Making Sounds

★ **Overview**

In this lesson, you will learn how to make sounds with your Arduino. First you will make the Arduino play a 'musical' scale and then combine this with a photocell, to make a Theremin-like instrument that changes the pitch played as you wave your hand over the photocell.

★ **Specification**

Passive buzzer:

Working Voltage: 3V/5V

Resistance: 16Ohm

Resonance Frequency: 2KHZ

Photoresistor:

Model: GL5528

Maximum Voltage: 150 Volt DC

Spectral Peak: 540nm

Maximum Wattage: 100mW

Operating Temperature: -30 ~ +70℃

Light Resistance (10 Lux): 10-20Kohm
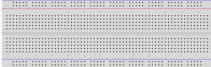
★ **Pin definition**

Passive Buzzer

Long pin

Short pin

Miuzei

★ **Hardware required**

Material diagram	Material name	Number
	Photoresistor	1
	Passive buzzer	1
	10KΩ resistor	1
	USB Cable	1
	UNO R3	1
	Breadboard	1
	Jumper wires	Several

![Miuzei]

Connection

★ Schematic

★ **Connection diagram**

Miuzei
Connection:
Passive Buzzer ->D11
Photoresistor -> A0
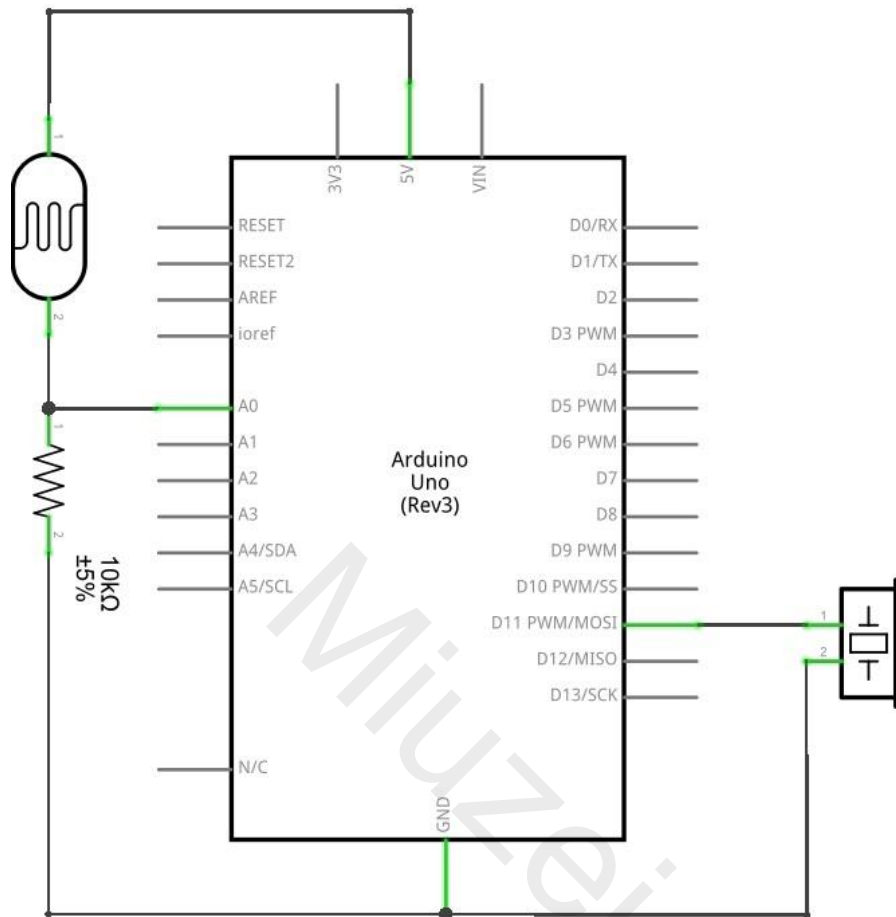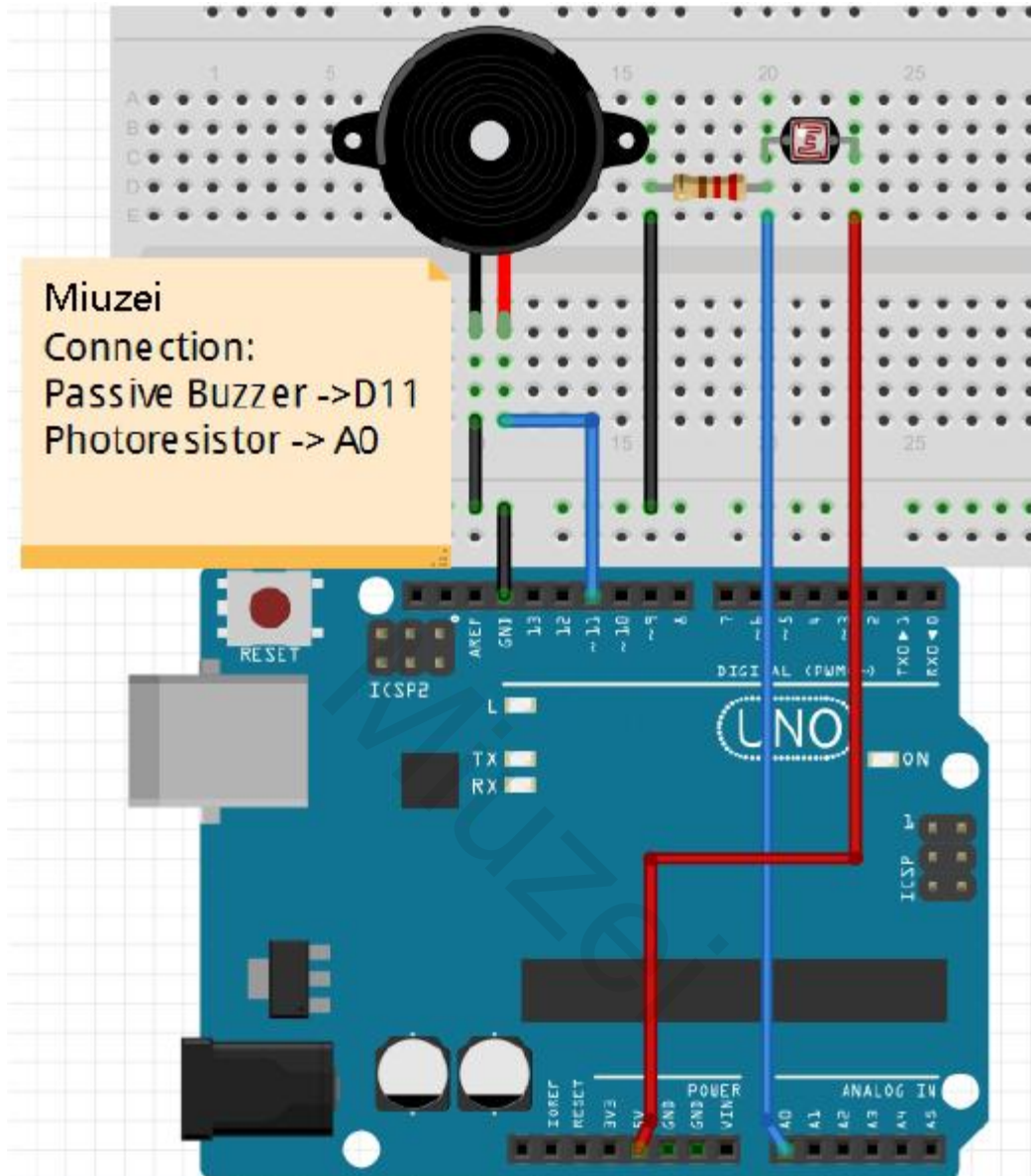
Note: Photoresitor`s pin is not divided into positive and negative polarity

★ Sample code

Note: sample code under the **Sample code** folder

```
int speakerPin = 11;
int photocellPin = A0;
void setup()
{
}

void loop()
{
    int reading = analogRead(photocellPin);
    int pitch = 200 + reading / 4;
    tone(speakerPin, pitch);
}
//Tips: Try changing the value 4 in the line below to lower and higher values.
//int pitch = 200 + reading / 4;
We simply take an analog reading from A0, to measure the light intensity. This value
will be in the range of something like 0 to 700.
We add 200 to this raw value, to make 200 Hz the lowest frequency and simply add
the reading divided by 4 to this value, to give us a range of around 200Hz to 370Hz.
```
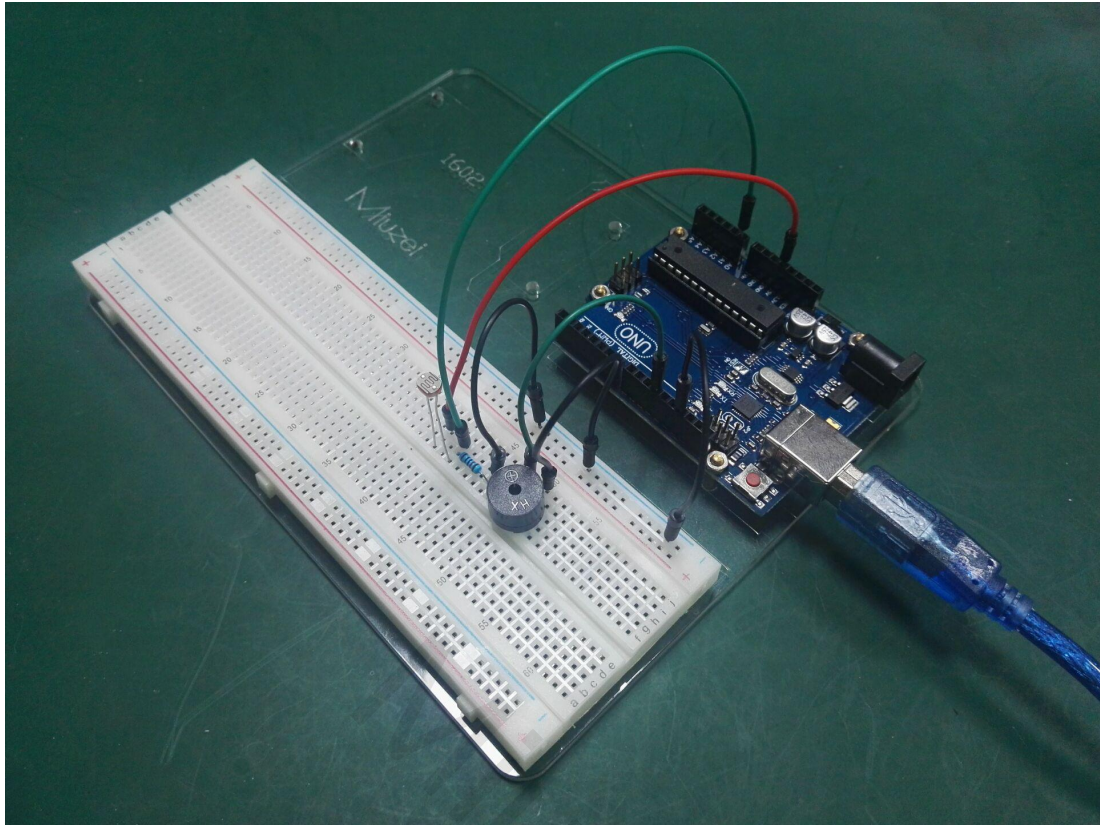
Miuzei

★ **Example picture**

★ **Language reference**

tone()
+ (addition)
/ (divide)

★ **Application effect**

When you use the hand slowly close to the photosensitive resistance, the buzzer sounds will be changed.

About Miuzei:

Miuzei found in 2011 , which is a professional manufacturer and exporter that concerned with open-source hardware research & product development, We have more than hundred engineers devote to developing open source hardware like Arduino, Raspberry pi ,3d printers , robots.

Miuzei committed to make more creative open source products and provide richer knowledge for enthusiasts worldwide.   No matter what your ideas are, we provide various mechanical parts and electronic modules to turn your ideas into success.

Would you like to experience our new release products for Free ? If you are intersted with that you could feel free contact with us by email: support@miuzeipro.com
Or join our facebook:
https://www.facebook.com/miuzeipro
Twitter:
https://twitter.com/miuzei_offical