

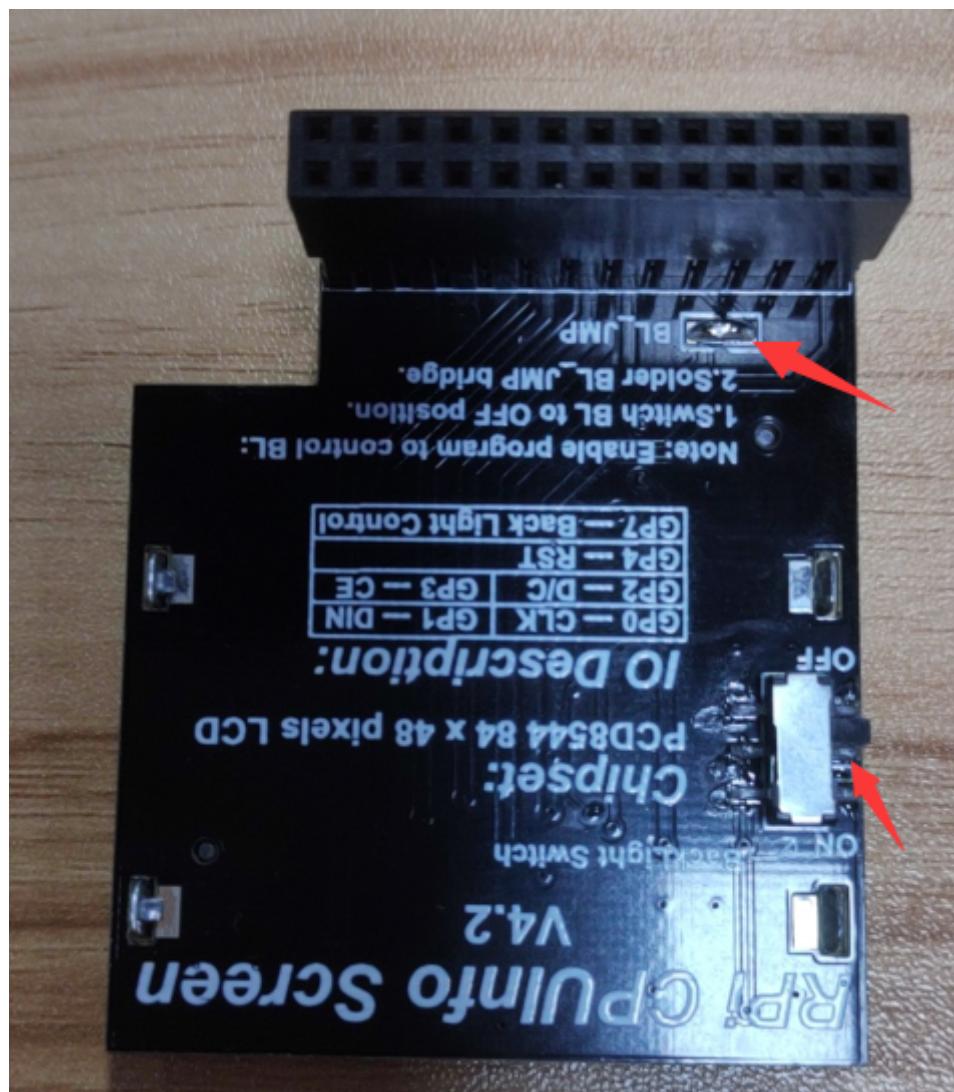
7.Backlight control

After CPU Info LCD screen is correctly inserted into the Raspberry Pi, you need to compile and run the program to display it normally.

This experiment controls the backlight effect through the program: the backlight will flash every 0.5 seconds.

1. Welding The BL_JMP of 1.6 LCD

!!!Note: Before welding BL_JMP, you must turn BackLight Swith to OFF. Otherwise, when GPIO7 outputs high level (3.3V), it will cause a short circuit. Because the short circuit current is too large, it is likely to burn out the Raspberry Pi and the display. Therefore, users who need to use software to control the backlight effect will turn the switch to the OFF position in reverse order.



the Raspberry Pi, so we must install the wiringPi library file.

Enter the following command to install the wiringPi library. Users who have already installed the wiringPi library can ignore this step.

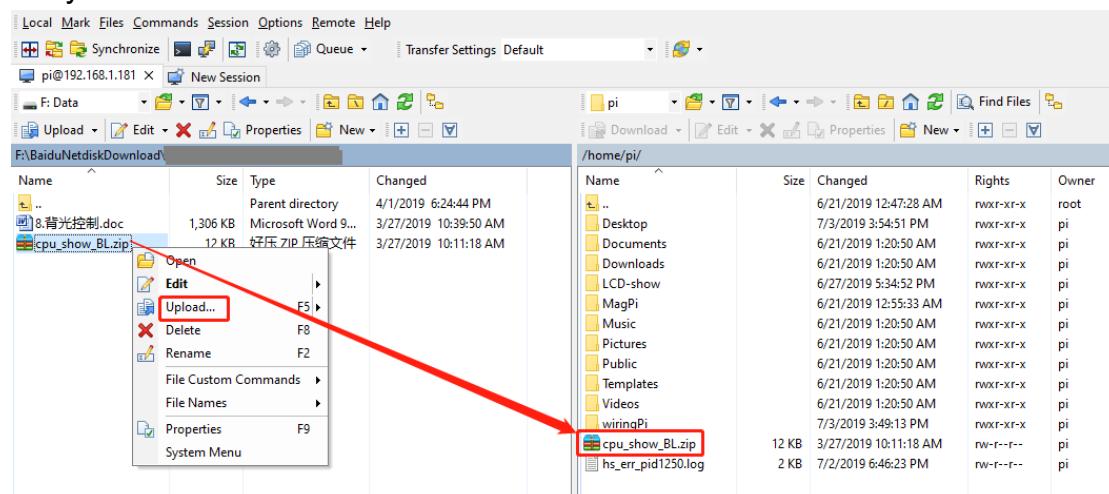
```
cd ~
git clone git://git.drogon.net/wiringPi
cd wiringPi
./build
```

3. Install Drive

1) Transfer the driver file to the Raspberry Pi

You need to install the Winscp tool on your computer. After connecting to the Raspberry Pi, transfer the [cpu_show_BL.zip](#) package from this folder to the pi directory of the Raspberry Pi.

As shown below, drag and drop [cpu_show_BL.zip](#) directly into the Raspberry Pi system.



2) Extract file

Open the Raspberry Pi terminal and find the [cpu_show_BL.zip](#) file.

Enter command:

ls

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

Enter command:

unzip cpu_show_BL.zip

```
pi@raspberrypi:~ $ unzip cpu_show_BL.zip
Archive: cpu_show_BL.zip
  creating: cpu_show_BL/
  creating: cpu_show_BL/BL/
  inflating: cpu_show_BL/BL/bl
  inflating: cpu_show_BL/BL/test.c
  inflating: cpu_show_BL/bl.c
  inflating: cpu_show_BL/PCD8544.c
  inflating: cpu_show_BL/PCD8544.h
  inflating: cpu_show_BL/README.txt
pi@raspberrypi:~ $
```

3) Enter the program folder

```
cd ~/cpu_show_BL
```

```
ls
```

```
pi@raspberrypi:~/cpu_show_BL $ ls
BL bl.c PCD8544.c PCD8544.h README.txt
pi@raspberrypi:~/cpu_show_BL $
```

4) Compiler file

Enter command:

```
gcc -o bl bl.c PCD8544.c -lwiringPi
```

```
pi@raspberrypi:~/cpu_show_BL $ gcc -o bl bl.c PCD8544.c -lwiringPi
pi@raspberrypi:~/cpu_show_BL $ ls
bl BL bl.c PCD8544.c PCD8544.h README.txt
pi@raspberrypi:~/cpu_show_BL $
```

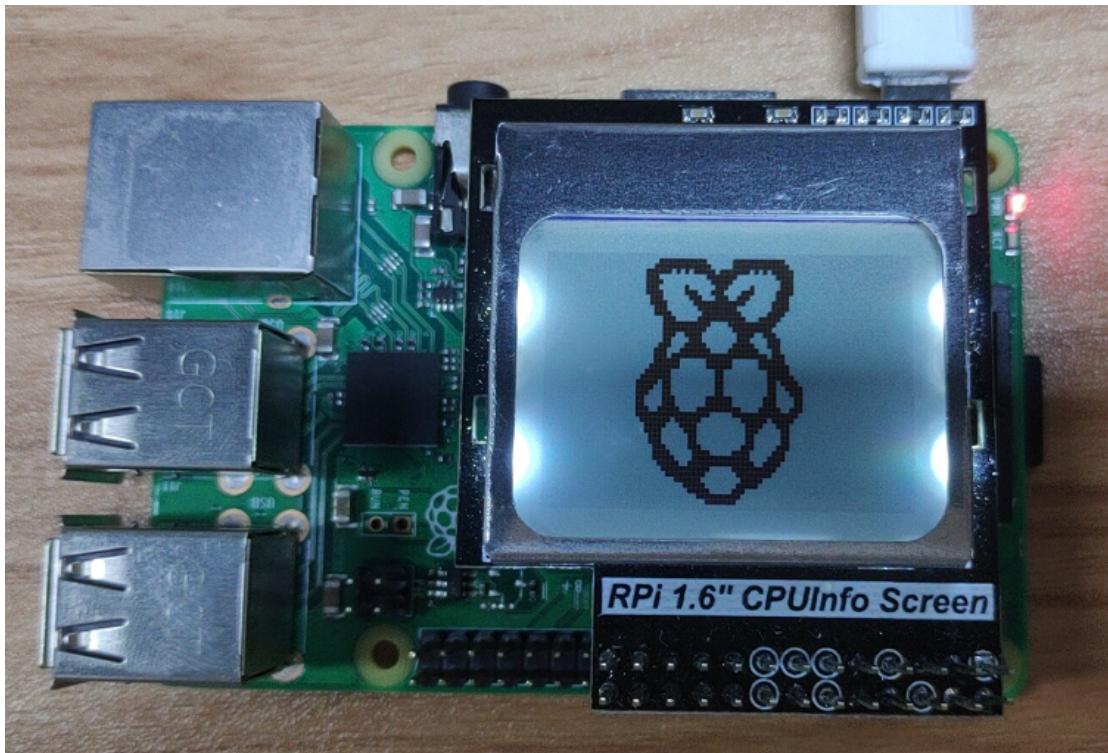
5) Running procedure

Enter command:

```
./bl
```

```
pi@raspberrypi:~/cpu_show_BL $ ./bl
Raspberry Pi PCD8544 sysinfo display
=====
|
```

The Raspberry Pi icon is displayed on the CPU Info screen and the backlight flashes every 0.5s



4.Code analysis

Enter command:

nano bl.c

This command is to open bl.c

- 1) The following sections are the LCD pin settings:

```
// pin setup
int _din = 1;
int _sclk = 0;
int _dc = 2;
int _rst = 4;
int _cs = 3;
```

- 2) Main function

```

int main (void)
{
    // print infos
    printf("Raspberry Pi PCD8544 sysinfo display\n");
    printf("=====\\n");

    // check wiringPi setup
    if (wiringPiSetup() == -1)          wiringPi initialization
    {
        printf("wiringPi-Error\\n");
        exit(1);
    }

    // init and clear lcd           LCD initialization
    LCDInit(_sclk, _din, _dc, _cs, _rst, contrast);
    LCDclear();

    //init GPIO7                   GPIO initialization
    pinMode (7, OUTPUT);

    delay(500);
}

```

3)The front part is the initialization program and the prompt information; the latter part is a for loop.

```

for (;;)
{
    // show logo
    LCDshowLogo();
    //LED ON
    digitalWrite (7, HIGH);
//    printf("LED On\\n");
    delay (500);
    //LED OFF
    digitalWrite (7, LOW);
//    printf("LED Off\\n");
    delay (500);

}
return 0;
}

```

Note: If you have added a boot-up user, first move the xx.desktop file displayed on the 1.6-inch screen in the /home/pi/.config/autostart folder to the pi directory.

If you do not close a program that has already been run, the screen will always change due to conflicts after the program runs.

For example, there is a file driver.desktop that drives a 1.6-inch screen in the /home/pi/.config/autostart folder.

```
pi@raspberrypi:~/.config/autostart $ ls  
start.desktop  
pi@raspberrypi:~/.config/autostart $ █
```

We need to move **start.desktop** to the pi directory:

Enter command:

```
mv /home/pi/.config/autostart/start.desktop /home/pi
```

Then we can enter command:

```
sudo reboot
```

This command is to restart the Raspberry Pi.