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Initial Proposal

Our goal by the end of the project is to familiarize ourselves with the inner workings of Arduinos. We want to be able to build a foundational understanding so that we can apply our knowledge to future projects. To start off we’ll use the starter kit guide as well as video and online tutorials. We both will have similar roles in researching how to maneuver an Arduino and use it in different situations. We want to build and make functional some basic projects via some searches as a means of practicing the required elements of a functional system.

Timeline:

* Day 1: Research Basics of the Arduino through the starter kit and other resources
* Day 2: Look into beginner projects, find something interesting and gather the proper materials, understand how arduinos work with breadboards and specifics
* Day 3: Familiarize ourselves with the Arduino IDE and program the Arduino for our project
* Day 4: Work on beginner projects with the Arduino
* Day 5: Continue trying out different projects with Arduino; Finish final project

Daily Log

Day 1: 10/12/2018

Today as our first day we looked over the beginning of the Starter Kit Guide to familiarize ourselves with the Arduino. We researched the basic functions of the board and how each of the components connect to each other and how to identify where to input the wires. To research we used external learning sites to understand the basics.

Day 2: 10/15/2018

We found a project online, to complete this class. We picked the traffic light project from makeuseof.com and followed the diagrams we were given. At first we were able to identify all of the components used until the resistors. We were looking in the diagram and each resistor used had a four color pattern, but in the starter kit all resistors had a five color pattern. Eventually we matched as close as possible and matched the amount of resistance to check if we used the right ones. We got the traffic light to work on a loop as well as with a pedestrian crossing button to theoretically allow for two flows of traffic.

<https://www.makeuseof.com/tag/arduino-traffic-light-controller/>

Day 3: 10/16/2018

We returned to the traffic light problem and adjusted our set-up on the breadboard to allow for a traffic-light configuration across a four-way intersection. After finishing that, we had run out of different circumstances to prepare for, so we went looking for different projects. Nick found a paper piano that uses capacitive sensing to play music by pressing paper keys. The rest of the period was spent gathering materials in order to get started immediately for Day 4.

Day 4: 10/18/2018

We set up the breadboard for the paper piano as well as implemented the code into the Arduino IDE. We drew the piano itself and configured the wires in a reasonable way for the most space in between each and adjusted the piano keys accordingly. The program was not compiling properly because it was looking for a library that we did not have so after a little trouble shooting the code finally compiled.

[https://create.arduino.cc/projecthub/San\_Ismail/paper-piano-with-arduino-e27da7?](https://create.arduino.cc/projecthub/San_Ismail/paper-piano-with-arduino-e27da7?ref=platform&ref_id=424_trending___&offset=24)

Day 5:10/19/2018

We attempted to finish the project we started yesterday that we got the code to compile. We started the program up and the capacitive sensors would not work. We replaced the speaker and double checked the wattage of the speaker and it was within .25 watts. The sensors still didn’t work. We’re not sure but we believe it to be a problem with how the wires pick up current from the paper piano, yet no matter how dense the pencil keys were drawn, there was no signal of a picked up current to trigger a tone.

Final Write-up

This group is composed of Nick and Audie. We learned how to set up circuits around a breadboard and connect it to an Arduino, how to integrate LEDs and delays, how to use a battery and battery cap as a power source, and writing code to set our circuits in action. Through all this we learned the two basic functions of Arduino IDE, void setup() and void loop(), as well as how to create our own methods to use within the program, how to change the delay timers, tones, sensor thresholds, and the like.

The primary problem we encountered was getting the wires to sense a change in capacitance on the paper piano. We remade the piano about 10 different times with different types of pencil and different amounts of graphite layered onto the page. We tried changing the requirements and sensitivity to let even smaller changes in capacitance have an effect in creating a tone, but nothing proved effective.

The primary suggestion for others pursuing Arduino are to try different things, and to just get started working on any projects that seem interesting. No matter how basic a project may seem, they help you figure out the specifications for all the materials required and how they interact with a breadboard to create a functional circuit.

Overall we enjoyed setting up the breadboards and arduinos and IDE program. It was tedious to make sure all the wires were plugged into the right spots in relation to other pieces, but enjoyed seeing circuits like traffic lights for a 4-way intersection work properly. Arduino is a very flexible computer and we could definitely entertain trying out different and more complex projects in the future.