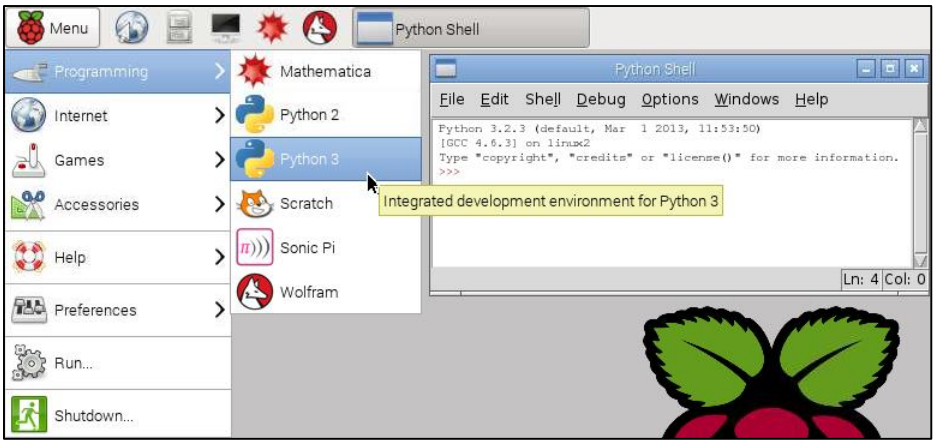
CoderDojo

Rainbow

Card **1** of **2**

I'm Learning Pi Python

1 Before powering on the Pi, connect the ***Sense HAT*** to the Pi. Start the Pi and once booted, open Python3.



2 From the python shell open a new window (File > New Window). Start by saving this new file to the home directory as ***rainbow.py***. Then start by entering the following lines of code. These import the Sense HAT software and create a ***sense*** object. The third line makes sure the display is clear to begin with.

```
from sense_hat import SenseHat
sense = SenseHat()
sense.clear()
```

2 In smiley.py we previously set the colours of individual pixels using the ***sense.set_pixel*** method. This is slow and complex to do for every single pixel. Instead we can define some ***variables*** to make a colour palette. In the code below we define variables for the seven colours of the rainbow. The colours are set using RGB (Red Green Blue) values.

```
r = [255, 0, 0]
o = [255, 127, 0]
y = [255, 255, 0]
g = [0, 255, 0]
b = [0, 0, 255]
i = [75, 0, 130]
v = [159, 0, 255]
e = [0, 0, 0] # e stands for empty/black
```

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Card **2** of **2**

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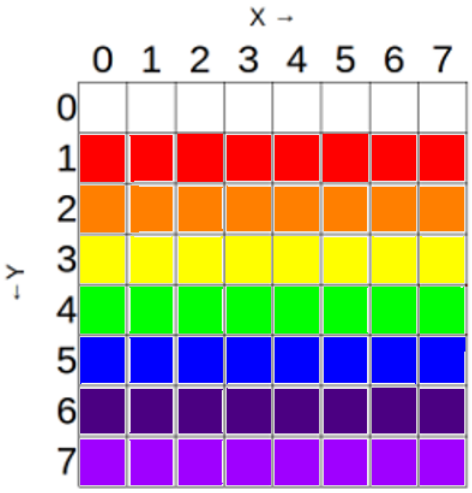
4 You can then describe a matrix by creating 2D list of colour names

```
image = [
e, e, e, e, e, e, e, e,
r, r, r, r, r, r, r, r,
o, o, o, o, o, o, o, o,
y, y, y, y, y, y, y, y,
g, g, g, g, g, g, g, g,
b, b, b, b, b, b, b, b,
i, i, i, i, i, i, i, i,
v, v, v, v, v, v, v, v,
]
```

5 You can then give the ***image*** list to the ***sense.set_pixels*** method and draw the image.

```
sense.set_pixels(image)
```

6 Run the program and the LED matrix pixels should show beautiful lines in the colours of the rainbow.



7 Try changing the program so that the coloured lines are curved like a real rainbow. Good luck! *(Hint: try changing the order of the variables in the image list).*