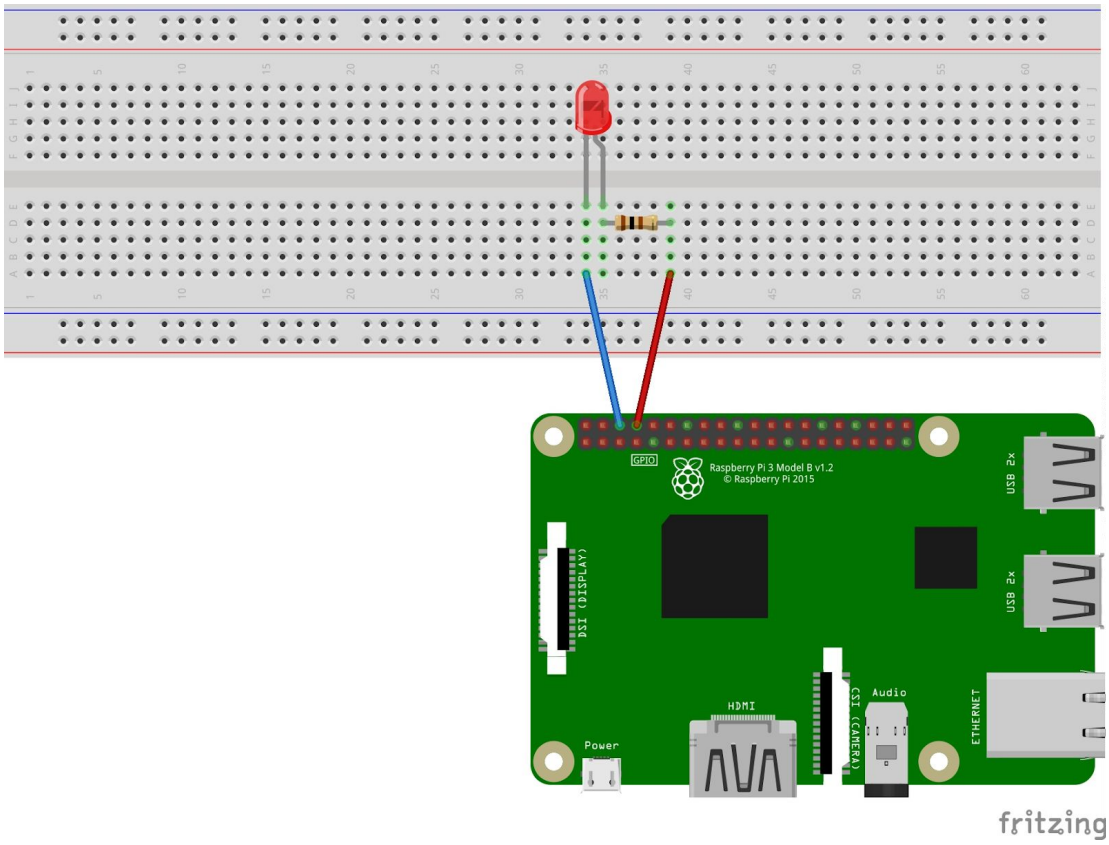
Making a LED blink using the Raspberry Pi and Python

PARTS

- Raspberry Pi
- LED Lights of various colors
- Breadboard
- Jumper wires (note: there are 3 different types)

WHAT WE ARE BUILDING

A simple circuit to control turning the LED light on and off using code.



RULES

- CAREFUL! We will be using the wires to create electrical circuits. Feel free to experiment but pay attention to where you are plugging the wires into to avoid short circuiting the Pi.
- Wires get plugged into the breadboards first before you plug them into the Raspberry Pi.
- Don't touch the pins of the Pi with metal or it will ☠
- Leave the sticker on the back of the breadboard.
- **+** goes to positive, ground goes to **-**

HOW TO

Setup

1. Find a partner to work on the project with.
2. Grab the following items:
    a. 1 Raspberry Pi (w/ power cord)
    b. 1 LED light to start
    c. 2 jumper wires with pin on one end and plug on other
    d. 2 jumper wires with pins on both ends
3. Unplug a monitor, keyboard and mouse from a computer and plug it all into your Pi.
4. Plug in the power cord into your Raspberry Pi and into the outlet.
5. Connect the wires and light like we did in the walk through (and like you see in above picture).

Write the code to turn on the light

1. When your Raspberry PI boots up, click on the raspberry in the upper left to reveal the options menu.
2. Select **Programming** from the menu.
3. From the **Programming** menu select **Python**
4. This will load up the shell the Python script will run in. We are going to save our code as a file, so from within this terminal click **File** in the top menu. Within the File options select **New**.
5. This will bring up an editor for you to build your Python script. Enter the code you see below.
6. Once code is entered save your file. You can give it any name you wish but best to stay simple and use one word. Give it the file extension of **.py** (example: **blinky.py**)
7. You can then tell it to **Run Module** from the menu or just press **F5** on your keyboard.
8. Within the Python terminal you will see the code execute and the lights blink on the breadboard.

CODE

```
# import Pi GPIO and time modules
import RPi.GPIO as GPIO
import time

# set up GPIO numbering and turn off warnings (don't worry if you don't understand this right now)
GPIO.setmode(GPIO.BOARD)
GPIO.setwarnings(False)

# set up which pin to control the LED from and set it to output
ledPin = 8
GPIO.setup(ledPin, GPIO.OUT)

"""
This for loop runs the code inside it 5 times, change the number in the range() brackets to alter how many times it runs.
The LED turns on for half a second, then turns off again.
Make sure you indent the code inside the for loop correctly!
"""

for i in range(5):
        print("LED turning on")
        GPIO.output(ledPin,GPIO.HIGH)
        time.sleep(0.5)
        print("LED turning off")
        GPIO.output(ledPin,GPIO.LOW)
        time.sleep(0.5)
```