

Iot

Reading / Writing
analogue devices
LED + Game-controller

Recapitulation

- Start up the Raspberry Pi
 - Burn the image to SD-card
 - See / get access to the R-Pi – some problems to make the windows update DNS
 - <https://github.com/adafruit/Adafruit-Pi-Finder>
 - Try the Linux environment
- Start of the Python programming
 - Simple GPIO access
 - Remember to use Python3

LED Light (RGB)



LED controls

- Set RGB to on | off (True | False)

```
GPIO.setmode(GPIO.BCM)
```

```
GPIO.setup(14, GPIO.OUT)
```

```
GPIO.setup(15, GPIO.OUT)
```

```
GPIO.setup(18, GPIO.OUT)
```

```
GPIO.output(14, GPIO.LOW)
```

```
GPIO.output(15, GPIO.HIGH)
```

```
GPIO.output(18, GPIO.HIGH)
```

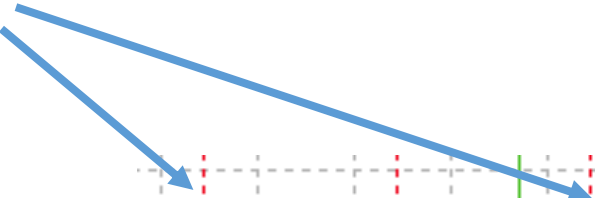
- Set RGB to different level
 - PWM Pulse-Width Modulation
 - Could also be useful when working with motors

Pulse-Width Modulation

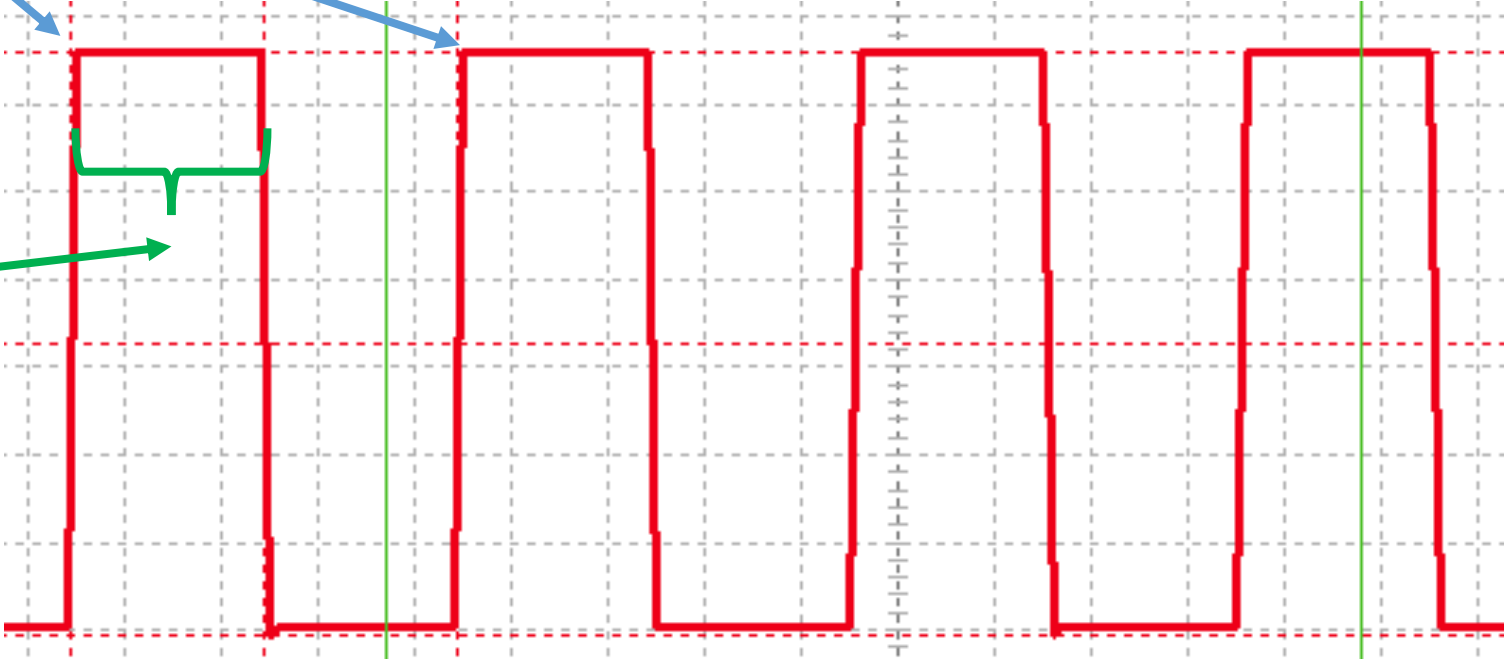
- “Do you remember when you were a kid, how you sometimes flicked the light switch on and off repeatedly, really quickly, to see what would happen?”
- And you were told not to do it in case something bad happened (and it never did)? That was crude PWM.”
- raspi.tv

Pulse-Width Modulation

- Frequency



- Duty Cycle



PWM Python example

`GPIO.setup(25, GPIO.OUT)` ← set the pin to be output

`p = GPIO.PWM(25, 50)` ← activate PWM at 50 hertz
`(frequency)`

`p.start(50)` ← start PWM with a 50%
`Duty Cycle`

`p.ChangeFrequency(100)` ← Change frequency
`p.ChangeDutyCycle(20)` ← Set the Duty Cycle to 20%

`p.stop()`

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NOW

Your turn to work

