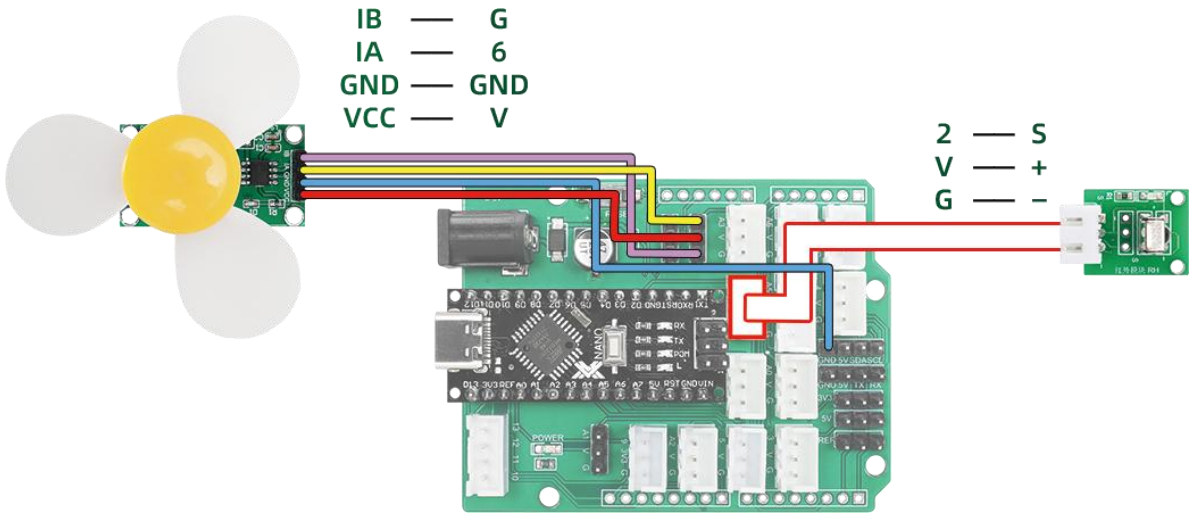
Project 18-Infrared remote control fan

1. project description

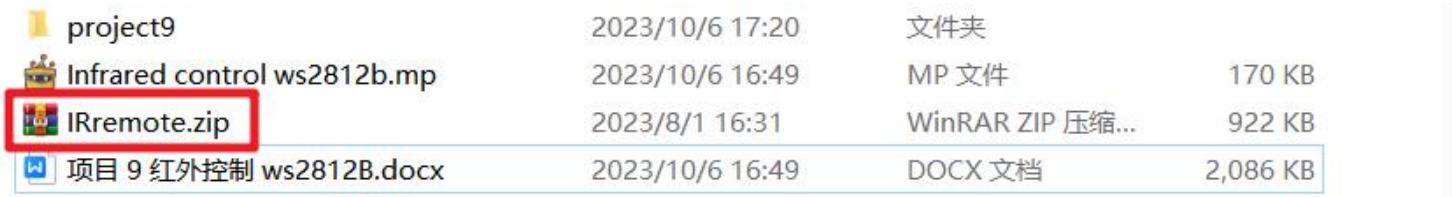
In this project , you will learn how to use an infrared remote control to start, stop, and adjust the speed of a small DC motor. Use PWM to adjust the fan speed. Set the buttons in the program. The "OK" button is a switch. When buttons 1 to 9 are pressed , the wind speed is from 1 to 9. Press button 0 to stop the fan.

2. Project wiring diagram



3. Download Arduino code

Confirm that the infrared remote control library file IRremote.zip has been added successfully. If it has not been added, please go back to item 9 to see how to add the library.



Open the project Arduino code file (path: project 18 infrared control fan\project18\project18.ino)

Connect the main control board to the computer using USB, select the board type as Nano, select the newly displayed COM number, click "Download" to start compiling and downloading the program to the main control board.

Code analysis:

```
#include <IRremote.h>     //添加红外遥控库    Add infrared remote control library

#define Level0  0XFF9867  //按钮 0    Button 0
#define Level1  0XFFA25D  //按钮 1    Button 1
#define Level2  0XFF629D  //按钮 2    Button 2
#define Level3  0XFFE21D  //按钮 3    Button 3
#define Level4  0XFF22DD  //按钮 4    Button 4
#define Level5  0XFF02FD  //按钮 5    Button 5
#define Level6  0XFFC23D  //按钮 6    Button 6
#define Level7  0XFFE01F  //按钮 7    Button 7
#define Level8  0XFFA857  //按钮 8    Button 8
#define Level9  0XFF906F  //按钮 9    Button 9
#define SpeedUp   0XFF18E7//按钮 上   Button up
#define SlowDown  0XFF4AB5//按钮 下   Button down
#define OFF_ON    0XFF38C7//按钮启动    Button  OK

#define receiver 2  //定义红外接收器引脚2   Define pin 2 of the infrared receiver
#define FanPinA 6   //定义风扇电机引脚1A pin6    Define the fan motor pin 1A pin6
bool switchflag = false;//按钮开关初始设置值为关    The initial setting value of the button switch is off
int FanSpeed = 0;       //风扇速度值初始设置为0   The fan speed value is initially set to 0
IRrecv irrecv(receiver);//创建` irrecv `实例     create instance of 'irrecv'
decode_results results; //创建` decode_results `实例     create instance of 'decode_results'
```

```
24  void setup()
25  {
26      pinMode(receiver,INPUT);
27      irrecv.enableIRIn();       //启动红外接收器     Start the receiver
28      pinMode(FanPinA, OUTPUT); //设置连接风扇电机引脚6为输出   Set pin 6 of the connected fan motor as the output
29      analogWrite(FanPinA,0);    //初始设置风扇电机引脚6写入pwm为0,让电机停止
30      Serial.begin(9600);        //设置波特率9600    Set the baud rate to 9600
31  }
32
33  void loop()
34  {
35      if (irrecv.decode(&results))           //是否接收到红外信号    have we received an IR signal?
36      {
37          Serial.print("value = ");
38          Serial.println(results.value, HEX); //将接收到红外编码值打印输出到串口监视器 Print the received infrared
39          if(results.value==OFF_ON){
40            switchflag=!switchflag;          //开关按钮取反，按一下开，再按一下就关    The switch button is revers
41          }
42          if(switchflag==true){              //在开关打开状态下    When the switch is on
43              switch (results.value)         //按下不同档位按钮控制风扇不同的速度    Press the button of different
44              {
45              case  Level0:FanSpeed = 0;break;    //按钮0~9控制速度0~255    button 0 to 9 controls the speed 0 to 2
46              case  Level1:FanSpeed = 120;break;
```

```
        case  Level9:FanSpeed = 255;break;
        case  SpeedUp:                      //按钮“上”加速、按钮“下”减速    Button "up" to speed up, button "down" to slow down
            FanSpeed += 25;
            if(FanSpeed > 255 ){
                FanSpeed = 255;
            }
            break;
        case  SlowDown:
            FanSpeed -= 25;
            if(FanSpeed < 0 ){
                FanSpeed = 0;
            }
            break;
        default:break;
        }
    }else{
        FanSpeed=0;     //关闭风扇 Turn off the fan
    }
    // Serial.print("speed = ");
    // Serial.println(FanSpeed);    //打印速度值到串口监视器    Print speed value to serial port monitor
    analogWrite(FanPinA,FanSpeed);  //给风扇电机引脚A写入pwm数值FanSpeed
    irrecv.resume();                //接收下一个红外信号   receive the next value
```

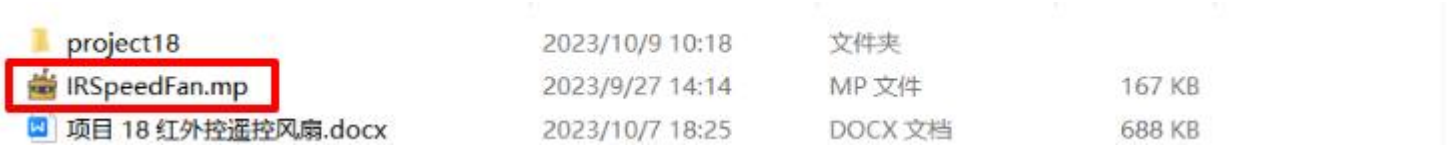
Project effect:

Only when the switch "OK" button is turned on, the speed adjustment buttons 0~9 will work. Press the switch button "OK" for the first time to turn it on, and press it again to turn it off.

Speeds 0~9 correspond to pwm values of 120~255.

4. Download Mind+ graphical code

Open the project Mind+code file (path: Project 18 Infrared Control Relay\IRSpeedFan.mp)



Connect the main control board to the computer with a USB cable and select the newly appeared CH340 serial port COM number. Click "Upload to Device" to complete the code upload.

Programming analysis: (For the infrared coding value corresponding to the button, please see the comparison table of item 9)


Nano 主程序开始
设置串口波特率为 9600
设置数字引脚 6 输出为 低电平
设置 风扇转速 的值为 120
循环执行
串口 字符串输出 变量 风扇转速 换行
设置 红外编码 的值为 读取红外接收模块 数字引脚 2
开关是否打开
上下控制加减速
如果 变量 fan switch = 1 那么执行
设置pwm引脚 6 输出 变量 风扇转速
否则
设置pwm引脚 6 输出 0


定义 开关是否打开
如果 变量 红外编码 = FF38C7 那么执行
如果 变量 开关转换 = 1 那么执行
设置 fan switch 的值为 1
设置 开关转换 的值为 0
NANO 串口 字符串输出 开 换行
否则 如果 变量 开关转换 = 0 那么执行
设置 fan switch 的值为 0
设置 开关转换 的值为 1
NANO 串口 字符串输出 关 换行
“OK”按键打开或关闭风扇


定义 上下控制加减速
如果 变量 红外编码 = FF18E7 那么执行
如果 变量 fan switch = 1 那么执行
将 风扇转速 增加 10
如果 变量 风扇转速 >= 240 那么执行
设置 风扇转速 的值为 240
否则 如果 变量 红外编码 = FF4AB5 那么执行
如果 变量 fan switch = 1 那么执行
将 风扇转速 增加 -10
如果 变量 风扇转速 <= 60 那么执行
设置 风扇转速 的值为 60
“上” 按键控制速度加
“下” 按键控制速度减