

Learning Module #2 - Cover Sheet
Arduino with Sean and Charlie
September 12th, 2024 to September 23rd, 2024 (Period F)

Learning Module #2 - Overview
Arduino with Sean and Charlie
September 12th, 2024 to September 23rd, 2024 (Period F)

- **Names of Group Members:**
 - Sean and Charlie
- **Topics Covered:**
 - Arduino
- **What did we learn from this activity?**
 - From this activity, Sean and Charlie learned how an Arduino functions, how a breadboard works, how to wire and create circuits between the Arduino, breadboard, and peripherals, and how to code the actual functions they wanted to happen in the Arduino IDE. This entire process involved them learning how to properly connect everything to the breadboard and the breadboard to the Arduino, which included wiring LEDs, beepers, humidity sensors, and more. In addition, they gained key knowledge about the possibilities of an Arduino when connected to different sensors. At the same time, they learned how to debug and utilize the terminal/console to test inputs and outputs. Most importantly, they strengthened their patience and precision skills, helping them connect peripherals correctly and debug code efficiently.
- **What problems did we encounter and how did we deal with them?**
 - Sean and Charlie encountered some problems with the soldering process. One issue was with their soldering iron. The one that they originally used had a dull tip, making it difficult to be precise. To fix that, they decided to use another soldering iron that had a sharper tip, which made their soldering experience much easier. However, they still faced other challenges, which required them to learn how to desolder. For example, they had to desolder two points on the circuit board a couple of times throughout the entire learning module. Additionally, Sean and Charlie ran into a problem with the LED lights on the circuit board. Specifically, the LED lights would not blink as they should have. Unfortunately, this issue was not resolved, but this did not take away from everything that they learned from the entire project.
- **What suggestions do we have for others who might pursue this activity?**
 - Sean and Charlie strongly advise others to choose a good soldering iron, specifically one with a sharp tip. Using a good soldering iron makes the entire process much easier, and it helps avoid making any mistakes that require desoldering. Also, they recommend others to keep the components from their soldering kit and work station organized. This prevents losing any pieces or spending a lot of time looking for their correct components. Most importantly, they also advise others to work with the soldering iron in a safe manner. This

includes wearing goggles and being cautious when the soldering iron is plugged in.

- **Summary of Our Experience:**

- Overall, Sean and Charlie had a good experience with this learning module. They managed to get a lot of work done while having an enjoyable time. They liked working on a project that is very hands-on, and they were happy to create something in the end. Although they had little to no experience with Arduino, they learned a lot of new information and accomplished their initial goals.

Learning Module #2 - Daily Log
Arduino with Sean and Charlie
September 12th, 2024 to September 23rd, 2024 (Period F)

IN SCHOOL (ALL DAYS):

September 12th, 2024 - Period F

Sean and Charlie

Day #1

- Sean and Charlie researched Arduino by watching videos and reading the arduino website. They learned about analog vs digital output, capacitors, resistors, and how to create a circuit. They are ready to begin using the Arduino the next day.

September 13th, 2024 - Period F

Sean and Charlie

Day #2

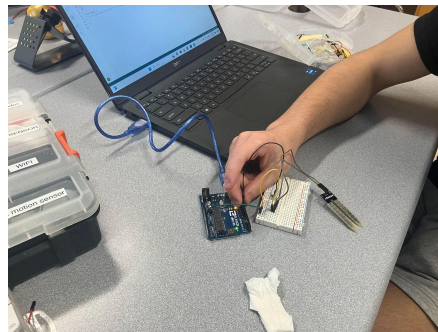
- Sean and Charlie began to practice their Arduino skills by doing some small exercises on the breadboard. Also, they learned how to use LEDS, resistors, buttons, and buzzers. In the end, they made a simple circuit that when pressing a button the LED turned on.

September 16th, 2024 - Period F

Sean and Charlie

Day #3

- Sean and Charlie used what they learned about Arduino by beginning to put their moisture sensor circuit together. They made a lot of progress by using different components as outputs and experimenting with code. By the end of the day, they were confident in their goal of making a moisture sensor output when a towel is below a certain moisture level.

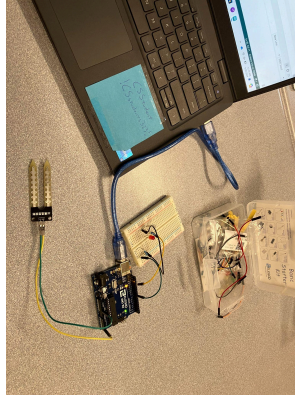


September 17th, 2024 - Period F

Sean and Charlie

Day #4

- Sean and Charlie continued working on their circuit. The circuit works and makes a buzzing noise when the towel is not wet enough. However, there was an issue with the LED lights. Sean and Charlie have to find out why this issue is happening and fix it.



September 19th, 2024 - Period F

Sean and Charlie (Absent)

Day #5

- Sean attempted to fix the issue from the previous day. He fixed his code. And the circuit worked properly.

September 20th, 2024 - Period F

Sean and Charlie (Absent)

Day #6

- Sean began experimenting with the ultrasonic sensor. His goal was for the buzzer to go off when the sensor sees something close enough. So far, he has completed wiring and code. He was able to make a very simple circuit but he did learn the fundamentals of the ultrasonic sensor.

Learning Module #1 - Resources
Arduino with Sean and Charlie
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- **Sources:**

- [Arduino Guides \(YouTube Playlist\)](#)
- [Instructables \(Helped Wire Components, Ex. Humidity Sensor\)](#)
- [Project Hub Arduino \(Helped Debug and Helped Write Code\)](#)

- **Materials:**

- [Arduino](#)
- [Wiring Kit](#)
- [Moisture Sensor](#)
- [Ultrasonic Sensor](#)
- [Breadboard](#)
- [Laptops with Arduino IDE Installed](#)