Assignment 1 Reflection Log

Goal for exercise – "Introduction to Arduino"
The goal for this exercise is to explore the basics of Arduino and learn how to use one.

What do you know about Arduino computers?
I new almost nothing about Arduino's before I started this assignment, but I'm excited to learn more.

List all resources and what specifically you used or learnt from that resource to complete the challenge exercises.
Encoders:
From the handout.
http://www.arduinoos.com/2010/06/rotary-encoders/
https://www.pc-control.co.uk/incremental_encoders.htm

Functions:
Great for referencing language:
https://www.arduino.cc/reference/en/
Useful for strings:
https://www.arduino.cc/reference/en/language/variables/data-types/string/functions/concat/

Basics:
For learning how to print things.
https://docs.arduino.cc/built-in-examples/strings/StringAdditionOperator
pull-up resistors.
https://docs.arduino.cc/learn/microcontrollers/digital-pins

ISRs:
From the handout. These go over the details of ISRs and how to use them properly.
http://gammon.com.au/interrupts
https://www.arduino.cc/reference/en/language/functions/external-interrupts/attachinterrupt/

Using CLion as an IDE for Arduino
The Arduino IDE leaves so much to be desired. No code completion? No refactor? No formatting? Gross. So I set up a Clion plugin that lets me enjoy all it's features and interface with the arduino directly without ever touching the Arduino IDE.
https://docs.platformio.org/en/latest//projectconf/index.html#projectconf
https://plugins.jetbrains.com/plugin/13922-platformio-for-clion
https://docs.platformio.org/en/latest//core/userguide/device/cmd_monitor.html
https://docs.platformio.org/en/latest//projectconf/build_configurations.html
https://docs.platformio.org/en/latest/plus/debugging.html

https://www.jetbrains.com/help/clion/settings-file-and-code-templates.html#controls
https://docs.platformio.org/en/latest/projectconf/section_platformio.html#projectconf-section-platformio
https://docs.platformio.org/en/latest/projectconf/section_env_monitor.html#monitor-port

Compile a list of all documentation created. Provide file name and a short description of that file.
All my code is commented. I made the truth table for the encoder exercise.

Encoders.ino is for the first part of the encoder exercise. Finished and working.
EncodersISR.ino is for the second part of the encoder exercise. Unfinished.
SEED Assignment 1 Documentation.pdf shockingly contains my documentation for assignment 1.

(I haven't even made the file yet for the LED exercise.)

Provide an example of something that you would do differently or you could improve upon if you did this exercise again.

This assignment has been way more challenging than I thought it would be. I don't have any experience working with an Arduino, and I found the instructions difficult to follow. I ended up underestimating the amount of time the exercises would take, and I wish I had given myself more opportunities to have assistance from the TAs. I'm writing this on Friday evening, the day that this assignment is due, and I've barely finished the encoder without interrupts exercise. I've spent almost 12 hours of the past 72 troubleshooting, researching, and experimenting, and hardly anything to show for it. I wish that the assignment instructions were more precise and easier to follow.

Given that the assignment is so open-ended, I understand why some things were vague, but the overall structure and functionality of the code we are asked to build shouldn't be this convoluted. My part of the projects with encoders using interrupts is mostly working, but I still don't completely understand why we update the position by 2 instead of 1 using the ISR or what the purpose of the second function actually is. Not having a clear objective for a function makes implementing it significantly more difficult. I've had my group members look over my code, help from multiple TAs, help from friends in different sections, and plenty of time to independently troubleshoot my code, and yet I'm still having a lot of difficulty getting things to work the way that they're supposed to. Another thing that frustrates me is that the TAs don't have office hours, and the office hours for the instructors are short and infrequent. For a two-credit hour class, I'm stunned at how much I've had to do already, and we haven't even started building the robot yet.

On a scale of 1-5, what is your comfort level with Arduino computers after going through this exercise? (1 being least comfortable and 5 being most comfortable).

1	2	3	4	5

I'm at a 3. I know a lot more than I did when I started, but I'm far from comfortable using Arduino-specific syntax.