1-2 Automatic temperature control version

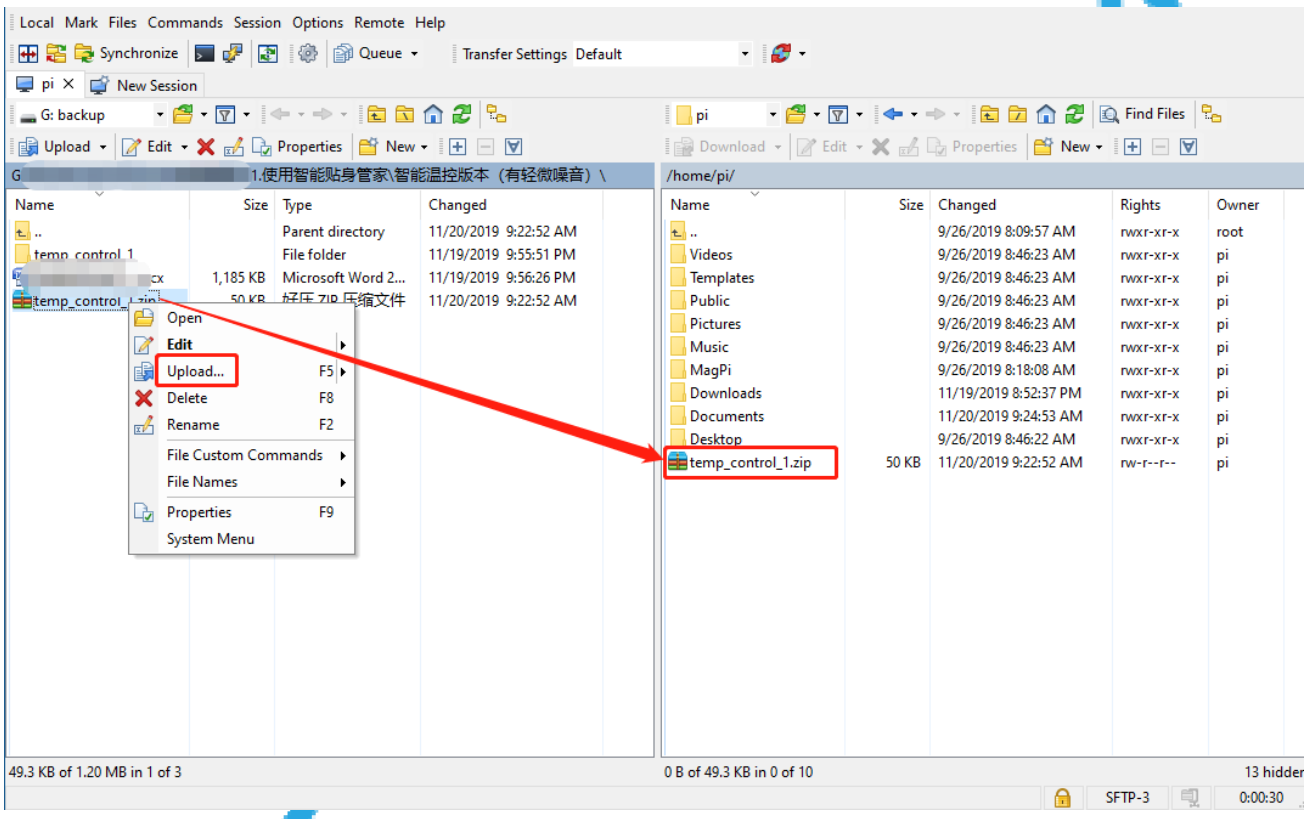
The Raspberry Pi RGB_Cooling_HAT needs to be properly plugged into the GPIO port of the Raspberry Pi and open the Raspberry Pi system **I2C** function.

This experimental phenomenon shows that the OLED displays the CPU usage, CPU temperature, running memory usage, disk usage and IP address of the Raspberry Pi. The RGB light turns on the special effect. Then speed of fan will be adjusted due to CPU temperature.

1. File transfer

1.1 Install **WinSCP** tool on the computer side, connect the Raspberry Pi and transfer the **temp_control_1.zip** package to the pi directory of the Raspberry Pi.

Path of WinSCP:[Raspberry Pi RGB_Cooling_HAT]---[Tools]---[winscp556_setup.1416364912.exe]



1.2 Extract file

Open the Raspberry Pi terminal and input command ls to find the temp_control_1.zip file. As shown below:

```
pi@raspberrypi:~ $ ls
Desktop    Downloads  Music      Public            Templates
Documents  MagPi      Pictures   temp_control_1.zip  Videos
```

Input command to extract file:

unzip temp_control_1.zip

```
pi@raspberrypi:~ $ unzip temp_control_1.zip
Archive:  temp_control_1.zip
   creating: temp_control_1/
  inflating: temp_control_1/fan
  inflating: temp_control_1/fan.c
  inflating: temp_control_1/fan_temp
  inflating: temp_control_1/fan_temp.c
  inflating: temp_control_1/install_1.sh
  inflating: temp_control_1/oled
  inflating: temp_control_1/oled.c
  inflating: temp_control_1/oled_fonts.h
  inflating: temp_control_1/rgb
  inflating: temp_control_1/rgb.c
  inflating: temp_control_1/rgb_effect
  inflating: temp_control_1/rgb_effect.c
  inflating: temp_control_1/rgb_temp
  inflating: temp_control_1/rgb_temp.c
  inflating: temp_control_1/ssd1306_i2c.c
  inflating: temp_control_1/ssd1306_i2c.h
  inflating: temp_control_1/start_1.desktop
  inflating: temp_control_1/start_1.sh
  inflating: temp_control_1/temp_control_1
  inflating: temp_control_1/temp_control_1.c
```

2.Compiling and running program

2.1 Input command to enter temp_control find file:

cd temp_control_1/

ls

```
pi@raspberrypi:~ $ cd temp_control_1/
pi@raspberrypi:~/temp_control_1 $ ls
fan          install_1.sh  rgb          rgb_temp       start_1.desktop
fan.c        oled          rgb.c        rgb_temp.c     start_1.sh
fan_temp     oled.c        rgb_effect   ssd1306_i2c.c  temp_control_1
fan_temp.c   oled_fonts.h  rgb_effect.c ssd1306_i2c.h  temp_control_1.c
```

2.2 Input command to compile:

gcc -o temp_control_1 temp_control_1.c ssd1306_i2c.c -lwiringPi

```
pi@raspberrypi:~/temp_control_1 $ gcc -o temp_control_1 temp_control_1.c ssd1306
_i2c.c -lwiringPi
ssd1306_i2c.c: In function 'ssd1306_fillRect':
ssd1306_i2c.c:724:3: warning: implicit declaration of function 'swap_values' [-W
implicit-function-declaration]
   swap_values(x, y);
   ^~~~~~~~~~~
pi@raspberrypi:~/temp_control_1 $ ls
fan          install_1.sh  rgb          rgb_temp       start_1.desktop
fan.c        oled          rgb.c        rgb_temp.c     start_1.sh
fan_temp     oled.c        rgb_effect   ssd1306_i2c.c  temp_control_1
fan_temp.c   oled_fonts.h  rgb_effect.c ssd1306_i2c.h  temp_control_1.c
pi@raspberrypi:~/temp_control_1 $
```

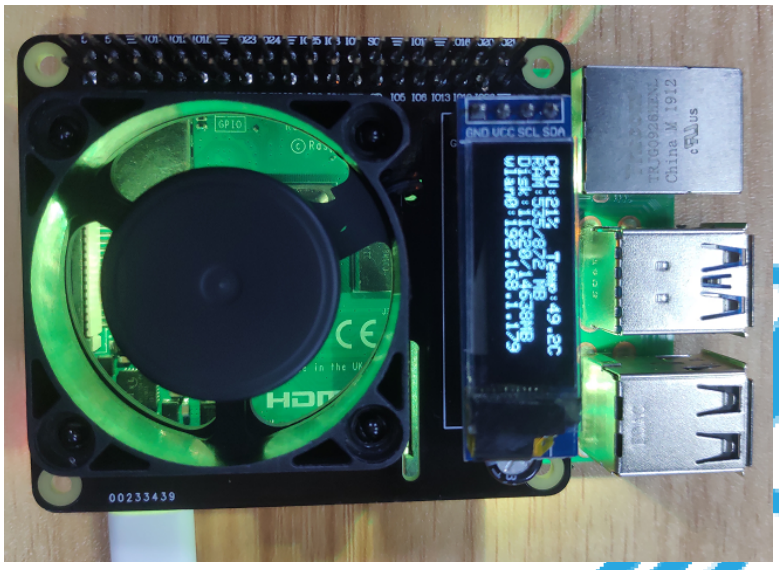
Among them, the gcc compiler is called, -o means to generate the file, **temp_control_1** is the generated file name, **temp_control_1.c** is the source program, **ssd1306_i2c.c** is the library that drives oled, and **-lwiringPi** is the wiringPi library that references the Raspberry Pi.

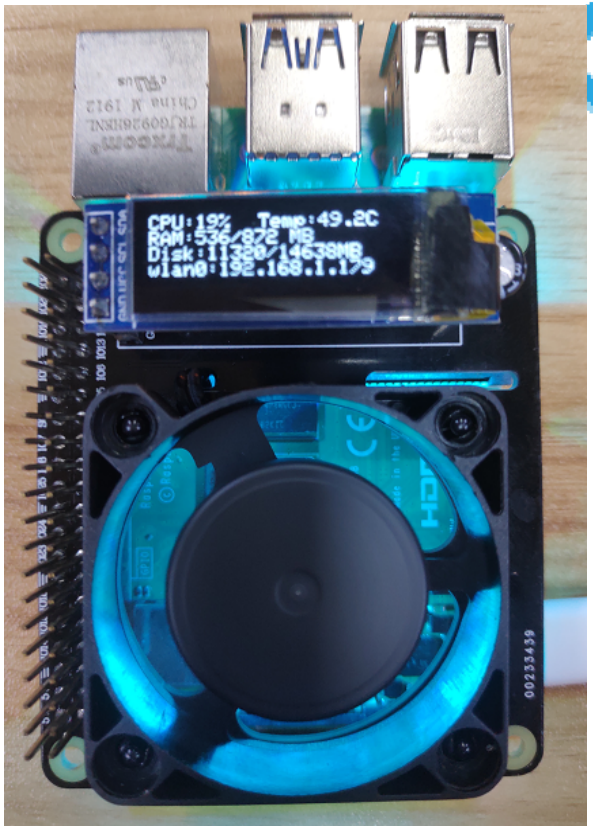
2.3 Input command to run the program

./temp_control_1

```
pi@raspberrypi:~/temp_control_1 $ ./temp_control_1
init ok!
```

At this point, the system will prompt “init ok!”, RGB lights show special effects, and the OLED screen displays information such as CPU usage, CPU temperature, running memory usage, disk usage and IP address of the Raspberry Pi. And speed of fan will be adjusted due to CPU temperature.





3. Add boot self-starting

3.1 Input command to enter relate folder

cd /home/pi/temp_control_1

3.2 Input command t view script file

ls

```
pi@raspberrypi:~/temp_control_1 $ ls
fan          install_1.sh  rgb           rgb_temp       start_1.desktop
fan.c        oled          rgb.c         rgb_temp.c     start_1.sh
fan_temp     oled.c        rgb_effect    ssd1306_i2c.c  temp_control_1
fan_temp.c   oled_fonts.h  rgb_effect.c  ssd1306_i2c.h  temp_control_1.c
pi@raspberrypi:~/temp_control_1 $
```

3.3 Run script command to install

sudo sh install_1.sh

Finally, system will prompt “install ok!”

```
pi@raspberrypi:~/temp_control_1 $ sudo sh install_1.sh
ssd1306_i2c.c: In function 'ssd1306_fillRect':
ssd1306_i2c.c:724:3: warning: implicit declaration of function 'swap_values' [-W
implicit-function-declaration]
   swap_values(x, y);
   ^~~~~~~~~~~
install ok!
pi@raspberrypi:~/temp_control_1 $
```

！Note: If you already have the autostart folder, it will be prompt can not create the autostart folder, which will not affect our use.

4.Restart Raspberry pi

Input command to restart Raspberry Pi:

sudo reboot