

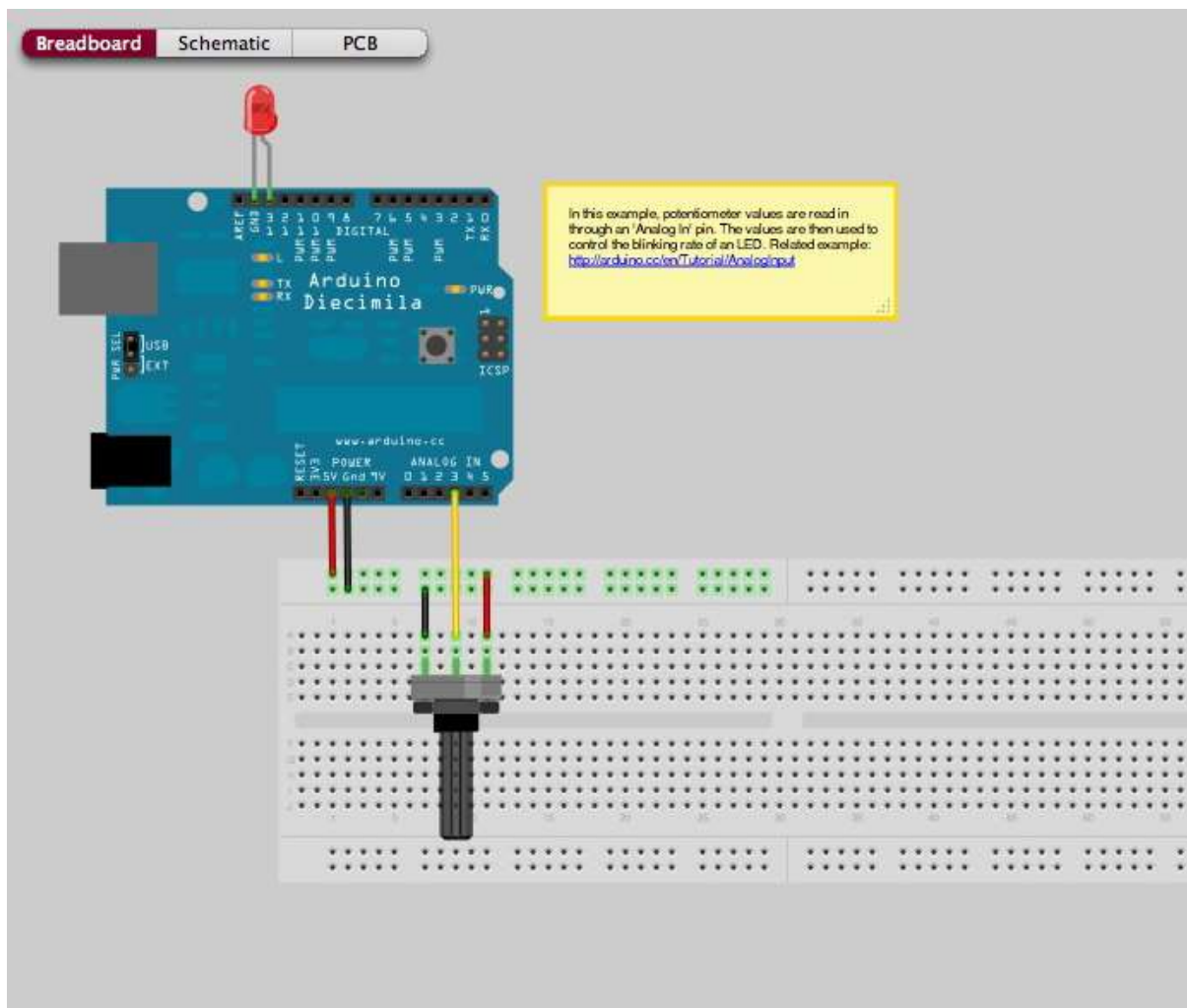
Arduino



I'm Learning about Using a Potentiometer

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1 A potentiometer is a device that provides variable resistance usually through a knob or slider. In this project, potentiometer values are read in through an 'Analog In' pin. The values could then be used to control the blinking rate of an LED.



2 Now we can take a look at a simple program to take an analog reading and make the LED Blink. Open up the Arduino software and use the Open Icon to look at the sketch AnalogInput in the examples folder



```
File Edit Sketch Tools Help
AnalogInput$
/*
 Analog Input
 */

int sensorPin = A0; // select the input pin for the potentiometer
int ledPin = 13; // select the pin for the LED
int sensorValue = 0; // variable to store the value coming from the sensor

void setup() {
 // declare the ledPin as an OUTPUT:
 pinMode(ledPin, OUTPUT);
}

void loop() {
 // read the value from the sensor:
 sensorValue = analogRead(sensorPin);
 // turn the ledPin on
 digitalWrite(ledPin, HIGH);
 // stop the program for <sensorValue> milliseconds:
 delay(sensorValue);
 // turn the ledPin off:
 digitalWrite(ledPin, LOW);
 // stop the program for for <sensorValue> milliseconds:
 delay(sensorValue);
}

3 Arduino Uno on COM16
```

3 Most Arduino microcontrollers use 10 bit analog (voltage) to digital (numeric) conversion, which is 2^{10} possible numbers = 1024. Therefore a voltage of 0V corresponds to a numeric value of 0. A voltage of 5V corresponds to a numeric value of 1024. Therefore a value of 3V would correspond to a numeric value of:

$$3/5 = x/1024, x = 3*1024/5 = \sim 614$$

4 Now use the Analog output to control the flashing of the LED.

5 We can send the value back to the console using the serial port of the Arduino using the code:

```
Serial.println(sensorValue);
```

This sends the value contained in the variable “sensorValue” serially via the USB plug and digital pin 1. Verify, then upload this sketch to your Arduino. Once it is done, press on the “magnifying glass” located towards the top right of the window. This is the “Serial monitor” and monitors communications being sent and received by the Arduino

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A screenshot of the Arduino IDE interface. The window title is 'AnalogInput | Arduino 1.0'. The menu bar includes 'File', 'Edit', 'Sketch', 'Tools', and 'Help'. Below the menu bar is a toolbar with icons for saving, running, and uploading. The main text area contains the following code:

```
int sensorPin = A0; // select the input pin for the potentiometer
int sensorValue = 0; // variable to store the value coming from the sensor

void setup() {
  Serial.begin(9600);
}

void loop() {
  // read the value from the sensor and display it every second
  sensorValue = analogRead(sensorPin);
  Serial.println(sensorValue);
  delay(1000);
}
```

The status bar at the bottom indicates 'Done compiling.' and 'Binary sketch size: 2666 bytes (of a 32256 byte maximum)'. The bottom right corner shows 'Arduino Uno on COM16'.

Note to use Serial communications you need to set the Baud rate using the command

```
Serial.begin(9600);
```

For more information and additional lessons try the following useful links:

<http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-3-potentiometer-3638>

<http://fritzing.org/projects/analog-input-potentiometer>

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