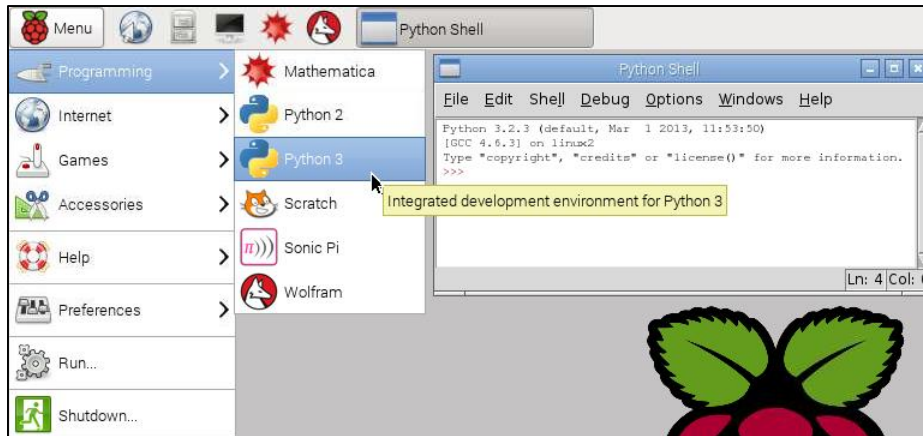


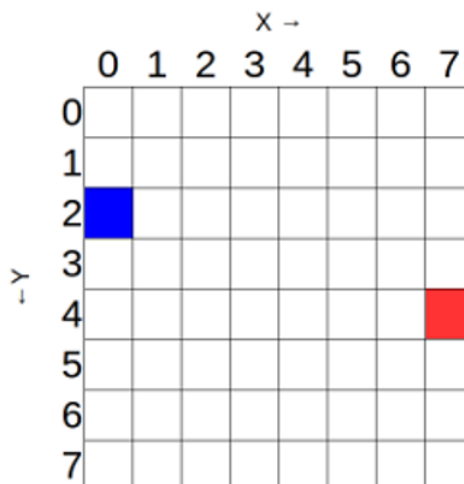
**1** Before powering on the Pi, connect the **Sense HAT** to the Pi. Start the Pi and once booted, open Python3.



**2** From the python shell open a new window (File > New Window). Start by saving this new file to the home directory as **smiley.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()
```

**3** The pixels (the LEDs) are arranged in a coordinate system. Numbering begins at the top left corner and counts from 0 (not 1). The blue pixel is at coordinates (0, 2), the red pixel is at coordinates (7, 4).



# Smiley



Smiley

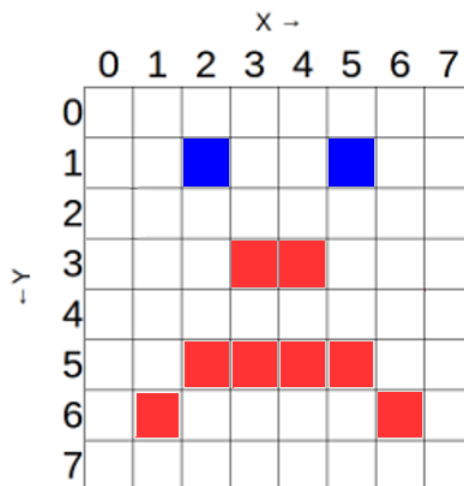
Card 2 of 2

I'm Learning Pi Basics

2 Add the following code to turn on two blue pixels and eight red pixels. The colours are set using **RGB** (Red Green Blue) values.

```
sense.set_pixel(2, 1, [0, 0, 255])
sense.set_pixel(5, 1, [0, 0, 255])
sense.set_pixel(3, 3, [255, 0, 0])
sense.set_pixel(4, 3, [255, 0, 0])
sense.set_pixel(1, 6, [255, 0, 0])
sense.set_pixel(2, 5, [255, 0, 0])
sense.set_pixel(3, 5, [255, 0, 0])
sense.set_pixel(4, 5, [255, 0, 0])
sense.set_pixel(5, 5, [255, 0, 0])
sense.set_pixel(6, 6, [255, 0, 0])
```

4 Back in the python shell window select **Run > Run Module**. The LED matrix pixels should show a grumpy face



5 Try changing the program to display a smiley face instead of a grumpy face. Good luck!