CS 1010

Deep dive into Raspberry Pi with Python

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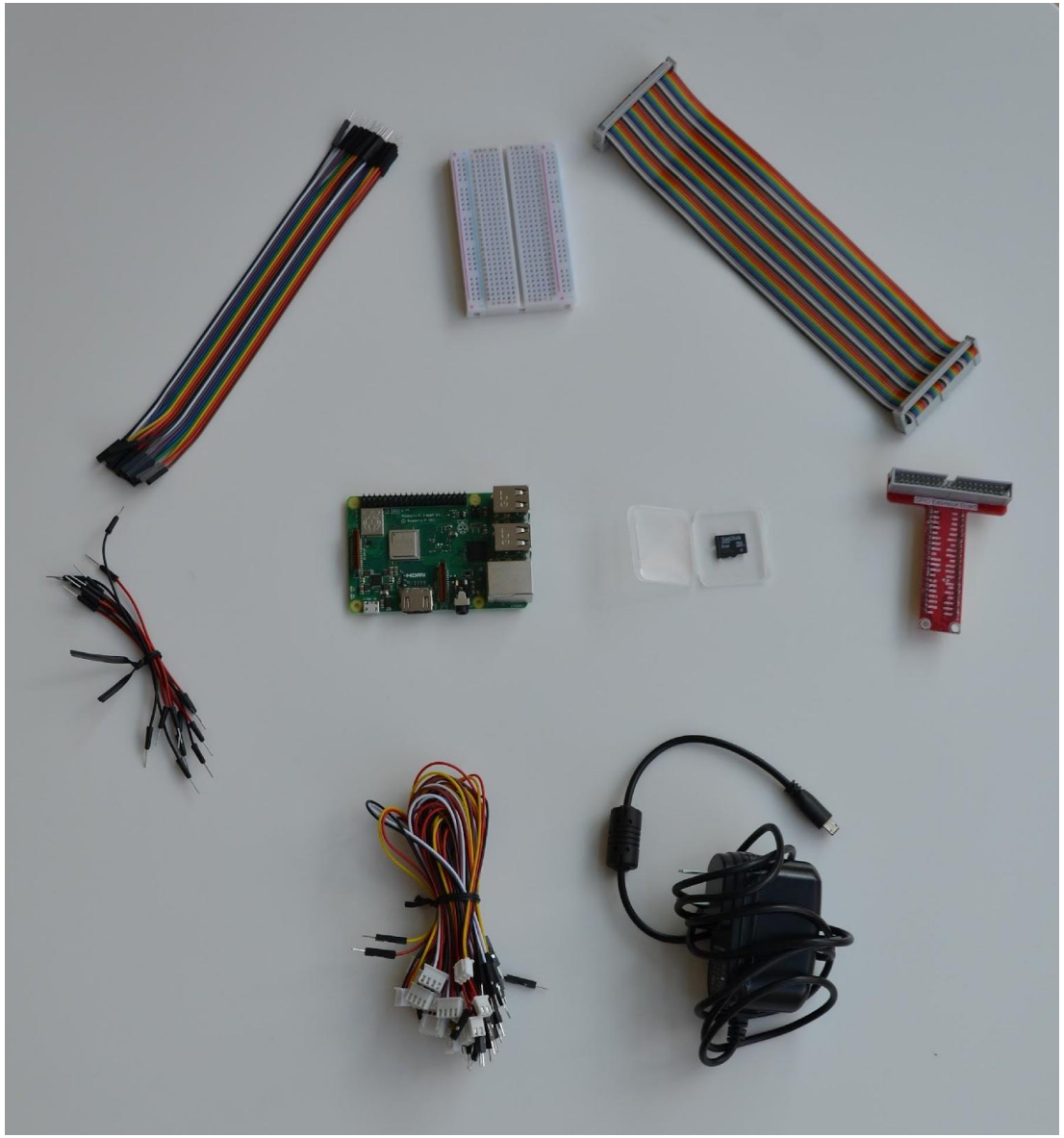
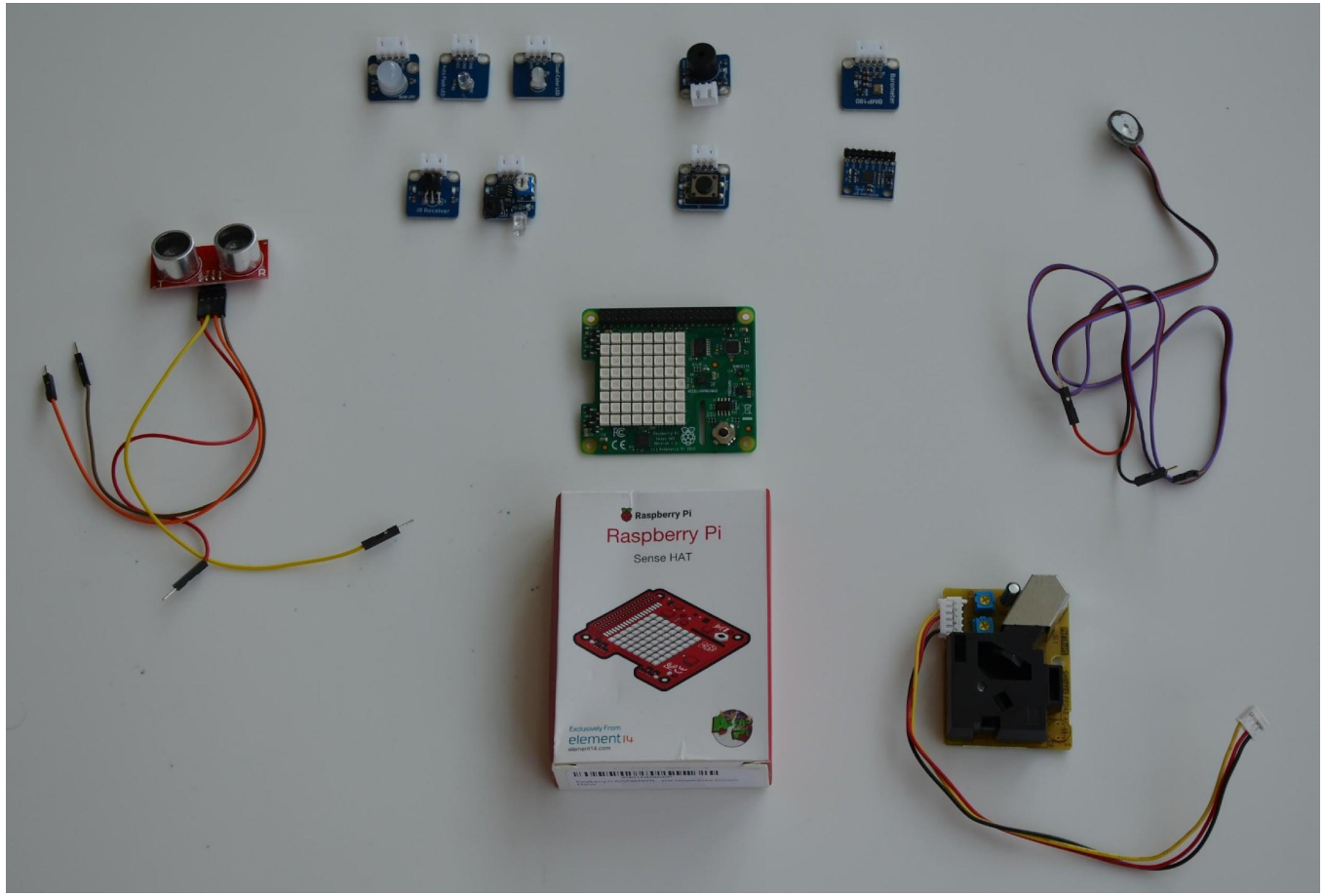
School of Engineering & Applied Science
THE GEORGE WASHINGTON UNIVERSITY

Photo: Kartik Bulusu





Components and sensors in your kits

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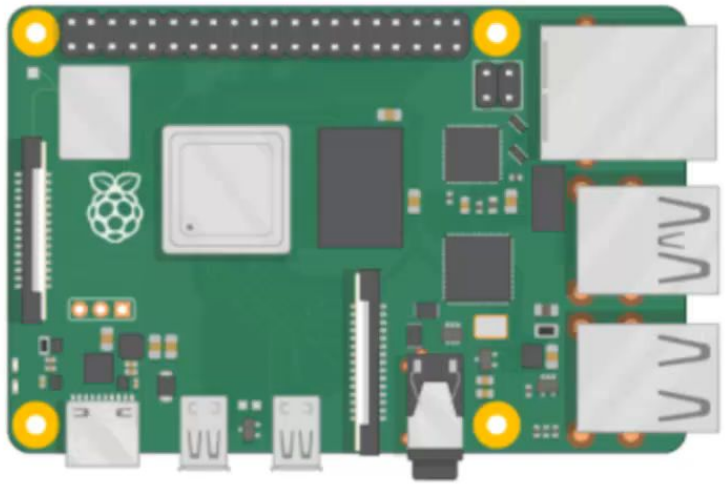
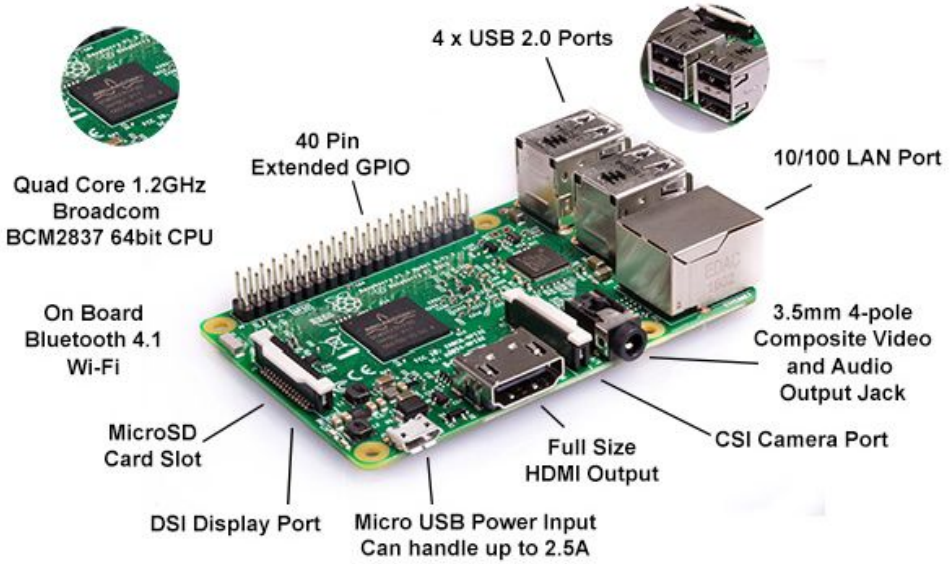
Raspberry Pi Hardware and Connections



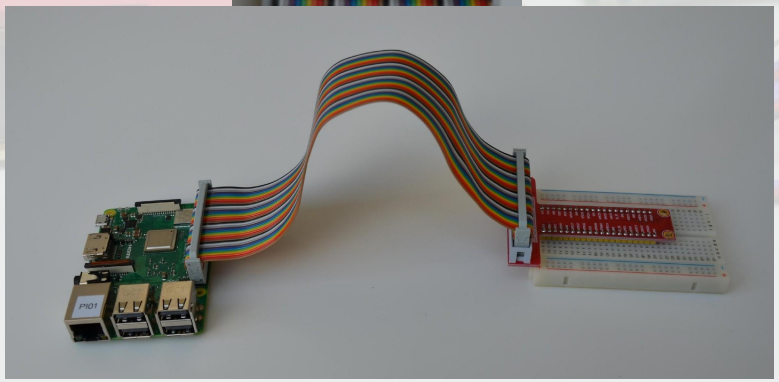
Source: https://www.raspberrypi.org/help/

GET STARTED WITH RASPBERRY PI

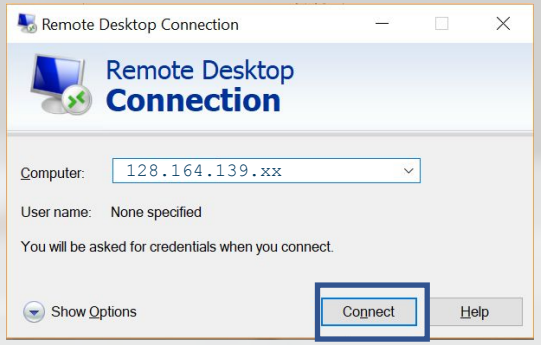


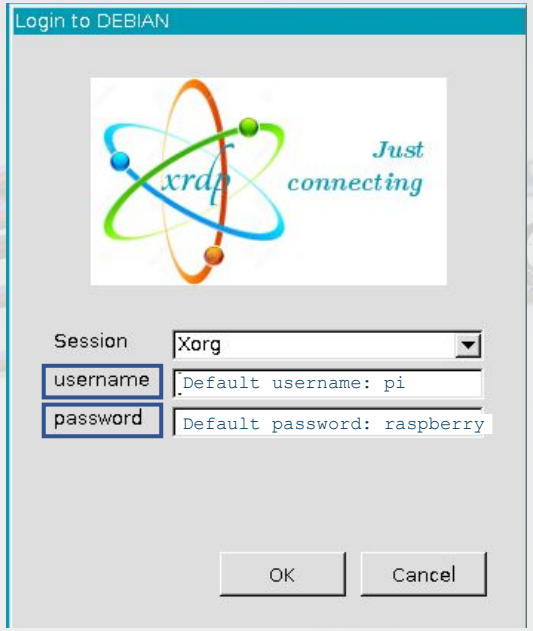
Source: https://opensensorhub.org/2019/05/19/kinect-support-on-raspberrypi-3b/

Connect the Raspberry Pi Mod to a bread board



Access to the RPi in the laboratory





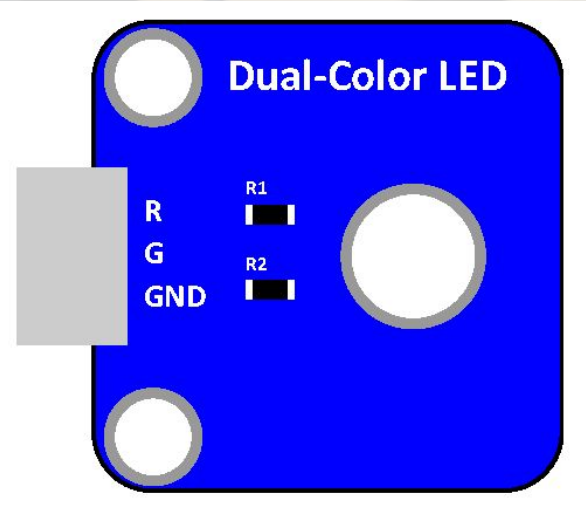
Source: https://upload.wikimedia.org/wikipedia/commons/f/f1/XRDP_Screenshot.png

Each RPi is assigned a unique

- **IP address <128.164.139.xx>**
- ***username* & *password***

Photo: Kartik Bulusu

Know your Light Emitting Diode (LED)



Source:
https://www.sunfounder.com/learn/lesson-1-dual-color-led-sensor-kit-v2-0-for-b.html

A dual-color light emitting diode (LED) is capable of emitting two different colors of light, typically red and green.

Application:
Variety of devices, such as televisions, digital cameras, and remote controls deploy these type LEDs.

Connector:
3-pin anti-reverse cable

Light up an LED with your Raspberry Pi 3 B +

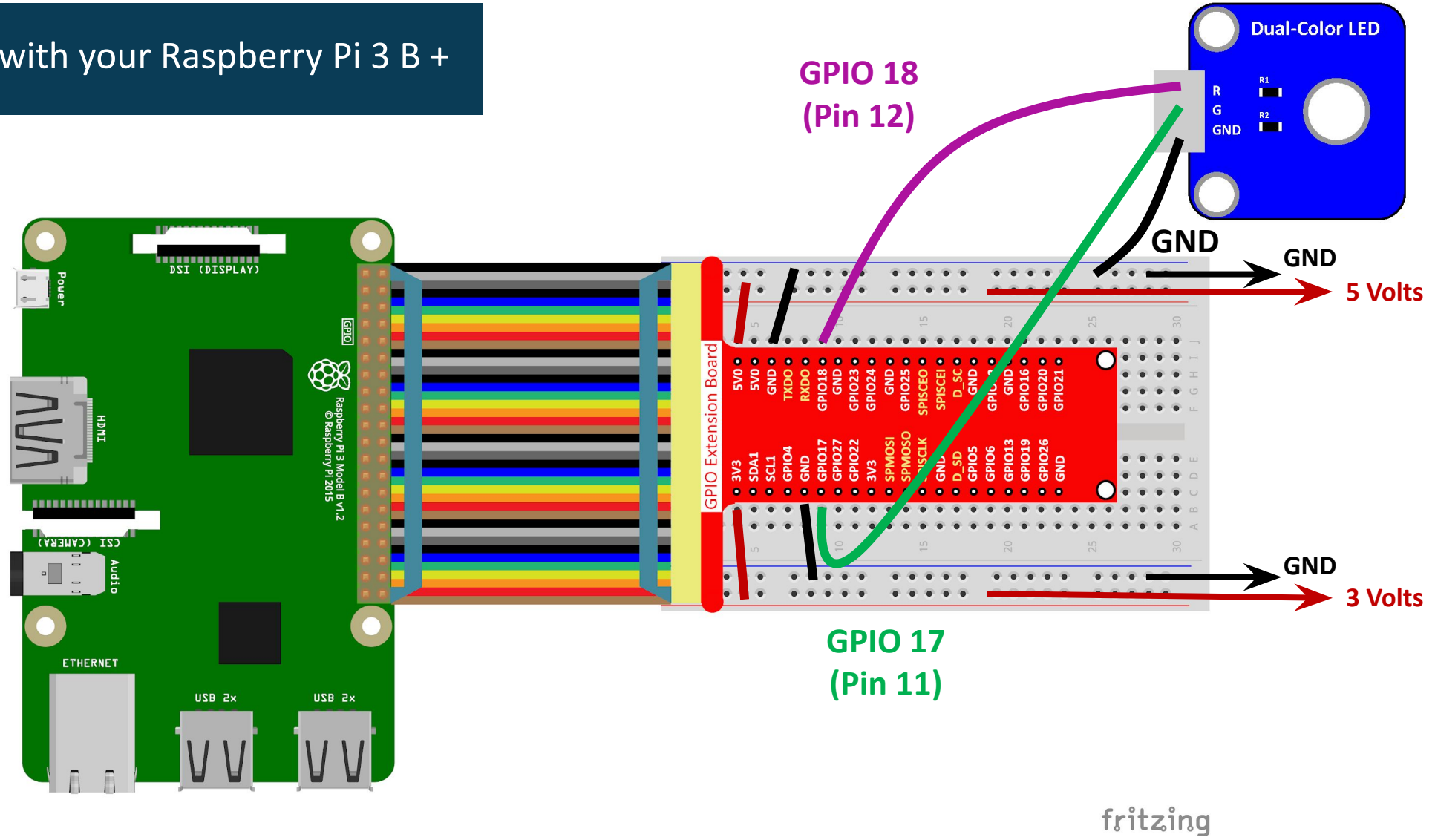
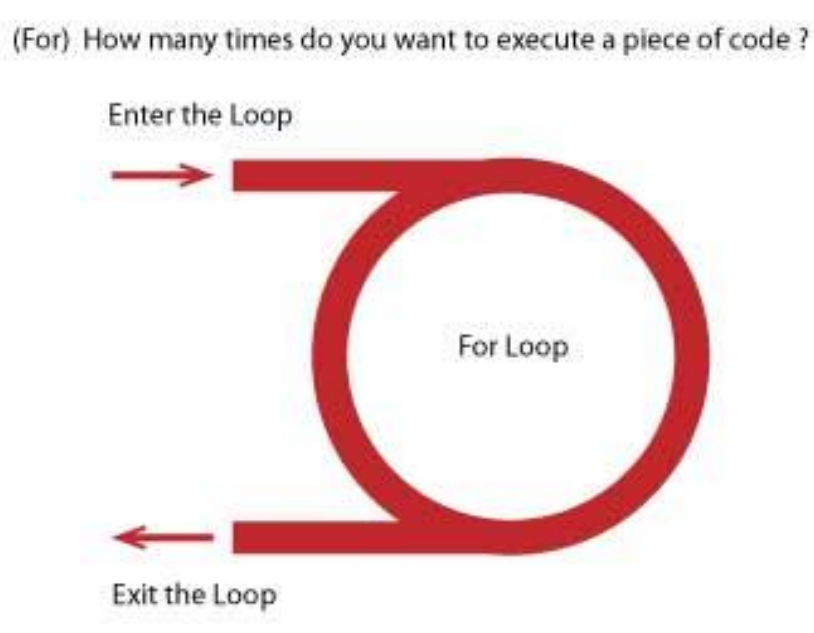
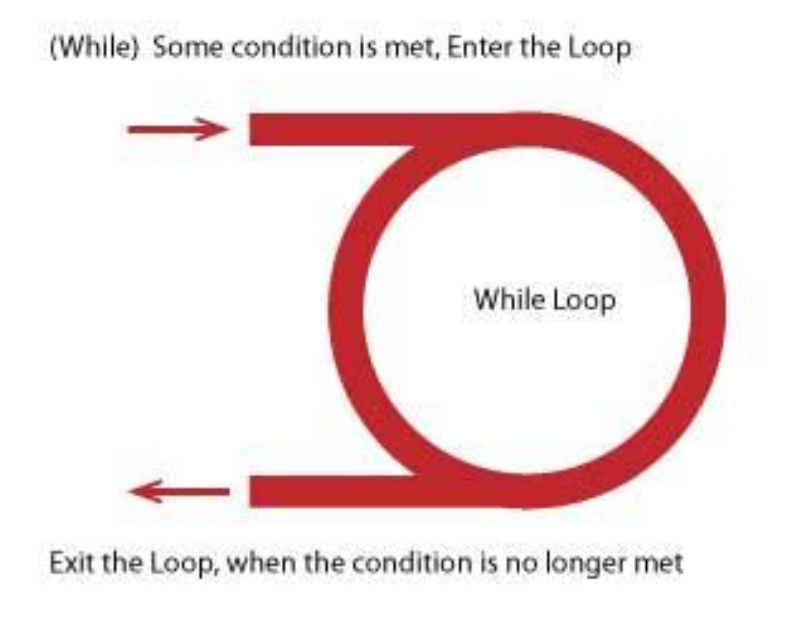
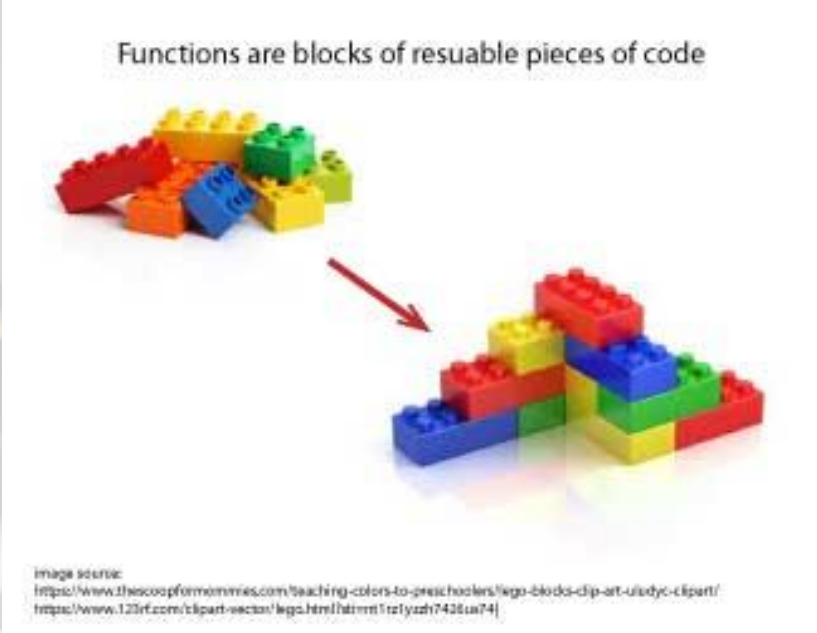


Photo: Kartik Bulusu

Know some programming paradigms



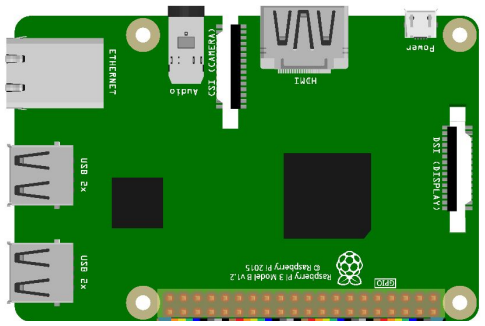




Loops

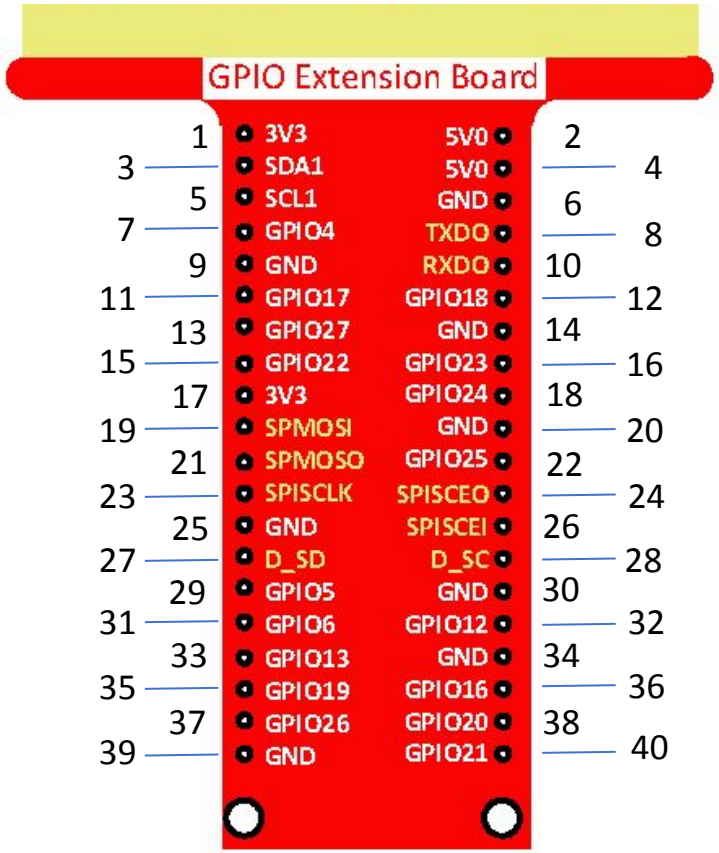
Functions

A simple python code to kick start your Raspberry Pi Model 3 B+ (RPi)



```
import RPi.GPIO as GPIO
import time
```

```
GPIO.setmode(GPIO.BOARD)
```



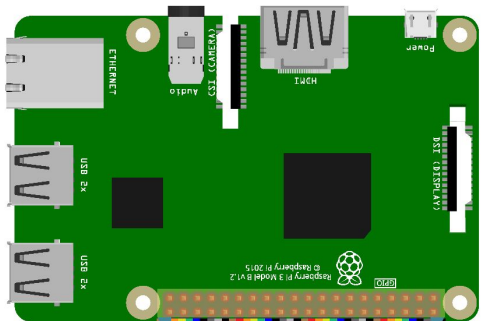

```
GPIO.setup(12, GPIO.OUT)
```

```
for i in range(0,15):

    GPIO.output(12, GPIO.HIGH)
    time.sleep(0.5)
    GPIO.output(12, GPIO.LOW)
    time.sleep(0.5)
    print(i)

GPIO.cleanup()
```

A simple python code to kick start your Raspberry Pi Model 3 B+ (RPi)



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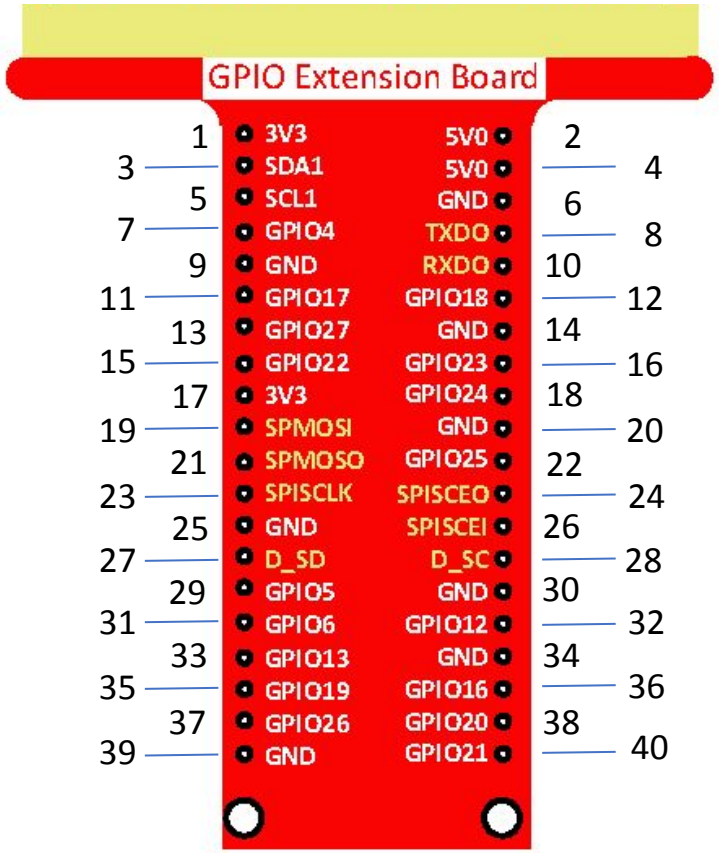


```
GPIO.setup(12, GPIO.OUT)
```

```
def loop():
    while True:
            GPIO.output(12, GPIO.HIGH)
            time.sleep(0.5)
            GPIO.output(12, GPIO.LOW)
            time.sleep(0.5)
```

```
def destroy():
    GPIO.output(12, GPIO.LOW)
   # Turn off all leds
    GPIO.cleanup()
```

```
if __name__ == "__main__":
    try:
        loop()
    except KeyboardInterrupt:
        destroy()
```