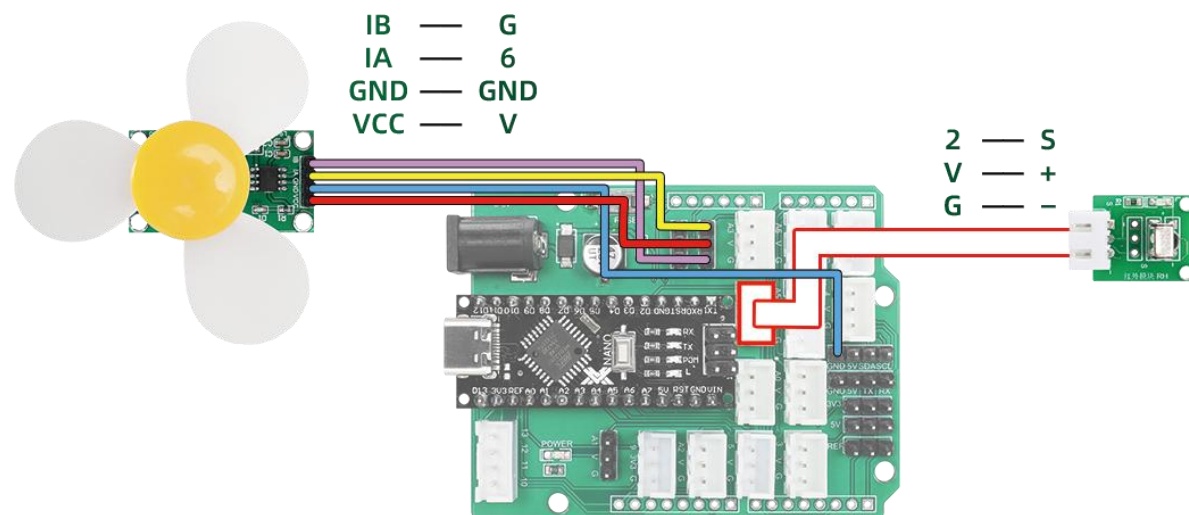


Project 18-Infrared remote control fan

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.

 project9	2023/10/6 17:20	文件夹	
 Infrared control ws2812b.mp	2023/10/6 16:49	MP 文件	170 KB
 IRremote.zip	2023/8/1 16:31	WinRAR ZIP 压缩...	922 KB
 项目 9 红外控制 ws2812B.docx	2023/10/6 16:49	DOCX 文档	2,086 KB

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

 project18	2023/10/9 10:18	文件夹	
 IRSpeedFan.mp	2023/9/27 14:14	MP 文件	167 KB
 项目 18 红外控遥控风扇.docx	2023/10/7 18:25	DOCX 文档	688 KB

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:

```

1  #include <IRremote.h>      //添加红外遥控库      Add infrared remote control library
2
3  #define Level0  0xFF9867  //按钮 0      Button 0
4  #define Level1  0xFFA25D  //按钮 1      Button 1
5  #define Level2  0xFF629D  //按钮 2      Button 2
6  #define Level3  0xFFE21D  //按钮 3      Button 3
7  #define Level4  0xFF22DD  //按钮 4      Button 4
8  #define Level5  0xFF02FD  //按钮 5      Button 5
9  #define Level6  0xFFC23D  //按钮 6      Button 6
10 #define Level7  0xFFE01F  //按钮 7      Button 7
11 #define Level8  0xFFA857  //按钮 8      Button 8
12 #define Level9  0xFF906F  //按钮 9      Button 9
13 #define SpeedUp  0xFF18E7//按钮 上      Button up
14 #define SlowDown 0xFF4AB5//按钮 下      Button down
15 #define OFF_ON   0xFF38C7//按钮启动      Button OK
16
17 #define receiver 2 //定义红外接收器引脚2  Define pin 2 of the infrared receiver
18 #define FanPinA 6  //定义风扇电机引脚1A pin6  Define the fan motor pin 1A pin6
19 bool switchflag = false;//按钮开关初始设置值为关  The initial setting value of the button switch is off
20 int FanSpeed = 0; //风扇速度值初始设置为0  The fan speed value is initially set to 0
21 IRrecv irrecv(receiver);//创建`irrecv`实例  create instance of 'irrecv'
22 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 reversed
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;

```

```

54     case Level9:FanSpeed = 255;break;
55     case SpeedUp:           //按钮“上”加速、按钮“下”减速      Button "up" to speed up, button "down" to slow down
56         FanSpeed += 25;
57         if(FanSpeed > 255 ){
58             FanSpeed = 255;
59         }
60         break;
61     case SlowDown:
62         FanSpeed -= 25;
63         if(FanSpeed < 0 ){
64             FanSpeed = 0;
65         }
66         break;
67     default:break;
68     }
69 }else{
70     FanSpeed=0;      //关闭风扇 Turn off the fan
71 }
72 // Serial.print("speed = ");
73 // Serial.println(FanSpeed);      //打印速度值到串口监视器      Print speed value to serial port monitor
74 analogWrite(FanPinA,FanSpeed);    //给风扇电机引脚A写入pwm数值FanSpeed
75 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)

project18	2023/10/9 10:18	文件夹	
IRSpeedFan.mp	2023/9/27 14:14	MP 文件	167 KB
项目 18 红外遥控风扇.docx	2023/10/7 18:25	DOCX 文档	688 KB

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)



The image shows a Scratch script designed to control a fan switch based on an infrared (IR) code. The script is written in a block-based programming language, likely Scratch, and is set against a grid background.

Script Structure:

- Define Variable:** A pink block labeled "定义 开关是否打开" (Define whether the switch is open) is at the top.
- Conditional Execution:** An orange "如果" (If) block checks if the variable "变量 红外编码" (Variable IR Code) equals "FF38C7". If true, it executes the following blocks:
 - Inner Conditional:** A green "如果" (If) block checks if the variable "变量 开关转换" (Variable Switch Toggle) equals "1". If true, it executes:
 - Set "fan switch" to 1.
 - Set "开关转换" (Switch Toggle) to 0.
 - Serial Port String Output: "开" (Open) followed by a line break.
 - Else Conditional:** A green "否则 如果" (Else If) block checks if "变量 开关转换" equals "0". If true, it executes:
 - Set "fan switch" to 0.
 - Set "开关转换" (Switch Toggle) to 1.
 - Serial Port String Output: "关" (Close) followed by a line break.

Message Box: A yellow message box with a close button (X) is displayed on the right, containing the text: "OK" 按键打开或关闭风扇 (OK button opens or closes the fan).

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 \geq 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 \leq 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