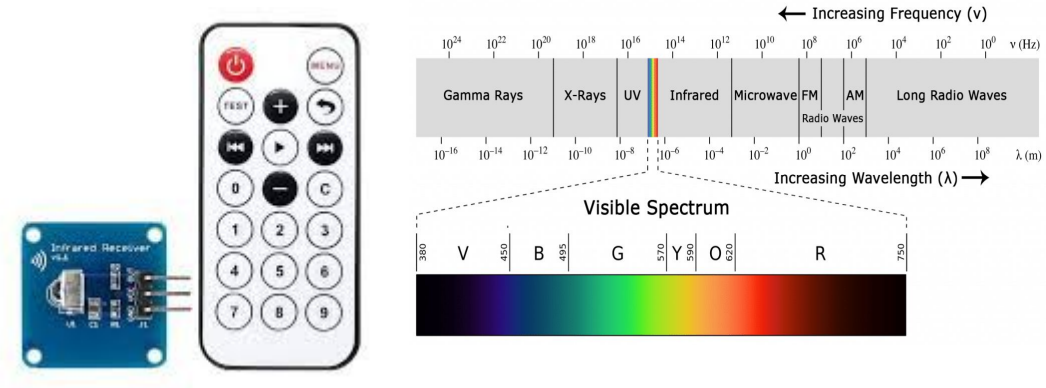
IR Remote
(Technical Note)

Introduction



A typical infrared communication system requires an IR transmitter and an IR receiver. The transmitter looks just like a standard LED, except it produces light in the IR spectrum instead of the visible spectrum. If you have a look at the front of a TV remote, you'll see the IR transmitter LED. The same type of LED is used in IR transmitter breakout boards for the Arduino. You can see it at the front of this Keyes IR transmitter. The IR receiver is a photodiode and pre-amplifier that converts the IR light into an electrical signal.

Scientific Fact and Applications

Infrared radiation is a form of light similar to the light we see all around us. The only difference between IR light and visible light is the frequency and wavelength. Infrared radiation lies outside the range of visible light, so humans cannot see it.

Applications:

IR TV Remote

When you press a button on your TV control, an LED on your control turns on and off continuously and causes a modulated infrared signal to send from the control to your TV. The command will execute after the signal is demodulated.

IR Receiver

IR receiver modules are used to receive IR signals. These modules work in 3, 8 KHz frequency. When the sensor is not exposed to any light at its working frequency, the Vout output has a value equal to VS (power supply). With exposing to a 38 kHz infrared light, this output will be zero.

Key	Code
CH-	0xFFA25D
CH	0xFF629D
CH+	0xFFE21D
<<	0xFF22DD
>>	0xFF02FD
>||	0xFFC23D
–	0xFFE01F
+	0xFFA857
EQ	0xFF906F
100+	0xFF9867
200+	0xFFB04F
0	0XFF6897
1	0xFF30CF
2	0xFF18E7
3	0xFF7A85
4	0xFF10EF
5	0xFF38C7
6	0xFF5AA5
7	0xFF42BD
8	0xFF4AB5
9	0xFF52AD

Z2M Part Number:
EMC-00008-A/B
EDS-00005-A

IR Remote
(Application Note)

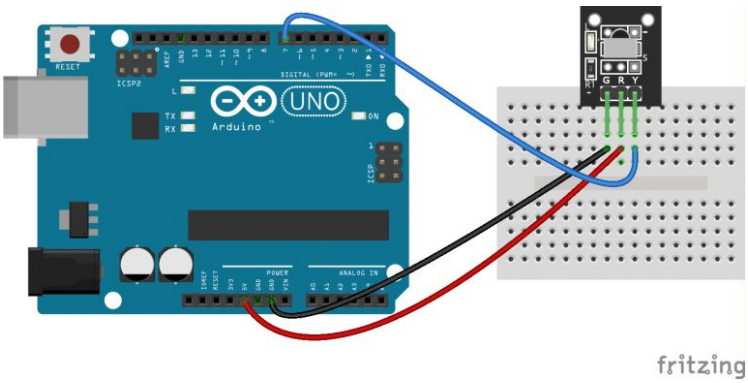
Project

To identify the specific codes for each of the IR Remote button.

Procedure

Arduino to IR Remote Module
1.Connect **pin 7** to **OUT**
2.Connect **5V** terminal to **VCC**
3.Connect **GND** of Arduino to **GND**
4. Press the buttons on the remote and observe the specific codes.

Schematic



Challenge Yourself

1. Create a system where you use an IR Remote to control a servo motor.
2. Using IF-ELSE functions to control different LEDs when you press different IR remote buttons.

Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
IR Remote Module TRANSMITTER	EMC-00008-A/ EDS-00005-A EMC-00008-A	1

Code

```
#include <IRremote.h>

const int RECV_PIN = 7;
IRrecv irrecv(RECV_PIN);
decode_results results;

void setup(){
  Serial.begin(9600);
  irrecv.enableIRIn();
  irrecv.blink13(true);
}

void loop(){
  if (irrecv.decode(&results)){
        Serial.println(results.value,
HEX);
        irrecv.resume();
 }
}
```