



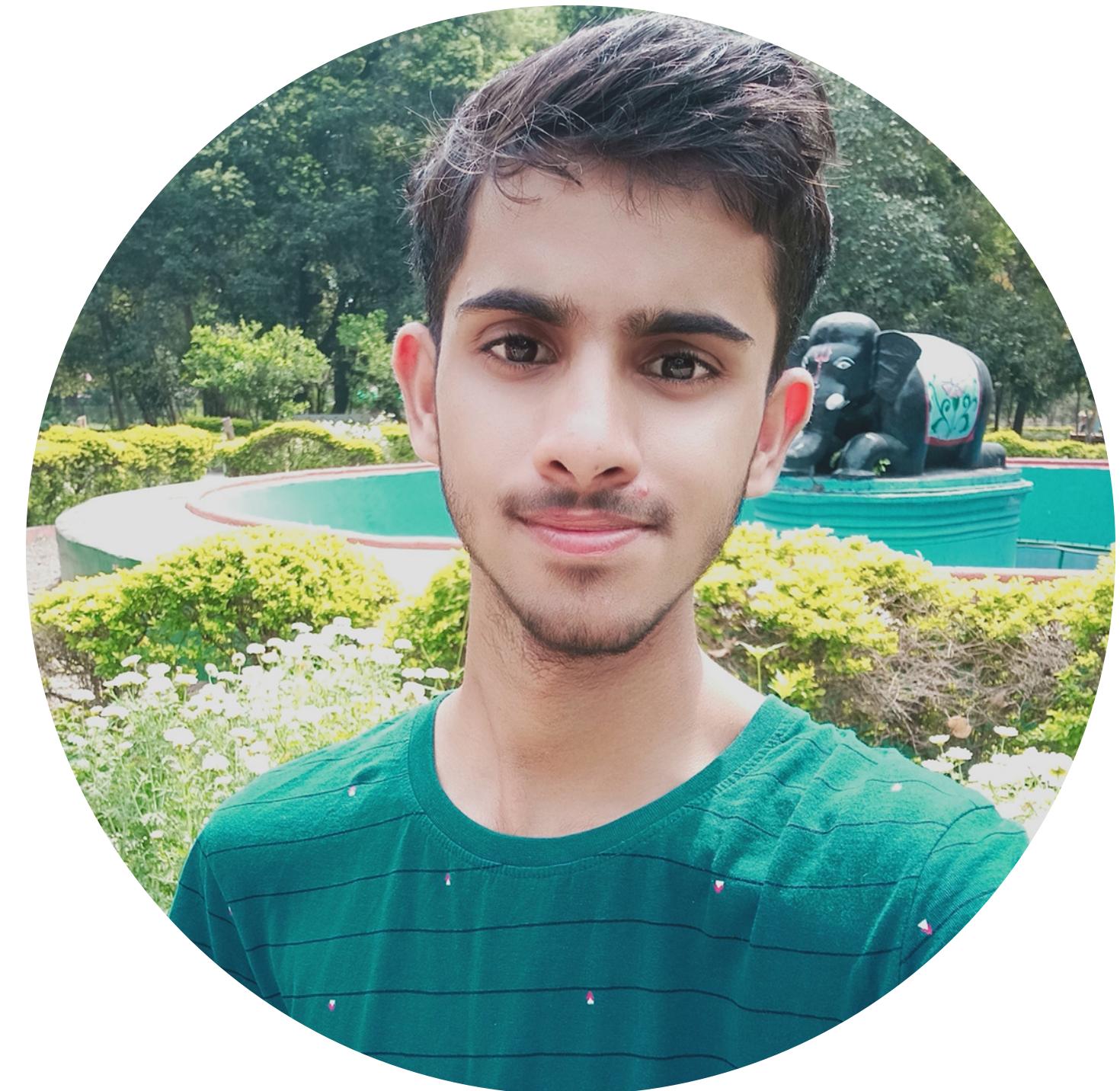
# Getting Started with IoT on Arduino

By Shobhit Kumawat

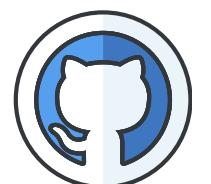
# Shobhit Kumawat

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- Community Manager Intern at Bolt IoT
- 3rd year undergraduate from ECE at IIIT Nagpur
- Well-versed in C, Python, HTML, JS, and many more programming languages



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@sbkmt



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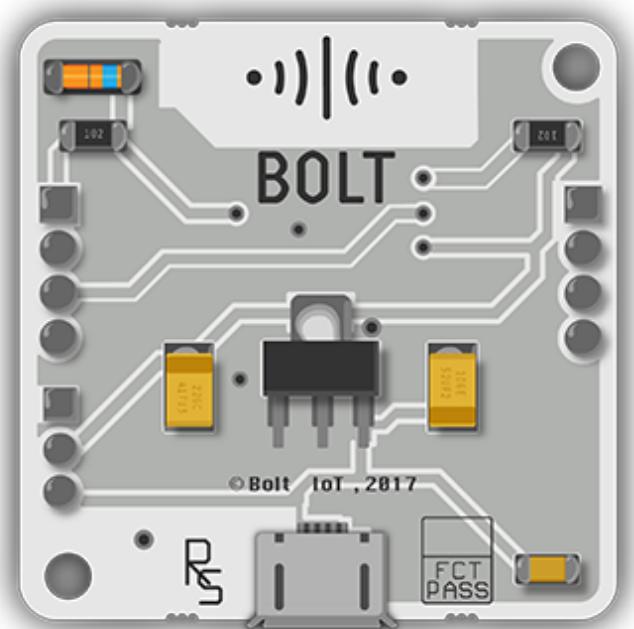
# Guidelines for Workshop

- Keep your audio and video on mute.
- If you have any questions during the session then you may note them down and ask them on Q&A Part at the end. :)
- Recording of this session will be made available on  
<https://www.boltiot.com/workshops>
- Link to all Workshop Resources will be provided at the end of this session.

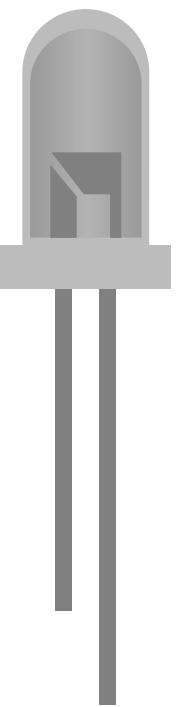
# Session Content

- 1 Introduction to Arduino
- 2 Getting Started with Boltduino
- 3 Controlling LED using Boltduino
- 4 Introduction to DHT Sensor
- 5 Temperature & Humidity Monitoring System using Bolt
- 6 Configuring Alerts in Project

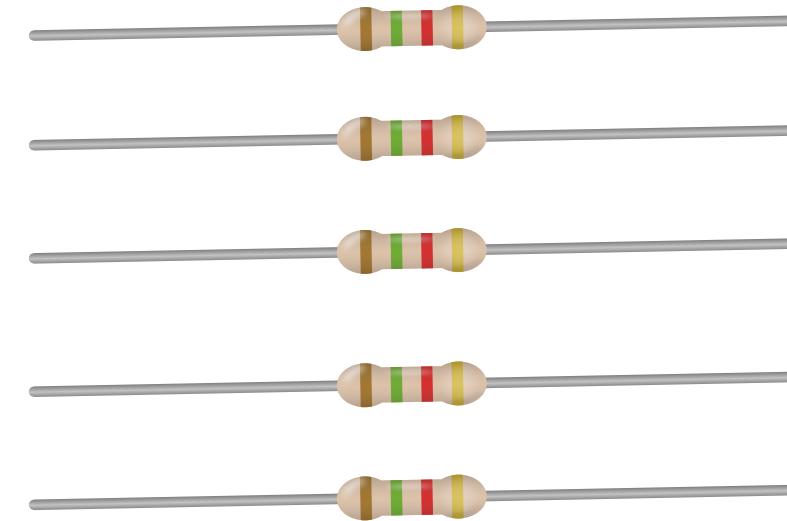
# Hardware Required



Bolt Wifi Module

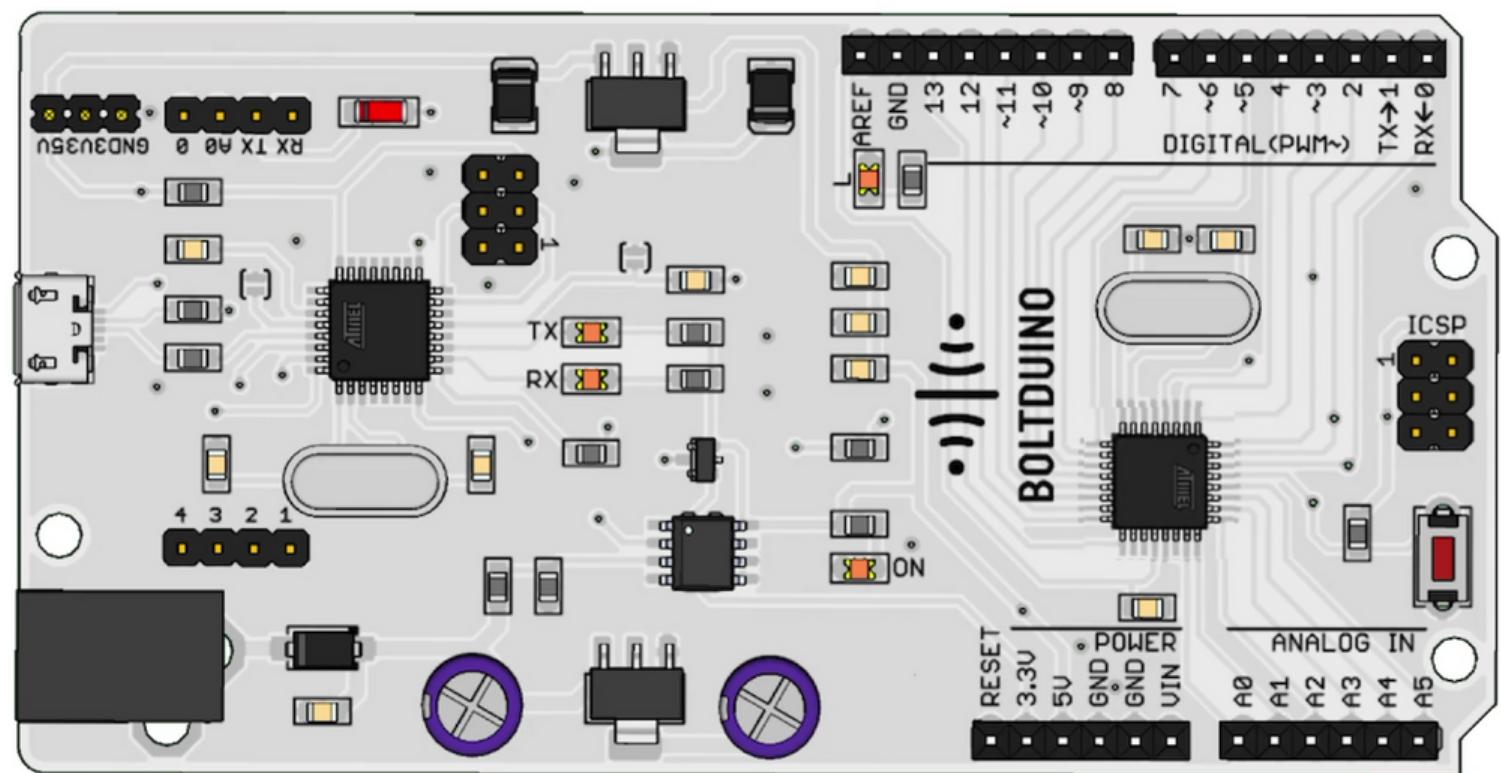


LED

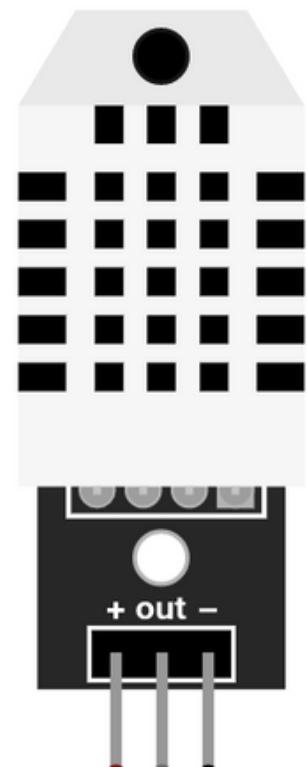


330 ohm Resistor

# Hardware Required



Boltduino/Arduino Boards



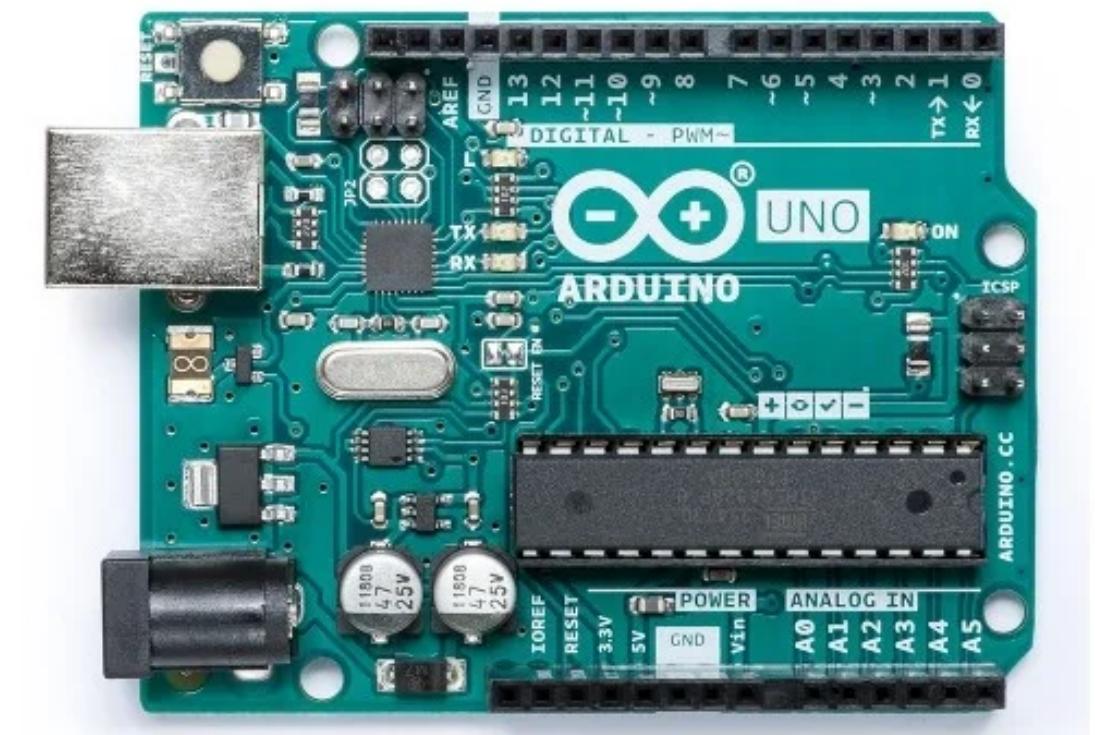
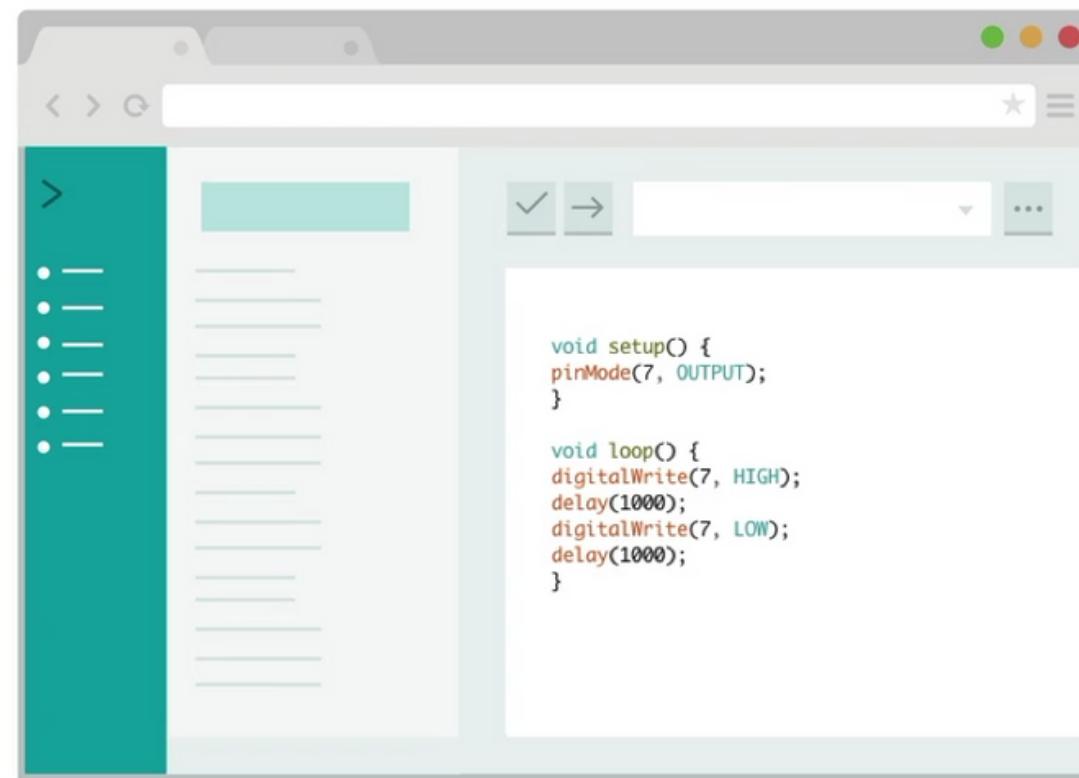
DHT22 Module

# Tools Required

1. Bolt Cloud (<https://cloud.boltiot.com/>)
2. Arduino IDE (<https://www.arduino.cc/en/software>)
3. Boltiot Arduino Library
4. DHT Arduino Library

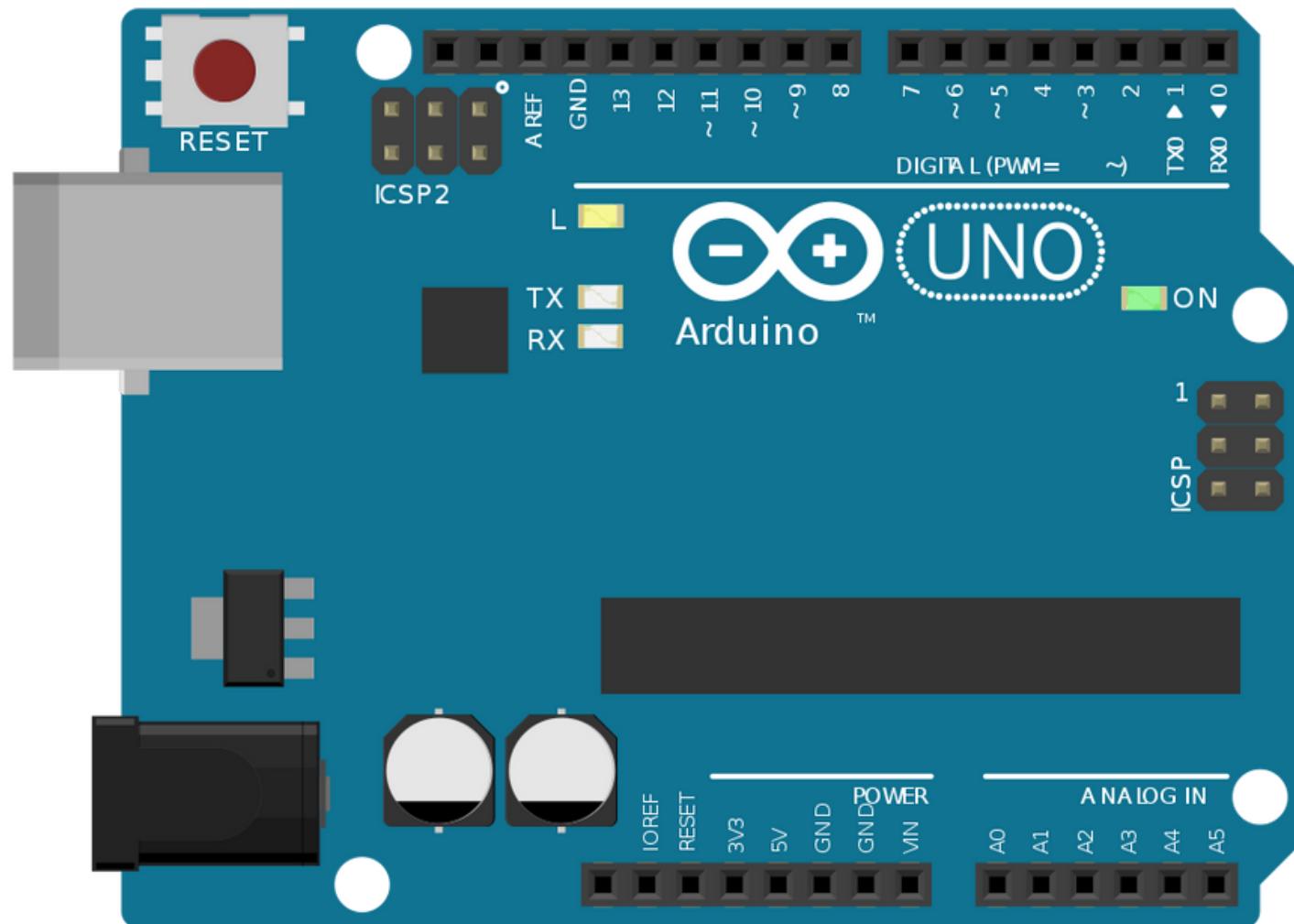


# Introduction to Arduino



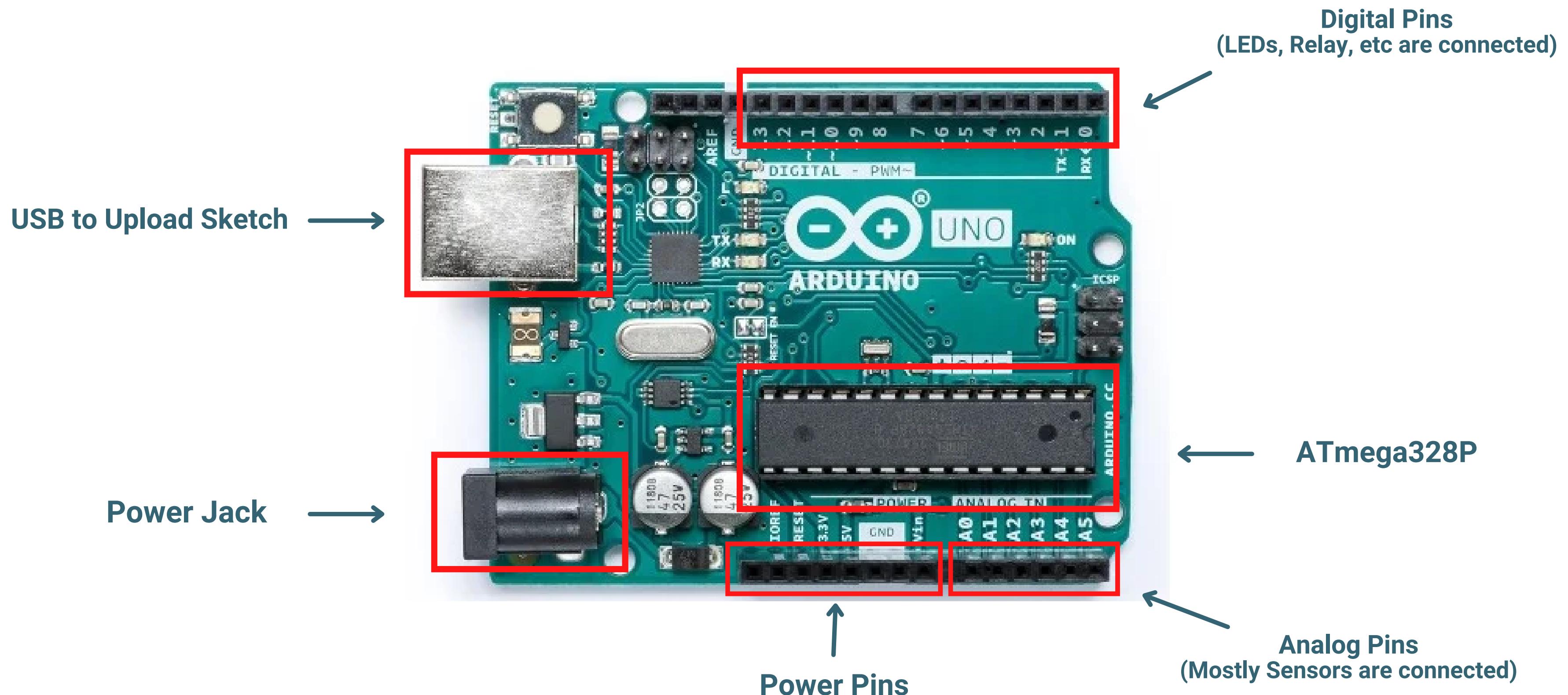
Hardware + Software + Community

# Introduction to Arduino



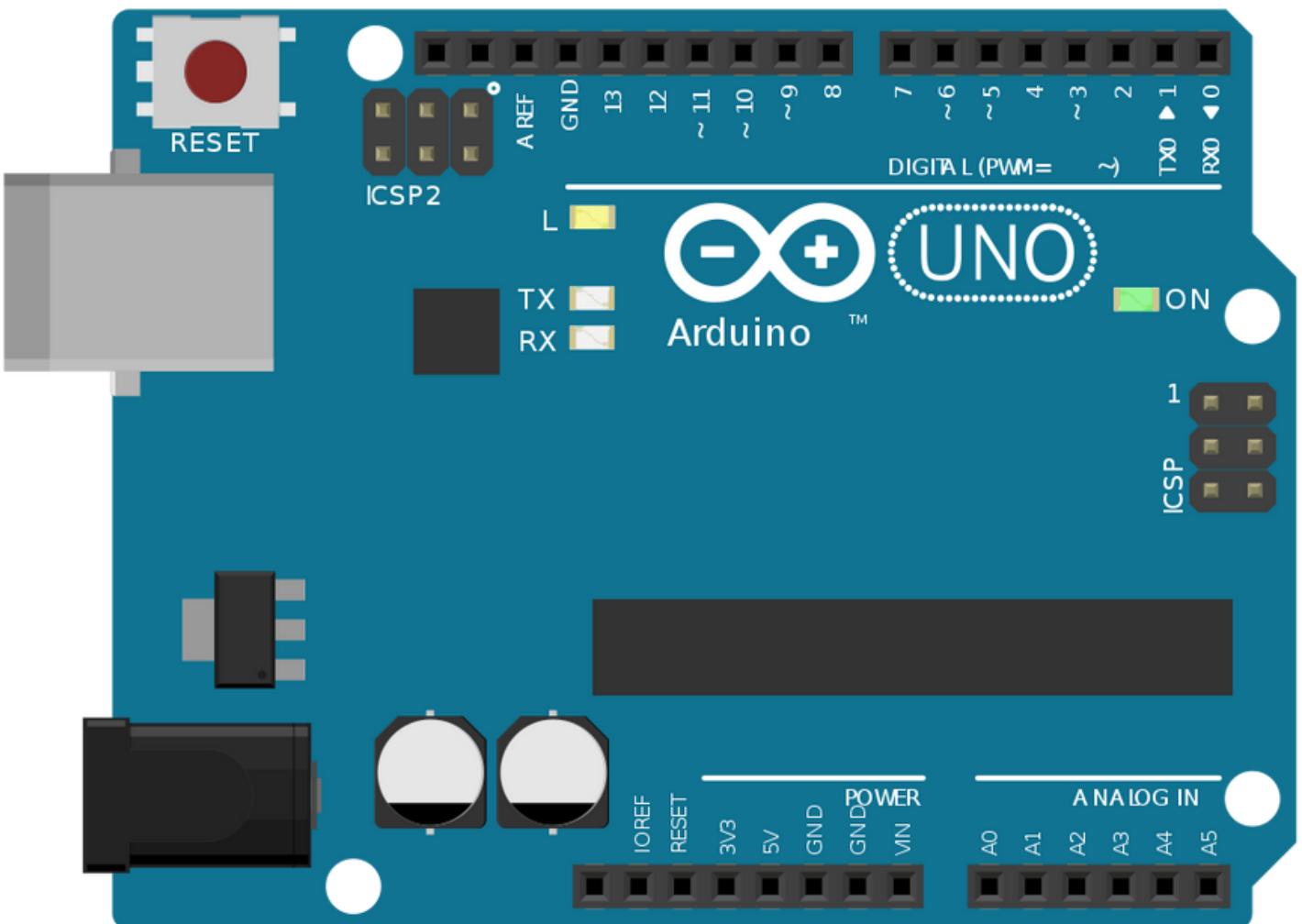
Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.

# Basics of Arduino



# Arduino Sketch

```
void setup() {  
    // put your setup code here, to run once:  
}  
  
void loop() {  
    // put your main code here, to run repeatedly:  
}
```



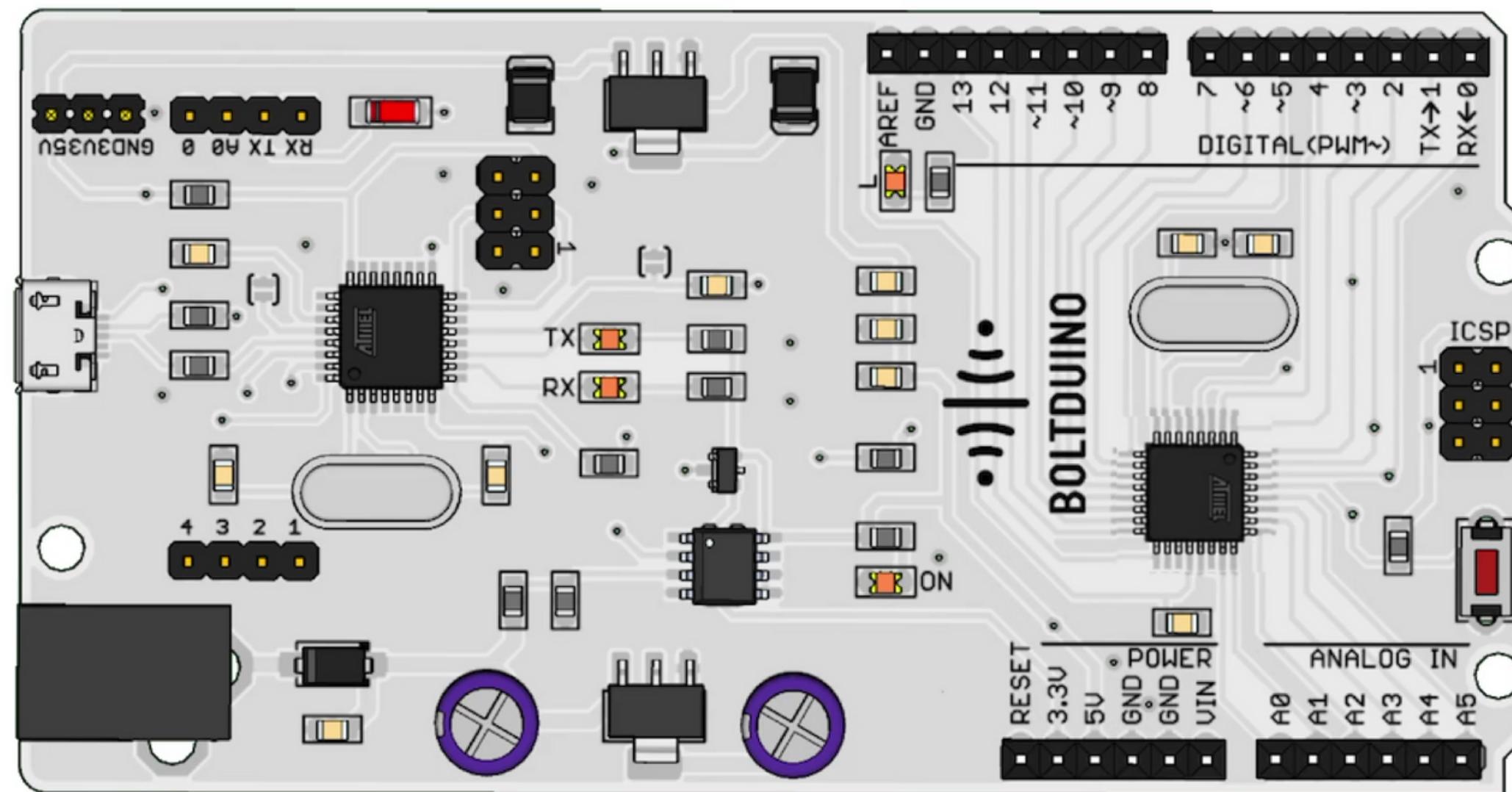
# Basic Syntaxes of Sketch

- **digitalWrite(pin, val)**
- **digitalRead(pin)**
- **analogWrite(pin, val)**
- **analogRead(pin)**
- **delay(time\_ms)**

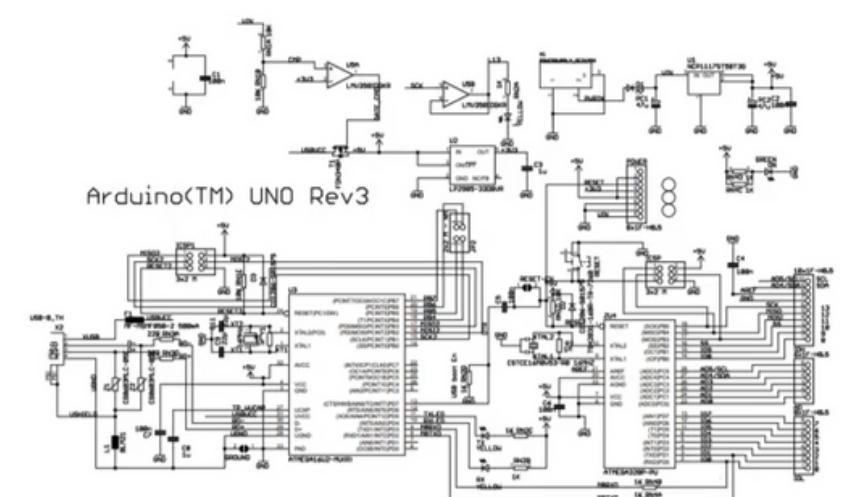
HIGH (1)

LOW (0)

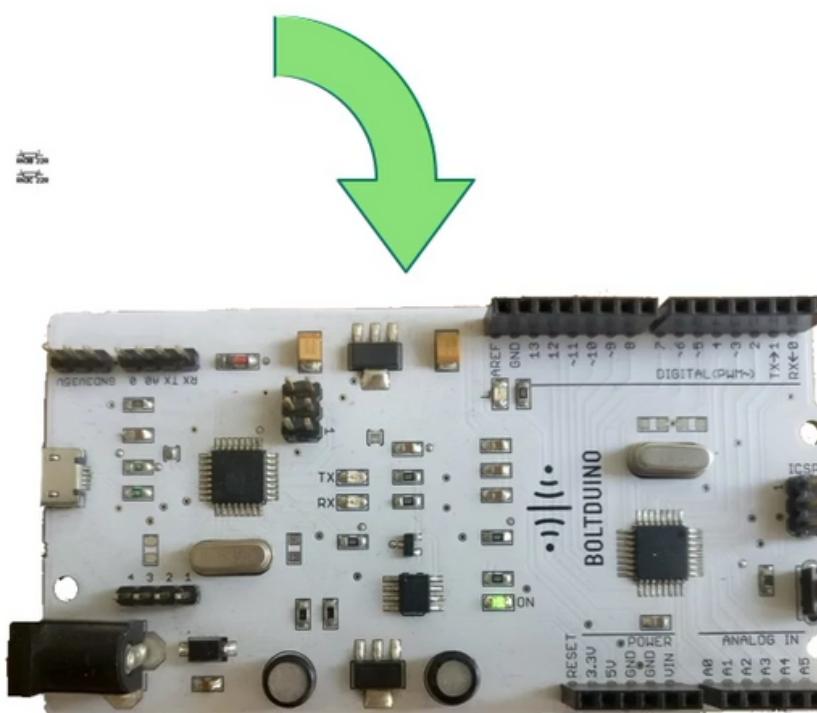
# Getting Started with Boltduino



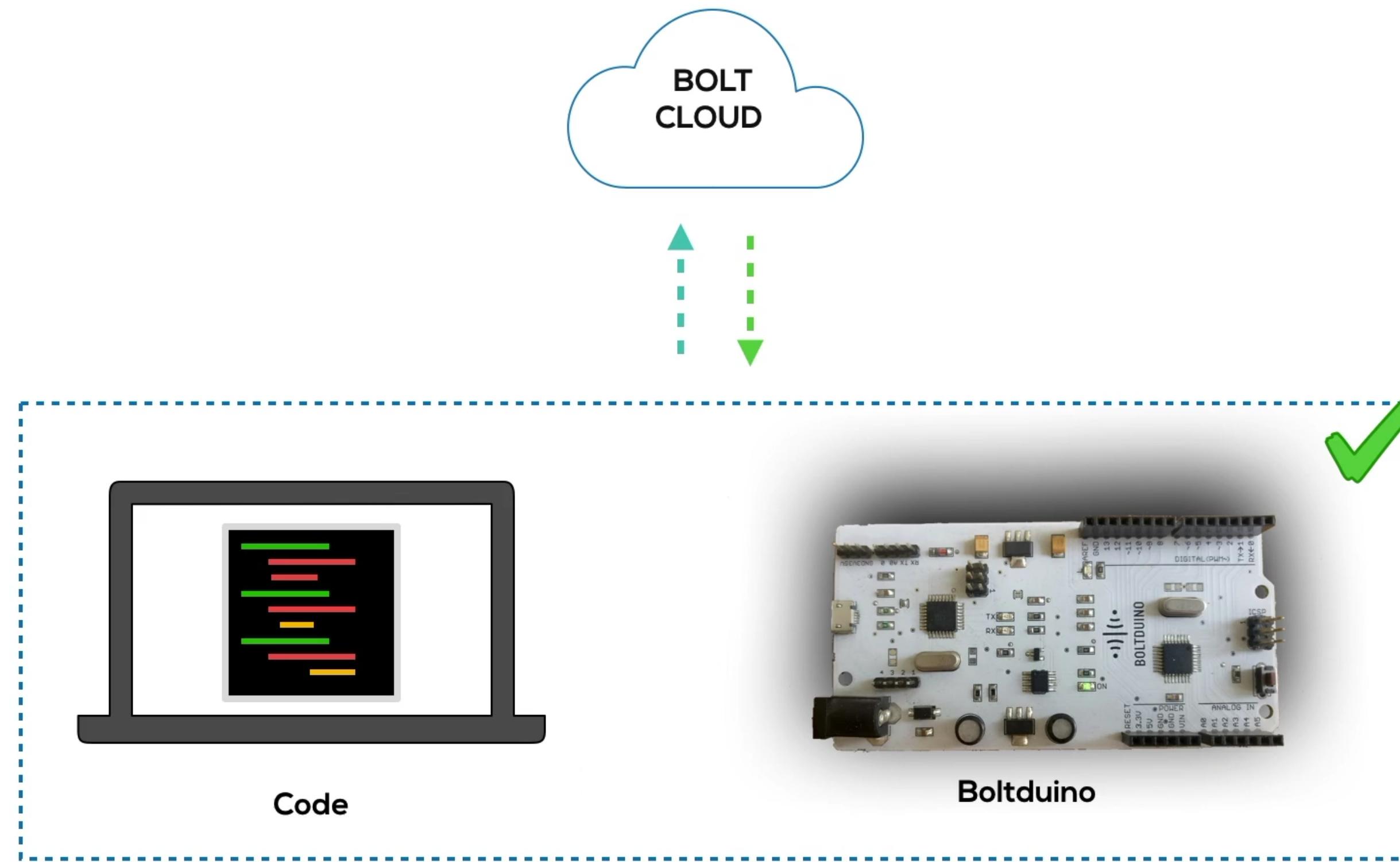
# Getting Started with Boltduino



- Internet Connectivity
  - OTA update
- (Will be live soon)

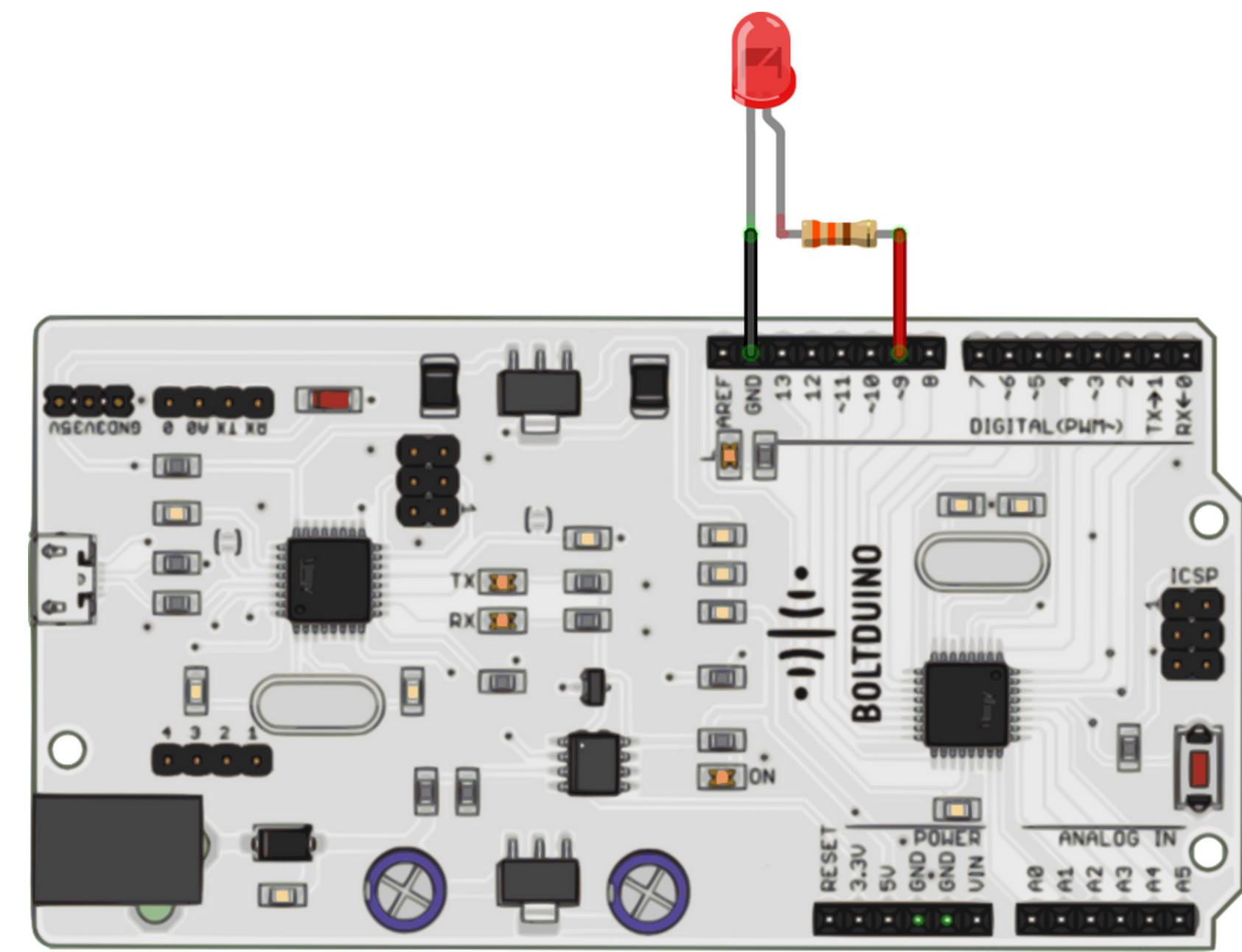


# Getting Started with Boltduino



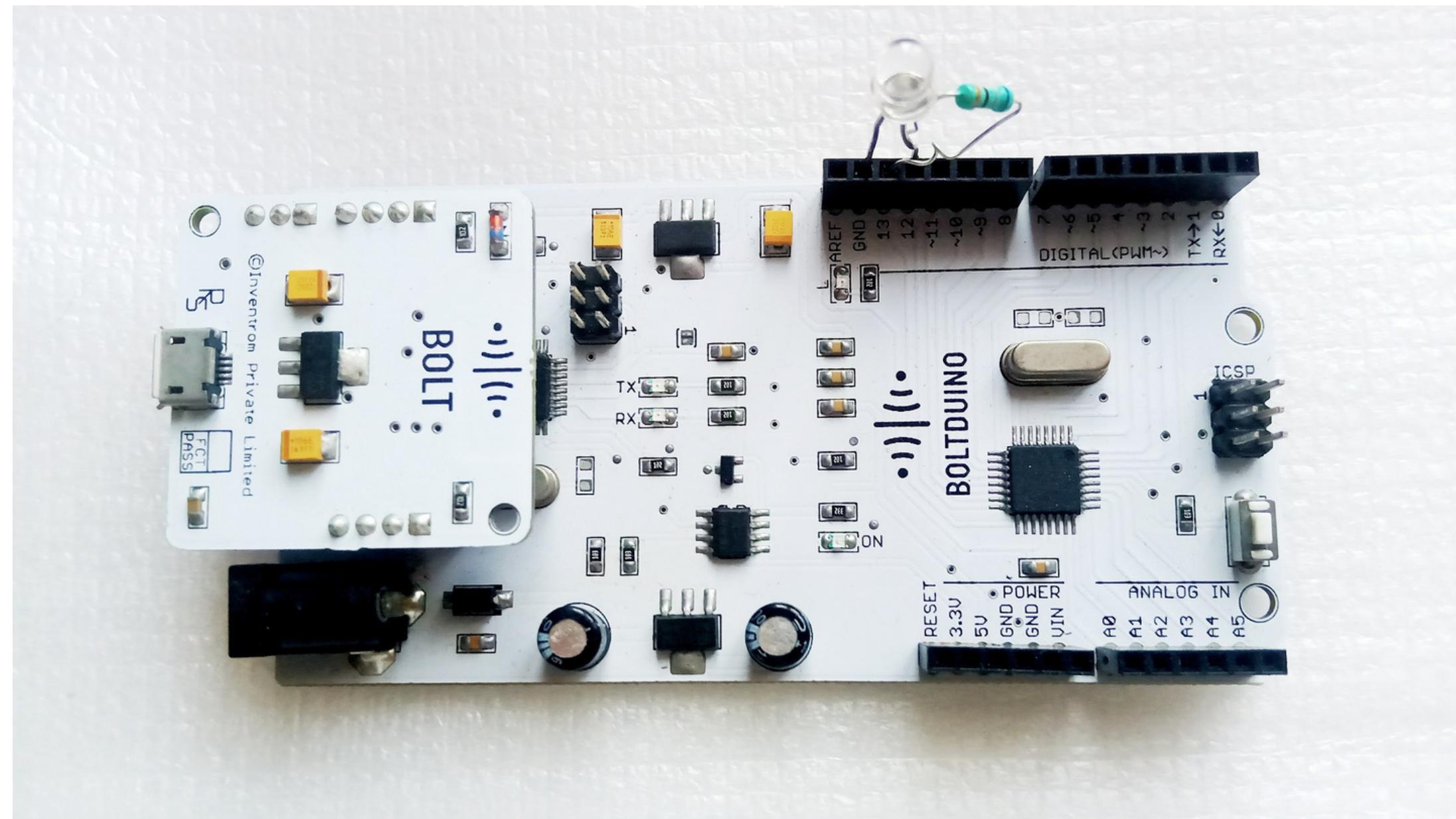
# Controlling LED using Boltduino

# Schematics for LED



fritzing

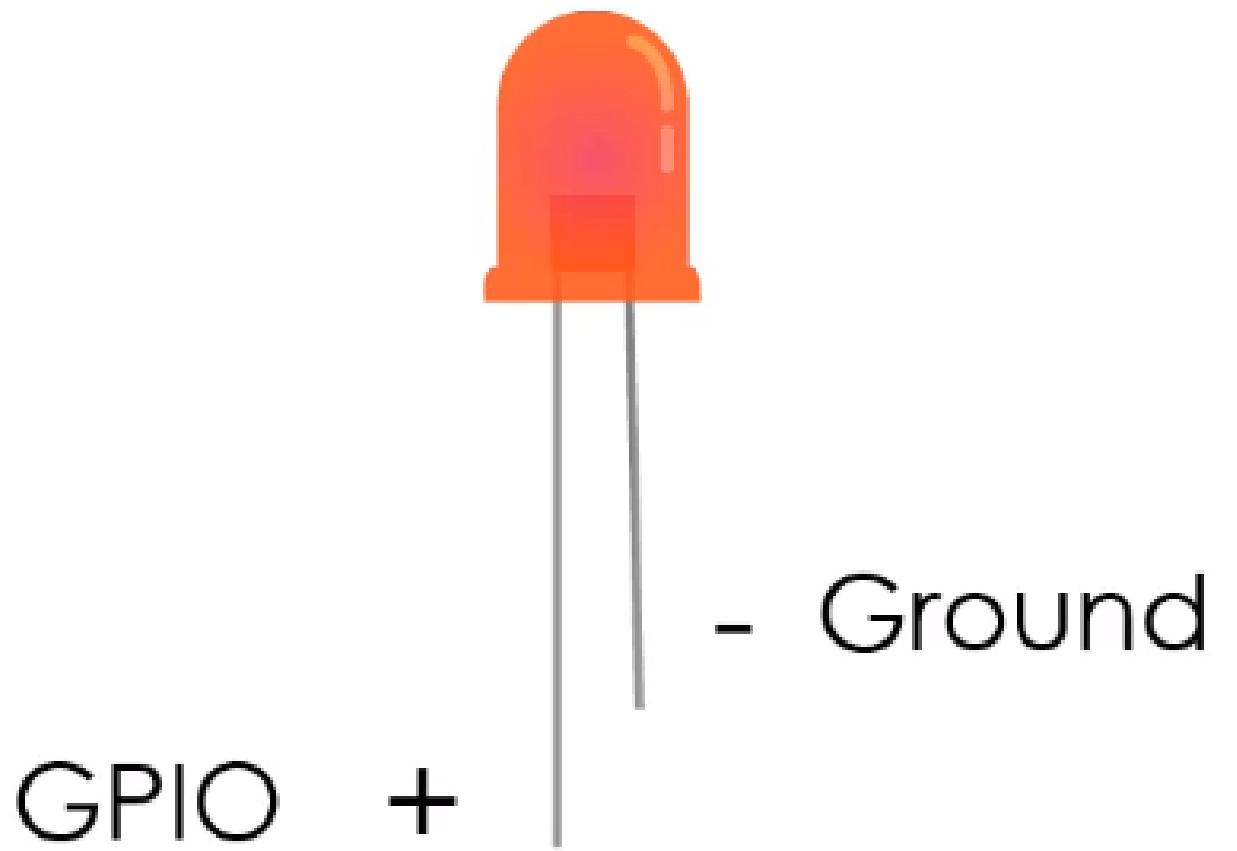
# Hardware Connections



# Arduino Sketch for turning on LED

```
void setup()
{
    pinMode(13, OUTPUT);
}

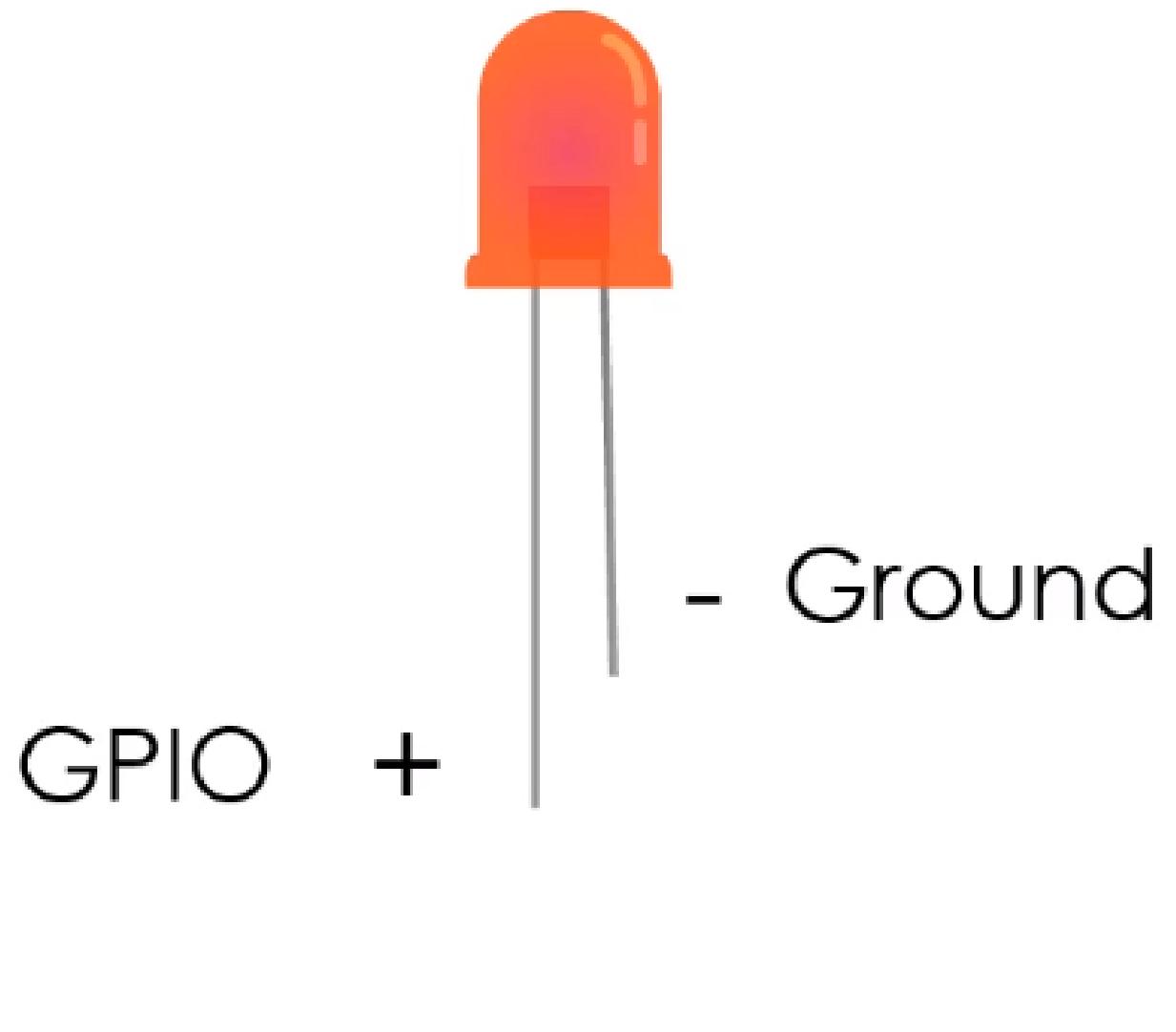
void loop()
{
    // turn the LED on
    digitalWrite(13, HIGH);
}
```



# Arduino Sketch for Blinking an LED

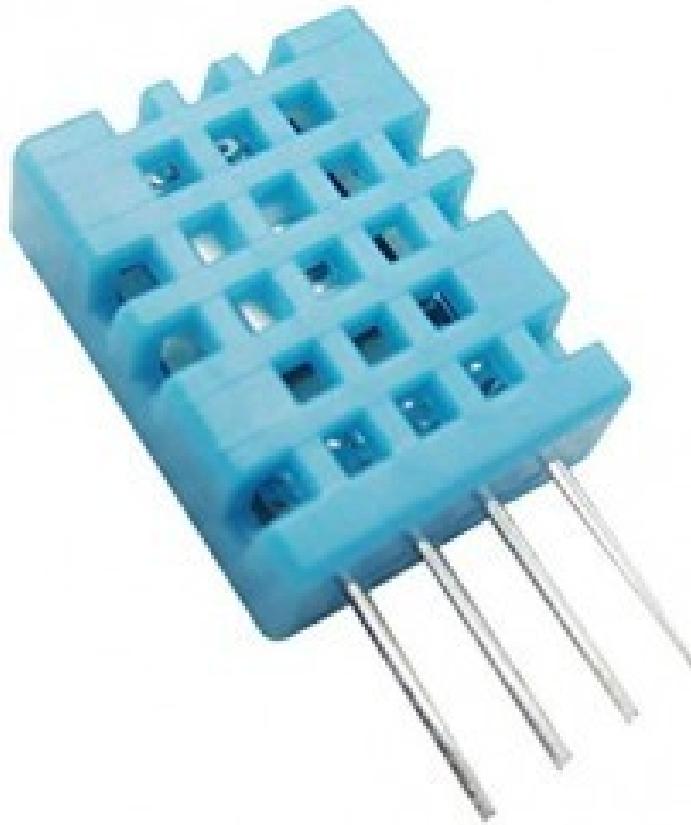
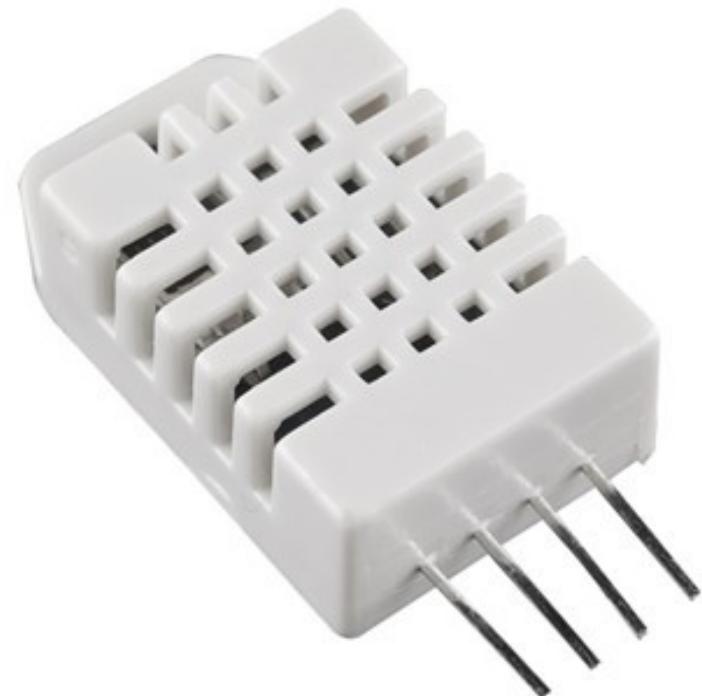
```
void setup()
{
    pinMode(13, OUTPUT);
}

void loop()
{
    // turn the LED on
    digitalWrite(13, HIGH);
    // Wait for 1000 millisecond(s)
    delay(1000);
    // turn the LED off
    digitalWrite(13, LOW);
    // Wait for 1000 millisecond(s)
    delay(1000);
}
```



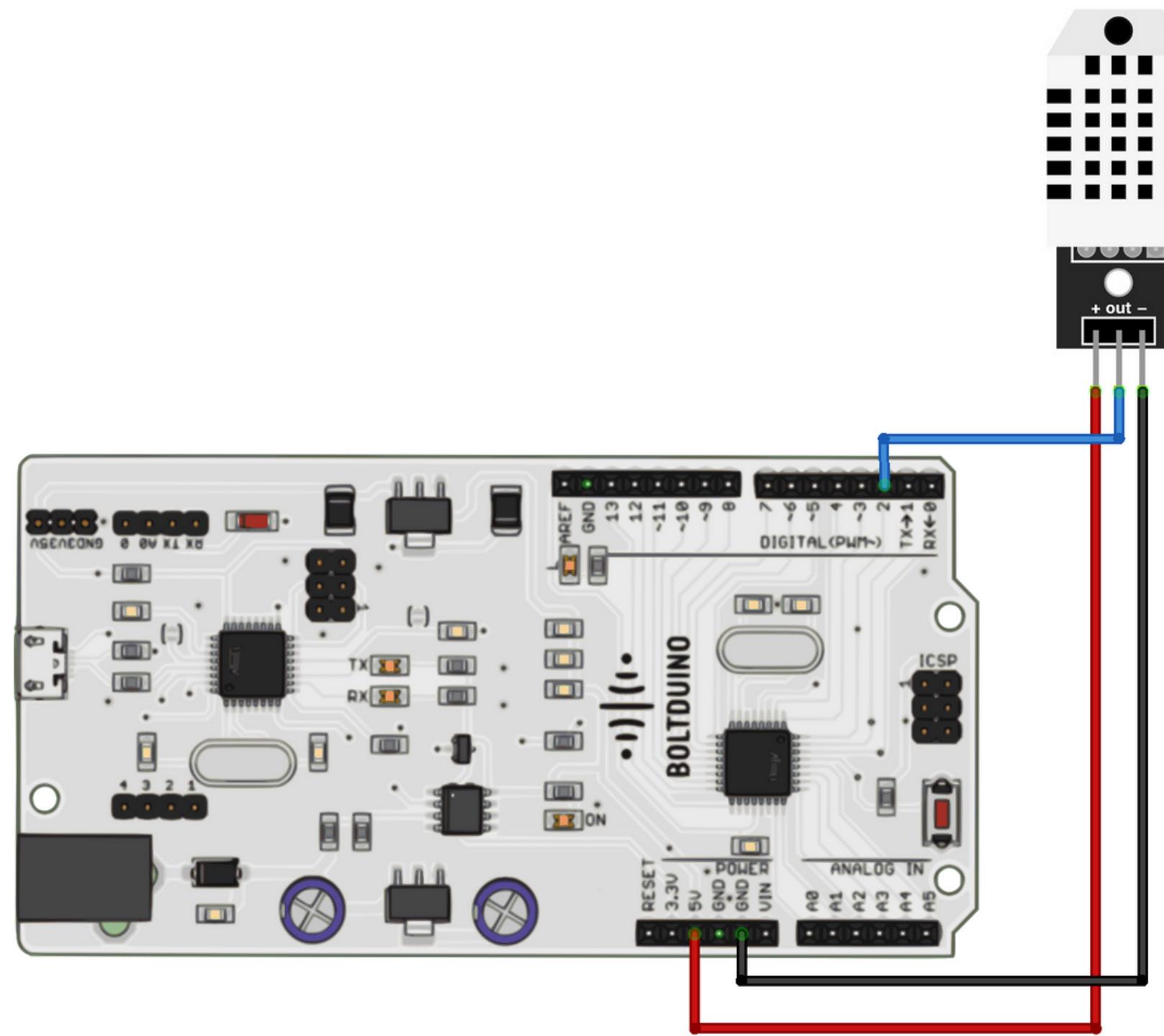
# Introduction to DHT Sensor

The DHT11 and the DHT22 sensors are a popular choices for humidity and temperature measurements with the Arduino.



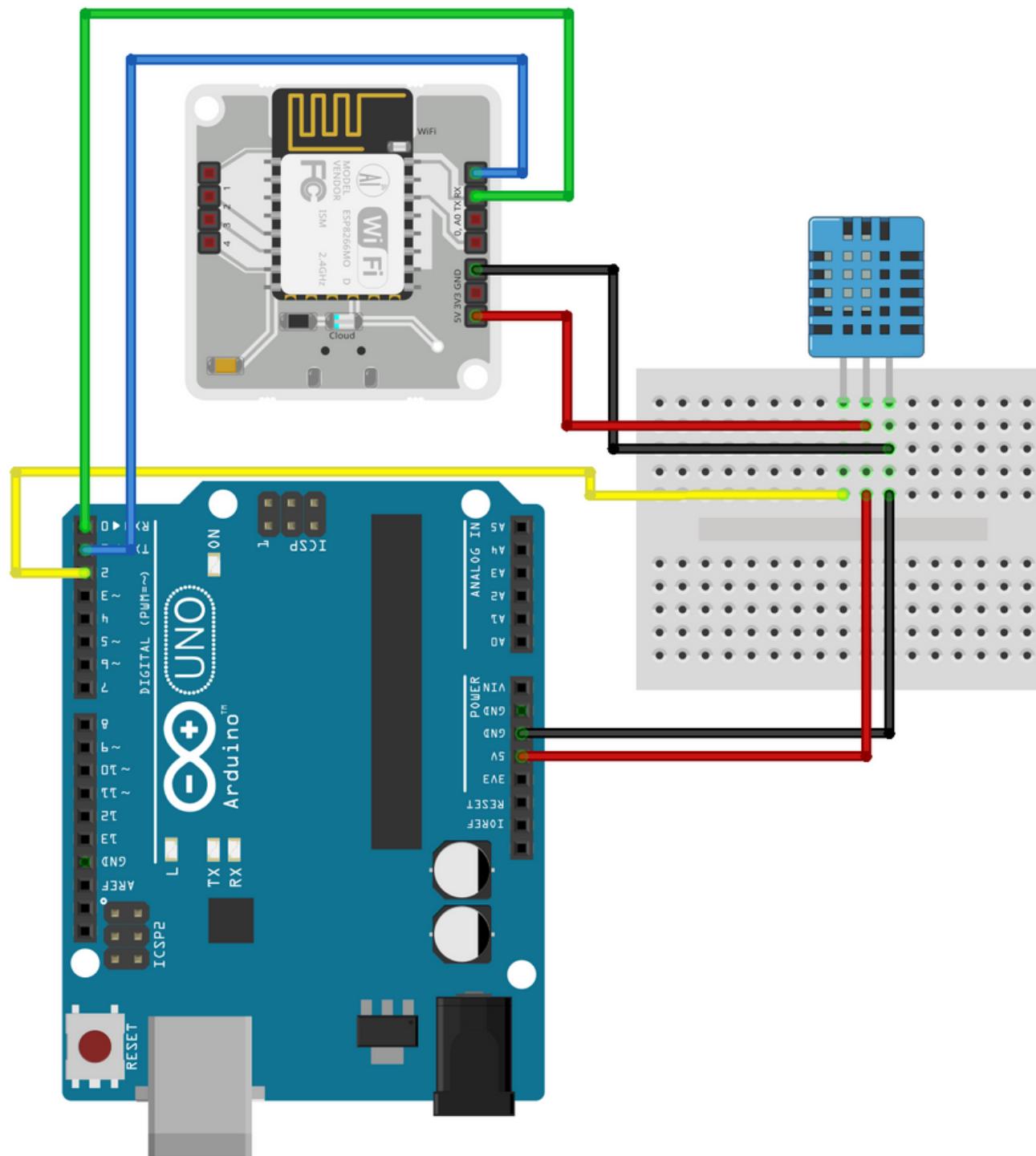
# **Temperature & Humidity Monitoring System using Bolt**

# Schematics for Project



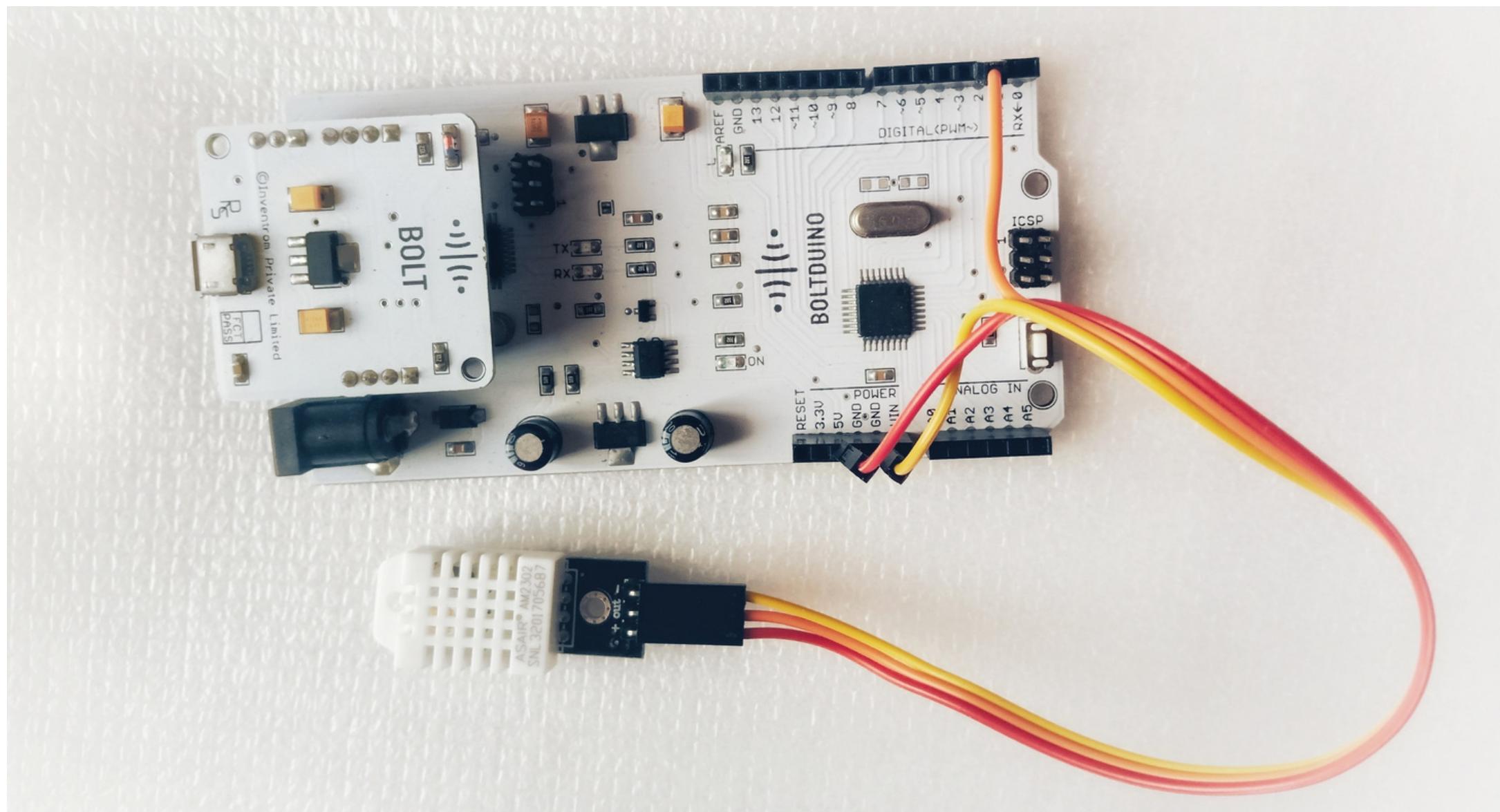
\*For DHT22 Sensor using  
Boltduino

# Schematics for Project



\*For DHT11 Sensor using  
Arduino UNO

# Hardware Connections



# Configuring Bolt Cloud

How many CSV values do you want to send?

 ▼

Baud Rate ⓘ : 9600

How often do you want to send data?

**Note :** Variable name can only contain lowercase alphanumeric characters and underscore and should start with an alphabet.

Pin	Variable Name
CSV0	temp
CSV1	humid

# Arduino Library Installation steps

Please follow the steps to include the BoltIoT library to Arduino

- Click [here](#) to download the zip
- Open Arduino IDE.
- Click on Sketch->Include Library->Add .Zip library.
- Navigate to the folder where boltiot-library.zip was downloaded, and select boltiot-library.zip.
- Press the 'Choose' button and the library is loaded to your Arduino IDE.

# Project Resources

1

## Boltiot Library

<https://github.com/sbkmt/BoltIoT-Arduino-Workshop/blob/main/boltiot-library.zip>

2

## DHT Library

<https://www.arduino.cc/reference/en/libraries/dht-sensor-library/>

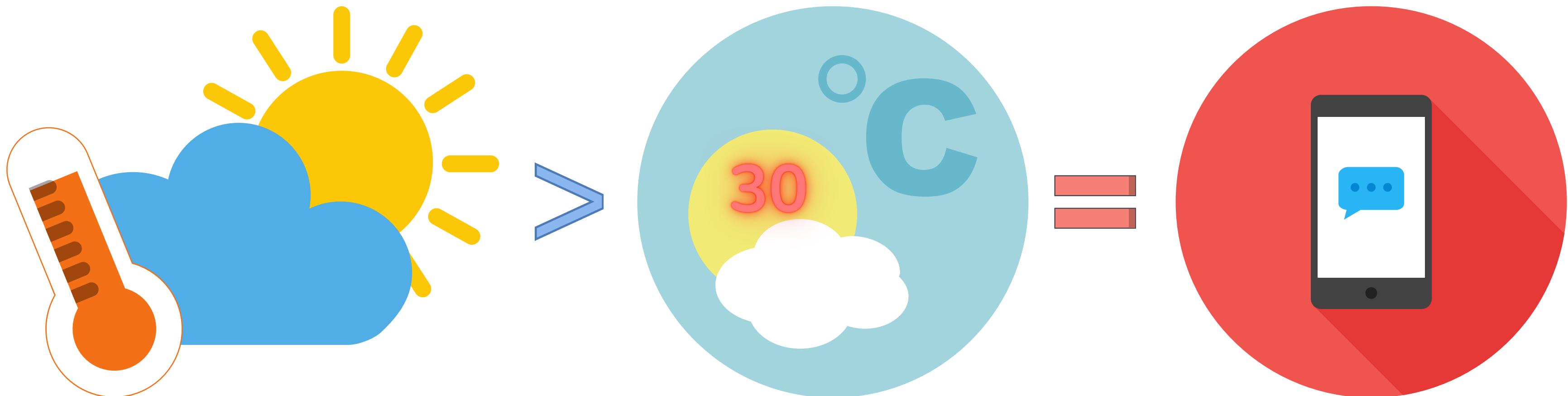
3

## Project Codes

<https://gist.github.com/sbkmt/f59de0fb03871b306bdef0145d7b9532>

# Configuring Alerts in Project

# Logic for Alerts



If the temperature is greater than 30, send an alert to the owner instantly.

# Push Notification Alerts

The screenshot shows a user interface for creating a push notification alert. At the top left is a green button labeled "Create alert" with a bell icon. At the top right are three icons: a switch labeled "ON", a save icon, and a close/cancel icon. The main area is divided into three sections: "Alert Name" (containing "Temperature\_"), "Condition" (containing "Data" selected, "If CSV0 is greater than 30"), and "Alert" (containing "Push Notification (Android)" selected, "Message" field with text "Hi !! The temperature of your warehouse is above 30 Degree Celcius. Please take relevant actions"). A "Help" button is at the bottom right.

Create alert

ON

Alert Name

Temperature\_

Condition

Data  Status (Bolt Cloud Pro)

If CSV0 is greater than 30

Alert

Send

Message

Hi !! The temperature of your warehouse is above 30  
Degree Celcius. Please take relevant actions

Help

# Email Alerts

 Create alert

ON  

Alert Name  
Temperature\_

Condition  
 Data  Status (Bolt Cloud Pro)  
If CSV0 is greater than 30

Alert  
Send Email (Bolt Cloud Pro)  
Message  
Hi !! The temperature of your warehouse is above 30 Degree Celcius. Please take relevant actions

Recipients  
shobhit.kumawat@boltiot.com  



# Important Links

Project Resources

<https://github.com/sbkmt/BoltIoT-Arduino-Workshop>

Buy Boltduino

<https://imjo.in/rYMN Rz>

All in One QR



Q & A



