Wayland GWC Reference
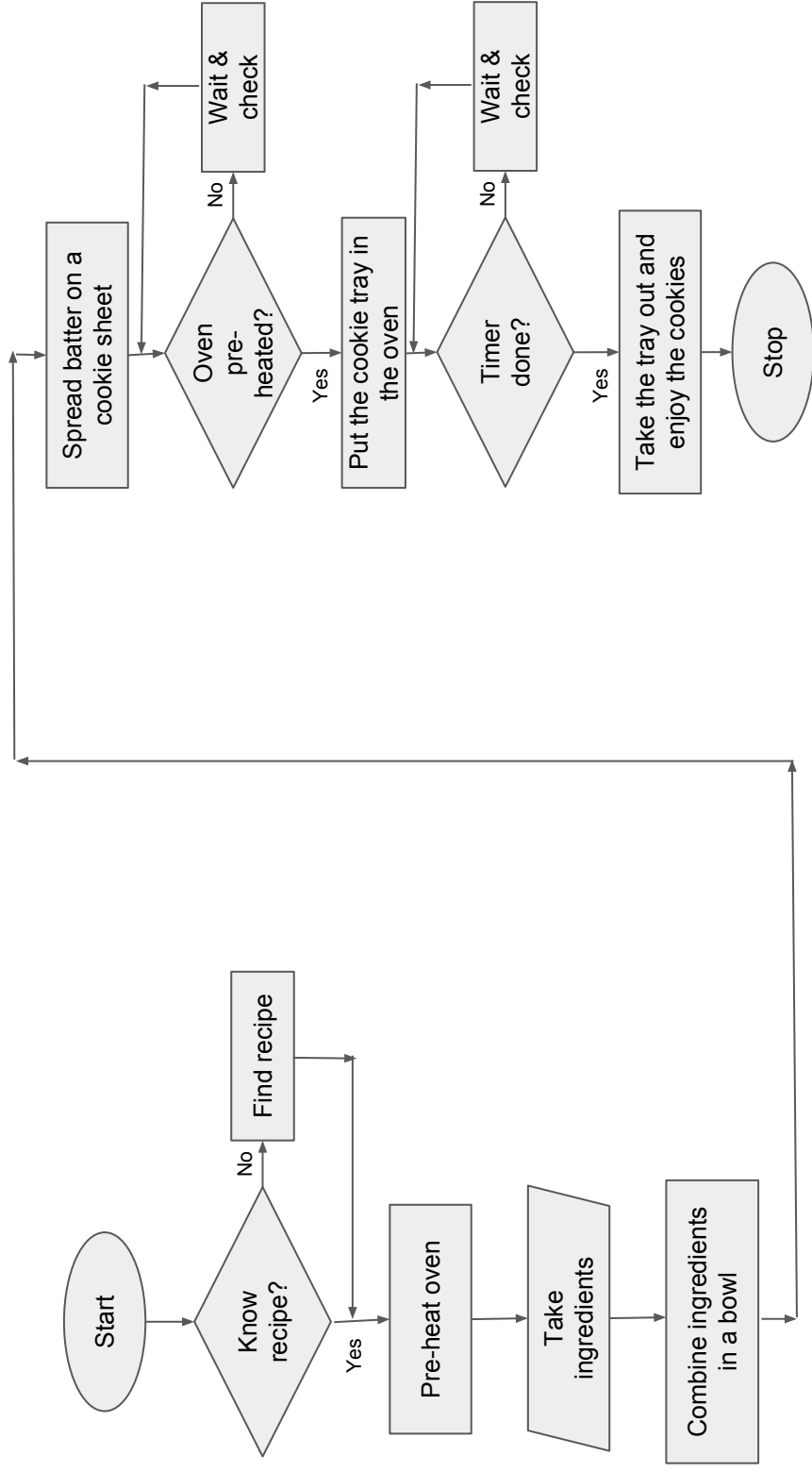
Flowcharts and diagrams - examples

How to bake cookies?
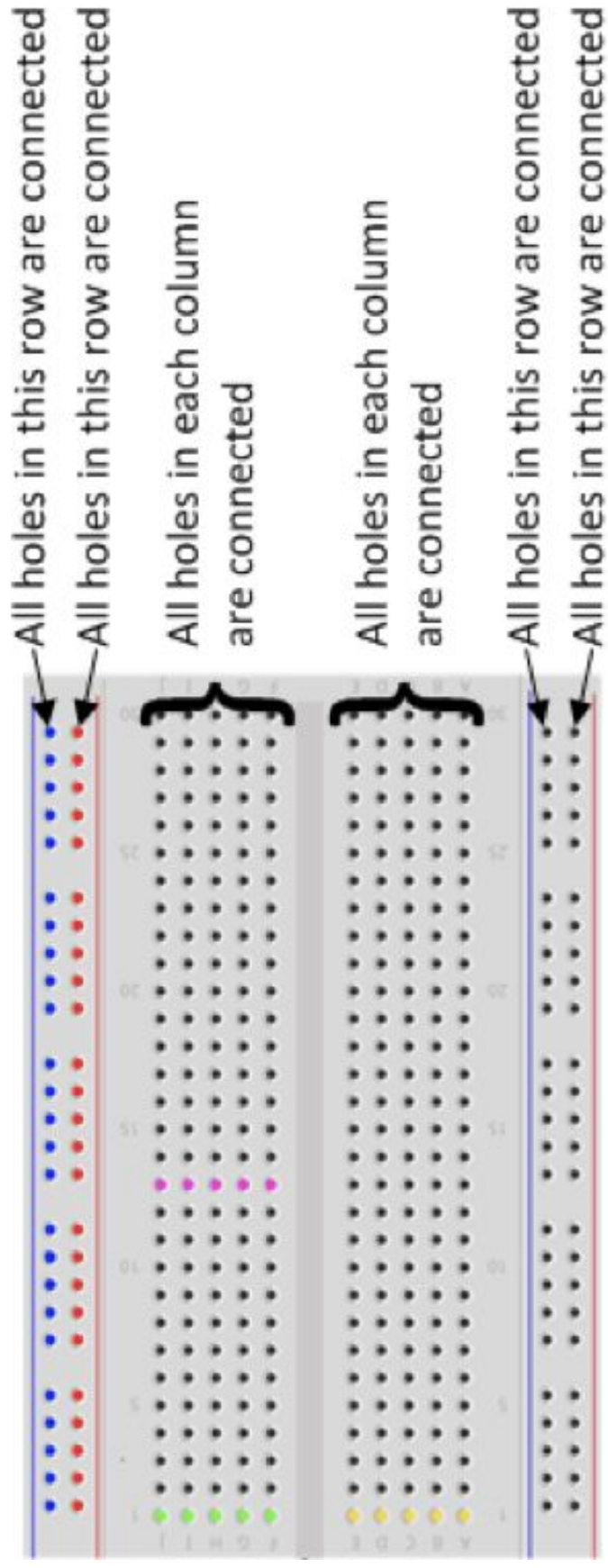
Start → Know recipe?

Know recipe? — No → Find recipe → (back to Know recipe?)

Know recipe? — Yes → Pre-heat oven → Take ingredients → Combine ingredients in a bowl → Spread batter on a cookie sheet

Spread batter on a cookie sheet → Oven pre-heated?

Oven pre-heated? — No → Wait & check → (back to Oven pre-heated?)

Oven pre-heated? — Yes → Put the cookie tray in the oven → Timer done?

Timer done? — No → Wait & check → (back to Timer done?)

Timer done? — Yes → Take the tray out and enjoy the cookies → Stop

Last week's code

```
Start
    │
    ▼
led = LED(25)
delay = 1
    │
    ▼
Is True == True?  ──No──▶  Stop
    │
   Yes
    ▼
Turn led on
    │
    ▼
Print "led On"
    │
    ▼
Sleep
    │
    ▼
Turn led off
    │
    ▼
Print "led Off"
    │
    ▼
Sleep ──▶ (back to Is True == True?)
```

Circuit reference

Quick review: Breadboards

All holes in this row are connected

All holes in this row are connected

All holes in each column are connected

All holes in each column are connected

All holes in this row are connected

All holes in this row are connected

Simple LED

Wire up an LED - test with power

to GROUND (GND) - Pin 6

Bottom pin is long (+)

3.3V power (pin 1) just to test circuit

fritzing
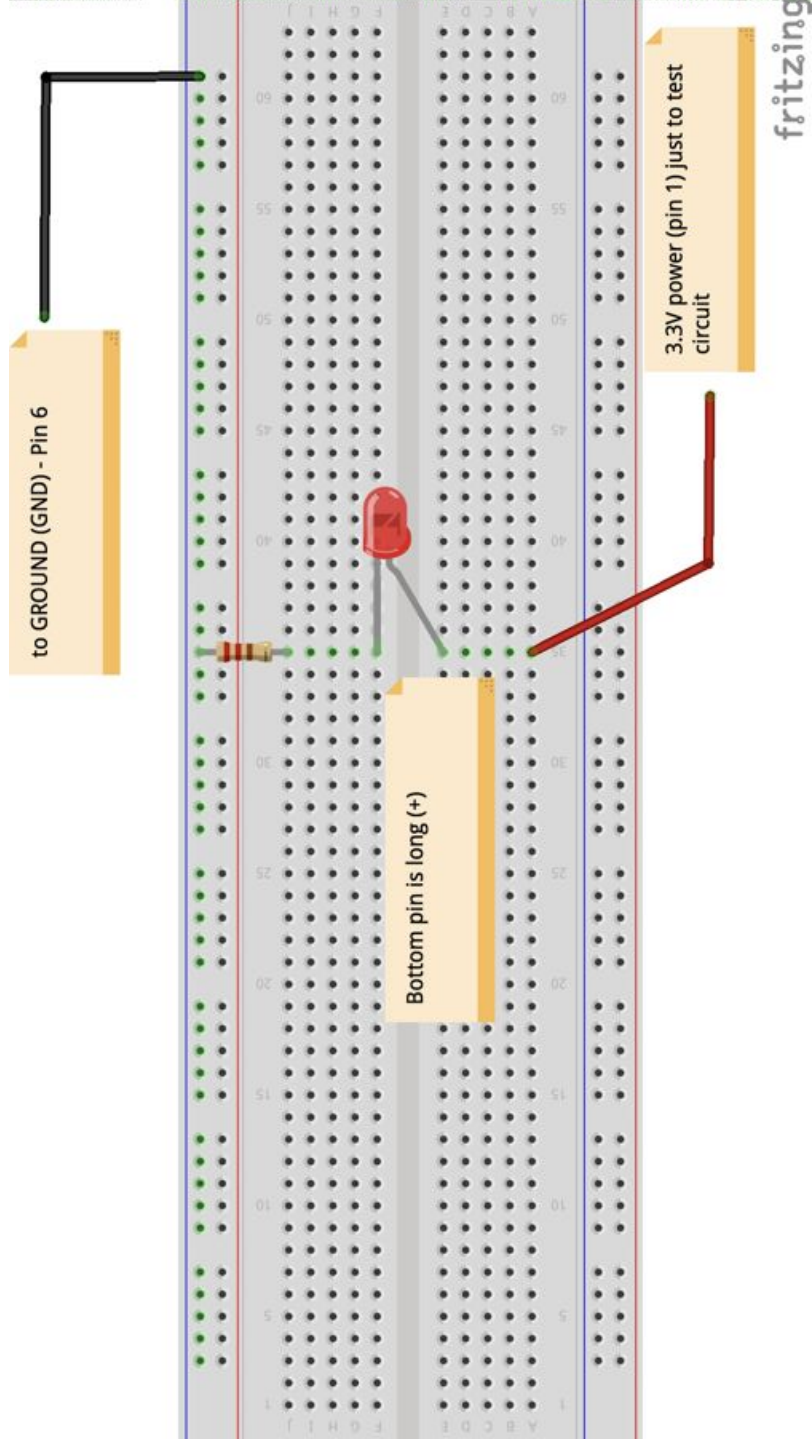
LED: connect for software

to GROUND (GND) - Pin 6

+5V to 5V power on the Pi (pin 2)

GPIO 25 (pin 22)

Bottom pin is long (+)

Change the GPIO pin if needed

fritzing
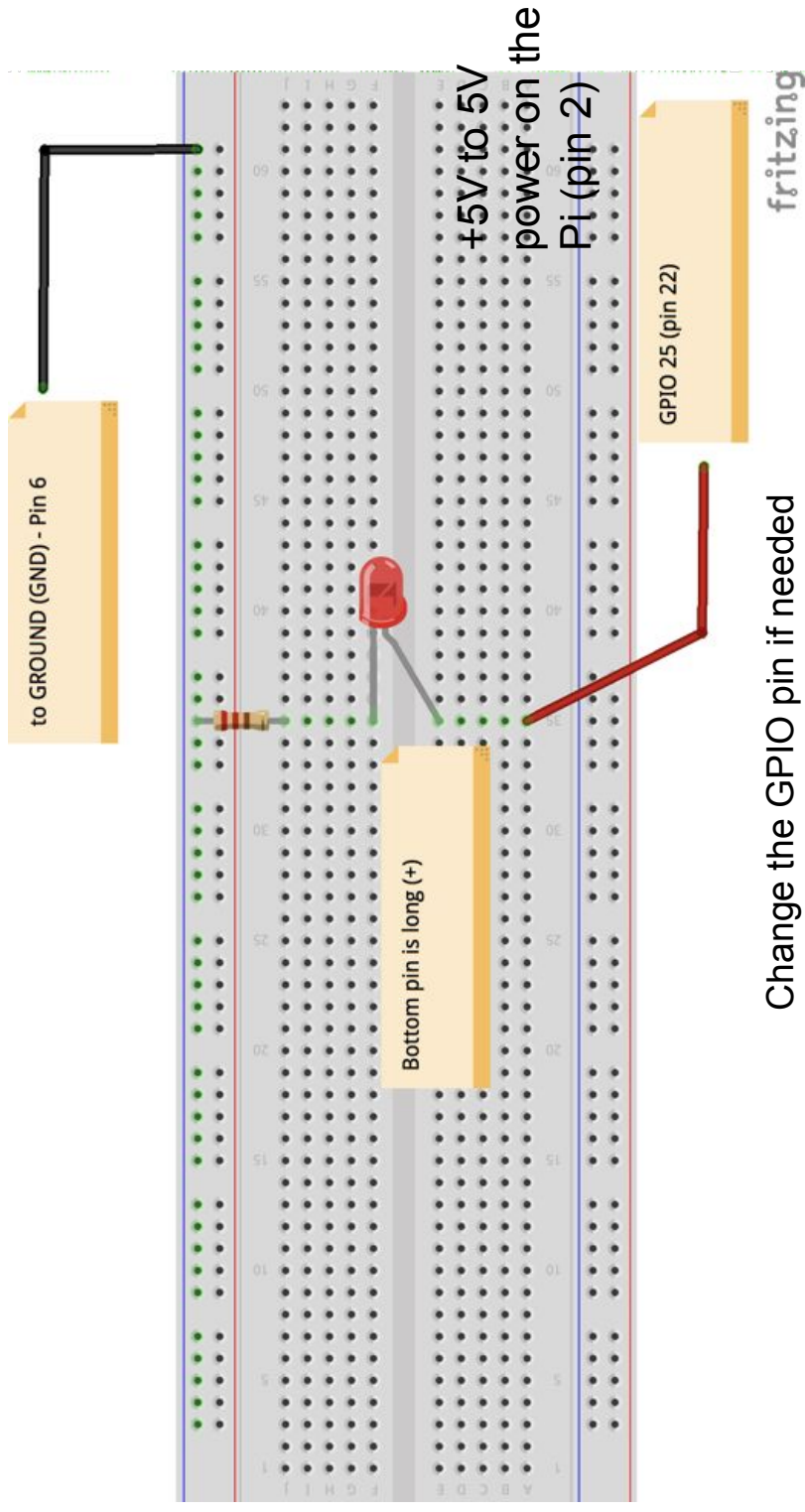
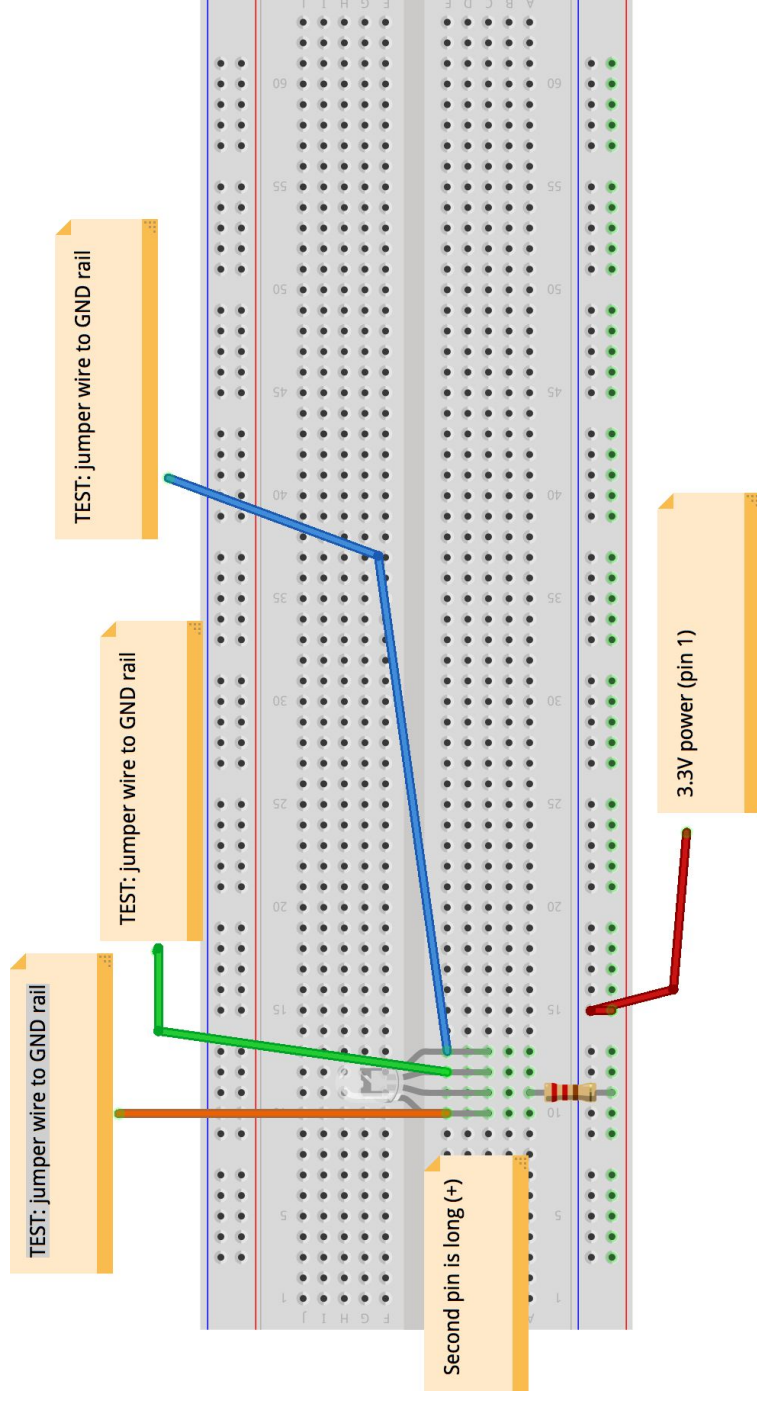# Example LED code (also good for testing!)

```
from gpiozero import LED
from time import sleep

led = LED(25)  # 25 is the GPIO number (not the actual number of the pin!!!)
delay = 1       # in seconds

while True:
    led.on()
    sleep(delay)
    led.off()
    sleep(delay)
```
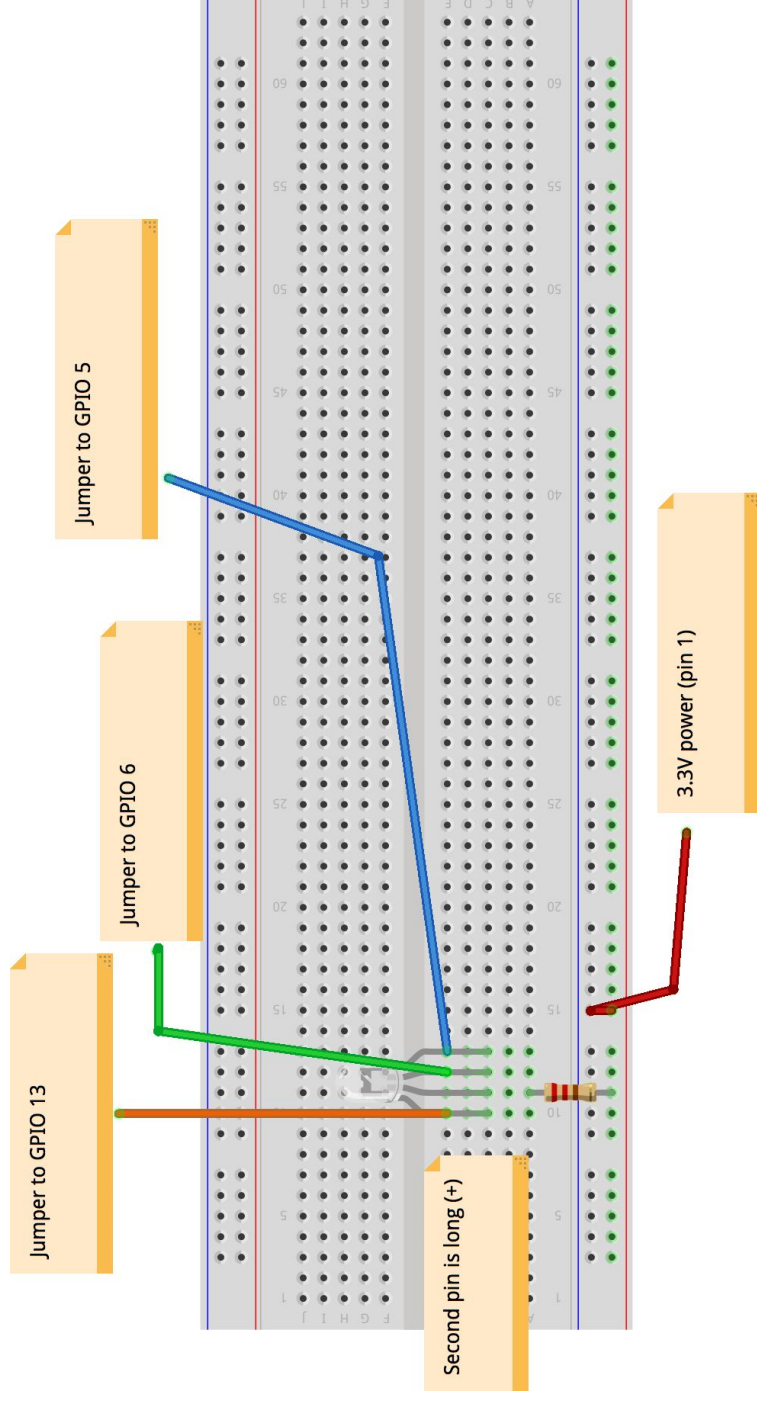
RGB LED

RGB LED breadboard layout

TEST: jumper wire to GND rail

TEST: jumper wire to GND rail

TEST: jumper wire to GND rail

3.3V power (pin 1)

Second pin is long (+)

fritzing

Connect RGB LED to the Raspberry Pi

Jumper to GPIO 5

Jumper to GPIO 6

Jumper to GPIO 13

3.3V power (pin 1)

Second pin is long (+)

fritzing

RGB LED code

```python
from gpiozero import RGBLED
from time import sleep

rgb = RGBLED(red=13, green=6, blue=5, active_high = False)
```
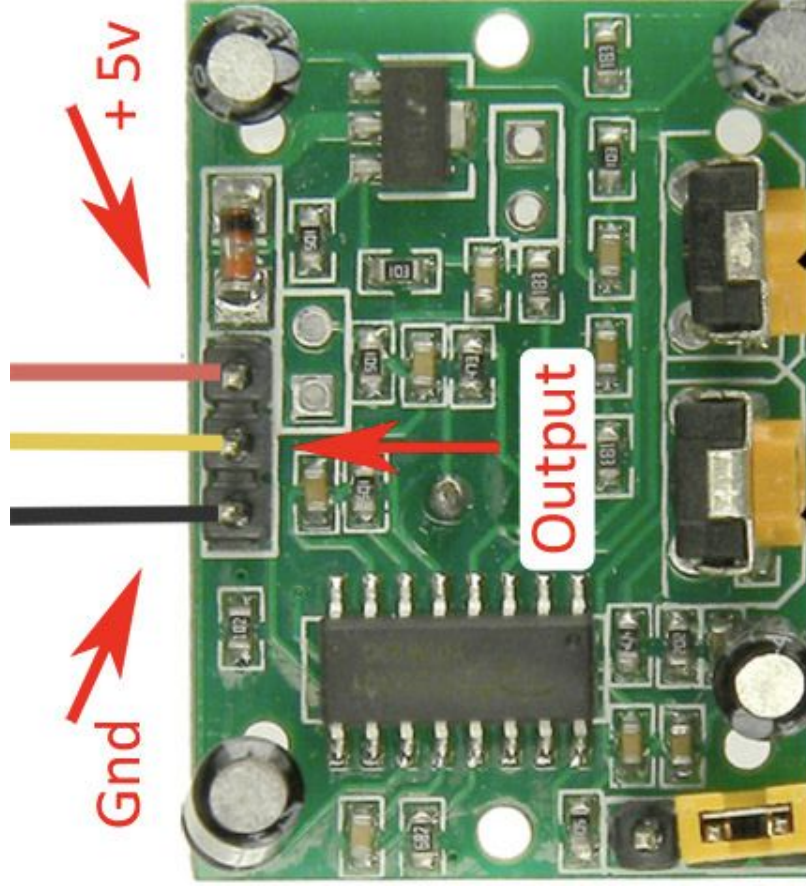
Motion detector that lights up

Motion detector circuits

Output to GPIO 4
(can you figure out
the pin?)

+5V to 5V
power on the
Pi (pin 2)

+ 5v

Output

Gnd

GND to GND
on the Pi (pin
14)

Let's code a motion detector light!

```
from gpiozero import MotionSensor, LED
import time

led = LED(25)   # LED GPIO number
pir = MotionSensor(4) # Motion detector GPIO number

for i in range(1, 4):
    pir.wait_for_motion()
    led.on()
    print("Something moved" , i , "times" )
    pir.wait_for_no_motion()
    led.off()
    print('everything is still')
```

Cleanup checklist

Cleanup checklist

1. sudo shutdown -h now
2. Unplug everything. Put parts in their bags.
3. Wrap up the power cord and twist-tie it
4. Put the cover on
5. Put everything except your USB key back in the box.

Write in your notebook:

- What you learned
- Ideas for things you could build
- Questions you have