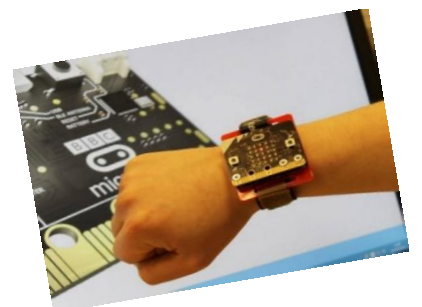
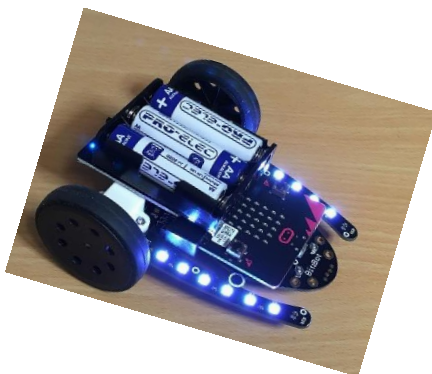
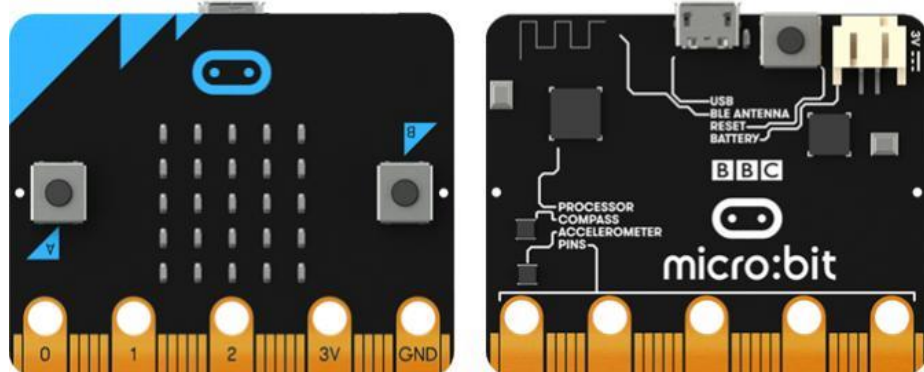




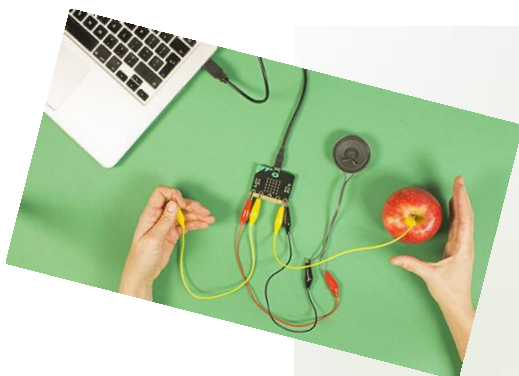
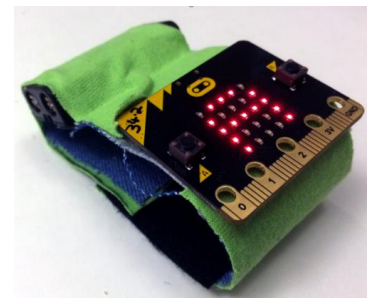
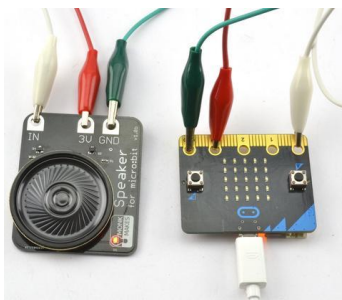
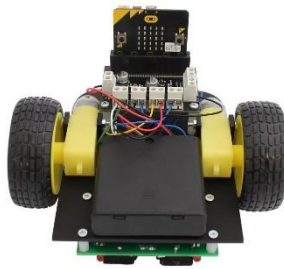
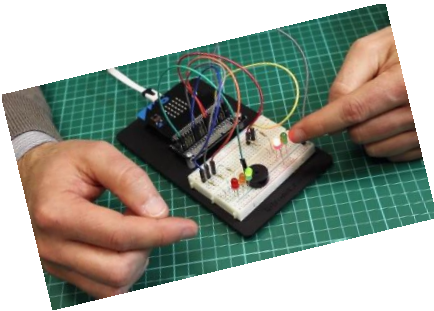
[ **the** academy\_of\_code]

## micro:bits introduction



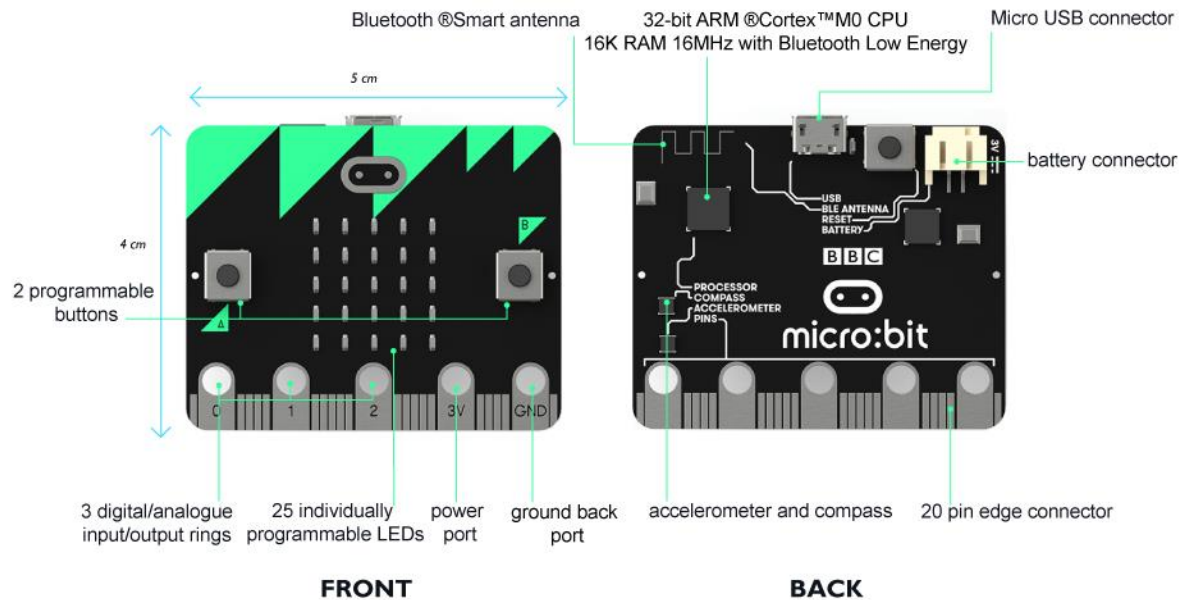
# Lesson 0

You can use the micro:bit for all sorts of amazing creations, from robots to musical instruments – the possibilities are endless. Think of the micro:bit as the brain of your project.



## micro:bit features

When you look at the front and back of a micro:bit you can see a range of physical features:



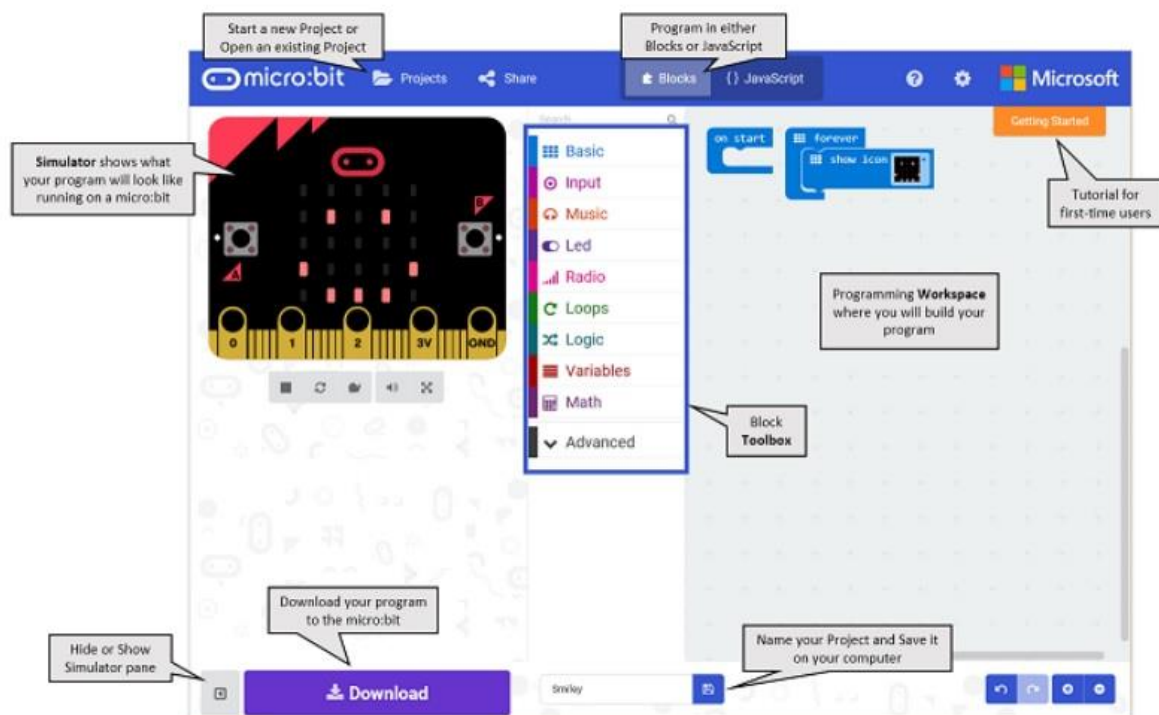
- 25 individually-programmable LEDs
- 2 round black programmable buttons: A and B
- Physical connection pins
- Light and temperature sensors
- Motion sensors (accelerometer and compass)
- Wireless Communication, via Radio and Bluetooth
- USB interface
- Battery connector

In the following pages we will explore how to program some of these physical features. But first, what app/software or webpage do we use to code the micro:bit?

## Where to Code

A micro:bit can be coded from any web browser in Blocks, Javascript, Python, Scratch and more; no software required. We will look at one programming environment this evening:

**makecode.microbit.org**



This programming environment is familiar to us – it looks very similar to scratch – easy! Code on the right, simulator on the left.

We need to get from clicking our blocks together on makecode.microbit.org to running our program on a micro:bit. We will do this as part of our first lesson.

# Lesson 1

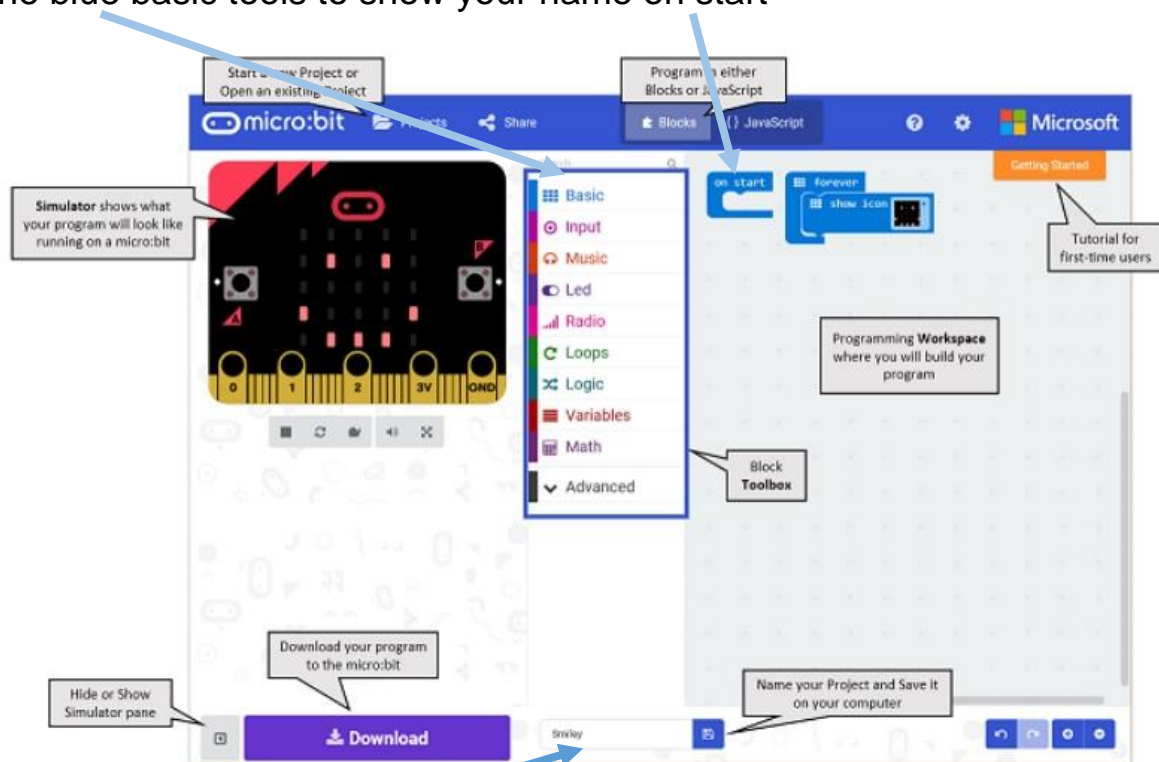
## Programming the LEDs

**What is it?** LED stands for Light Emitting Diode.

The micro:bit has 25 individually-programmable LEDs, allowing you to display text, numbers, and images.

### Your first challenge:

Go to **makecode.microbit.org** and use the programming block in the blue basic tools to show your name on start



Show Simon/Sarah/Ciaran/Eoin your program.

Now name it and

Download it to the downloads folder on your PC.

## **micro:bit in action**

Ask Simon/Sarah/Ciaran/Eoin for a battery pack for your micro:bit

Plug it in and follow the instructions on the 25 LEDs

We have now used:

- When button A pressed
- When button B pressed
- On shake
- Tilt

Go back to **makecode.microbit.org** and look for these inputs.

Where is tilt hidden?

### **Your second challenge:**

Create a program using all four of the above inputs: A; B; Shake; Tilt

Show Simon/Sarah/Ciaran/Eoin your new program.

Now name it and

Download it to the downloads folder on your PC.

Unplug the battery pack from your micro:bit

Ask Simon/Sarah/Ciaran/Eoin for a USB cable

### **Your program on the micro:bit**

Go to the downloads folder on your PC

Copy your first program – it ends in .hex

Connect your micro:bit to your PC using the USB cable

Paste your first program onto the micro:bit – it appears just like a USB key



## Your program on the micro:bit

Now run your program on the micro:bit – to reset – press the black reset button on the back of the micro:bit

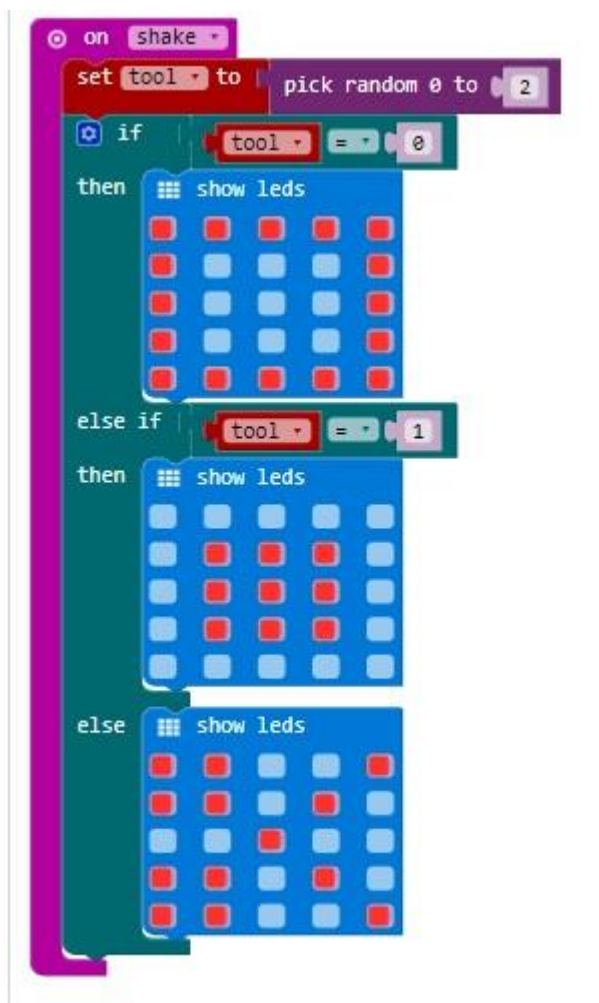
Now copy and paste your second program to the micro:bit – note your micro:bit will only hold one file at a time.

# Lesson 2

## Rock Paper Scissors

Below is the code to run rock paper scissors on the micro:bit

Try it!



Now name it and download this on to your micro:bit and try it

# Lesson 3

## Javascript

We can also code the micro:bit using javascript test instead of block programming.

Try the program below

Click on Javascript

Type the code

Test is on the simulator

Download it to your PC and transfer it to the micro:bit

```
1 basic.showString("Hello!")
2 |
3
4
```

**Microbit: Introducton to Javascript - First tutorial**