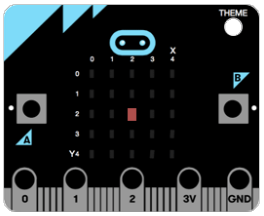


Programming the micro:bit using Python

Intermediate

Before you begin

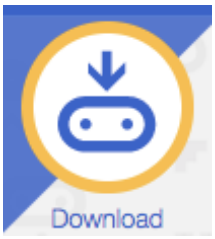
- Take time to read the safety guidance sheet
- Visit python.microbit.org using your web browser (preferably Google Chrome)
- Plug the micro:bit into your computer using the USB cable

Displaying your own images

- Each LED on the micro:bit display can to set to one of ten values (0 to 9). 0 is off and 9 is the brightest setting.
- Enter the following code in to the Python editor:

```
from microbit import *
pattern = Image("09090:00000:00500:50005:05550")
display.show(pattern)
```

- Press the “Download” button to get the program on to your computer
- Copy the downloaded file on to your micro:bit



- *Challenge* – alter the values to display your own image

Animating images

- We can give the impression of movement by switching between images
- Enter the following code in to the Python editor:

```
from microbit import *
happyface = Image("09090:00000:00500:50005:05550")
sadface = Image("09090:00000:00500:05550:50005")
while True:
    display.show(happyface)
    sleep(500)
    display.show(sadface)
    sleep(500)
```

- Press the “Download” button to get the program on your device
- *Challenge* – can you make a man appear to walk across the display? Alternatively, create your own animation, which should contain at least three images

Reacting to movement

- The micro:bit contains an accelerometer, which allows us to detect movement
- Enter the following code in to the Python editor:

```
from microbit import *
while True:
    if accelerometer.get_x() > 0:
        display.show('R')
    else:
        display.show('L')
```

- Press the “Download” button to get the program on your device
- *Challenge* – can you get more than one event to take place when the device is tilted?
- *Challenge* – can you make a man walk across the display in the direction the micro:bit is tilted?

Step counter

- *Challenge* – Can you program the micro:bit to act as a step counter? Hint – you could use - *if accelerometer.was_gesture('shake'):* to detect whether a step has been taken
- Essential features:
    - record number of steps taken
    - display number of steps taken (you might want to do this when a button is pressed. Hint – try using - *if button_a.is_pressed():*
- Desirable features:
    - display motivational messages
    - allow the daily step goal to be set
    - anything else you fancy!