

Pin output PWM

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1. Driver library
2. LED

For controlling the Raspberry Pi GPIO pins, our tutorial uses the GPIO Zero library.

1. Driver library

If users have used the RPi.GPIO library and wiringPi library before, they will find that the GPIO Zero library and the RPi.GPIO library/wiringPi library handle pins differently:

Driver library	Control pin mode
GPIO Zero Library	Device Class: LED (Output)
RPi.GPIO library/wiringPi library	Output status

The GPIO Zero library has more control methods associated with the device, while the RPi.GPIO library and wiringPi library control pins directly.

2. LED

In the GPIO Zero library, we can use the LED interface to control the PWM output of the pin.

- Control BCM pin number 17 PWM output: Manually set brightness

```
from gpiozero import PWMLED
from time import sleep

led = PWMLED(17)

while True:
    led.value = 0 #off
    sleep(1)
    led.value = 0.5 # half brightness
    sleep(1)
    led.value = 1 # full brightness
    sleep(1)
    led.value = 0.5 # half brightness
    sleep(1)
    led.value = 0 #off
    sleep(1)
```

- Control BCM pin number 17 PWM output:

```
from gpiozero import PWMLED
from signal import pause

led = PWMLED(17)

led.pulse(3,1)

pause()
```

led.pulse can set the fade-in and fade-out time: in the code, it takes 3 seconds from off to on (fade in), and 1 second from on to off (fade out) (if no parameters are used, the default is 1 second).