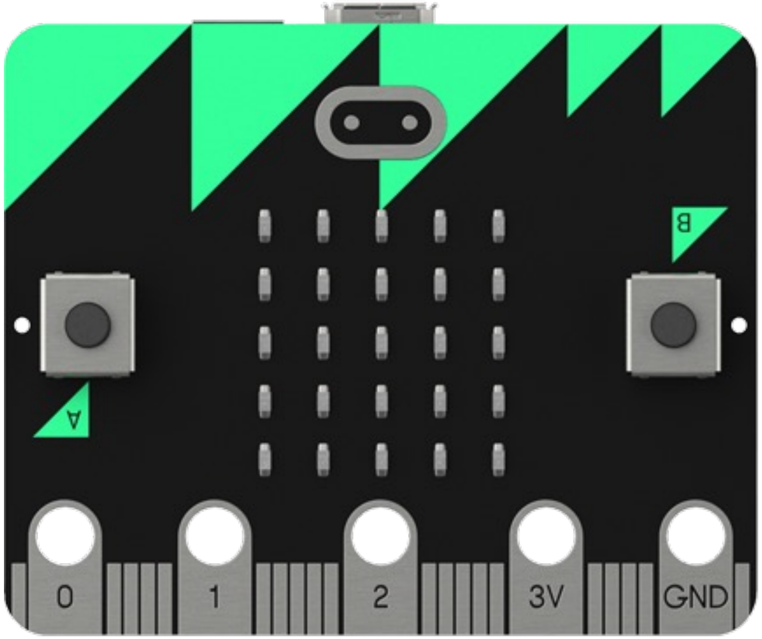
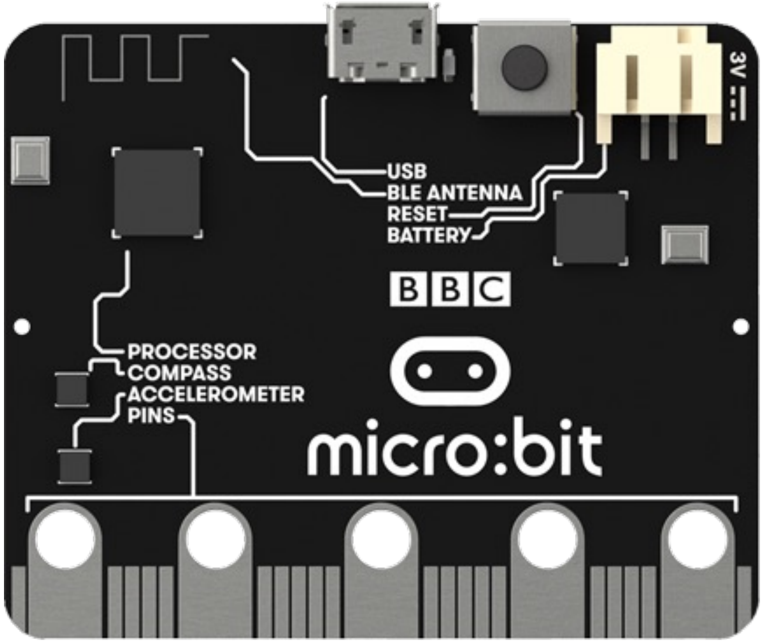
BBC Micro:bit





BBC

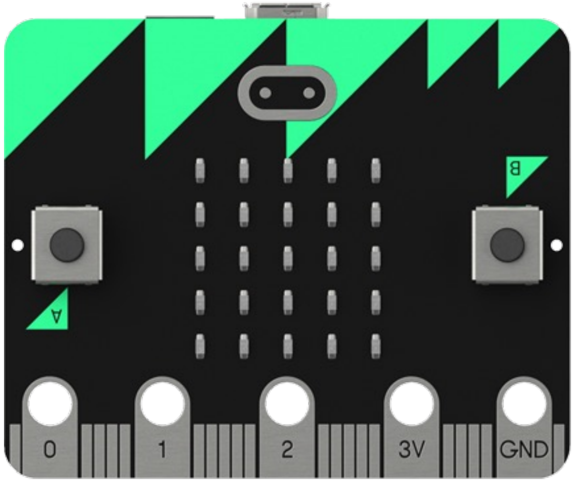
micro:bit

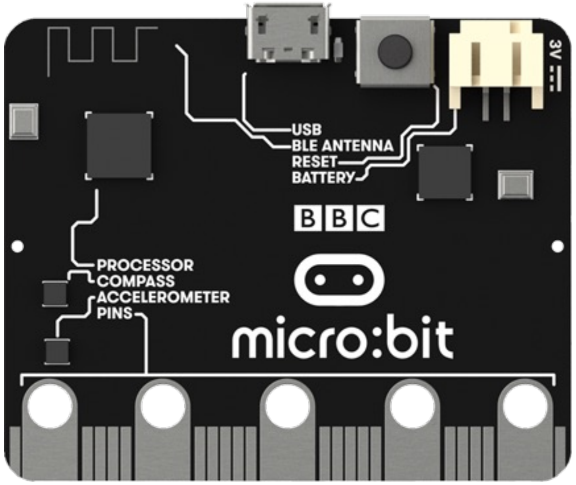
Lesson 1

Sequencing

What is it?

The micro:bit is a handheld, fully programmable computer. It's 70 times smaller and 18 times faster than the original BBC Micro computers used in schools in the 1980s.

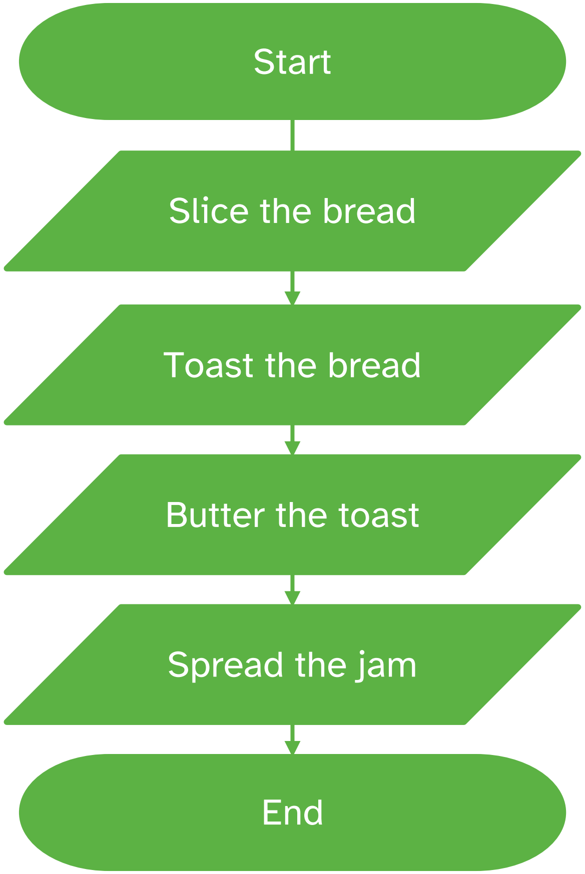




This little device has an awful lot of features, like 25 red LED lights that can flash messages. There are two programmable buttons that can be used to control games or pause and skip songs on a playlist. The BBC micro:bit can even detect motion and tell you which direction you're heading in.

Algorithms

An algorithm is a set of instructions that can be followed to solve a problem. Here is a simple algorithm for making toast:



Start

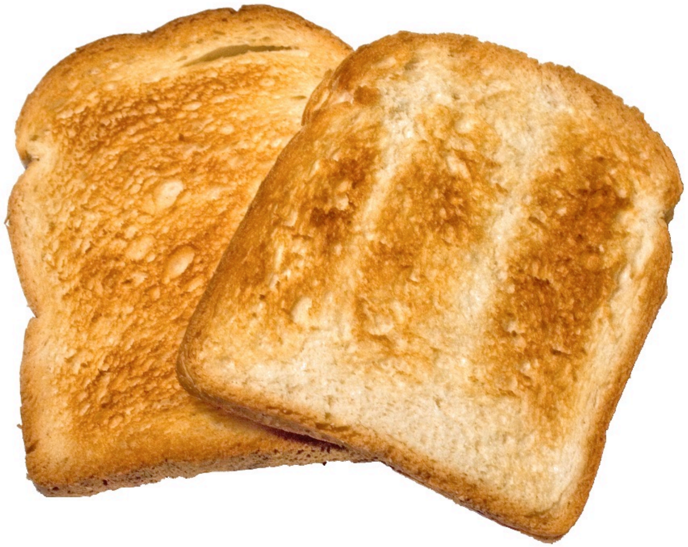
Slice the bread

Toast the bread

Butter the toast

Spread the jam

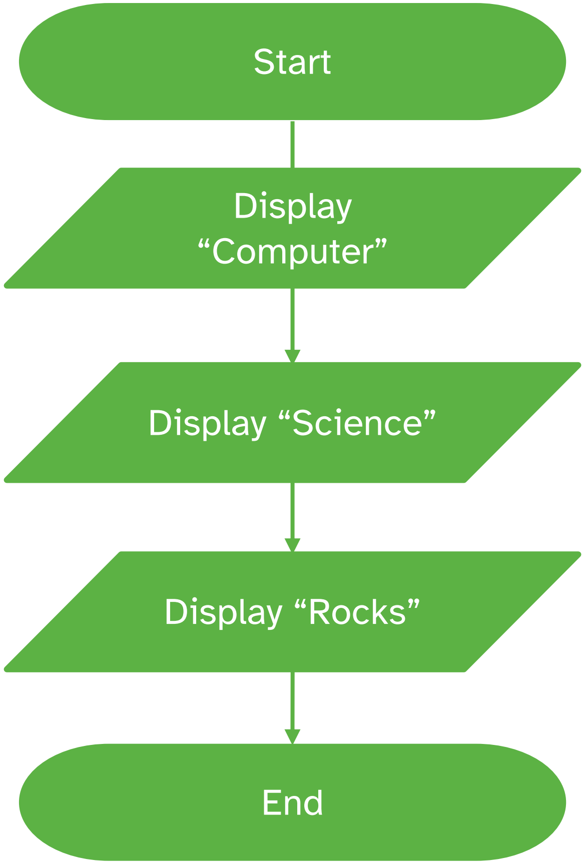
End



This algorithm is in the form of a flow chart which is a way of designing an algorithm.

Sequencing

The most simple type of algorithm uses sequencing, a set of instructions carried out one after another.



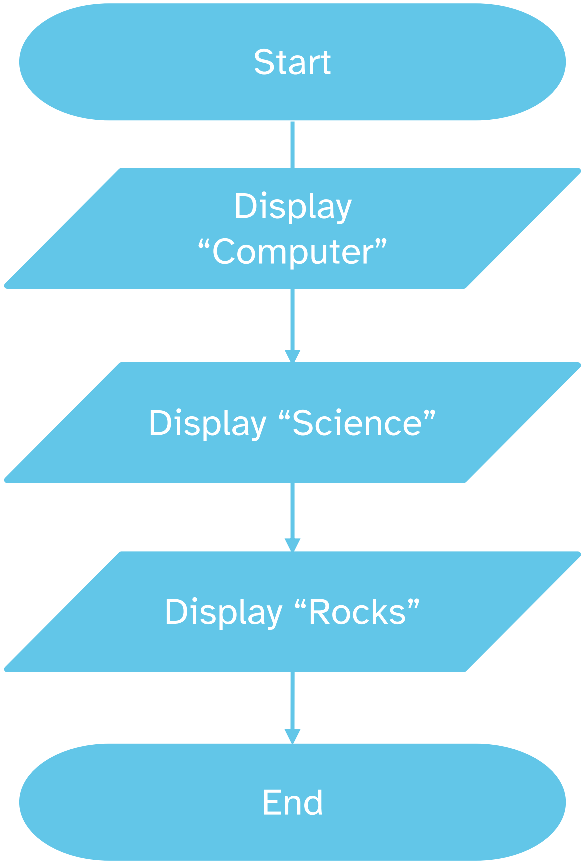
This is an design for an algorithm which will display the text “Computer”, “Science”, “Rocks” on the micro:bit.

We can turn an algorithm into a computer program using a programming language such as Python.

Python is a common programming language that is used a lot for web development.

Activity 1.1

Match the Python code to correct part of the flow chart.



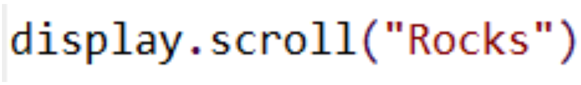
Start

Display “Computer”

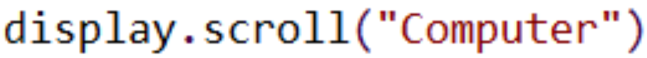
Display “Science”

Display “Rocks”

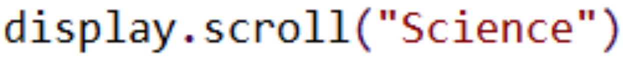
End



```
display.scroll("Rocks")
```



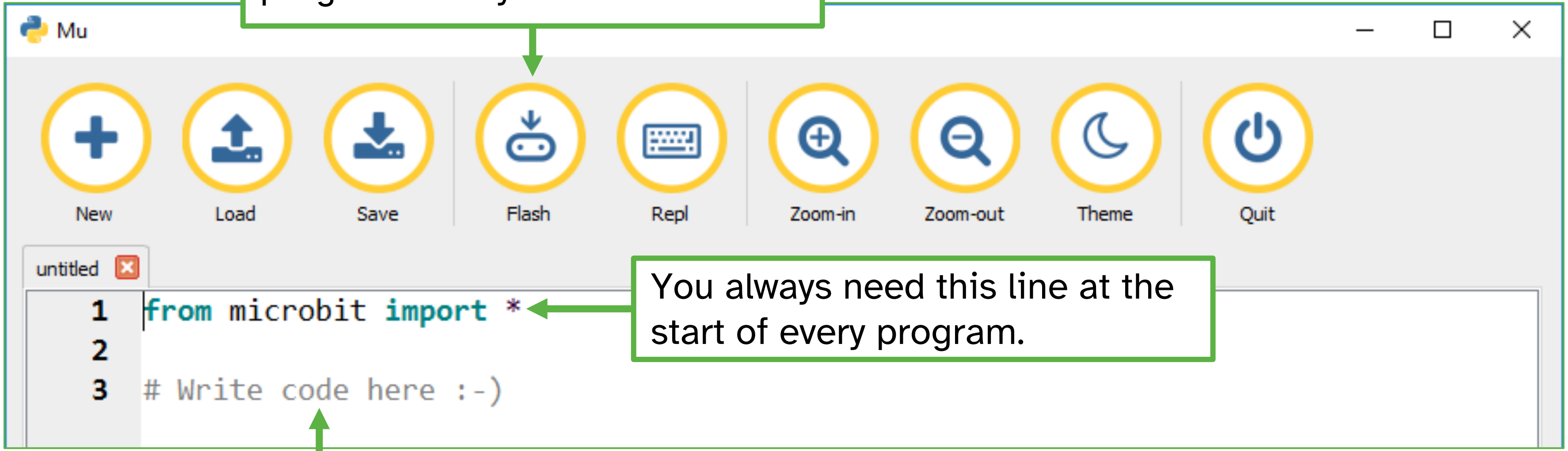
```
display.scroll("Computer")
```



```
display.scroll("Science")
```

Mu Editor

You are going to use the Mu editor to program your micro:bit.



```
from microbit import *

# Write code here :-)
```

Click this button to load your program onto your micro:bit.

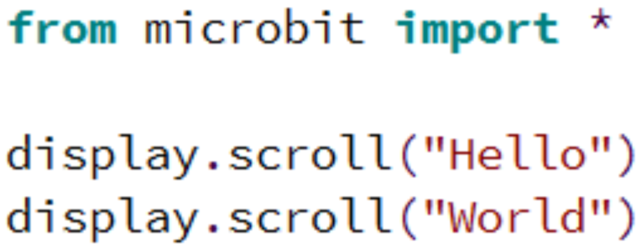
You always need this line at the start of every program.

Write your code here.

Displaying Text

You can display text on the micro:bit using the display.scroll command.

This code will output the text “Hello” and “World” on the micro:bit. Try it out for yourself.

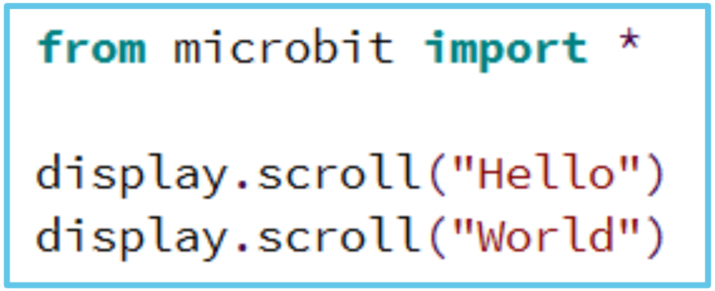


```
from microbit import *

display.scroll("Hello")
display.scroll("World")
```

Activity 1.2

Create a program that will display the text “Computer” “Science” “Rocks” on the micro:bit. Use this example code to help you.

Place a screenshot of your code here.

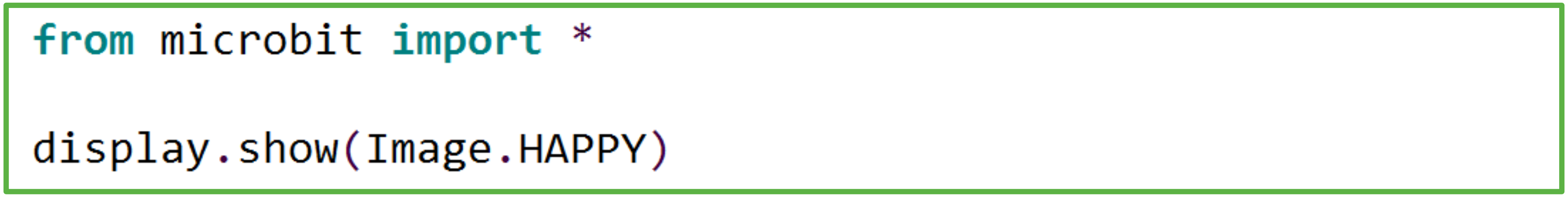


```
from microbit import *

display.scroll("Hello")
display.scroll("World")
```

Images

MicroPython (the version of Python the micro:bit uses) comes with lots of built in images.

Try creating a new program with the code shown below and load it onto your micro:bit.



```
from microbit import *

display.show(Image.HAPPY)
```

Built In Images

Here is a list of the built in images in Micro Python:

```
Image.HEART
Image.HEART_SMALL
Image.HAPPY
Image.SMILE
Image.SAD
Image.CONFUSED
Image.ANGRY
Image.ASLEEP
Image.SURPRISED
Image.SILLY
Image.FABULOUS
Image.MEH
Image.YES
Image.NO
Image.TRIANGLE
```

```
Image.TRIANGLE_LEFT
Image.CHESSBOARD
Image.DIAMOND
Image.DIAMOND_SMALL
Image.SQUARE
Image.SQUARE_SMALL
Image.RABBIT
Image.COW
Image.MUSIC_CROTCHET
Image.MUSIC_QUAVER
Image.MUSIC_QUAVERS
Image.PITCHFORK
Image.XMAS
Image.PACMAN
```

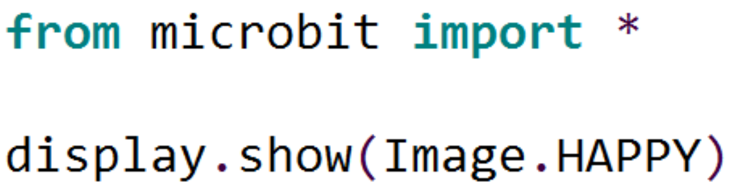
```
Image.TARGET
Image.TSHIRT
Image.ROLLERSKATE
Image.DUCK
Image.HOUSE
Image.TORTOISE
Image.BUTTERFLY
Image.STICKFIGURE
Image.GHOST
Image.SWORD
Image.GIRAFFE
Image.SKULL
Image.UMBRELLA
Image.SNAKE
```

`Image.CLOCK12` (clock at 12 o' clock, others from 1–11)

`Image.ARROW_N` (arrow pointing north, others replace N with NE, E, SE, S, SW, W, NW)

Activity 1.3

Create a program to display a built in image of your choice. Use this example code to help you:



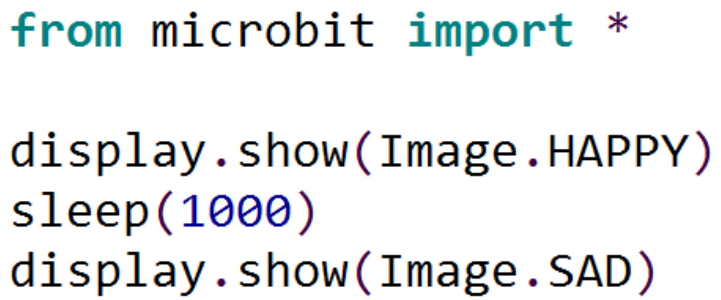
```
from microbit import *

display.show(Image.HAPPY)
```

Place a screenshot of your code here.

Delays

You can create a delay between lines of code in Python.

The code below will show a happy face for 1 second before switching to a sad face. Try it for yourself.



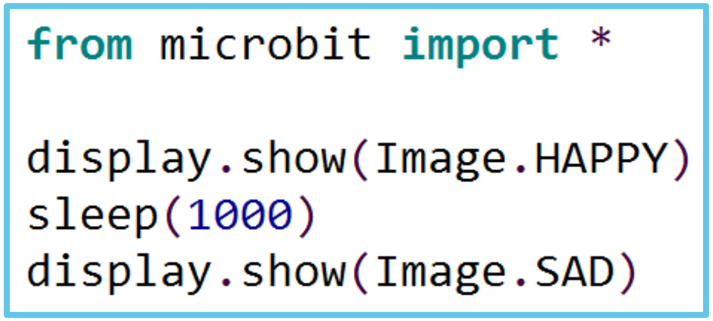
```
from microbit import *

display.show(Image.HAPPY)
sleep(1000)
display.show(Image.SAD)
```

Activity 1.4

Create an animation using the different built in images. Use the sleep function to create a pause between the images.

Place a screenshot of your code here.

Use this example code as a starting point:



```
from microbit import *

display.show(Image.HAPPY)
sleep(1000)
display.show(Image.SAD)
```