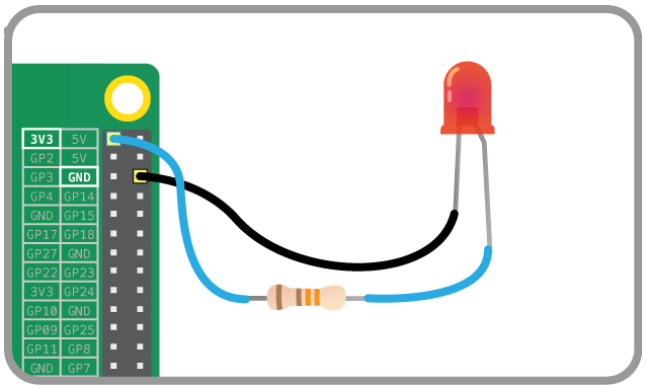
Raspberry Pi LED with Python

Introduction

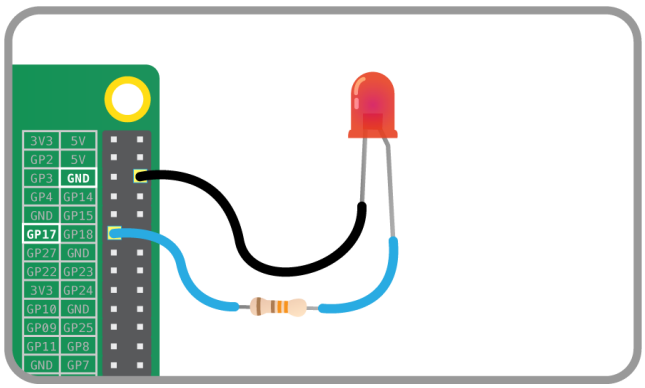
LEDs are delicate little things. If you put too much current through them they will pop (sometimes quite spectacularly). To limit the current going through the LED, you should always use a resistor in series with it.

Try connecting the long leg of an LED to the Pi's 3V3 and the short leg to a GND pin. The resistor can be anything over about 50Ω.



The LED should light up. It will always be on, because it's connected to a 3V3 pin, which is itself always on.

Now try moving it from 3V3 to GPIO pin 17:



The LED should now turn off, but now it's on a GPIO pin, and can therefore be controlled by code.

Extracted from the Raspberry Pi web tutorial available at: https://www.raspberrypi.org/learning/physical-computing-with-python/worksheet/
This modified worksheet is available at: https://github.com/dilwil/HiveWorksheets

Controlling The LED

GPIO Zero is a new Python library which provides a simple interface to everyday GPIO components. It comes installed by default in Raspbian.

Open IDLE from the main menu (Menu>Programming>Python 3 (IDLE).

You can switch an LED on and off by typing commands directly into the Python interpreter window (also known as the Python shell). Let's do this by first importing the GPIO Zero library. You also need to tell the Pi which GPIO pin you are using - in this case pin 17. Next to the chevrons `>>>`, type:

```
from gpiozero import LED
led = LED(17)
```

Press Enter on the keyboard.
To make the LED switch on, type the following and press Enter:

```
led.on()
```

To make it switch off you can type:

```
led.off()
```

Your LED should switch on and then off again. But that's not all you can do…

Flashing The LED

With the help of the time library and a little loop, you can make the LED flash.
Create a new file by clicking File > New file.

Save the new file by clicking File > Save. Save the file as `gpio_led.py`.
Enter the following code to get started:

```
from gpiozero import LED
from time import sleep

led = LED(17)

while True:
    led.on()
    sleep(1)
    led.off()
    sleep(1)
```

Save with Ctrl + S and run the code with F5.
The LED should be flashing on and off. To exit the program press Ctrl + C on your keyboard.