

Gesture control RGB lights

1. Purpose

In this course, we mainly learn to use Arduino, gesture recognition module and RGB light module to realize gesture control RGB lights.

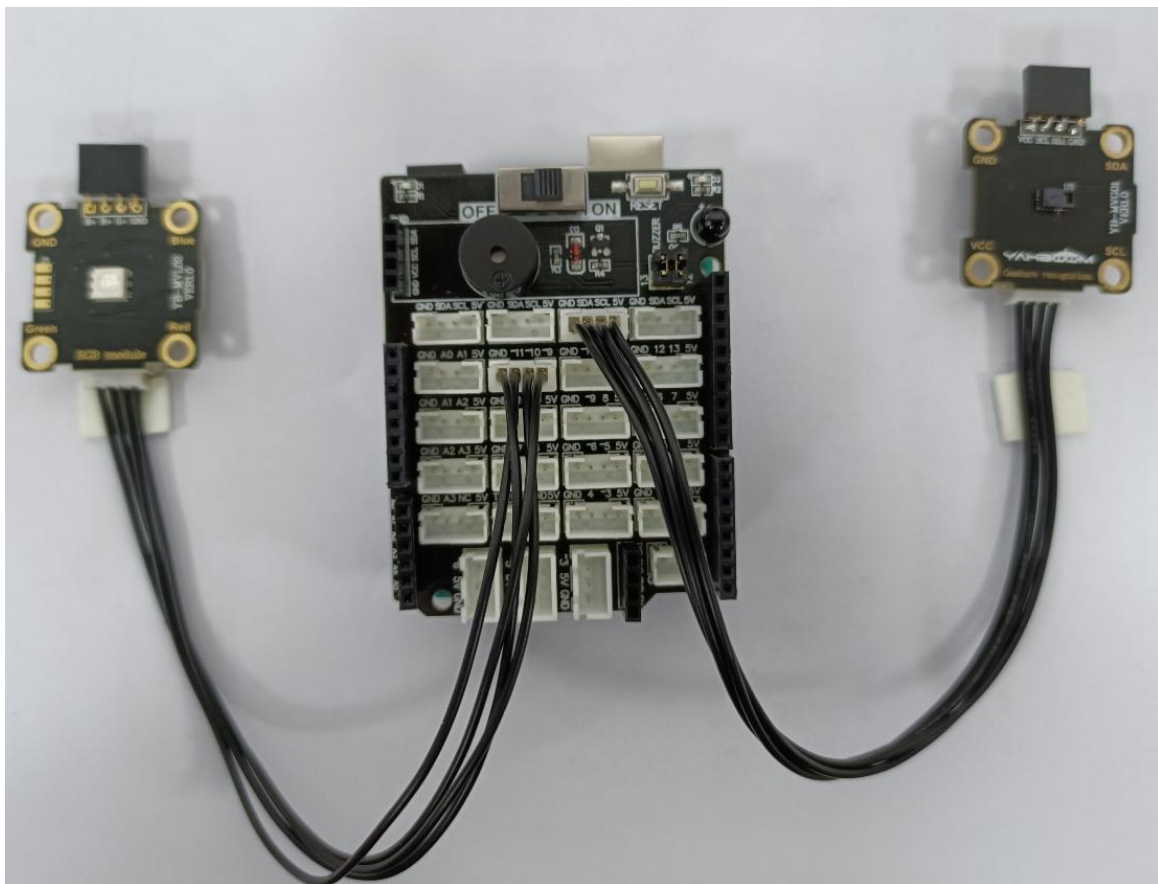
2. Preparation

Wiring diagram as shown below.

Gesture recognition module	Arduino
SCL	SCL
SDA	SDA
VCC	5V
GND	GND

RGB light module	Arduino
GND	GND
Red	10
Green	11
Blue	9

Note: As shown in the figure below, we use the Uno sensor expansion board. If you don't have an expansion board, you can connect the Arduino board and modules by DuPont lines.



3. About code

Please check .ino file.

We need to initialize the gesture recognition module through the initialization function, and the gesture can be recognized after the initialization is successful.

```
void setup()
{
    uint8_t error = 0;
    pinMode(LED_R, OUTPUT);
    pinMode(LED_G, OUTPUT);
    pinMode(LED_B, OUTPUT);
    Serial.begin(9600);
    Serial.println("\nGesture TEST DEMO: Recognize 9 gestures.");
    error = GestureInit();    // initialize Paj7620 registers
    if (error) {
        Serial.print("INIT ERROR, CODE:");
        Serial.println(error);
    }
    else {
        Serial.println("INIT OK");
    }
    Serial.println("Please input your gestures:\n");
}
```

In the main loop, different values are returned by continuously detecting different gestures, the obtained data is judged by switch statement. RGB lights of different colors are light up.

```
void loop()
{
    uint8_t data = 0, data1 = 0, error;
    error = GestureReadReg(0x43, 1, &data);    // Re
    if (!error) {
        switch (data) {
            case GES_RIGHT_FLAG:
                delay(200);
                GestureReadReg(0x43, 1, &data);
                if (data == GES_FORWARD_FLAG) {
                    color_led(ON, OFF, ON);
                    Serial.println("Forward");
                    delay(GES_QUIT_TIME);
                }
            }
        }
    }
```

.....

4. Compiling and downloading code

4.1 We need to open the **.ino** file by Arduino IDE software. Then click "v" under the menu bar to compile the code, and wait for the word "Done compiling" in the lower left corner, as shown in the figure below.

```

File Edit Sketch Tools Help
English_speech TextTab.h XFS.cpp XFS.h
static void XFS_Init()
{

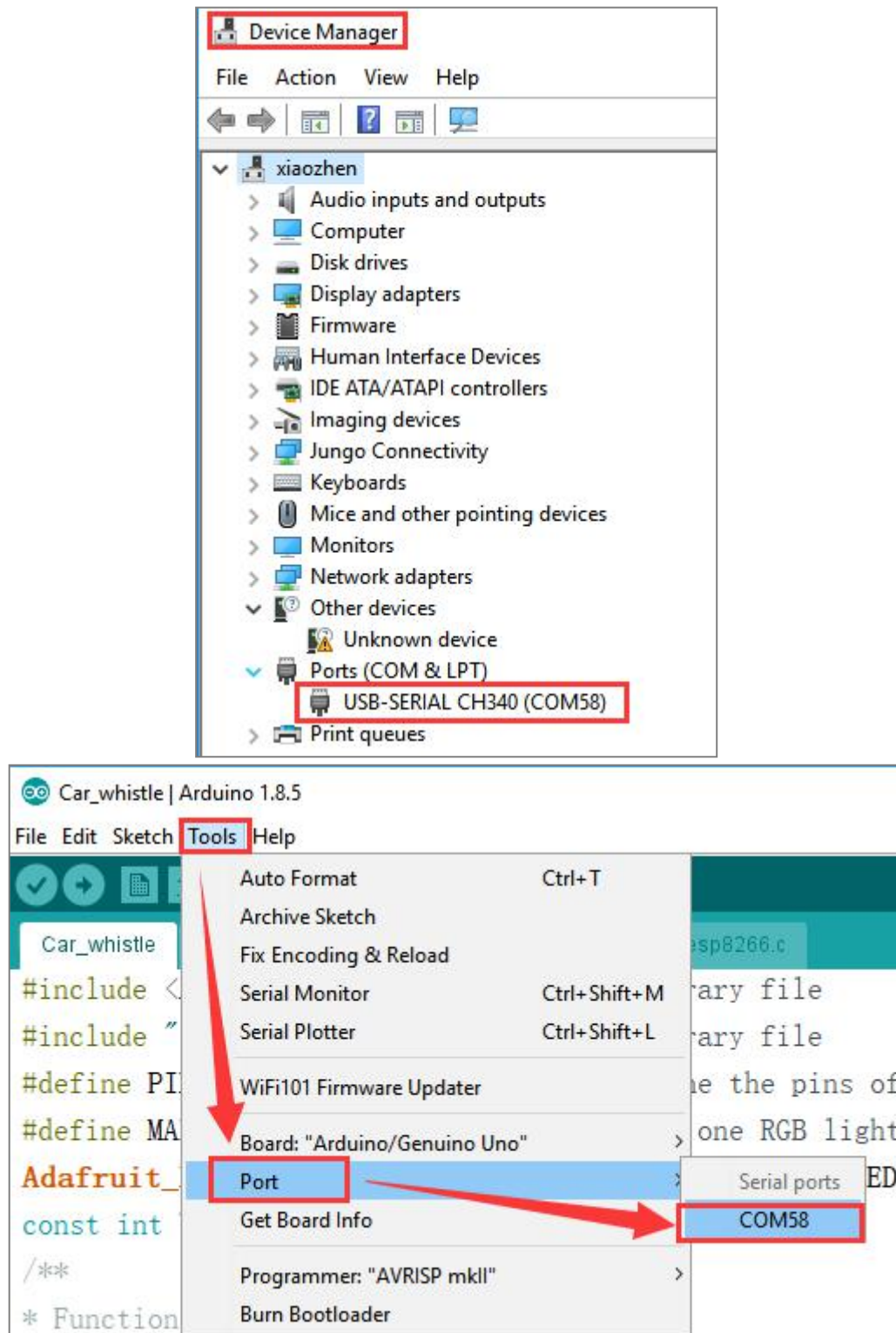
    xfs.Begin(0x50); //Device IIC address is 0x50
    delay(n);
    xfs.SetReader(XFS5152CE::Reader_XiaoYan); //Set reader
    delay(n);
    xfs.SetEncodingFormat(XFS5152CE::GB2312); //Set encoding
    delay(n);
    xfs.SetLanguage(xfs.Language_Auto); //Language jud
    delay(n);
    xfs.SetStyle(XFS5152CE::Style_Continue); //Composition
    delay(n);
    xfs.SetSpeed(5); //Set speaking

}

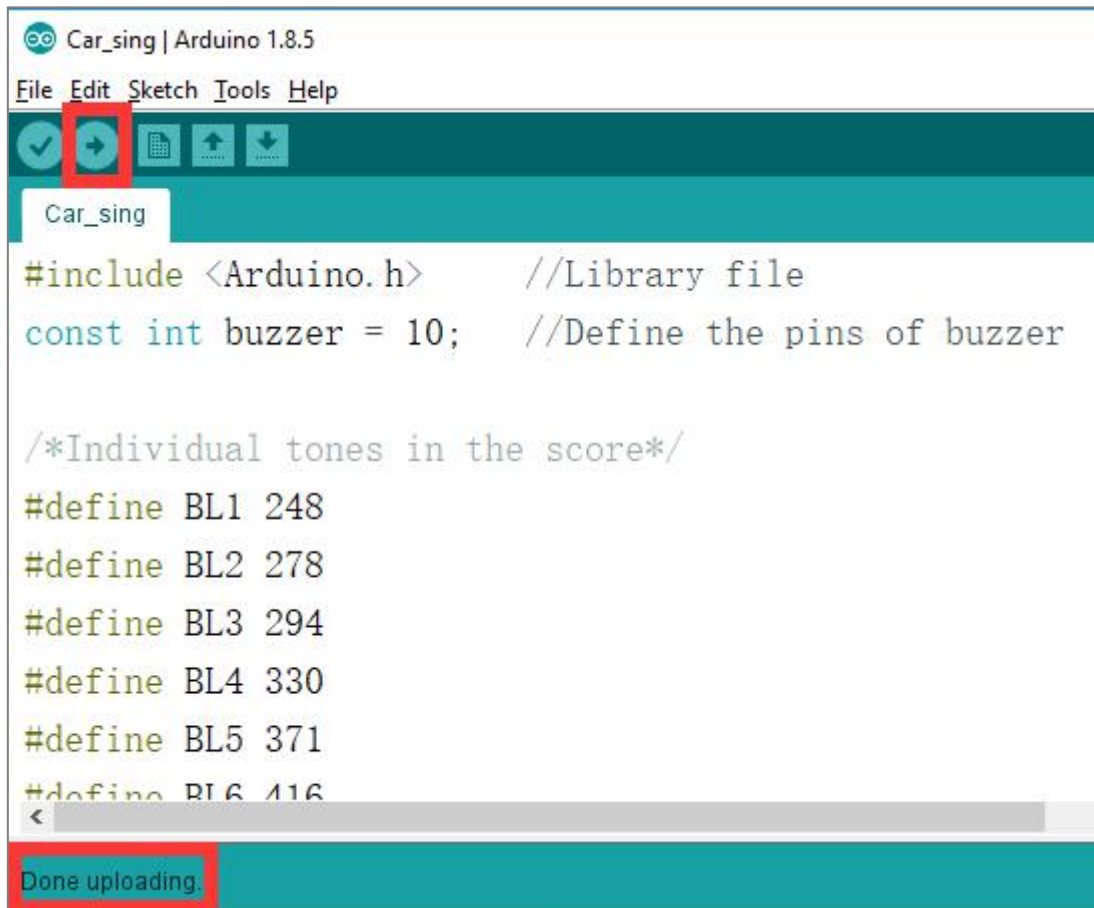
Done compiling
Sketch uses 5750 bytes (17%) of program storage space. Maximum is 32256 bytes.
Global variables use 521 bytes (25%) of dynamic memory, leaving 1527 bytes for local variabl

```

4.2 In the menu bar of Arduino IDE, we need to select **【Tools】** --- **【Port】** --- selecting the port that the serial number displayed by the device manager just now, as shown in the figure below.



4.3 After the selection is completed, you need to click “→” under the menu bar to upload the code to the UNO board. When the word “Done uploading” appears in the lower left corner, the code has been successfully uploaded to the UNO board, as shown in the figure below.



5. Phenomenon

After the program is downloaded successfully,

After the program is downloaded successfully, if the gesture recognition module be initialized successfully, the serial port will print "INIT OK", otherwise it will print "INIT ERROR, CODE:".

If it not be initialized, we can press the reset button on Arduino board to restart the program and initialize module.

When the module is initialized successfully.

Put the gesture recognition module in the vertical direction, open your palm to face the module, Swing over your palm from left to right in front of the module, RGB light will become red.

Swing over your palm from left to right in front of the module, RGB light will become blue.

Swing over your palm from bottom to top in front of the module, RGB light will become yellow.

Swing over your palm from top to bottom in front of the module, RGB light will become purple.

Approach from front to back directly in front of the module, RGB light will become sky blue.

Wave your hand in front of the module for a while, RGB light will light off.