

Arduino Learning Module

Jessica Howley and Stephanie Firling

Block F

10/4/19

Initial Proposal:

By the end of the learning module our goal is to have several of the lights working. We hope to be able to put on a “light show” with various LED lights. If we accomplish this early we will attempt to add music. We will first figure out how to make one work and then keep improving. We will watch videos online and look for online instructions to follow on the basis of programming and setting up an arduino. We will work together to set up the arduino. Jess will research and brainstorm while Steph types the code. We will reflect on our work together at the end of each day to fill out our logs. On the first day we will find a video to watch explaining the arduino and try to get it set up. We would like to have at least one light working. On days two through four we will program our light show. If we accomplish this we will try to add music to our light show on the fifth day.

Daily Logs

Day 1 (10/7/19) Today we wrote and handed in our initial proposal. We watched a couple videos that we used to follow while assembling the arduino. We worked together to place the led's and wires on the breadboard and attach everything to the arduino. We started to program the arduino but ran into an error when we tried to make the green light flash.

Day 2 (10/9/19) - Today we got the red, yellow, and green lights working. We added blue and white and made the five lights go off in order for about a second each. We added a physical button that when pressed, turned on the red led. added a button for red. We decided to start working on a digital button. We looked up the code and setup for this online.

Day 3 (10/10/19) Today we got digital button to work. We were stuck so we collaborated with Jamie and Logan who showed us their code. Our code was correct but we set up the button incorrectly on the board. After this we brainstormed what to do for the rest of the module, and decided to try using an ultrasonic sensor to measure distance. We looked up how to set it up online and found some sample code.

Day 4 (10/11/19) After figuring out some complications, we got the ultrasonic distance sensor to work accurately! After going over our code numerous times, we realized it was the sensor itself that was not working. We began to correspond different colored lights flashing for different

distances measured by the sensor. For example, if your hand were less than three inches away from the sensor a red light would go off.

Day 5 (10/18/19) - On the last day of the module we were able to get the ultrasonic sensor working so that a different light would go off for our hand being a certain distance away. For example, if one of our hands were less than 5 inches away the green light would go off, but if we moved it closer to less than three inches away a blue light would go off. We had extra time so we redid the digital button task so that we could take a video.

Final Report

Group Members

Jess Howley and Steph Firling

Topics Covered

Setup of Arduino, simple coding for arduino such as making lights blink, more complex coding and setup for arduino such as buttons and ultrasonic sensors

What Did We Learn?

_____By completing this learning module we learned how to successfully set up and program an arduino. Jess did not have any previous experience with arduino and Steph had only worked with them once so it was very helpful to watch videos and look at schematics to learn how arduino's work and what we can do with them. We were able to use multiple LED lights, a physical button, a digital button, and an ultrasonic sensor. We learned how to set up and program the arduino for the different challenges we did.

What Problems Did We Encounter?

We ran into a lot of problems that were mostly based on setup and wire placement. We had a particularly hard time programming the sensor, and after rewriting the code we realized it was the ultrasonic sensor itself that was not working.

What Would We Suggest For Others?

We would suggest that others who choose to pursue working on arduinos have a clear list of goals they would like to accomplish beforehand. We had underestimated ourselves and completed our initial goal within the first day. We spent a little too much time in class simply trying to figure out what to do next.

Overall Summary

Overall, we enjoyed working with arduino's this learning module. Both of us were able to learn a lot regarding setting up proper circuits and programming more complex programs than either of us had done on arduino before. We used sample code and made up our own code based off of samples we found online and utilized the internet and another group working on arduinos to create successful programs.