ICP3

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MonkeyCanCode edited this page on Feb 8 · 2 revisions

Source

Video

Introduction

For ICP3, we create a weather station on Arduino with various sensors (barometer, dust, light, temperature, and UV). The measurement for this weather station include temperatures, humidity, dust condensation, light, ultra violet rays, and atmospheric pressure. With these sensors, we then write the recorded data from sensors to ThinkSpeak for display purpose.

Part 1:

- Connect barometer sensor to Arduino
- Connect dust sensor to Arduino
- Connect light sensor to Arduino
- Connect temperature sensor to Arduino
- Connect UV sensor to Arduino
- Display data collected from sensors on IDE monitor

Part 2:

- Display data collected from sensors on LCD display
- Connect WIFI module to Arduino
- Send data collected from sensors to ThinkSpeak

Part 3 & Bonus:

- Combine parts 1 and 2 together

Objectives

The objectives for this ICP are:

- Learn how to use barometer sensor
- Learn how to use dust sensor
- Learn how to use light sensor
- Learn how to use temperature sensor
- Learn how to use UV sensor
- Integrate ICP1, ICP2, and ICP3

Approaches/Methods

For ICP 3, I worked with Mehul. We used various circuit diagrams provided by instructor and built the circuit for our ICP3. We made some changes to the provided circuit diagrams due to the different types of the hardware modules/snesor we received. We used the template source code provided by instructor as the base of our project, we made a lot changes to the final source we wrote compared to the original template source code.

Workflow

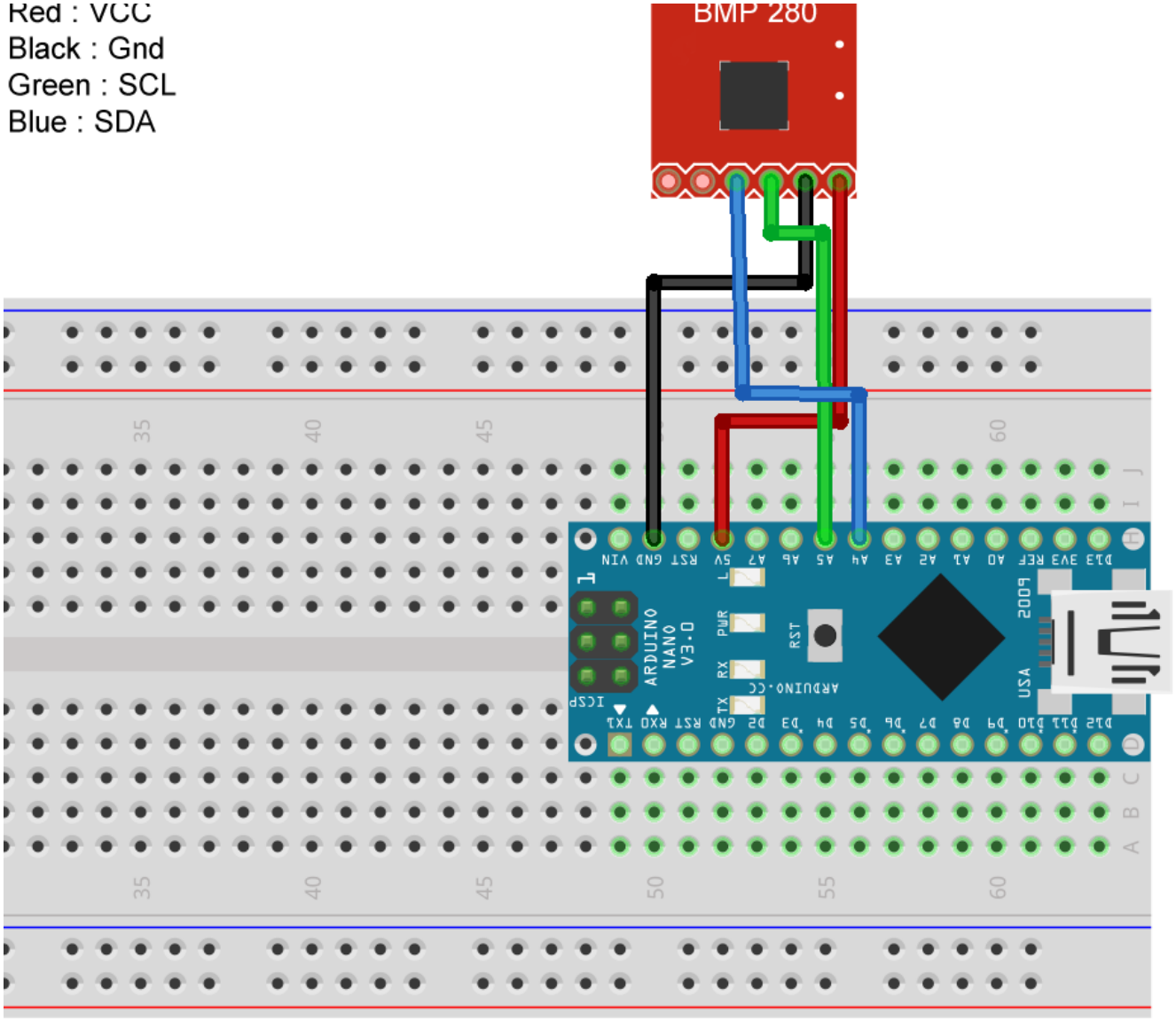
Here is the workflow for ICP3:

- Build the circuit board for each sensor with Arduino
- Test code snippet for each sensor with Arduino
- Combine all sensors together on the same breadboard
- Write new code to combine all sensors with Arduino
- Connect to LCD display and display data collected from sensors on it
- Connect WIFI module to Arduino
- Push collected data from sensors to ThinkSpeak
- Arduino starts up
- Arduino connects to WIFI
- Arduino read data from various sensors
- Arduino push data to ThinkSensor

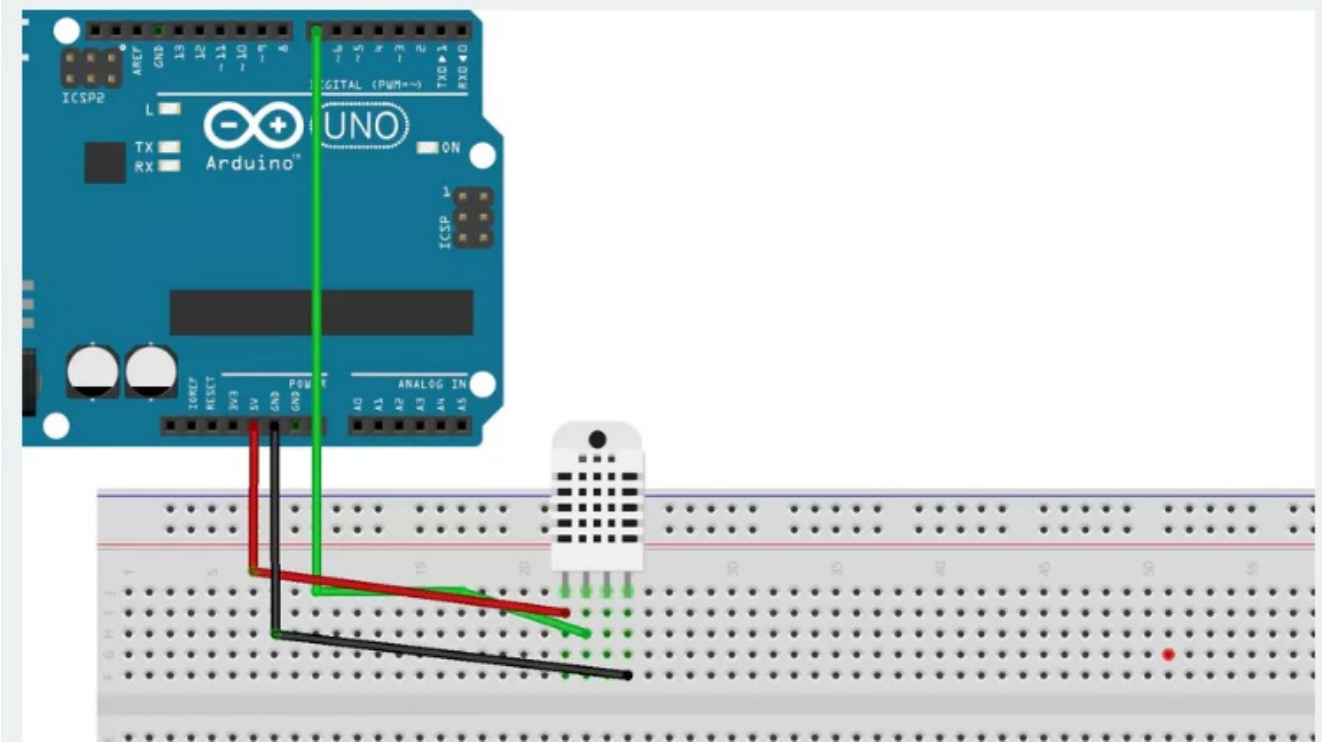
Circuit Diagram

Barometer sensor:

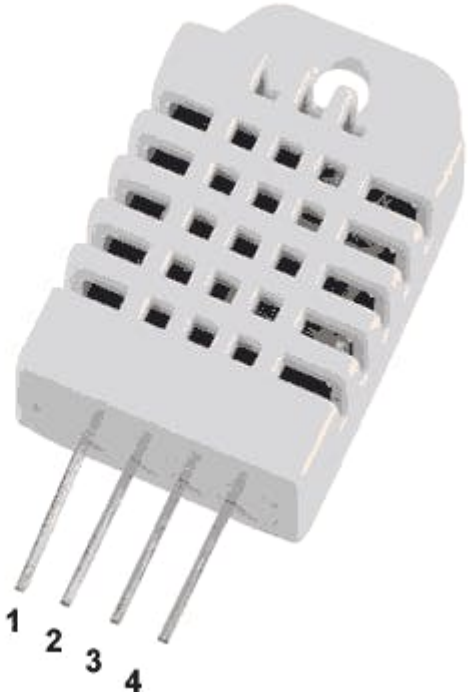
Red : VCC
Black : Gnd
Green : SCL
Blue : SDA



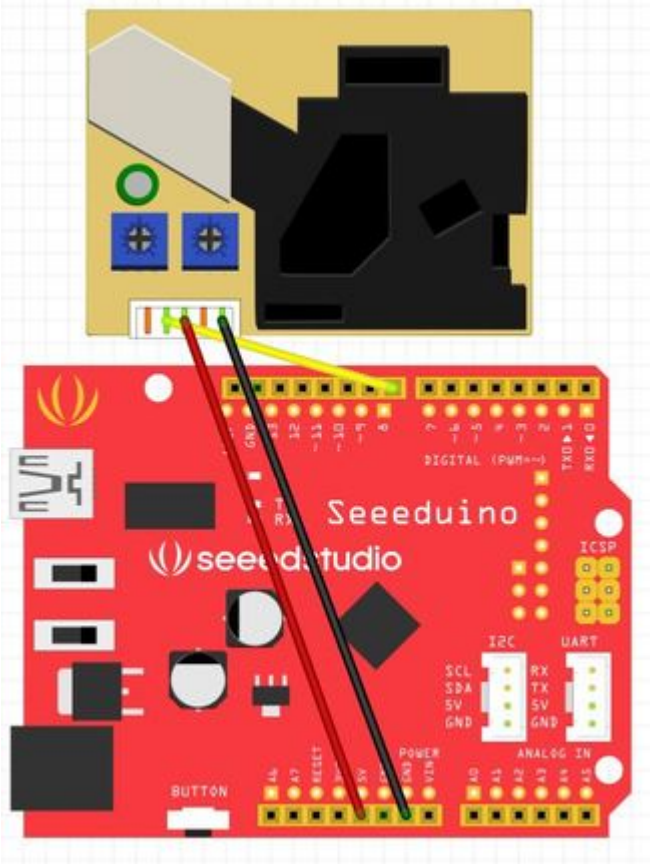
Temperature sensor:



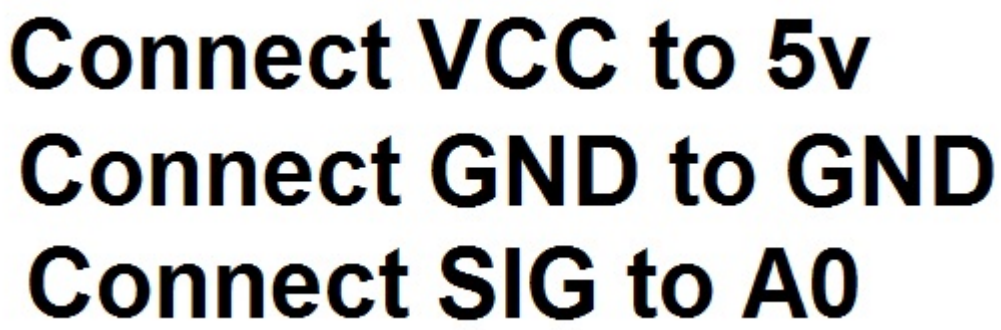
DHT22 pins	
1	VCC
2	DATA
3	NC
4	GND



Dust sensor:



UV sensor:



Parameters

There is no special parameters for this ICP.

Evaluation & Discussion

This ICP is also interesting and I feel more comfortable with the hardware stuff on Arduino. I got to play with more sensors and combined with the stuff I learned from previous classes into this one.

Conclusion

From this ICP, I learned more about Arduino and how to connect various sensors to Arduino and build even more complex circuit board and write Arduino code from scratch.

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https://github.com/MonkeyCanCode/IOT.wiki.git
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