COMP 1045 Lab 9 -IR Sensor

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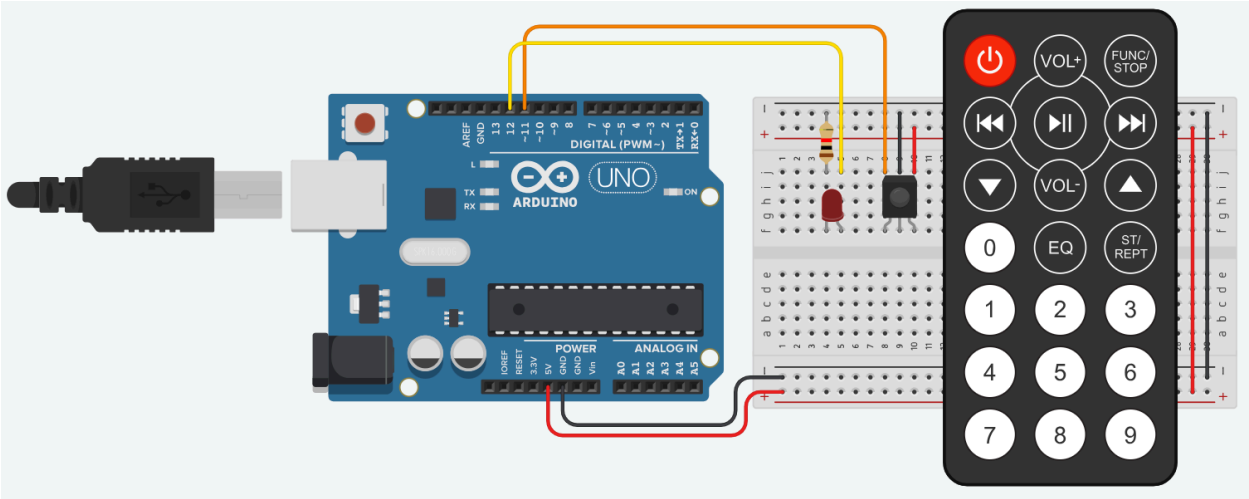
Circuit diagram: Please build the following circuit and test it using the sample code. You will need to click on components → ALL to see the IR sensor and remote.

Tinkercad Link: https://www.tinkercad.com/things/6xfUiMgbZCl-remote



Level 1: Please copy and paste this code to check if your IR sensor works.

```
#include <IRremote.h>   //including infrared remote header file

int RECV_PIN = 11;

IRrecv irrecv(RECV_PIN);

decode_results  results;

int blueLed = 12;
int value = 0;
```

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

void loop() {
  if (irrecv.decode(&results)) {
    value = results.value; Serial.println(" ");
    Serial.print("Code: ");
    Serial.println(results.value, HEX);; //prints the value a a
button press
    Serial.println(" ");
    irrecv.resume();    // Receive the next value
    Serial.println("*****************");

    if(value == 2295){
      digitalWrite(blueLed,HIGH);
      delay(500);
    }
      else {
        digitalWrite(blueLed,LOW);
        delay(500);
      }
  }
}
```

Level 2: Add a second LED(red) and have the following 5 functionalities using 5 different buttons on the remote. NOTE: You may use any buttons you choose.

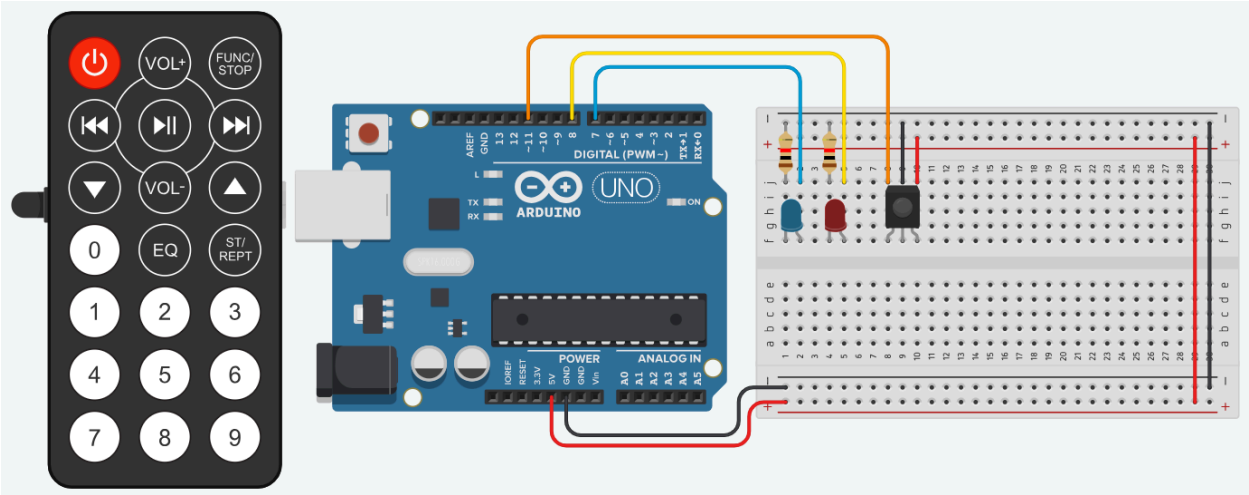
→ Button 1 = turn on blue LED

→ Button 2 = turn on red LED

→ Button 3 = turn off blue LED

→ Button 4 = turn off red LED

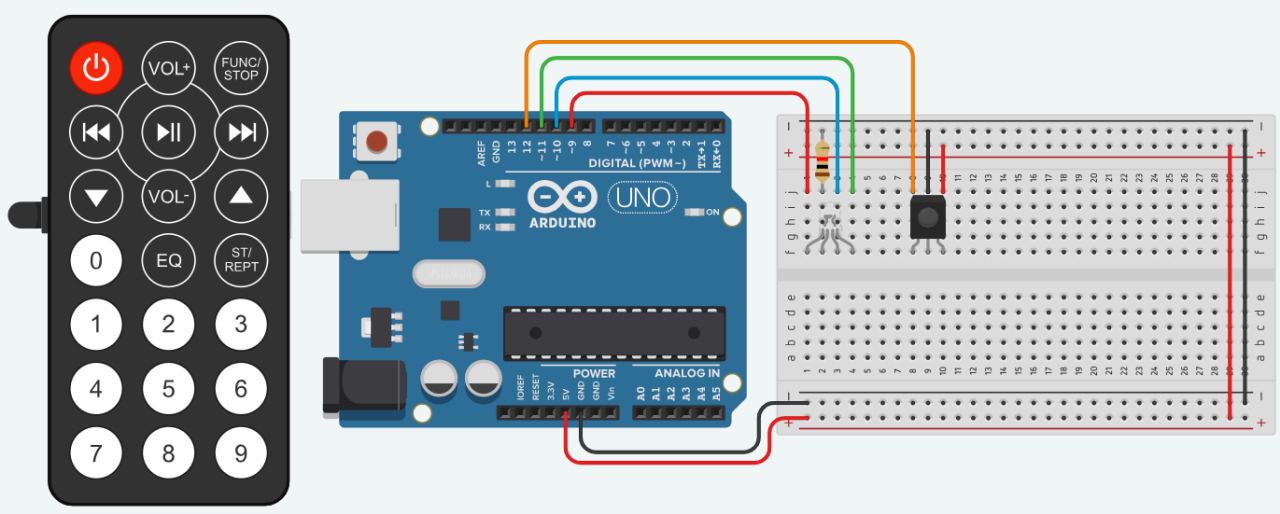
→ Button 5 = flash both LEDs 3 times




```
#include <IRremote.h>

int RECV_PIN = 11;
int LED1 = 7; // Blue LED
int LED2 = 8; // Red LED
IRrecv irrecv(RECV_PIN);
decode_results results;

void setup()
{
  Serial.begin(9600);
  Serial.println("Enabling.IRIn");
  irrecv.enableIRIn();
  Serial.println("EnabledIRin");
  pinMode (LED1, OUTPUT);
  pinMode (LED2, OUTPUT); // Set the red LED as output
}

void loop()
{
  if (irrecv.decode(&results)){
    Serial.println (results.value,DEC);
    irrecv.resume();
    unsigned int value = results.value;
    Serial.println (value);
    switch (value) {
```

```
      case 16582903: // Button 1
        digitalWrite (LED1,HIGH); // Turn on blue LED
        break;
      case 16580863: // Button 2
        digitalWrite (LED2,HIGH); // Turn on red LED
        break;
      case 16578823: // Button 3
        digitalWrite (LED1,LOW); // Turn off blue LED
        break;
      case 16576783: // Button 4
        digitalWrite (LED2,LOW); // Turn off red LED
        break;
      case 16574743: // Button 5
        // Flash both LEDs 3 times
        for(int i = 0; i < 3; i++) {
          digitalWrite(LED1, HIGH);
          digitalWrite(LED2, HIGH);
          delay(500);
          digitalWrite(LED1, LOW);
          digitalWrite(LED2, LOW);
          delay(500);
        }
        break;
    }
  }
  delay(100);
}
```

Level 3: Create a system to control the brightness on the RGB led. Use two buttons to control the brightness, one turn brightness up, one turns it down (you can choose the amount of brightness 1 button press equals). Then have a third button that will change the color. You can choose to keep the previous color on OR only keep the active color on. If the LED is at the lowest or highest brightness the value should not change.




```
#include <IRremote.h>

int RECV_PIN = 12;
int RED_PIN = 9; // Red channel
int GREEN_PIN = 11; // Green channel
int BLUE_PIN = 10; // Blue channel
int brightness = 128; // Initial brightness (range is 0-255)
int color = 0; // Initial color (0=red, 1=green, 2=blue)

IRrecv irrecv(RECV_PIN);
decode_results results;

void setup()
{
  Serial.begin(9600);
  irrecv.enableIRIn();
  pinMode(RED_PIN, OUTPUT);
  pinMode(GREEN_PIN, OUTPUT);
  pinMode(BLUE_PIN, OUTPUT);
}

void loop()
{
  if (irrecv.decode(&results)){
```

```
    irrecv.resume();
    unsigned int value = results.value;
    switch (value) {
      case 16582903: // Button 1 (increase brightness)
        if (brightness < 255) brightness += 5;
        break;
      case 16580863: // Button 2 (decrease brightness)
        if (brightness > 0) brightness -= 5;
        break;
      case 16578823: // Button 3 (change color)
        color = (color + 1) % 3;
        break;
    }

    // Set the color and brightness
    analogWrite(RED_PIN, (color == 0) ? brightness : 0);
    analogWrite(GREEN_PIN, (color == 1) ? brightness : 0);
    analogWrite(BLUE_PIN, (color == 2) ? brightness : 0);
  }
}
```