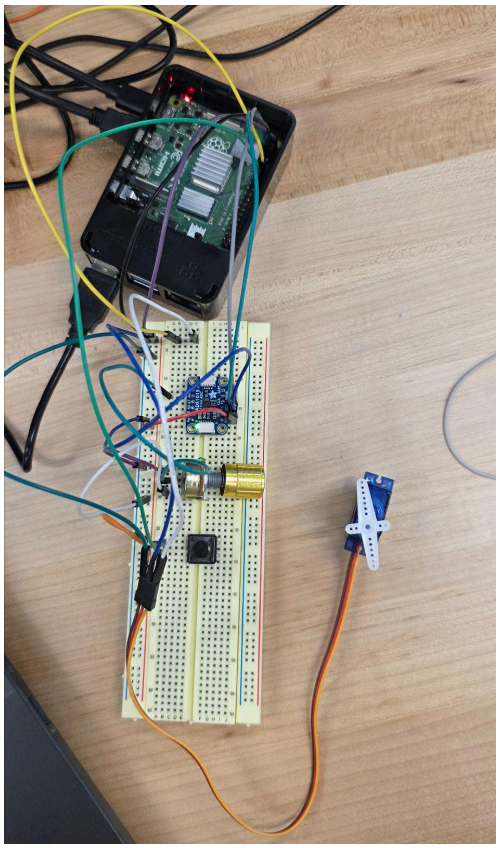

Figure 7: circuit for exercise 5

Supplemental Questions

Briefly summarize what you learned from this lab.

In this lab we learned about the various types of motors and how they can be controlled. We also learned about I2C and interrupts and their uses. This lab helped us realize potential use cases for all three types of motors and interrupts.

What is the advantage of using interrupts?

Interrupts notify the CPU of an event once it happens instead of wasting time and power constantly polling and waiting for an event to happen.

Explain the differences between stepper motors and servo motors and DC motors.

DC motors are continuous with the ability to control speed via the voltage delivered to it, but they have no position control. A servo motor can have speed and position controlled due to its built-in position feedback. Stepper motors have multiple magnetic poles inside of them and are used for their precise movement and high torque.

ACKNOWLEDGMENTS

I certify that this report is my/our own work, based on my/our personal study and/or research and that I/we have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. I/We also certify that this assignment/report has not previously been submitted for assessment anywhere, except where specific permission has been granted from the coordinators involved.

Author-1 Signature **Christian Landrum**
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REFERENCES

1) Lab 1 Slides

2) Lab 1 Handout

3) Lab 1 Documents