

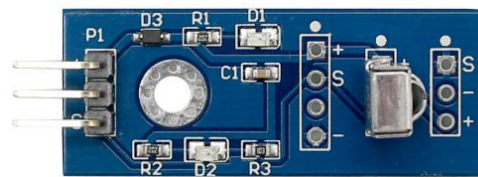
Lesson 15 IR Receiver Module

Introduction

In this lesson, you will learn how to connecting the IR Receiver to the UNO R3 to have wireless control of your project.

Hardware Required

- ✓ 1 * RexQualis UNO R3
- ✓ 1 * IR receiver module
- ✓ 1 * IR remote
- ✓ 3 * F-M Jumper Wires



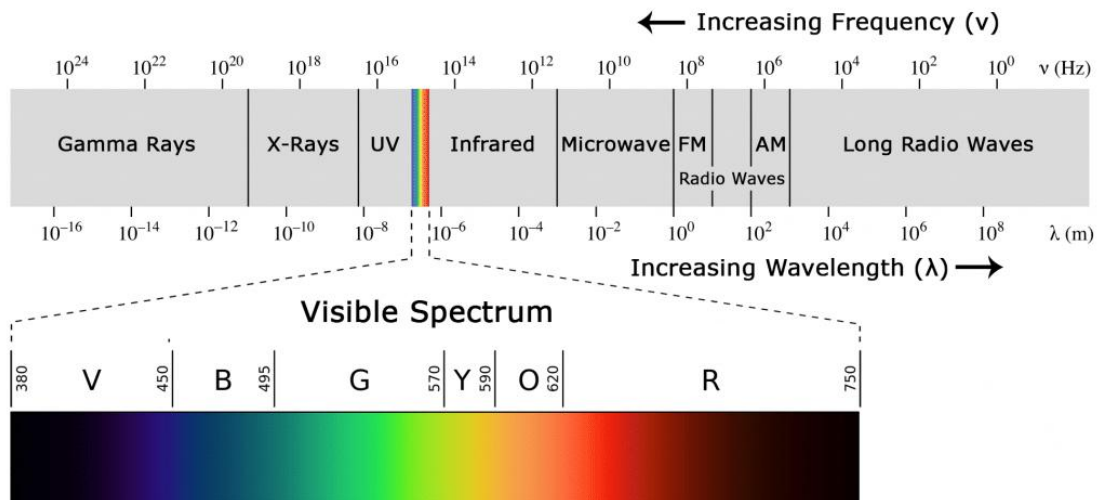
Principle

IR Receiver Module

Infrared (IR) communication is a widely used and easy to implement wireless technology that has many useful applications. The most prominent examples in day to day life are TV/video remote controls, motion sensors, and infrared thermometers.

There are plenty of interesting Arduino projects that use IR communication too. With a simple IR transmitter and receiver, you can make remote controlled robots, distance sensors, heart rate monitors, DSLR camera remote controls, TV remote controls, and lots more

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 can't see it:



Code interpretation

```
#include "IRremote.h"
```

```
int receiver = 11; // Signal Pin of IR receiver to Arduino Digital Pin 11
```

```
/*-----( Declare objects )-----*/
```

```
IRrecv irrecv(receiver); // create instance of 'irrecv'
```

```
decode_results results; // create instance of 'decode_results'
```

```
/*-----( Function )-----*/
```

```
void translateIR() // takes action based on IR code received
```

```
// describing Remote IR codes
```

```
{
  switch(results.value)
  {
    case 0xFFA25D: Serial.println("POWER"); break;
    case 0xFFE21D: Serial.println("VOL STOP"); break;
    case 0xFF629D: Serial.println("MODE"); break;
```

```
case 0xFF22DD: Serial.println("PAUSE");    break;

case 0xFF02FD: Serial.println("FAST BACK");    break;

case 0xFFC23D: Serial.println("FAST FORWARD");    break;

case 0xFFE01F: Serial.println("EQ");    break;

case 0xFFA857: Serial.println("VOL-");    break;

case 0xFF906F: Serial.println("VOL+");    break;

case 0xFF9867: Serial.println("RETURN");    break;

case 0xFFB04F: Serial.println("USB SCAN");    break;

case 0xFF6897: Serial.println("0");    break;

case 0xFF30CF: Serial.println("1");    break;

case 0xFF18E7: Serial.println("2");    break;

case 0xFF7A85: Serial.println("3");    break;

case 0xFF10EF: Serial.println("4");    break;

case 0xFF38C7: Serial.println("5");    break;

case 0xFF5AA5: Serial.println("6");    break;

case 0xFF42BD: Serial.println("7");    break;

case 0xFF4AB5: Serial.println("8");    break;

case 0xFF52AD: Serial.println("9");    break;

case 0xFFFFFFFF: Serial.println(" REPEAT");break;

default:

    Serial.println(" other button    ");

} // End Case
```

```

    delay(500); // Do not get immediate repeat

} //END translateIR

void setup() /*----( SETUP: RUNS ONCE )----*/

{

    Serial.begin(9600);

    Serial.println("IR Receiver Button Decode");

    irrecv.enableIRIn(); // Start the receiver

}/*--(end setup )---*/

void loop() /*----( LOOP: RUNS CONSTANTLY )----*/

{

    if (irrecv.decode(&results)) // have we received an IR signal?

    {

        translateIR();

        irrecv.resume(); // receive the next value

    }

}/* --(end main loop )-- */

```

Experimental Procedures

Step 1: Build the circuit

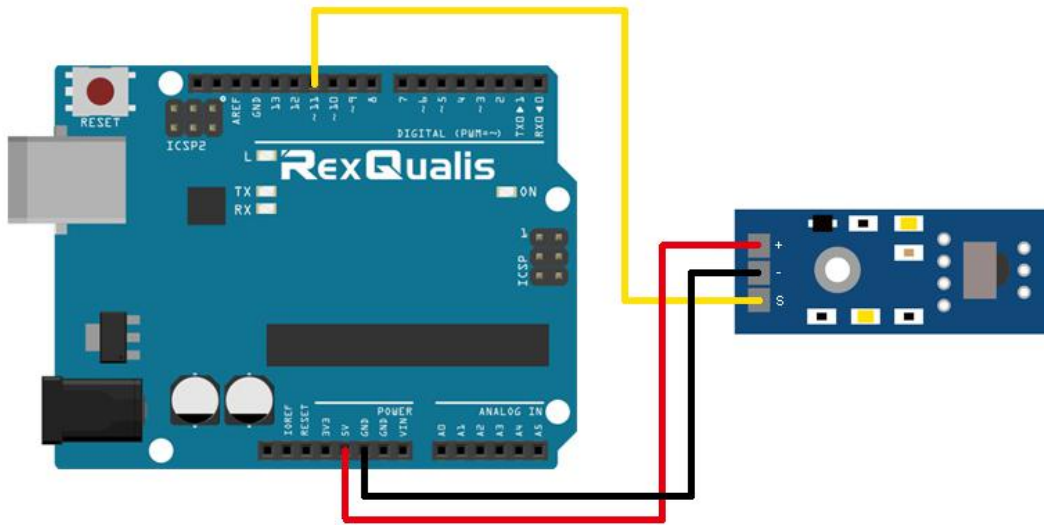
There are 3 connections to the IR Receiver.

The connections are: Signal, Voltage and Ground.

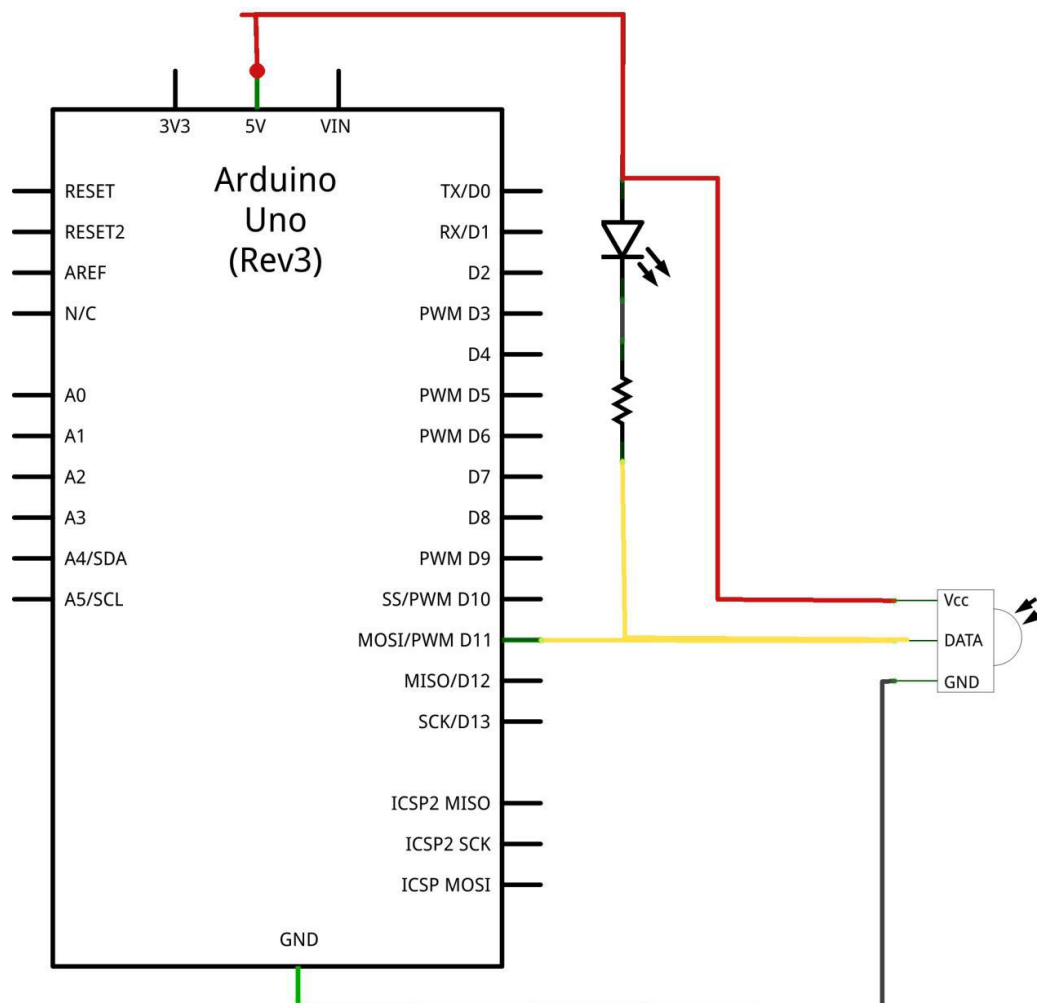
The “-” is the Ground, “S” is signal, and middle pin is Voltage 5V.

Connect the 5V and ground of the Arduino to the 5v and ground of the IR

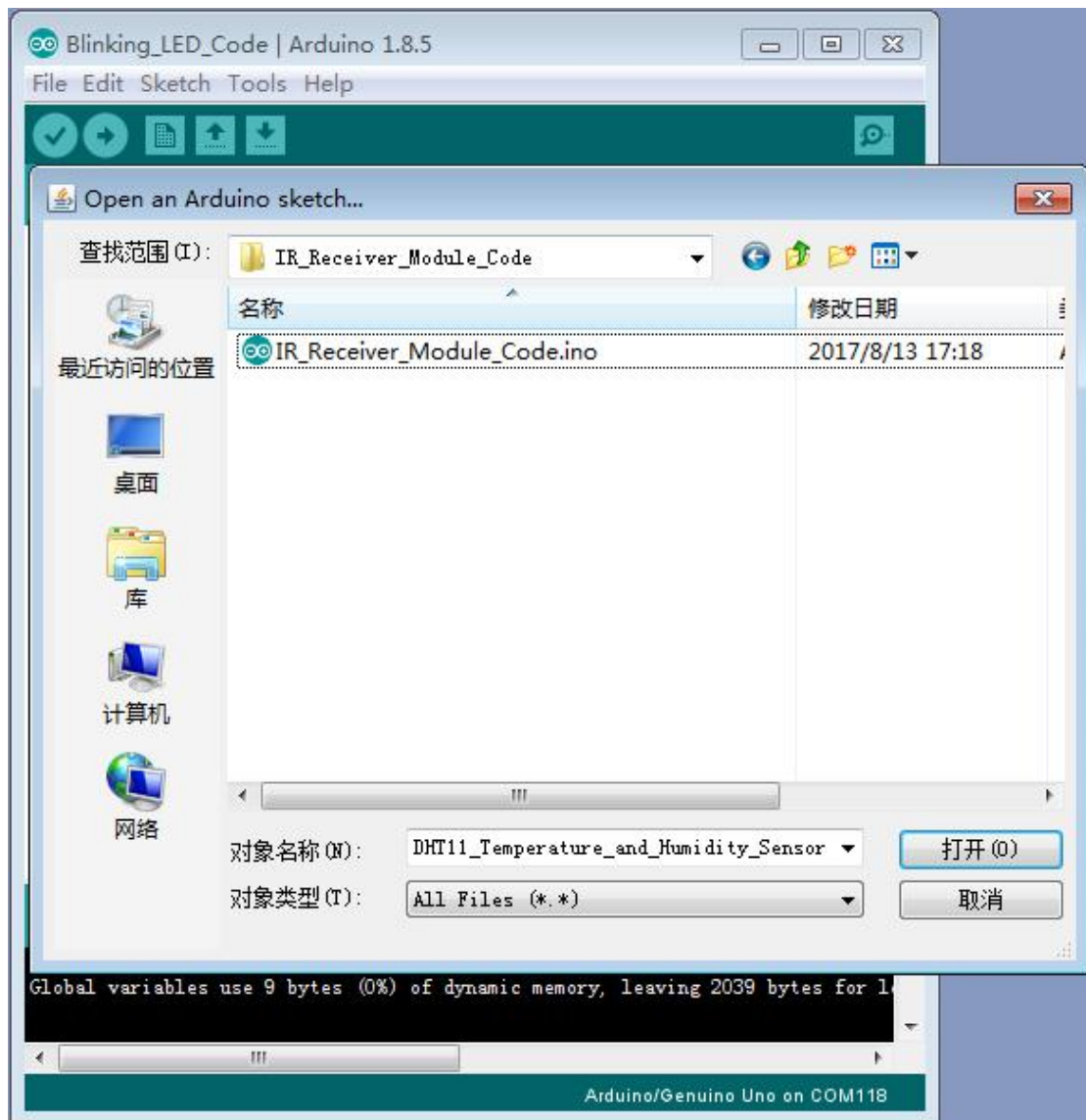
receiver and the pin 11 of the Arduino to the signal pin of IR receiver.



Schematic Diagram

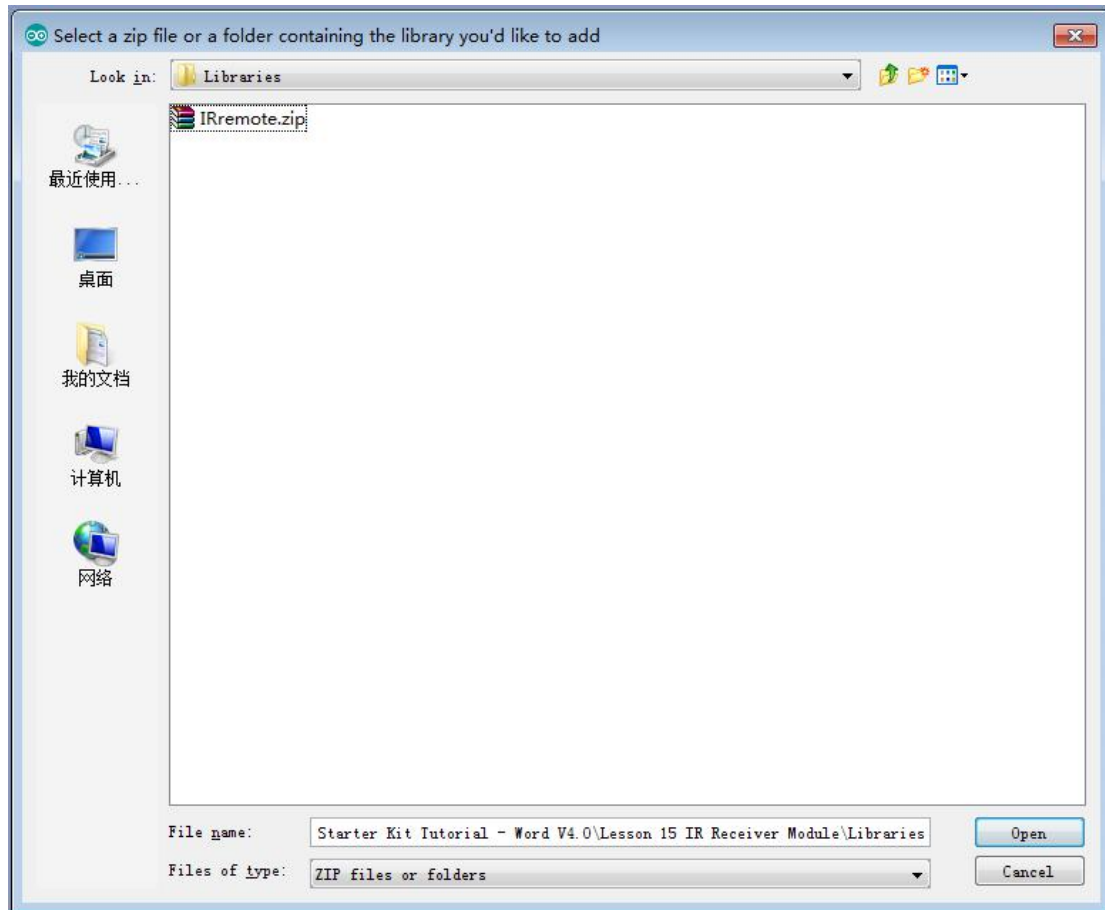


Step 2:Open the code:IR_Receiver_Module_Code



Step 3:Attach Arduino UNO R3 board to your computer via USB cable and check that the 'Board Type' and 'Serial Port' are set correctly.

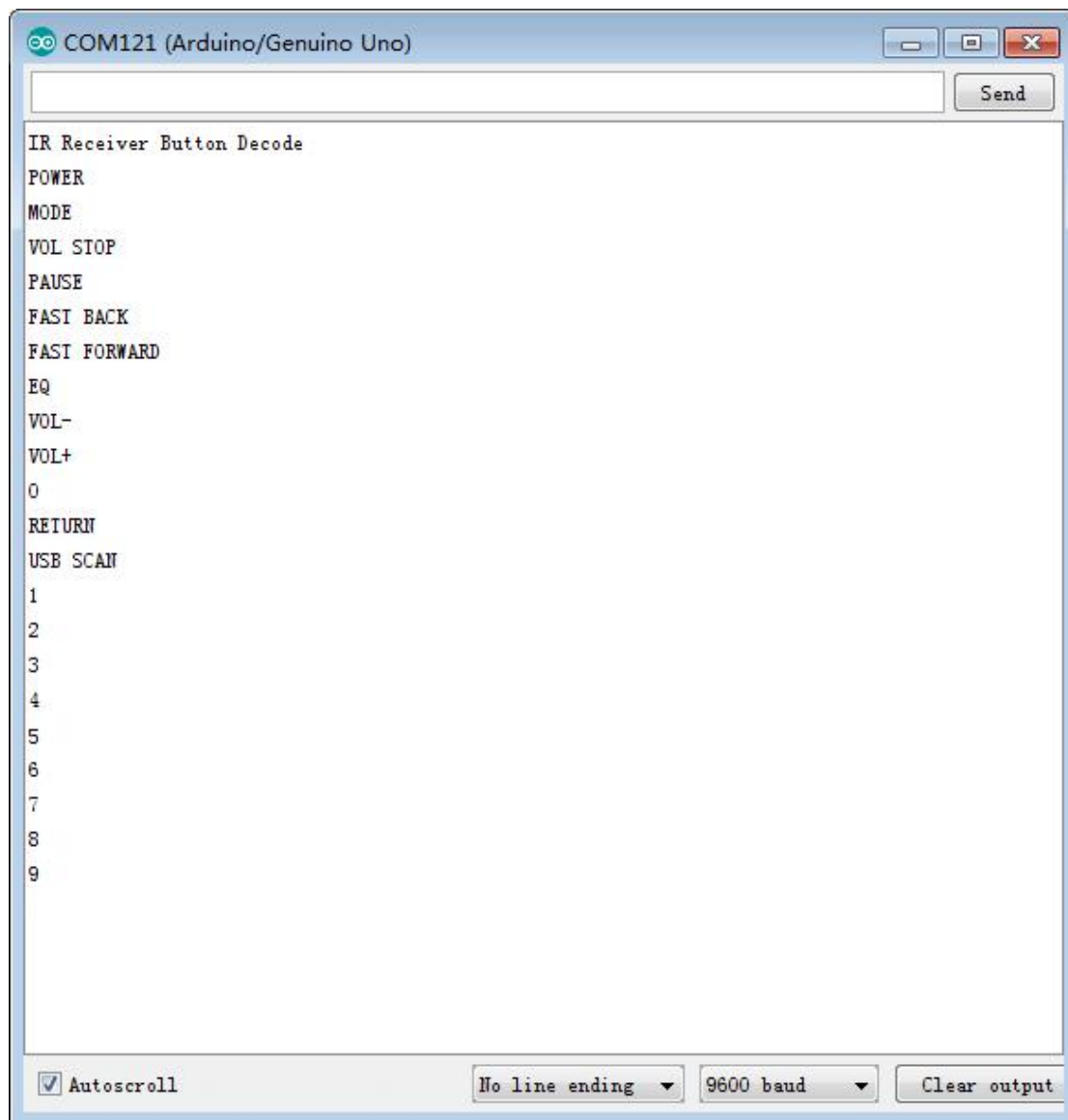
Step 4:Load the Library:IRremote



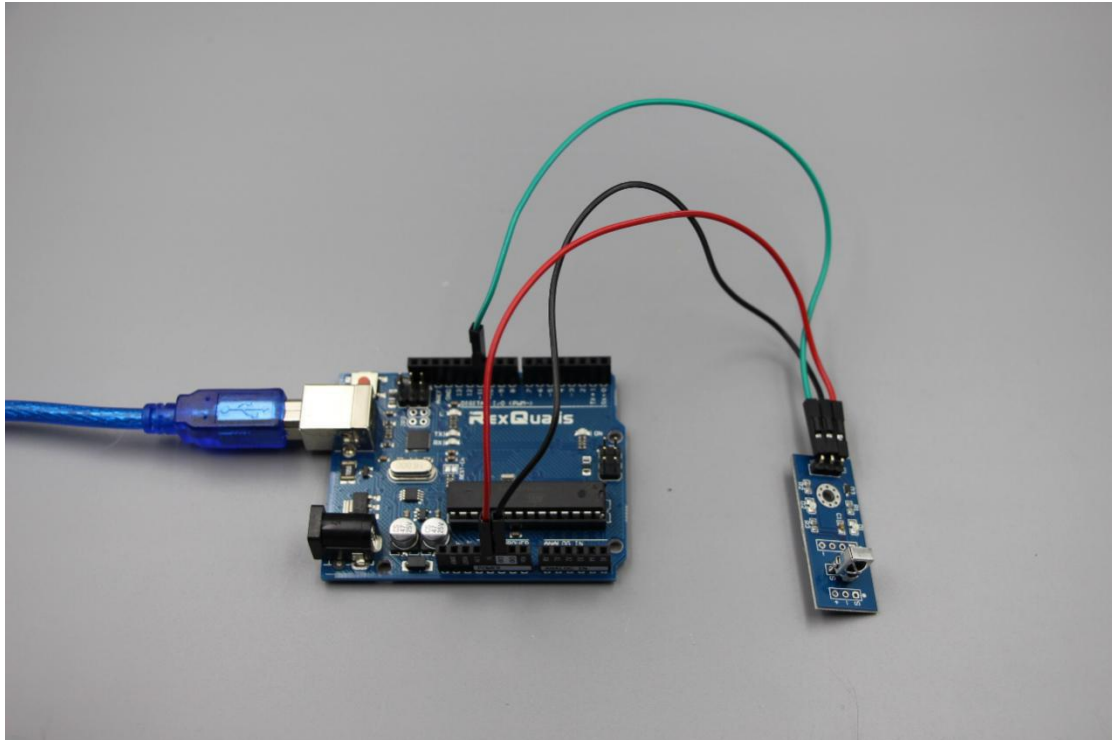
Step 5: Upload the code to the RexQualis UNO R3 board.

Step 6: Open the Serial Monitor then you can see the data as blow:

(How to use the Serial Monitor is introduced in details in Lesson 0 Preface)



Then, the remote control is aligned with the IR receiver and the corresponding numbers and symbols are displayed on the monitor



You can see the video of the experiment results on YouTube:

<https://youtu.be/YWP-AcF1l2A>

If it isn' t working, make sure you have assembled the circuit correctly, verified and uploaded the code to your board.For how to upload the code and install the library, check Lesson 0 Preface.