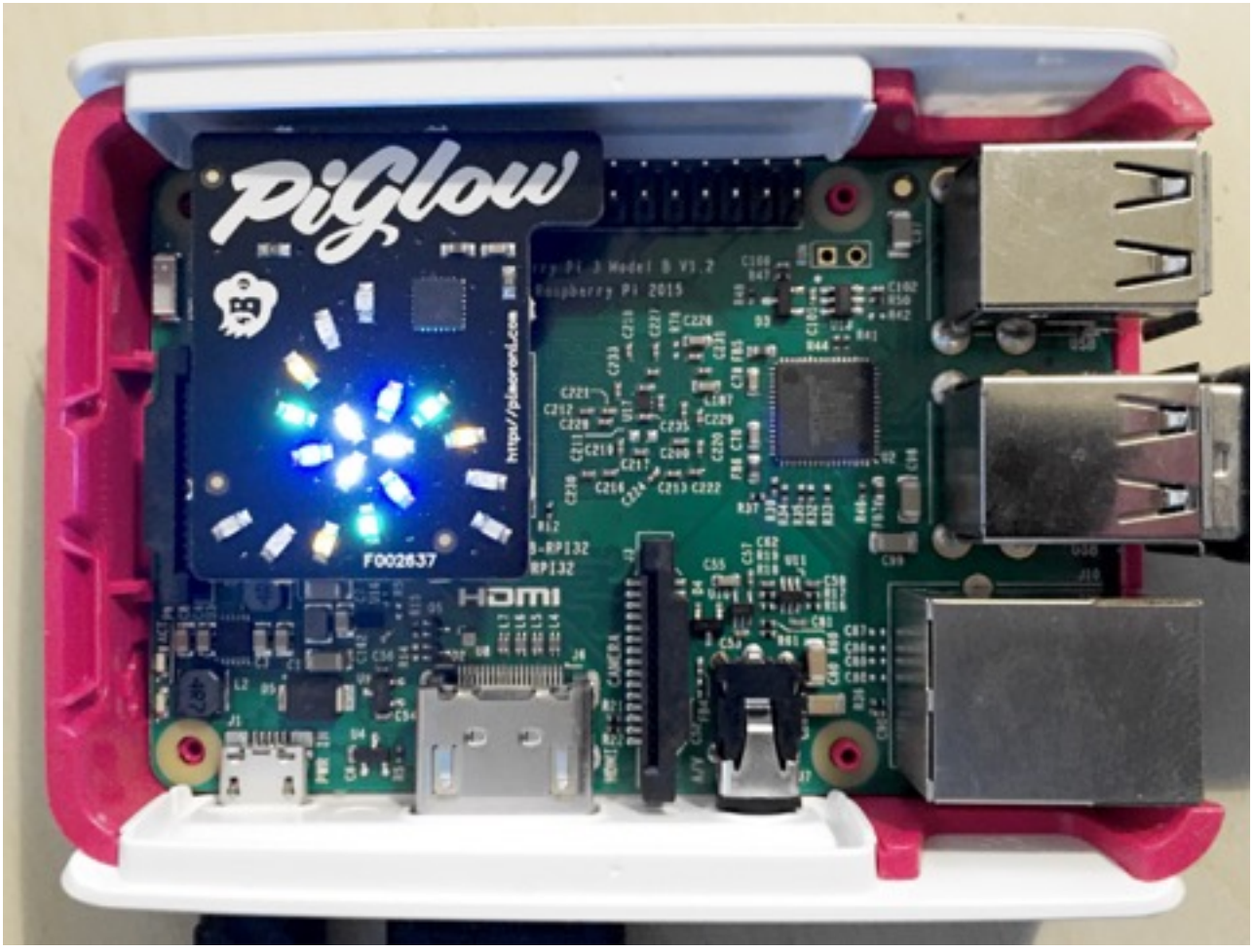
CoderDojo

PiGlow

You'll need a **Raspberry Pi** (a small computer in a box) and a **PiGlow** module for this (just ask if you need either of these).

If your **Raspberry Pi** is in a case, take off the lid, and attach the **PiGlow** module to the left of the row of pins, so it looks like this.



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- The **PiGlow** module has a bunch of LEDs (light emitting diodes) on it. These light up in different colours (red, orange, yellow, green, blue and white). There are three of each colour.

- Because the **PiGlow** module is connected to the **Raspberry Pi's** *input* / *output* pins, we can *control* it by writing a computer program.

- Make sure the **Raspberry Pi** is turned on, hooked up to a monitor, with a keyboard and mouse attached.

- Once the **Raspberry Pi** is up and running, go to the **Menu** at the top left, choose **Programming** and then click on **Python 3 (IDLE)**. Python is the computer language we will use to control the **PiGlow** and **IDLE** is the application we will use to write our Python code.

- You should now see a blank window with three arrows on it, like this: **>>>**

- This is called the python "prompt" – you can type code in here and python will follow

```
import piglow
piglow.auto_update = True
piglow.clear_on_exit = True
piglow.red(64)
```

- Type the code in the green box into **IDLE**. Nothing should happen after typing the first three lines – they just set up python and the **PiGlow** module to work with each other.

- But watch the **PiGlow** as you type in the fourth line. When you hit Enter, what happens?!

- Three LEDs (the red ones) came on. Now, try changing the number in the brackets.

- Or, turn on a different colour.

```
piglow.red(0)
piglow.red(255)
piglow.blue(100)
```

```
piglow.all(0)
piglow.orange(100)
piglow.led(1, 255)
piglow.led(7, 255)
piglow.arm(1, 50)
piglow.arm(2, 100)
piglow.arm(3, 200)
```

- Try entering some of these commands – see what patterns you can make!

Congratulations,

You just programmed some real hardware!

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Here are a couple of optional extras, if you want to explore a little deeper

- As well as running commands one at a time, you can write many lines of code, save them in a file, and have python run them all one after the other.
- In **IDLE**, go to the **File** menu and choose **New File**.

```
from time import sleep
import piglow
piglow.auto_update = True
piglow.all(0)

while True:
    piglow.arm(3, 0)
    piglow.arm(1, 20)
    sleep(0.5)

    piglow.arm(1, 0)
    piglow.arm(2, 20)
    sleep(0.5)

    piglow.arm(2, 0)
    piglow.arm(3, 20)
    sleep(0.5)

    piglow.all(0)
    piglow.arm1(10)
    sleep(0.5)

    piglow.all(0)
    piglow.arm2(10)
    sleep(0.5)

    piglow.all(0)
    piglow.arm3(10)
    sleep(0.5)
```

- Enter this code then go to the menu **Run** and choose **Run Module** (if it asks you to save the file, choose a name and click **Save**)
- Try messing around to see if you can change the behaviour. Can you make it go faster?
- You can find more examples at: https://github.com/pimoroni/piglow/tree/master/examples