



User's Guide

Thank you for using ARDUnity.

For more information, visit below link, please.

(www.ardunity.com)

What is ARDUnity?

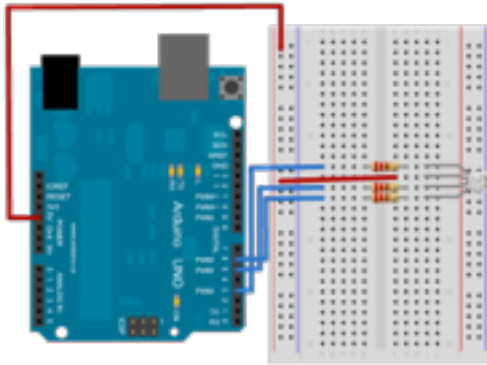
- **ARDUnity** is an asset that can make Unity App to interact with Arduino.
- **ARDUnity** is a compound word of “Arduino + Unity”



ARDUnity Edition Comparison

Features	Basic	Deluxe
Price	Free	\$50
Wire Editor	Yes	Yes
Support PlayMaker	Yes	Yes
ARDUINO Board (Included compatible product)	Yes	Yes
Digital I/O (Digital Read/Write)	Yes	Yes
PWM (Analog Write)	Yes	Yes
ADC (Analog Read)	Yes	Yes
Servo Motor (Only controlling PWM)	Yes	Yes
Tone (Buzzer)	Yes	Yes
Bluetooth LE (Only ARDUnity Brain)	Yes	Yes
DC Motor Driver (ex, Motor Shield)	No	Yes
Bluetooth Classic (ex, HC-06)	No	Yes
TCP/IP (ex, WiFi Shield)	No	Yes
Utilities for Smart Phone (Android/iOS)	No	Yes
AHRS Sensor (ex, MPU6050)	No	Yes
Support various product for ARDUINO	No	Yes

How it works?



Build Arduino Circuit



Add Component using Wire Editor



Export Arduino Sketch



**Play in Unity3D Editor
&
Connect ArdunityApp**



Upload sketch to Arduino Board

Supported connections



Arduino Hardware



USB



PC



Mac OS X



Bluetooth



Tablet



ANDROID



WiFi

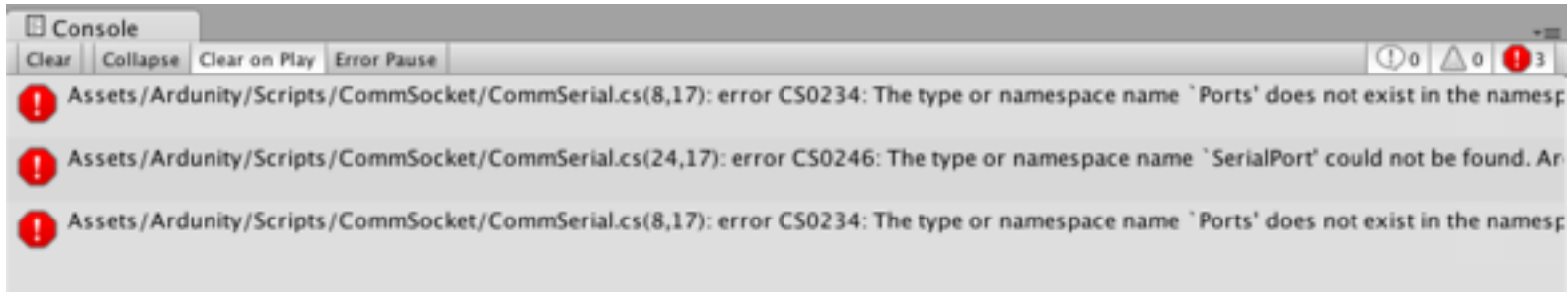


Smart Phone



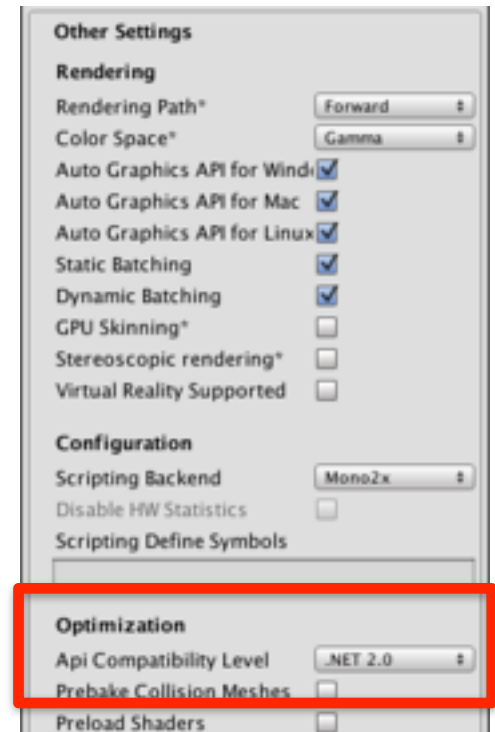
※ Some connections may not yet supported and may require additional hardware Arduino.

Resolve error



If you find an error like above, proceed as follows.

1. Find Menu & Click (Edit->Project Settings->Player)
2. See “Inspector View”
3. Click “Other Settings” tab
4. Find “Optimization/Api Compatibility Level.
5. Change “.Net 2.0 Subset” to “.Net 2.0”



You need to Arduino

- Download & Install “Arduino IDE”
 - <https://www.arduino.cc/en/Main/Software>
- You must have Arduino Board
 - It does not matter what series. (Uno, Leonard, etc)



```

// Blink
// Turns on an LED on for one second, then off for one second, repeatedly.
// This example code is in the public domain.
//

// Pin 13 has an LED connected on most Arduino boards.
// give it a name:
const int led = 13;

// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}

// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);             // wait for a second
  digitalWrite(led, LOW);  // turn the LED off by making the voltage LOW
  delay(1000);             // wait for a second
}

```



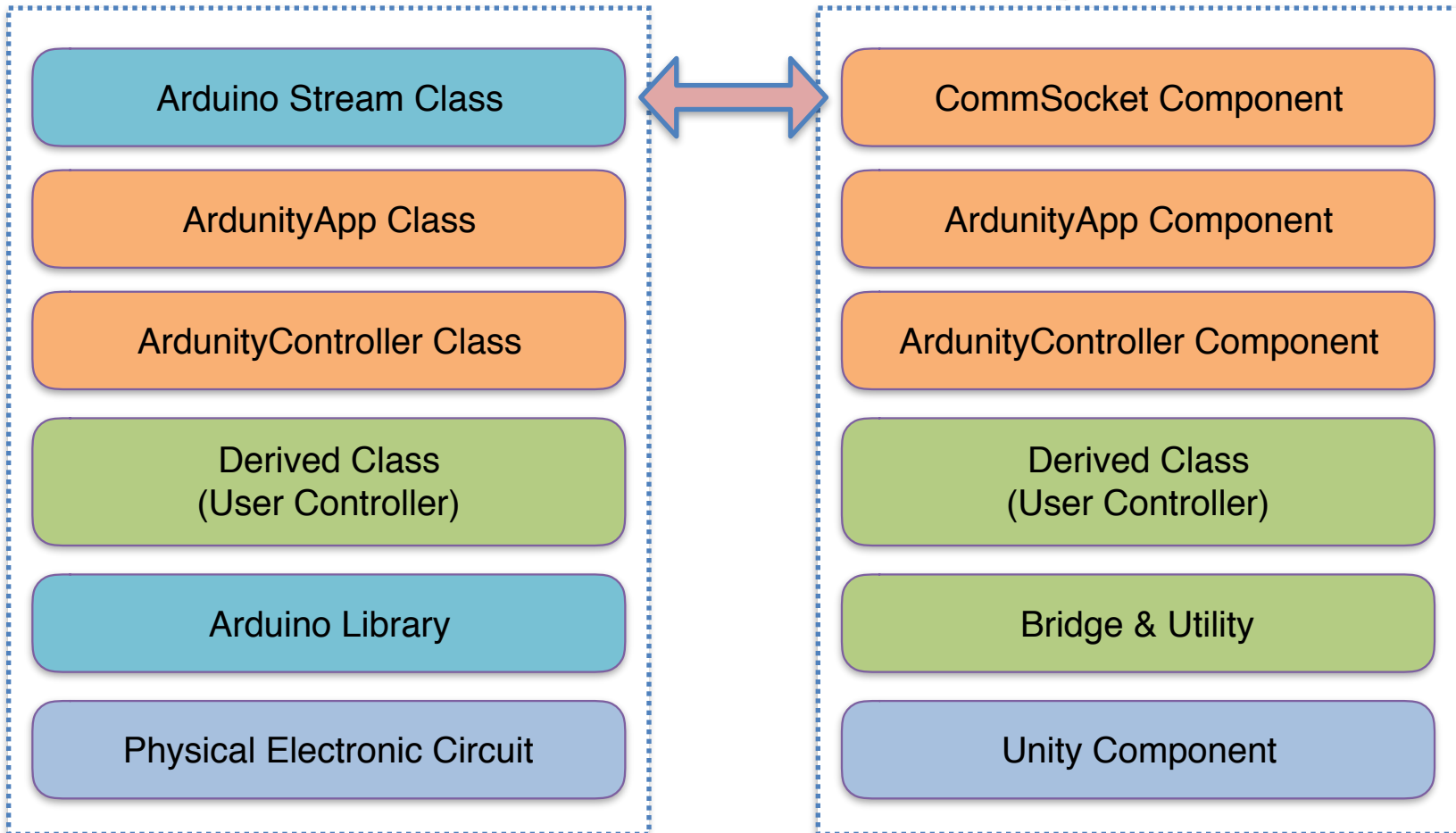
ARDUnity Architecture



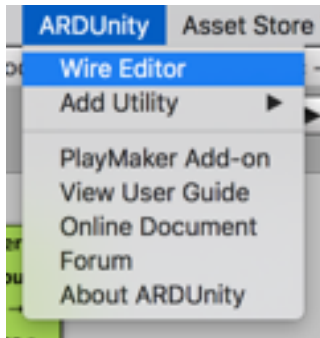
Arduino



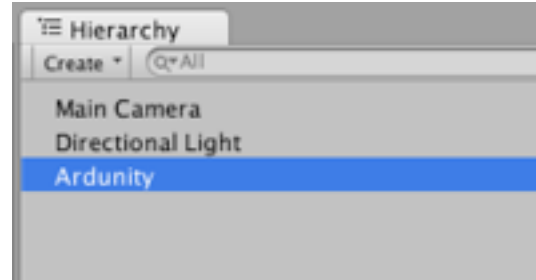
Unity



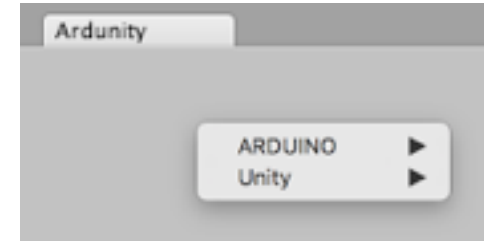
How to use Wire Editor (1/2)



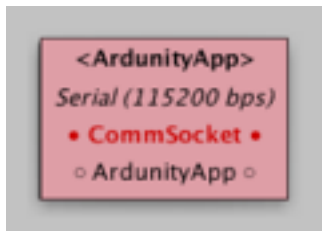
Open Wire Editor



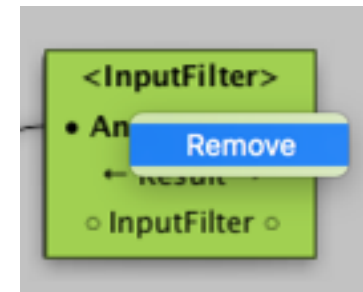
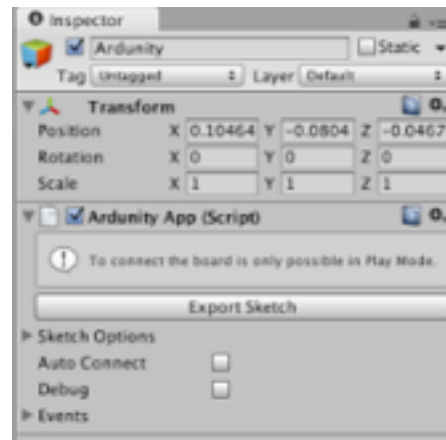
Create Empty GameObject
&
Select it



Click mouse right button

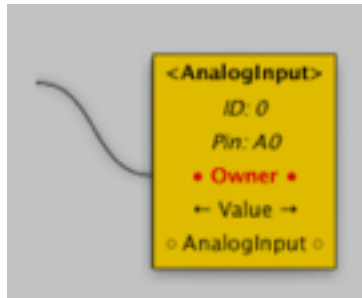


The block is appeared
&
The component is added

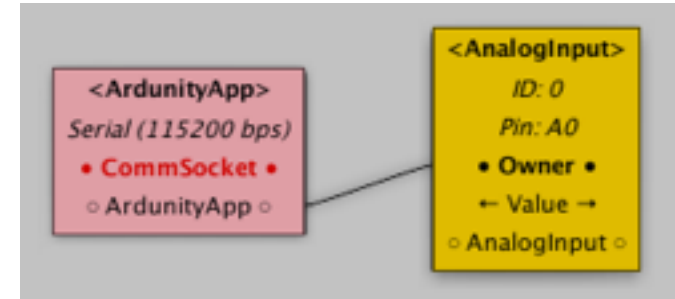


If you want to remove, select and
click mouse right button.

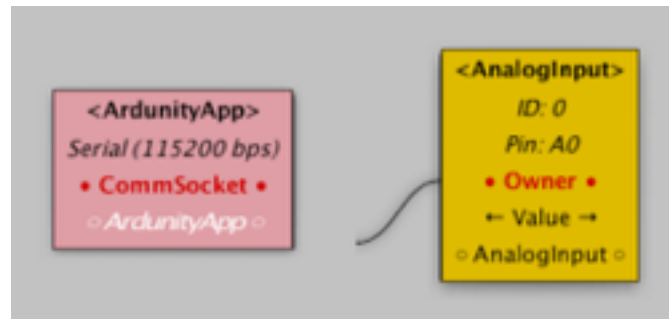
How to use Wire Editor (2/2)



Drag a node in bold font



Completed wiring



Possible connection node is displayed in white

Build for Android

- You need to modify manifest file to use bluetooth on Android.
- Since the modified manifest file is existed in ARDUnity, you have to copy it to a specified location.
 - From: ARDUnity/Plugins/Android/AndroidManifest.xml
 - To: Plugins/Android/AndroidManifest.xml



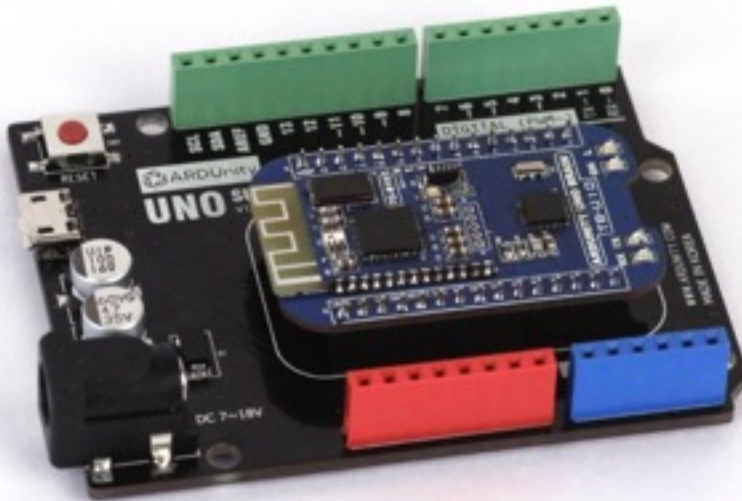
Build for Android

- If you already use the modified manifest file, you should insert some content to existed manifest file.

```
<uses-permission android:name="android.permission.BLUETOOTH"/>  
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/>  
<uses-feature android:name="android.hardware.bluetooth" android:required="true" />  
<uses-feature android:name="android.hardware.bluetooth_le" android:required="false" />
```

ARDUnity Board (Coming Soon)

- If you have not ARDUINO board, We recommend ARDUnity board. (Online shopping mall is coming soon.)
- ARDUnity board has Bluetooth LE.



Bluetooth™
4.0 

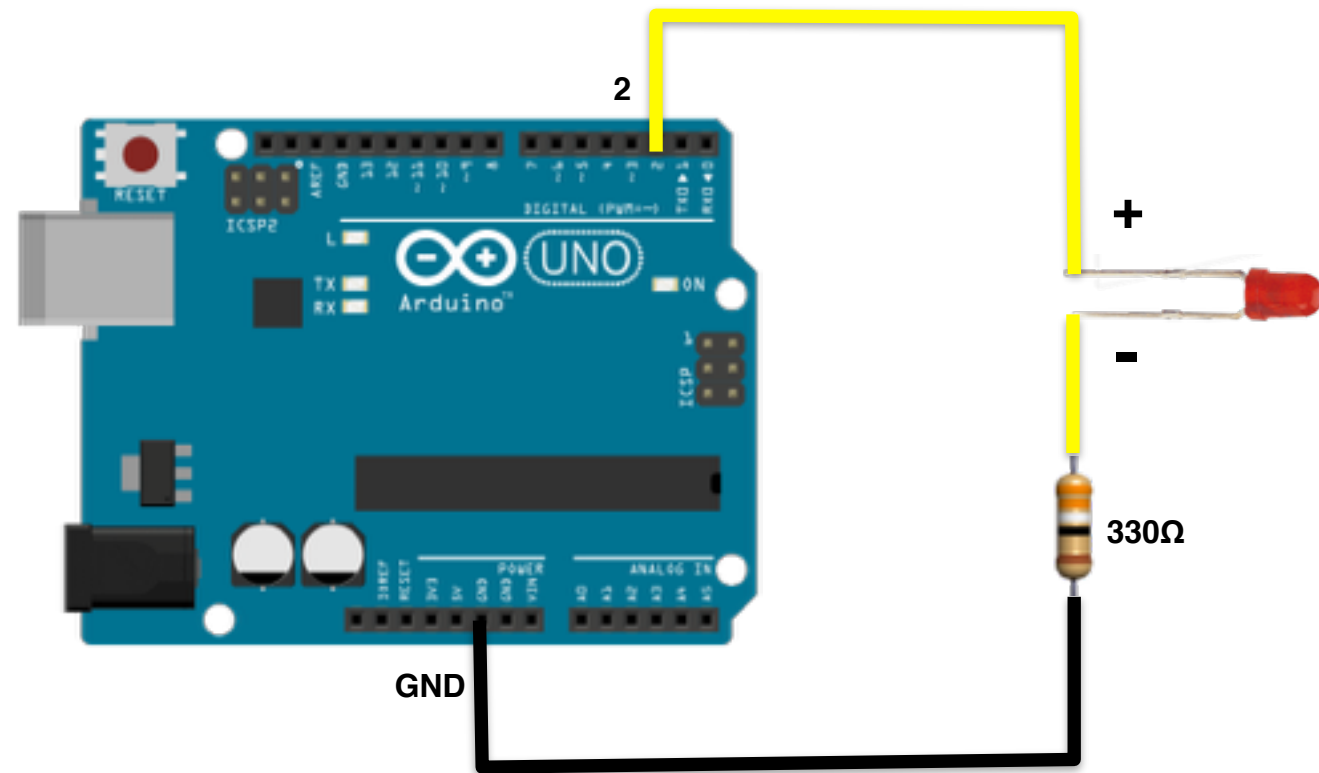
Support

- Please visit.
 - YouTube
(https://www.youtube.com/channel/UCA3j4X_ic1wih0z0xs5LgTg/videos)
 - Online Document
(<https://sites.google.com/site/ardunitydoc/>)
 - Forum
(<https://groups.google.com/forum/#!forum/ardunity-forum>)

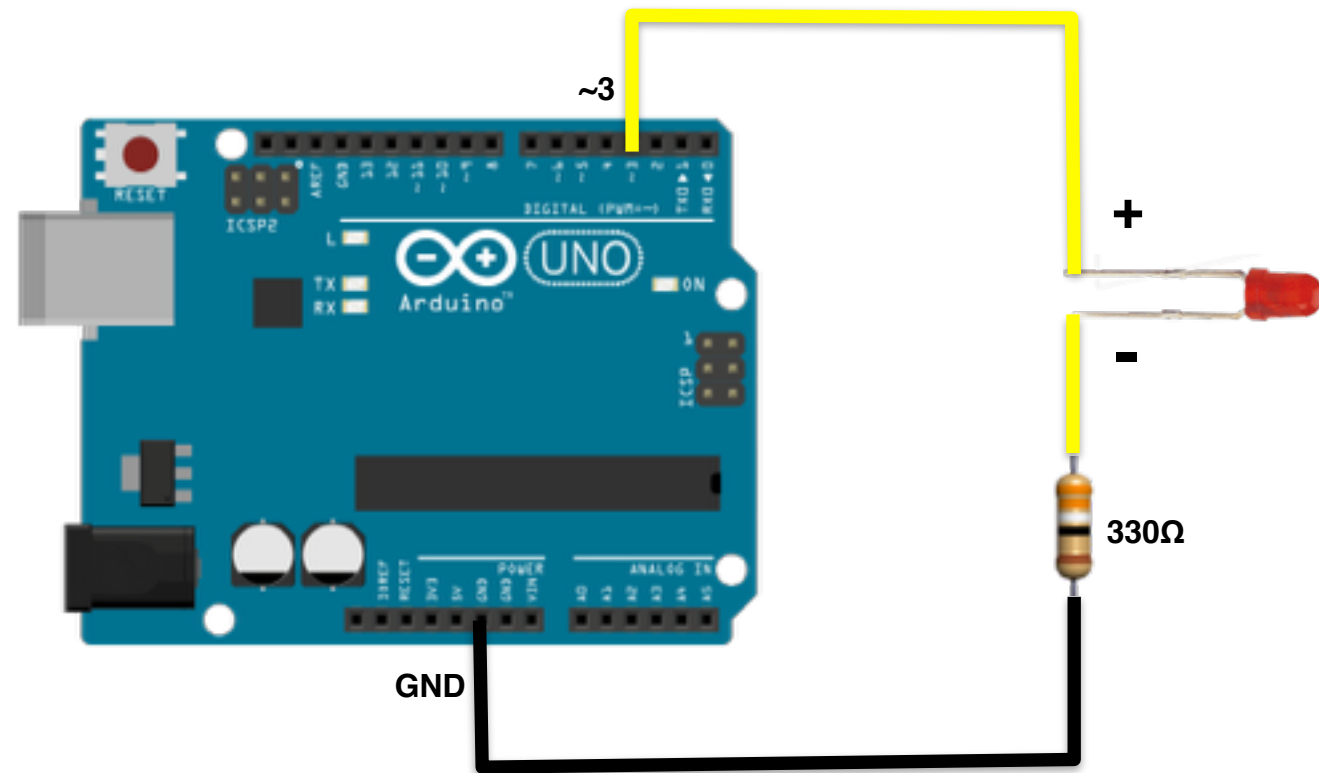


Circuits for Example

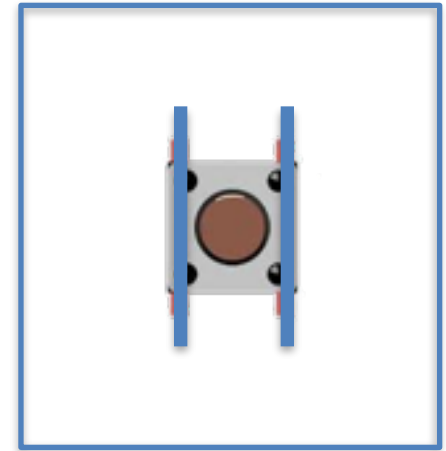
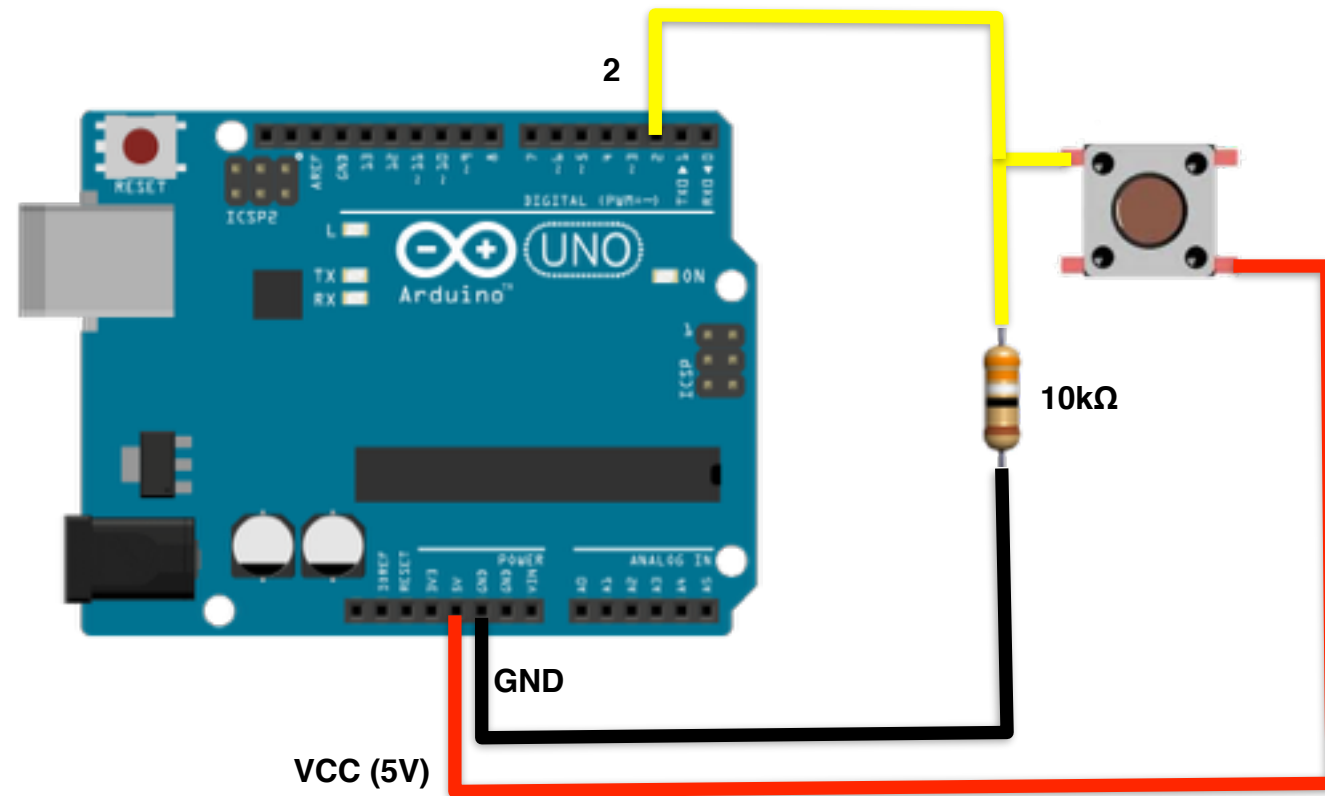
LED Circuit (Digital)



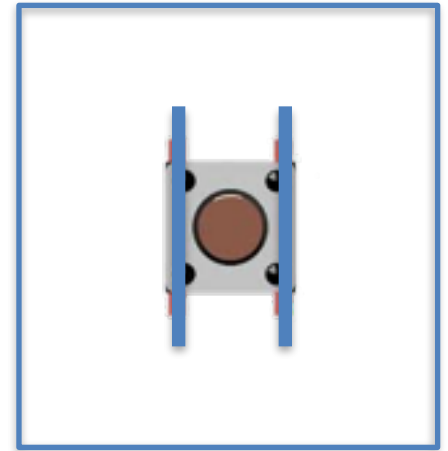
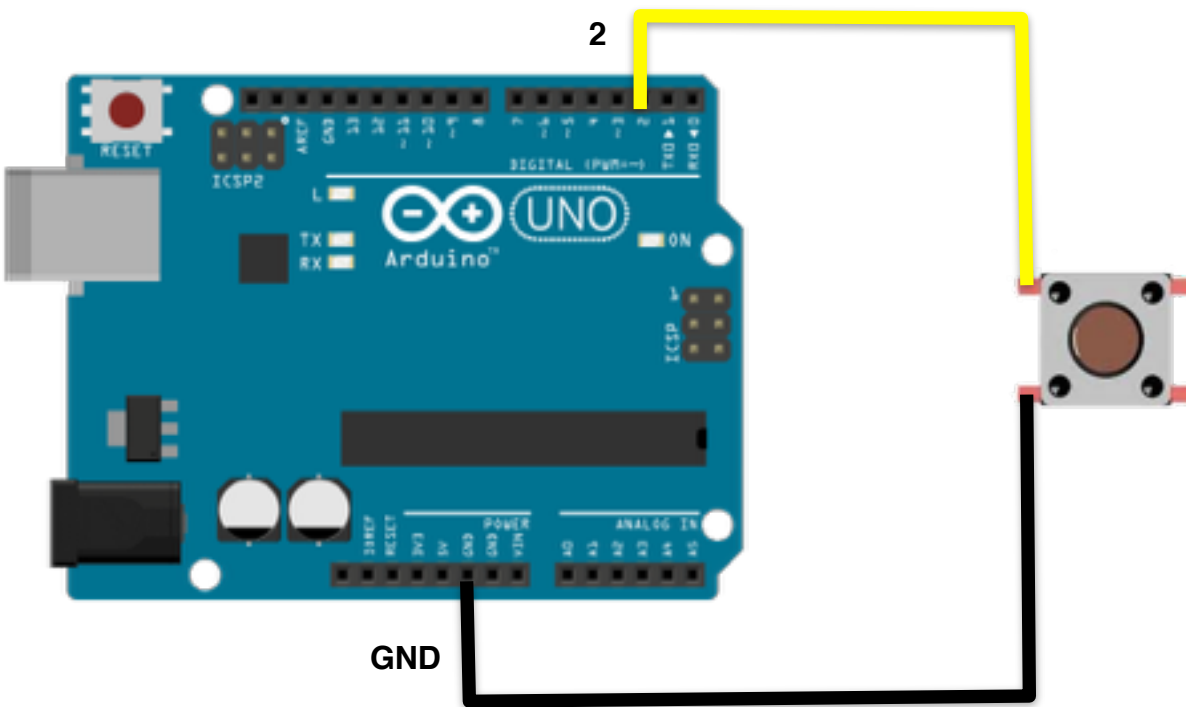
LED Circuit (Analog)



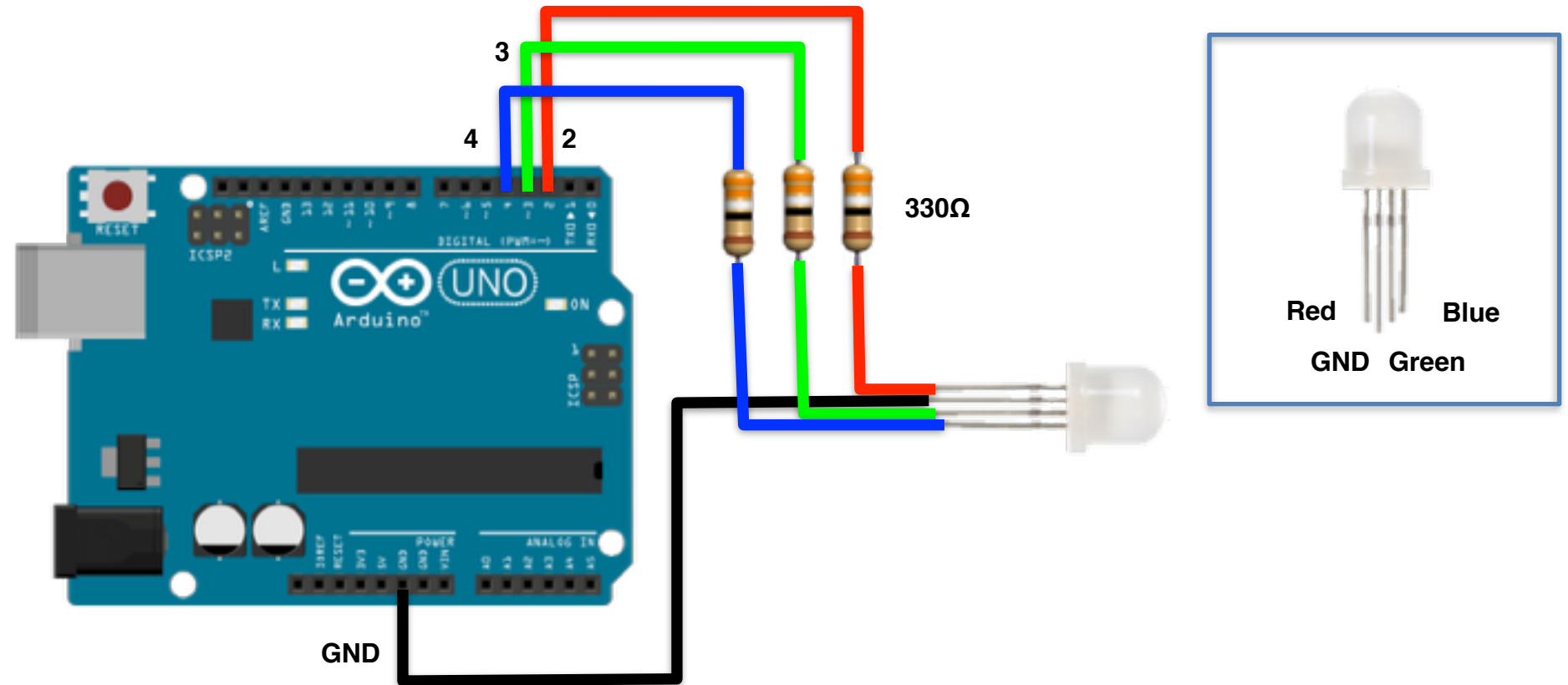
Push Button Circuit (Use external VCC)



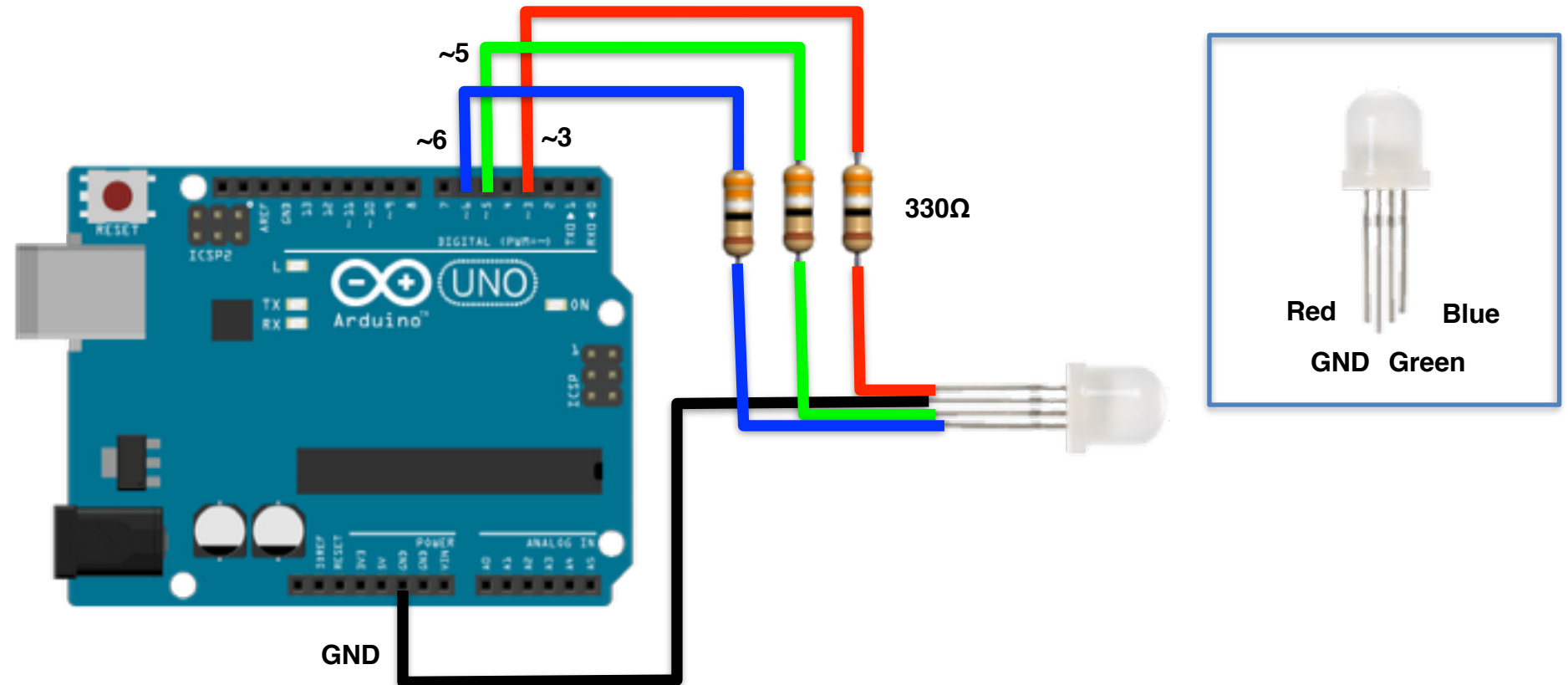
Push Button Circuit (Use internal pull-up)



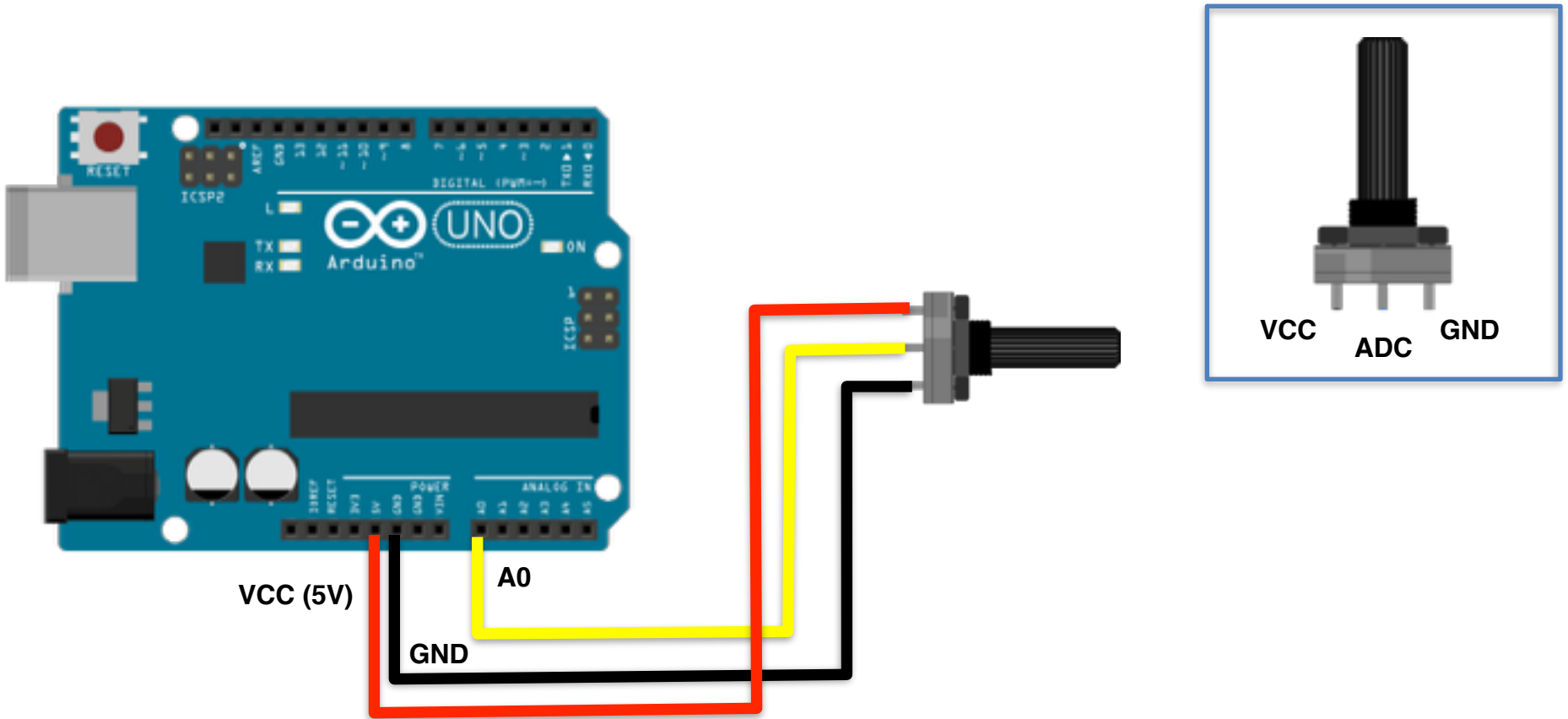
RGB LED Circuit (Digital)



RGB LED Circuit (Analog)



Potentiometer Circuit



Soft Potentiometer Circuit

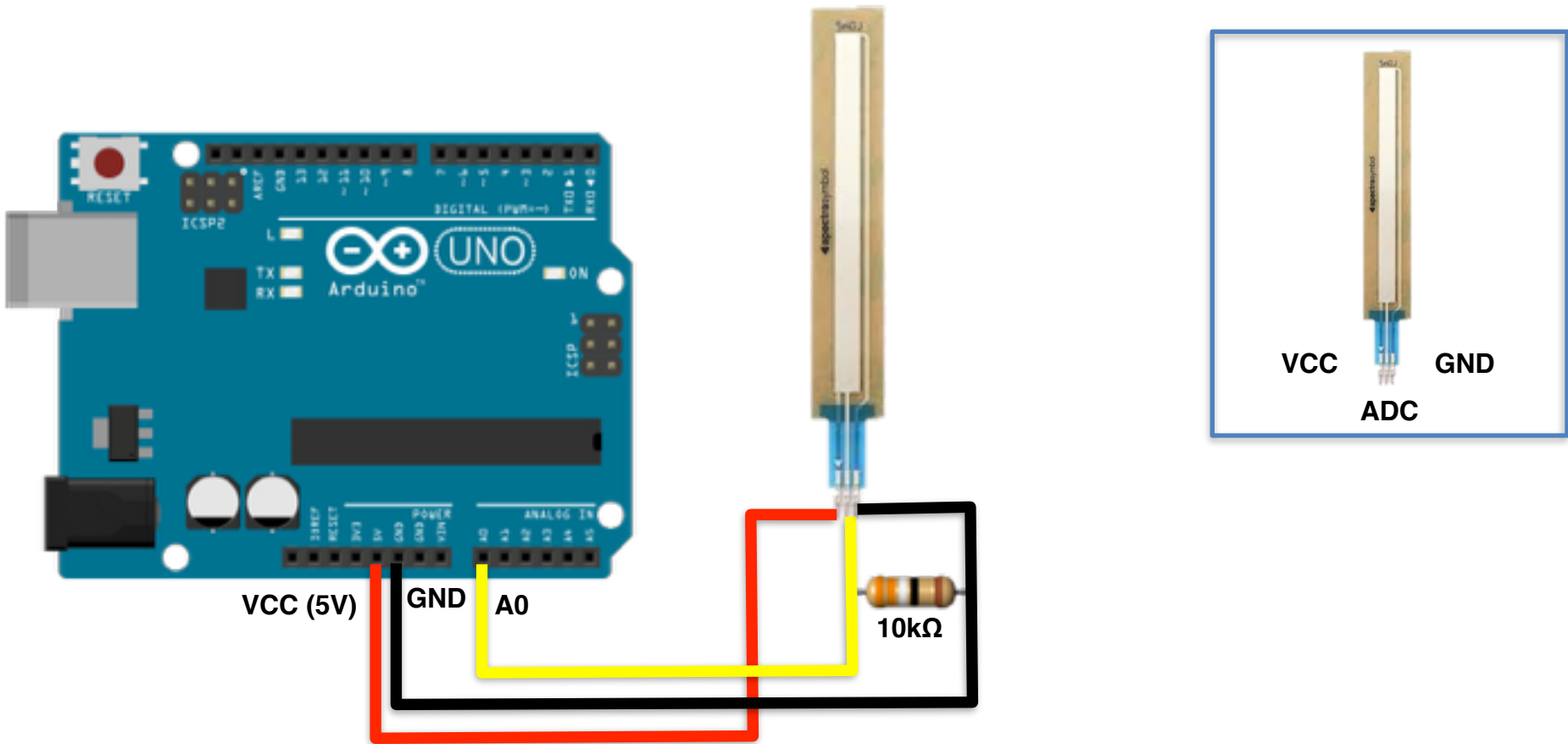
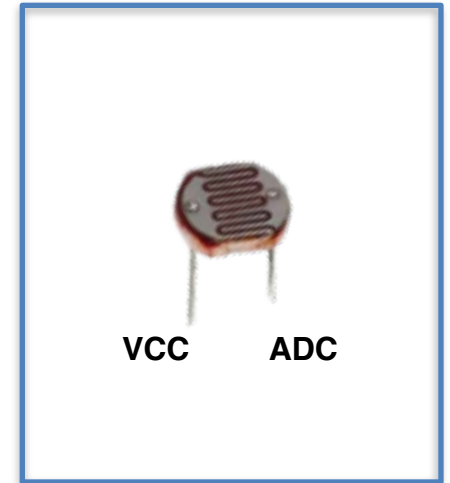
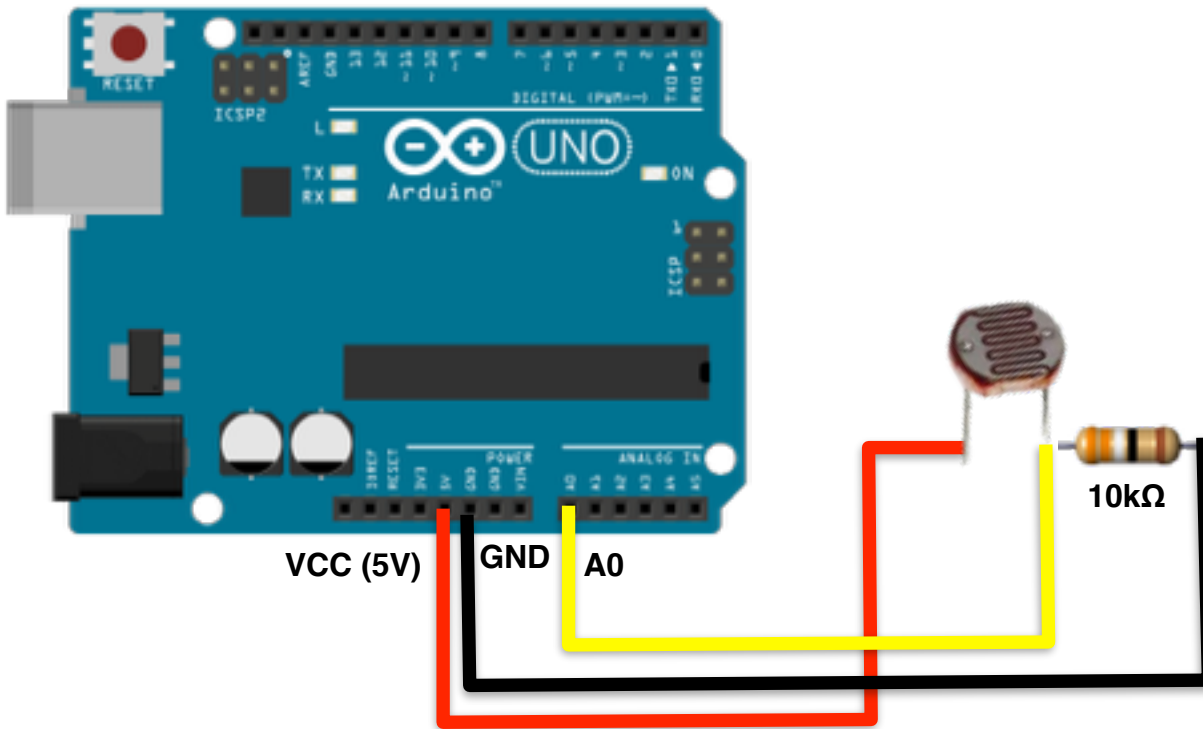
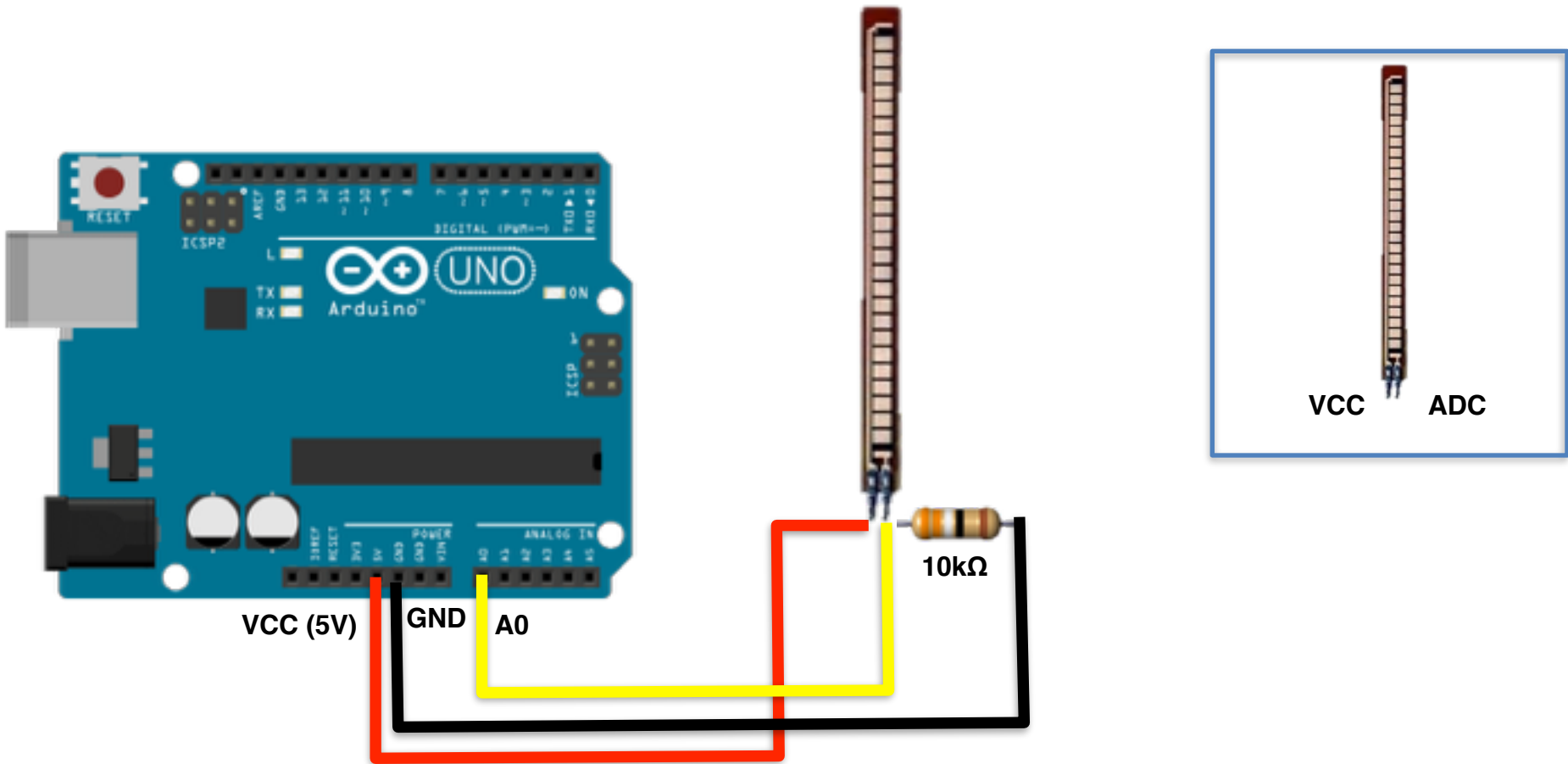


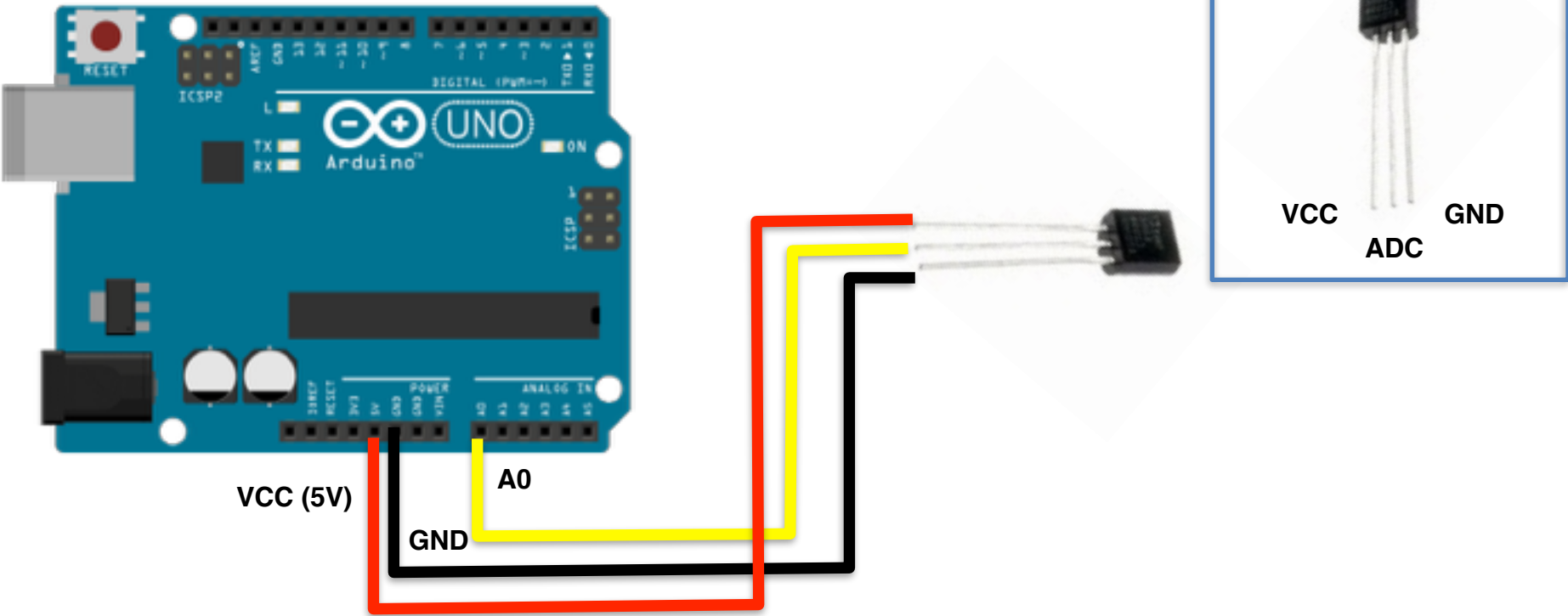
Photo Cell Circuit



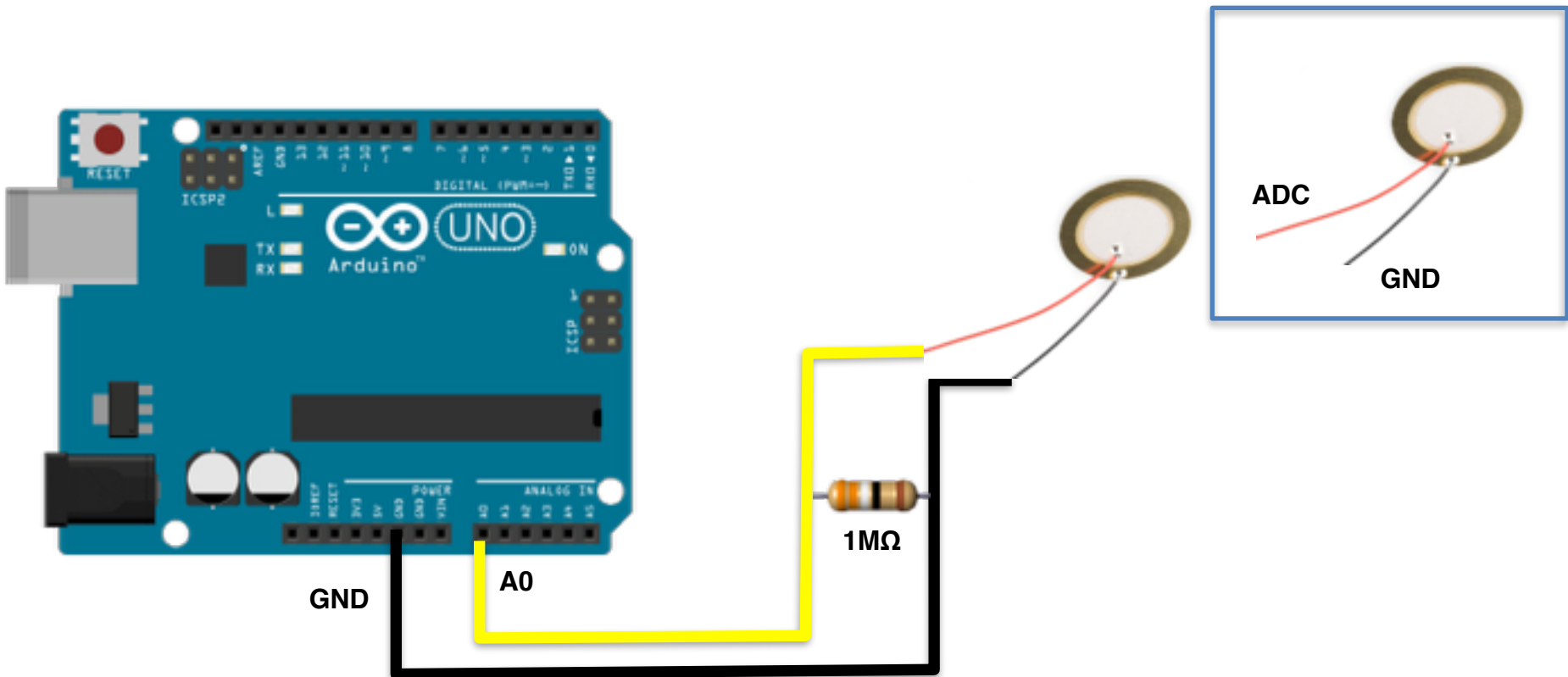
Flex Sensor Circuit



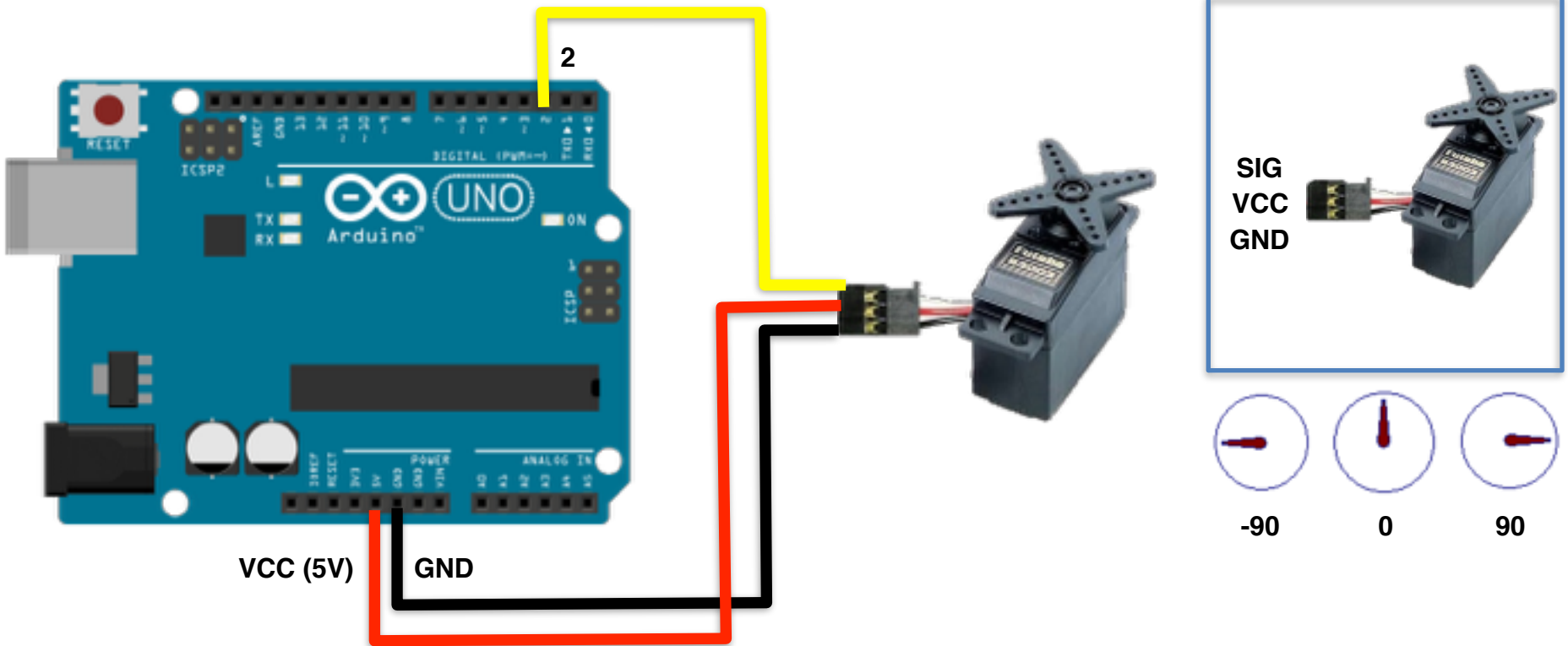
TMP36 Circuit



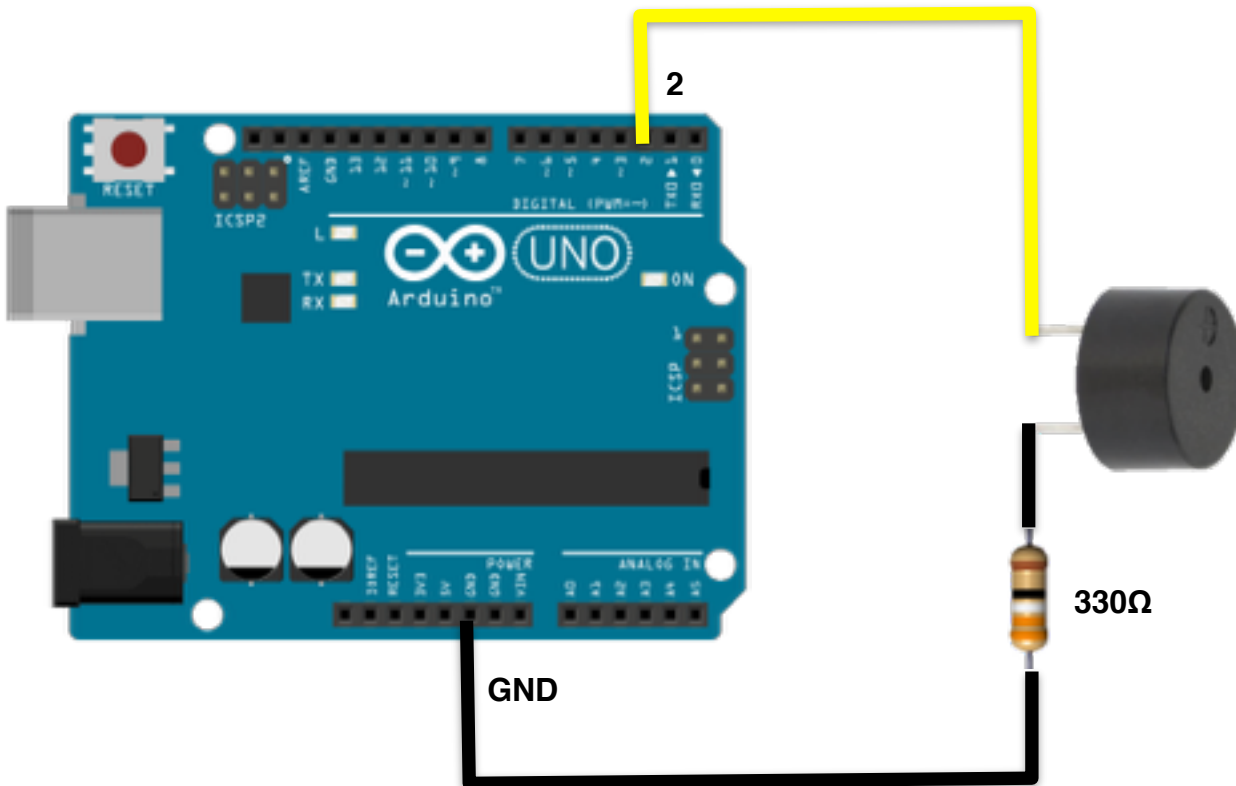
Piezo Sensor Circuit



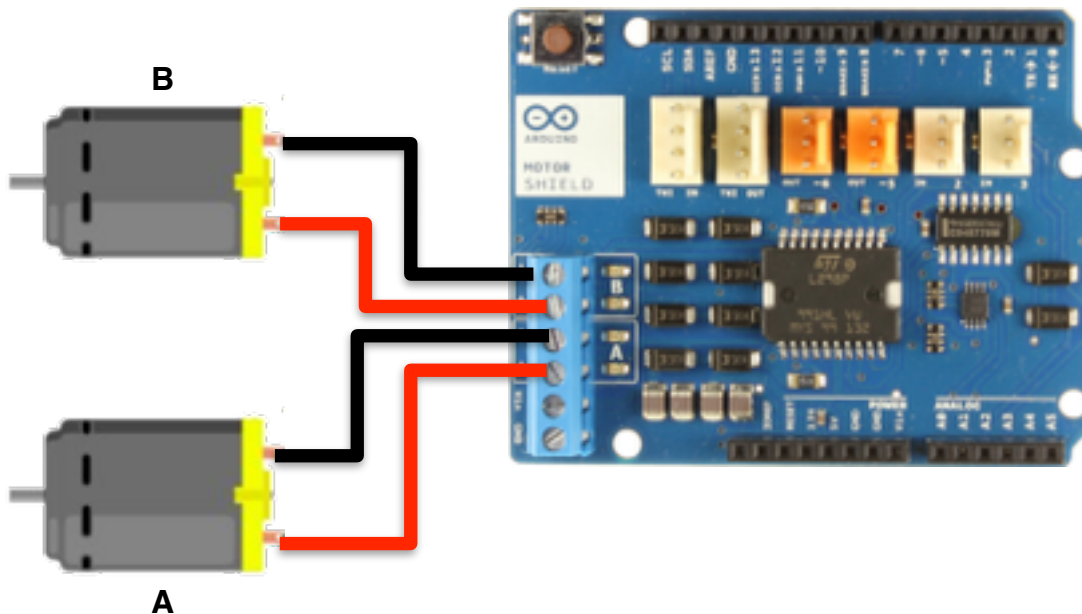
Servo Motor Circuit



Buzzer Circuit



Motor Shield Circuit



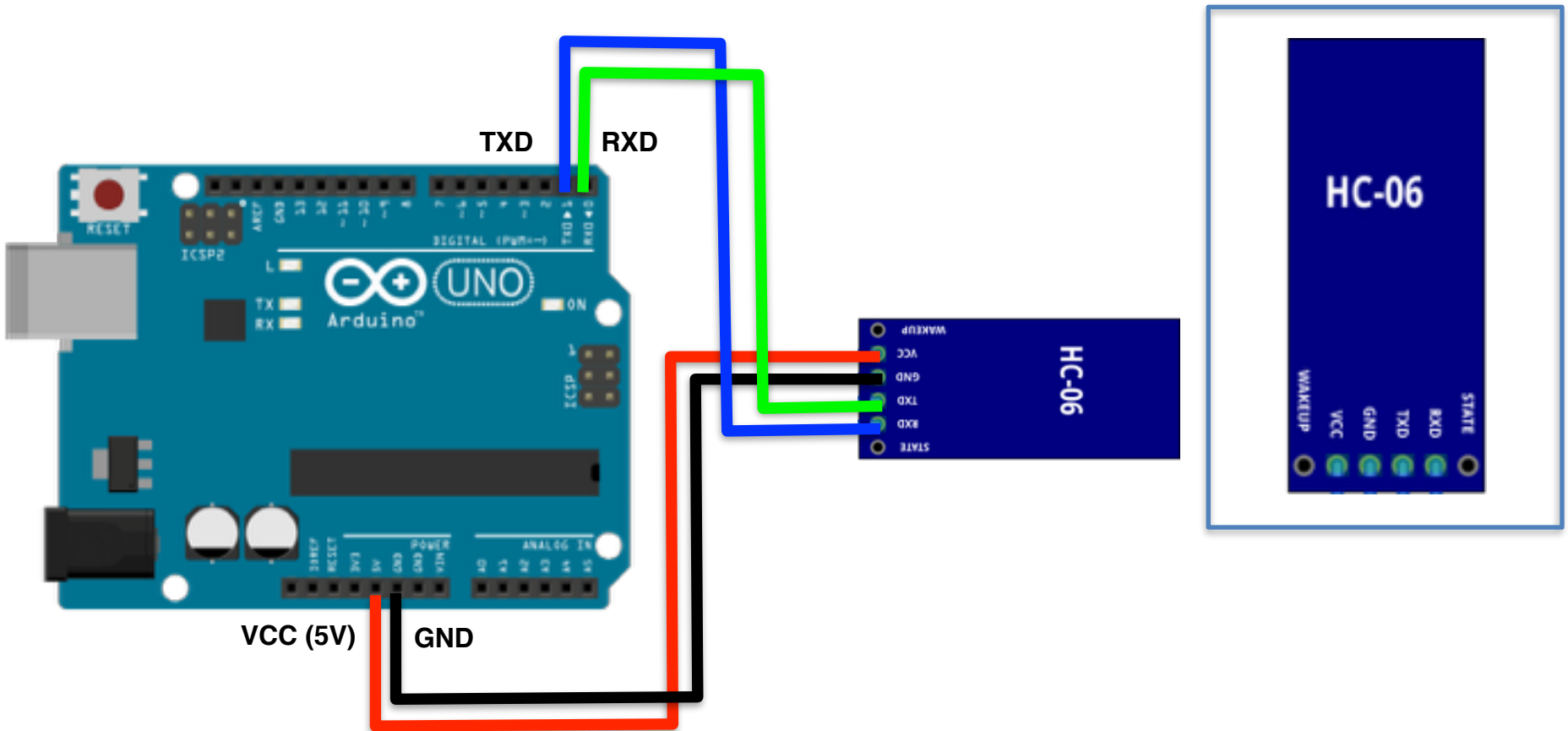
< Motor A >

- Direction pin: 12
- PWM pin: ~3

< Motor B >

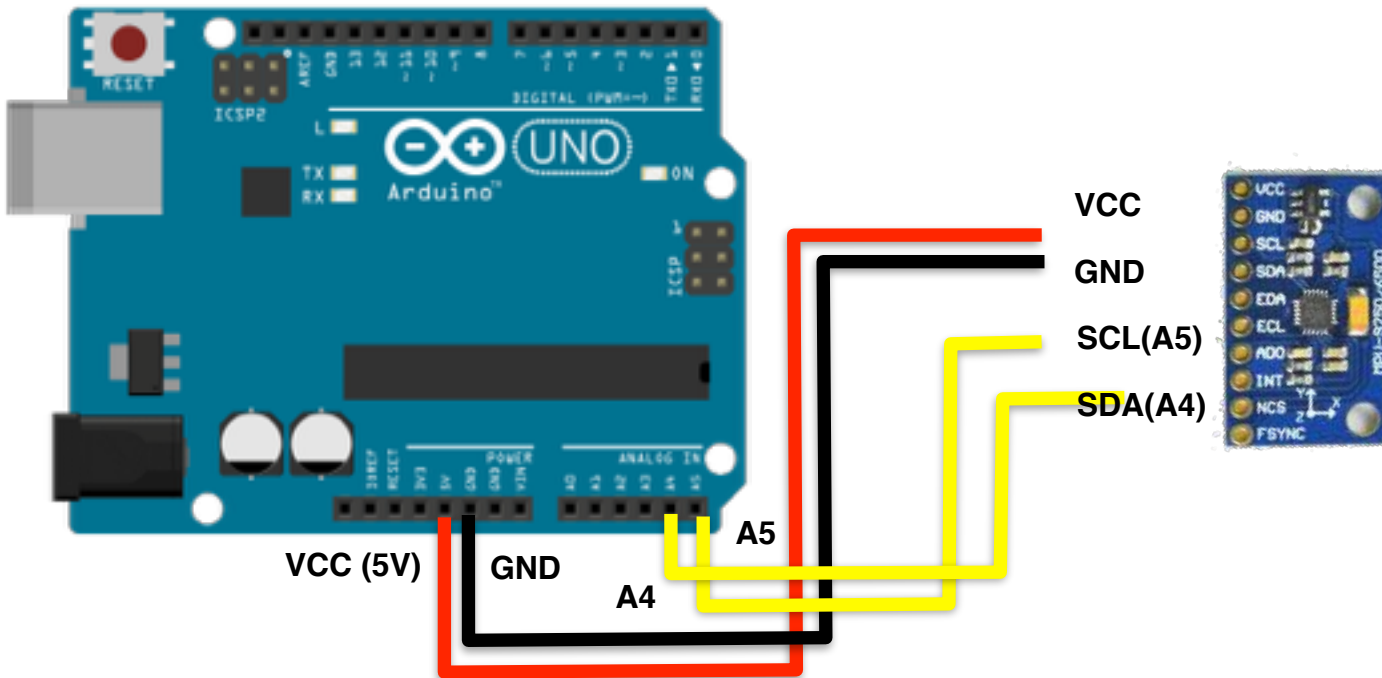
- Direction pin: 13
- PWM pin: ~11

HC-06 Circuit



※ You should verify that between two devices have same baudrate (bps).

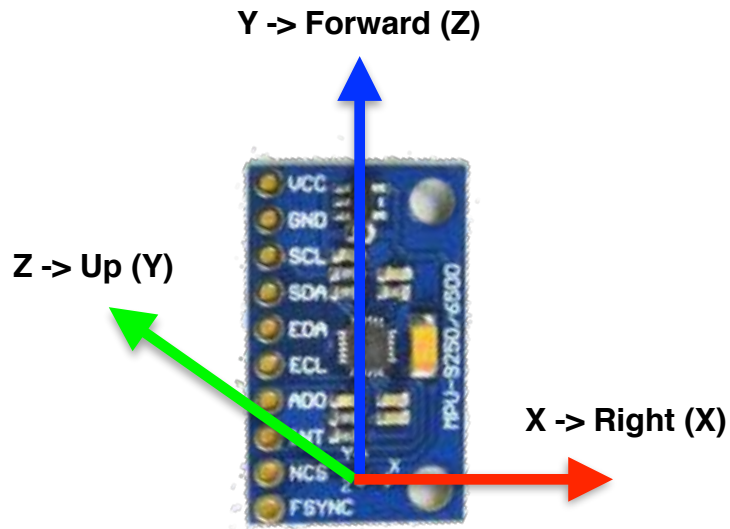
MPU Series Circuit



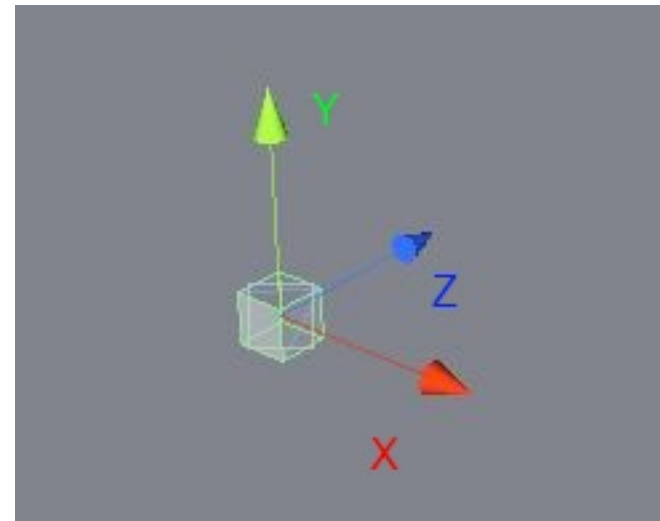
Support Model

- MPU 6050
- MPU 6500
- MPU 9150
- MPU 9250

MPU Series Orientation



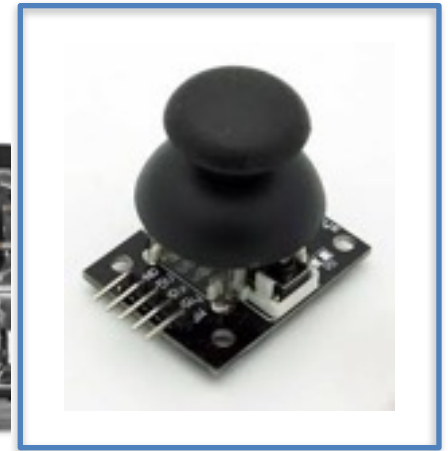
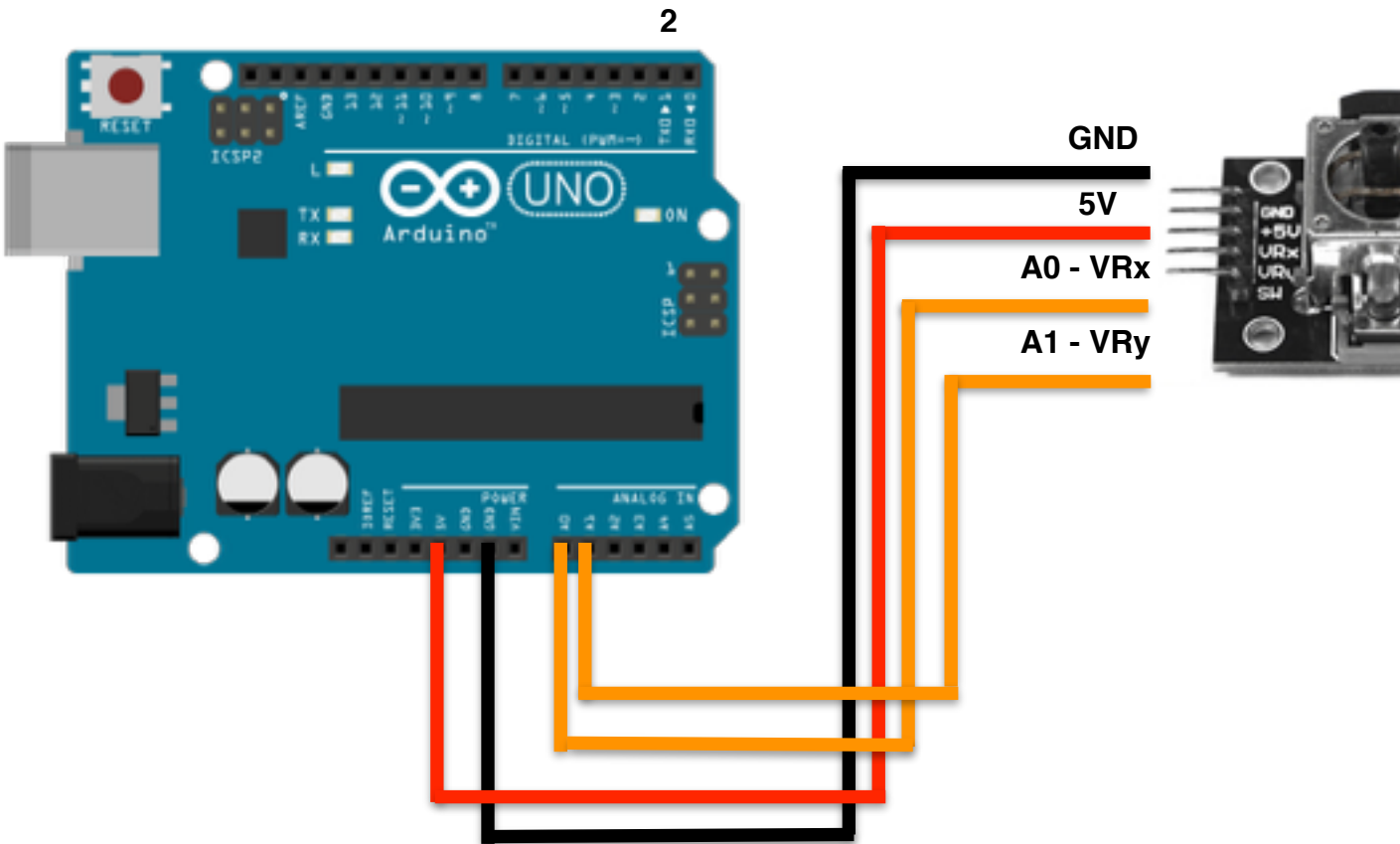
Coordinate System in MPU



Coordinate System in Unity

※MPUSeries convert a coordinate system between MPU and Unity. So, you can just think of MPU as Unity.

Joystick Circuit



Appendix

UNO Timer Conflict

