Hwb® presents...

technoteach technocamps

Llywodraeth Cymru Welsh Government

Prifysgol Abertawe Swansea University

Cardiff University Prifysgol Caerdydd

Prifysgol Bangor University

Cardiff Metropolitan University | Prifysgol Metropolitan Caerdydd

University of South Wales Prifysgol De Cymru

Cyngor Cyllido Addysg Uwch Cymru Higher Education Funding Council for Wales hefcw

Prifysgol Cymru Y Drindod Dewi Sant University of Wales Trinity Saint David

Prifysgol Aberystwyth University

Prifysgol Glyndŵr Wrecsam | Wrexham Glyndŵr University

institute of CODING in wales technocamps

in partnership with

BBC micro:bit the next gen

Get to Know Your micro:bit

micro:bit – The Next Gen

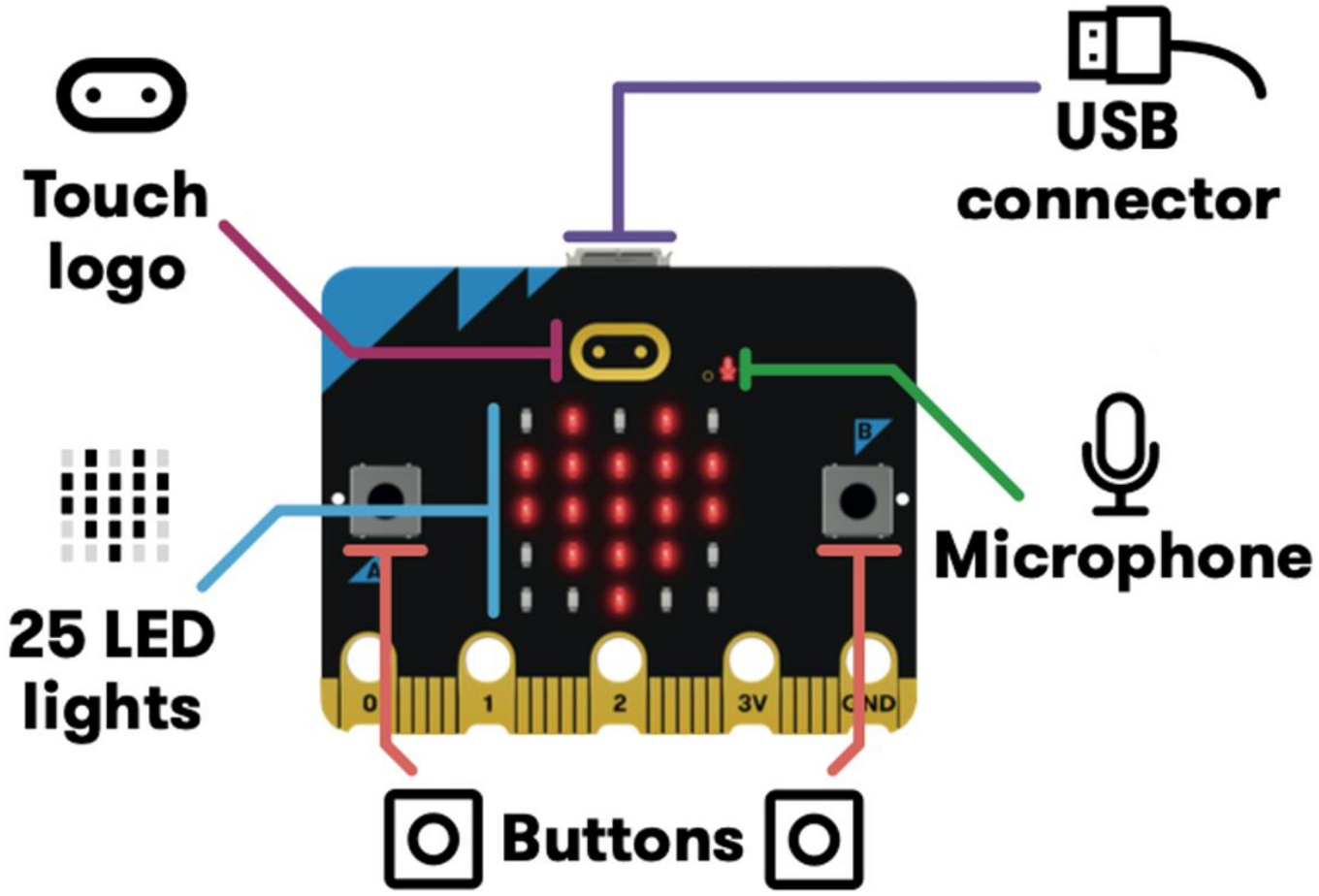
Technocamps have partnered with the micro:bit Foundation to roll-out their new phase of the micro:bit project. As part of this collaboration, we are the designated deliverers of 'micro:bit – The Next Gen' across Wales.

Alex Humphreys joined in with the coding lesson during her visit to Cardiff.

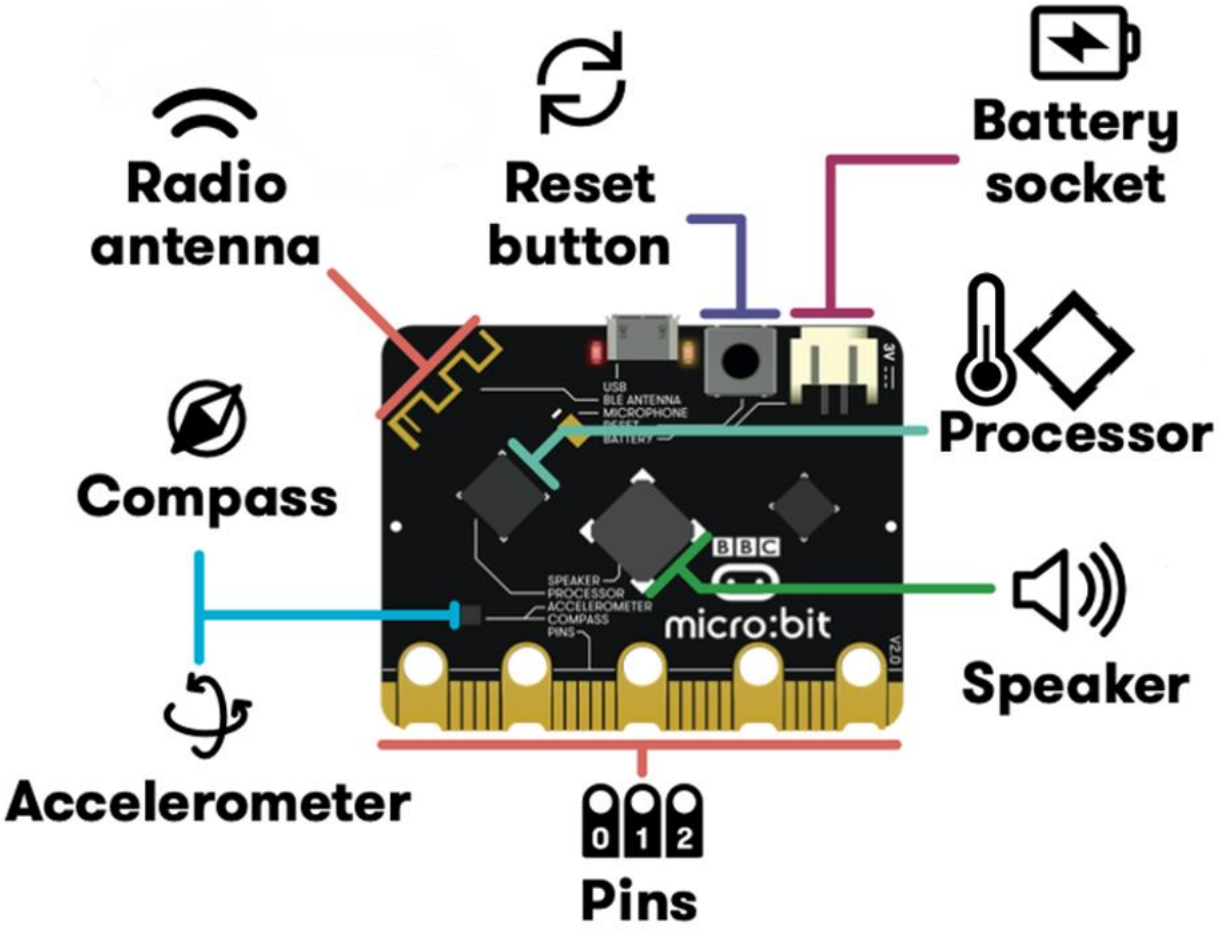
Presenter and journalist Alex Humphreys said she loved taking part in the micro:bit lesson facilitated by **Technocamps** during a visit to a school in Cardiff and said she supports children learning about coding from an early age.

What can my micro:bit do?

What can my micro:bit do?

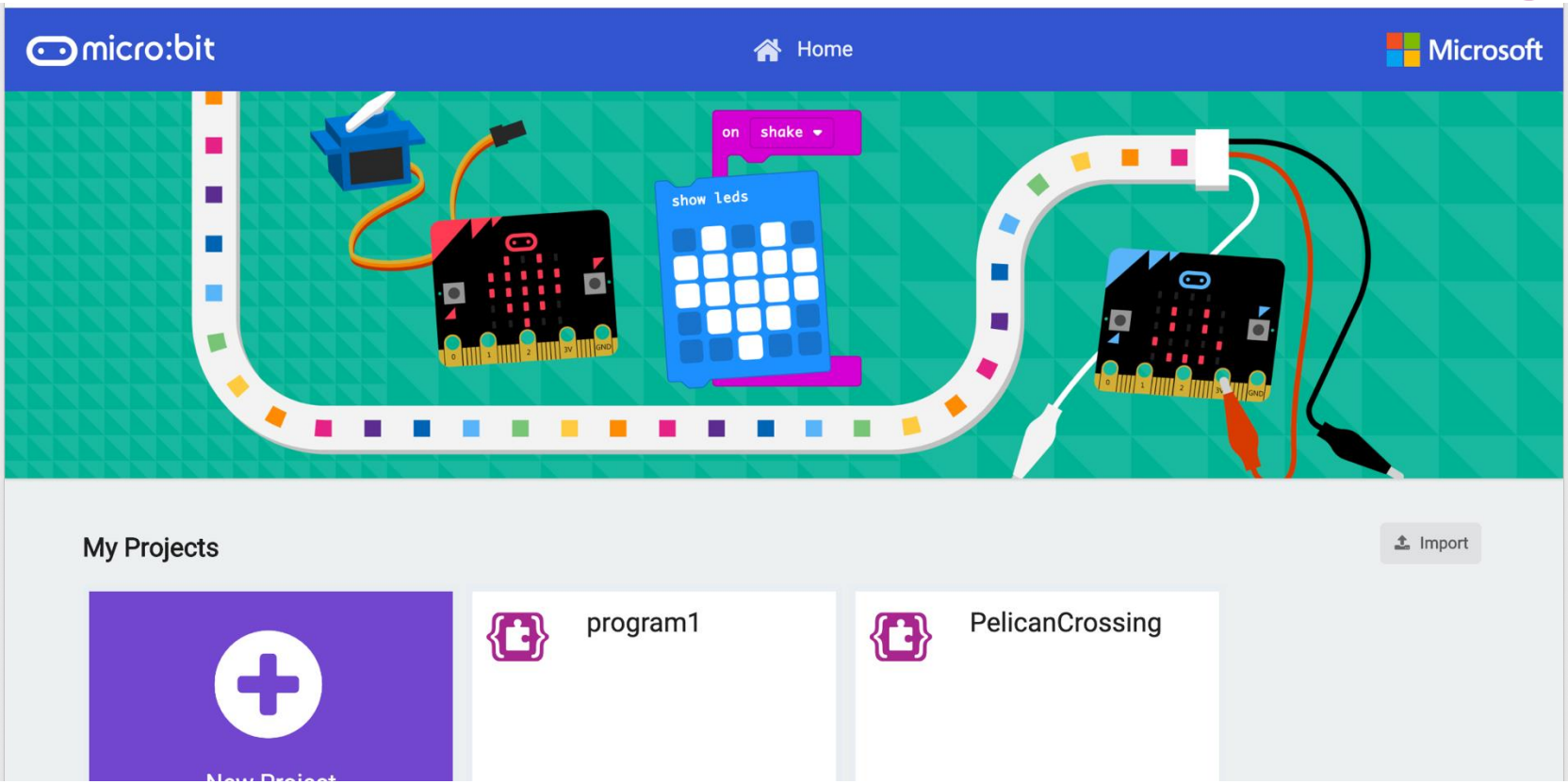


What can my micro:bit do?



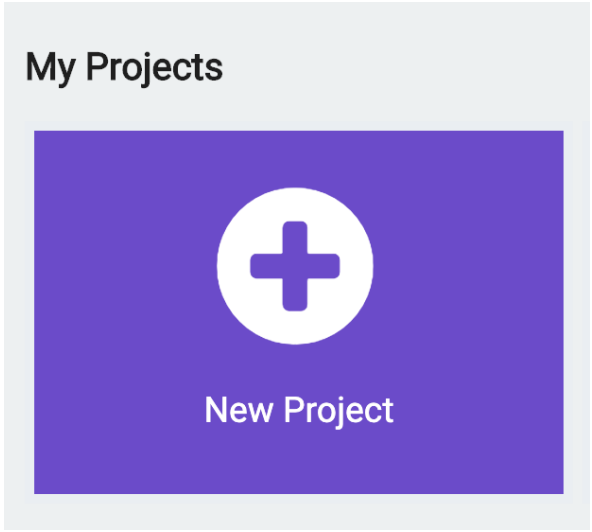
Starting with Makecode

makecode.microbit.org

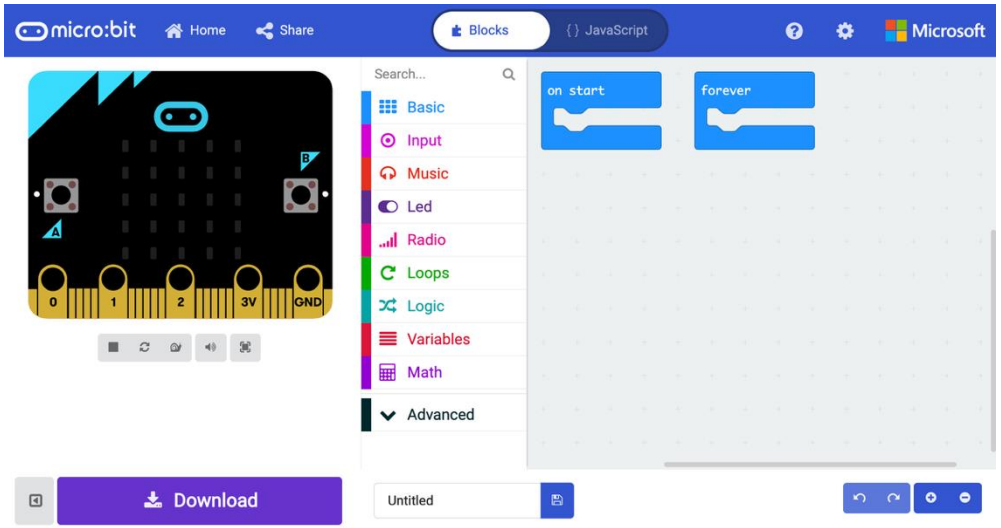


Starting with Makecode

Click New Project

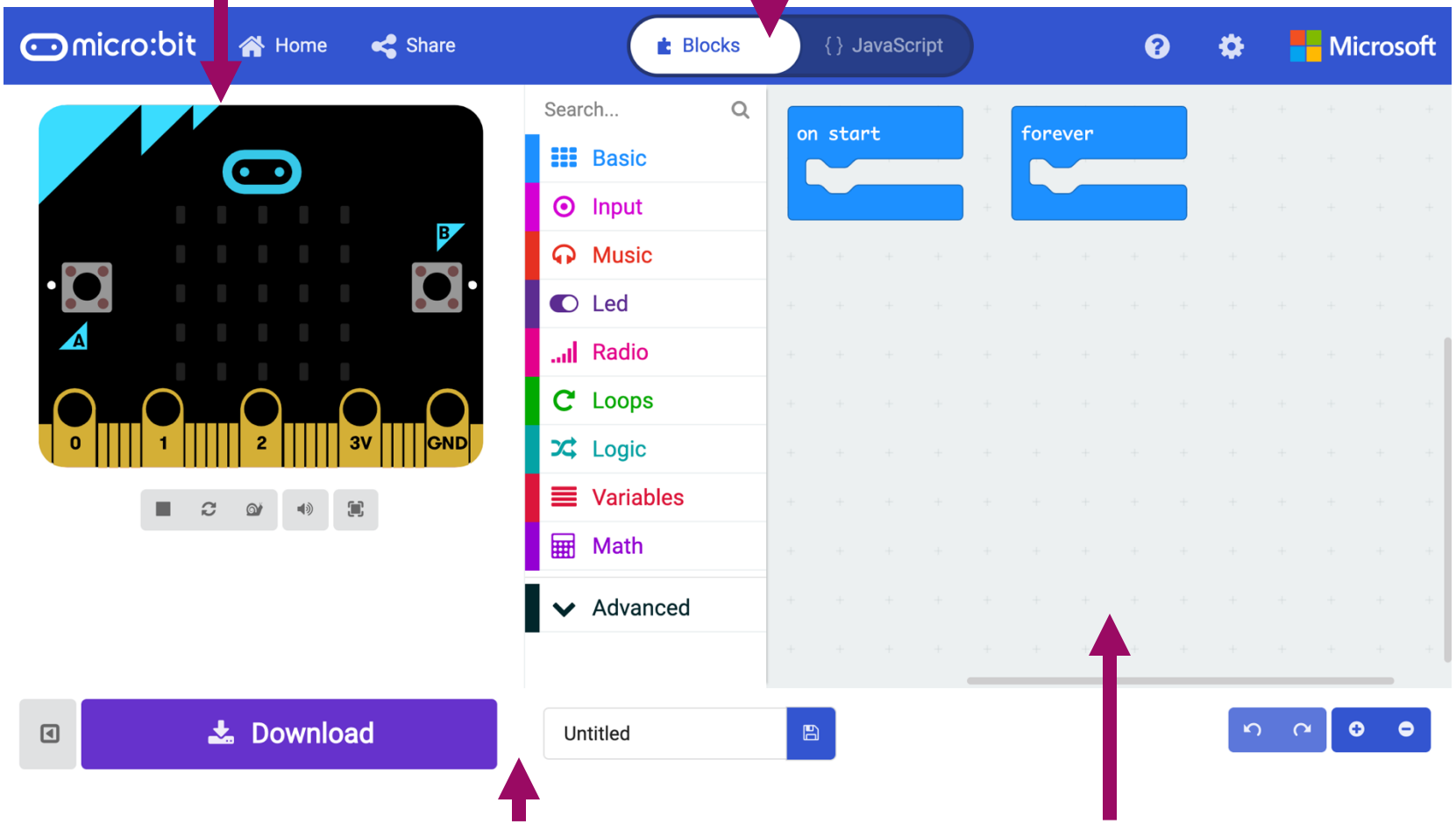


It should look like this!



Simulator

Language



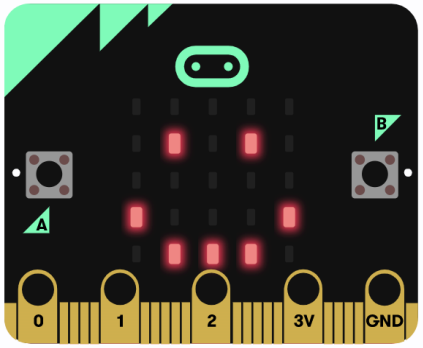
Save and Download

Code Window

Activity: Emotion Badge

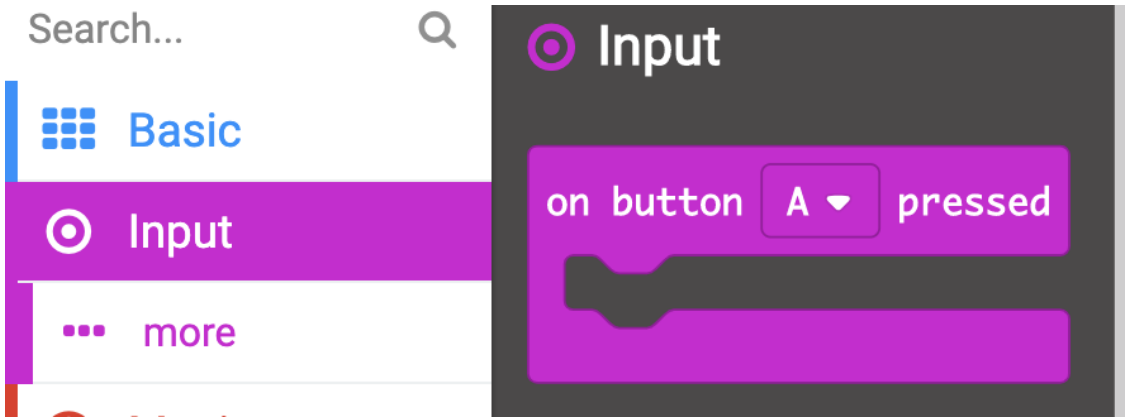
Emotion Badge

- An emotion badge is a way for us to show how we are feeling without having to talk out loud.
- We have programmed the micro:bit to display one emotion – a happy face.
- But if we want to change the emotion, we need to change the code and download it again.
- How do you think we can display different emotions without having to change the code each time?



Events

- Each micro:bit has two buttons, A and B.
- These buttons help us choose which action to take without reprogramming the micro:bit each time.
- For example, we can show a happy face when we press button A and a sad face when we press button B.
- The commands we need are found in the Input section.

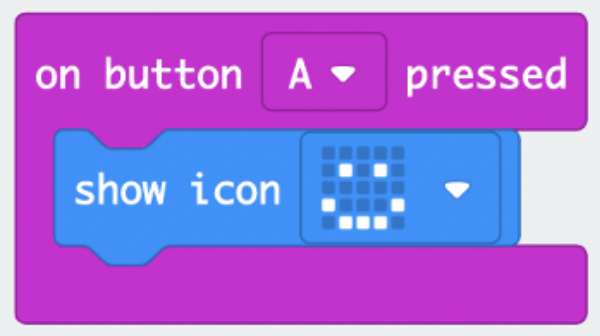


Events

Let's try using an event for button A:

1. Click on Input
2. Drag and drop the on button A pressed block into your code
3. Now click on Basic and drag and drop the show icon into the event block
4. Choose the happy face and download the code.

What happens?

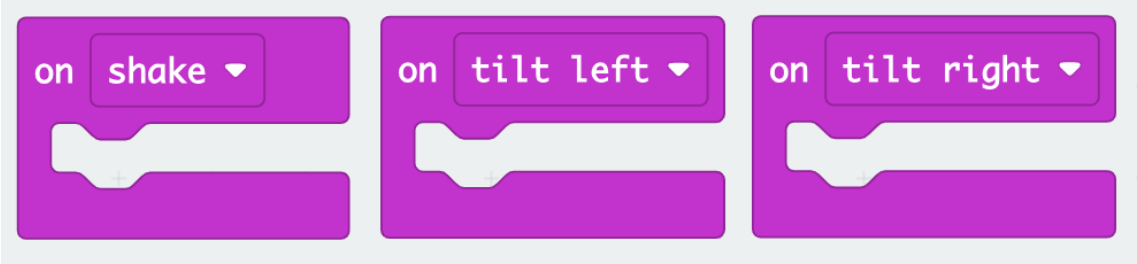


Multiple Events

- We can use multiple input commands – one for each button.
- Try adding an input for button B, the same way you did for button A.
- Try running the code.

Even More Emotions

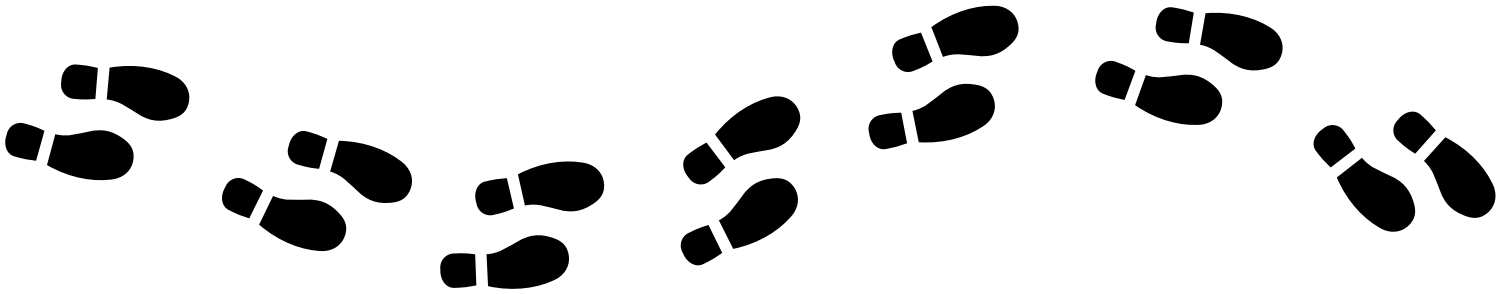
- There are only two buttons, but the micro:bit has many more input blocks.
- Try adding some more input blocks such as on shake or on tilt left.
- Add some more emotions such as confused, angry, or tired to your code.



Activity: Step Counter

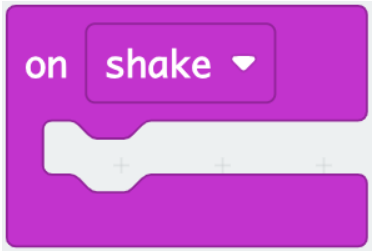
Step Counter

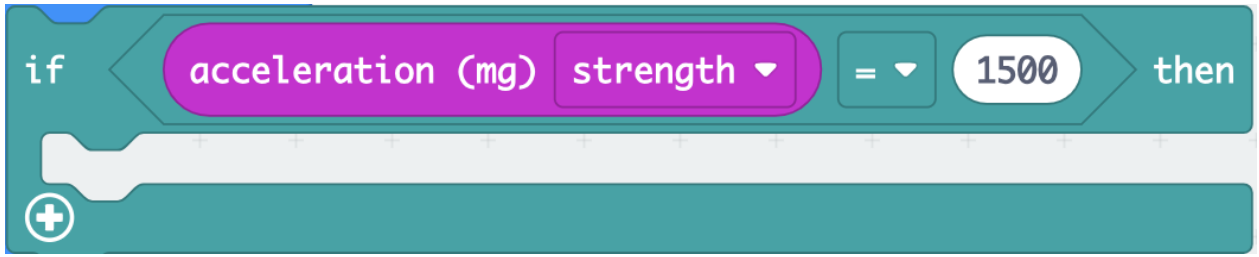
- A step counter (or pedometer) will need the micro:bit to react to movement instead of pressing a button.
- How do you think we can use movement as an input?



Movement Sensing

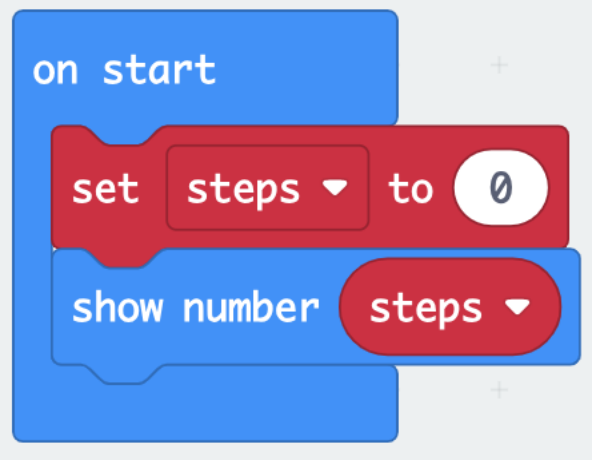
- One option is to use the on shake input. The micro:bit will carry out an action when it is shaken. However, this can be unreliable.
- Another option is to make the micro:bit react to a certain amount of acceleration. This value can be changed so can be customized to each person's step.
- Try making a step counter using this if statement.

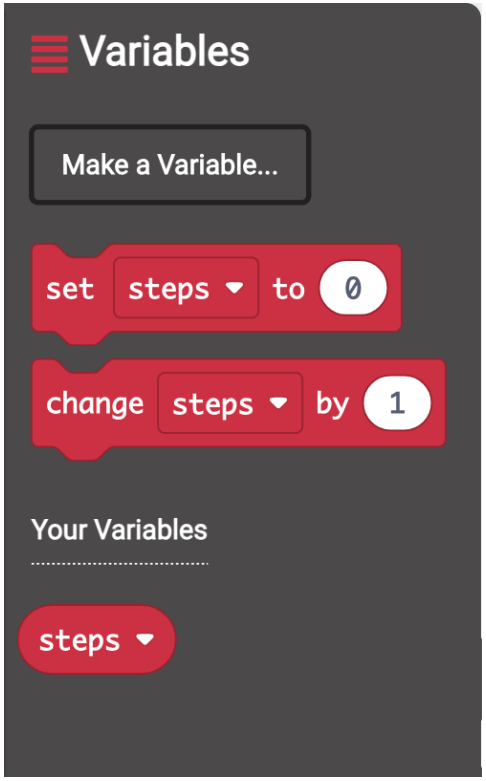




Step Variable

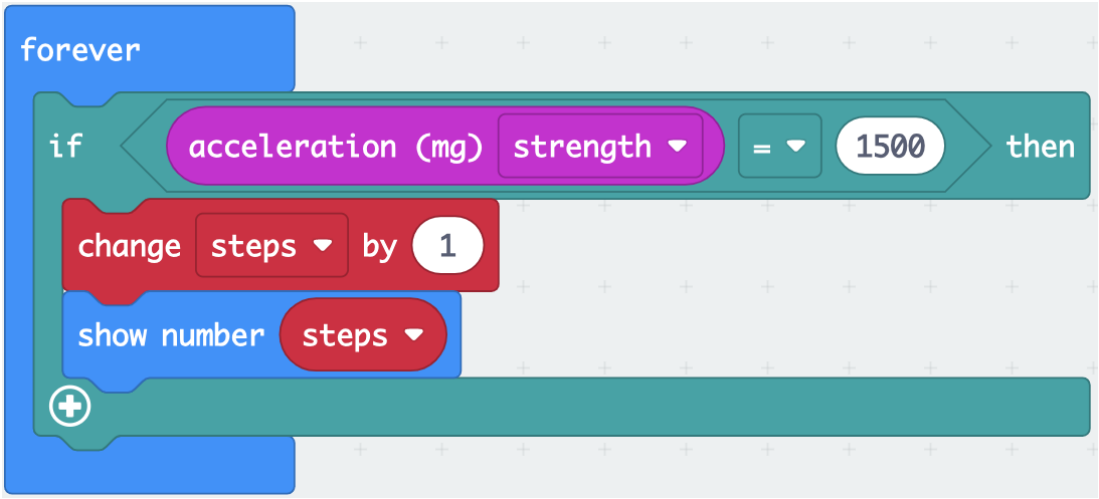
- We need to start by making a variable that we can modify. Let's call this "steps".
- Set the step count to 0.





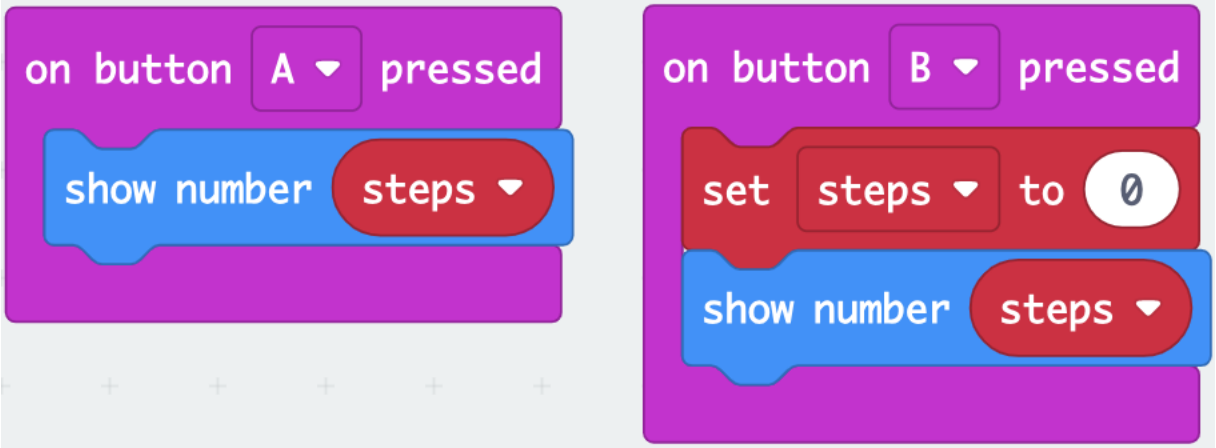
Step Counter

- Add the if statement to the forever loop and add the change steps command.



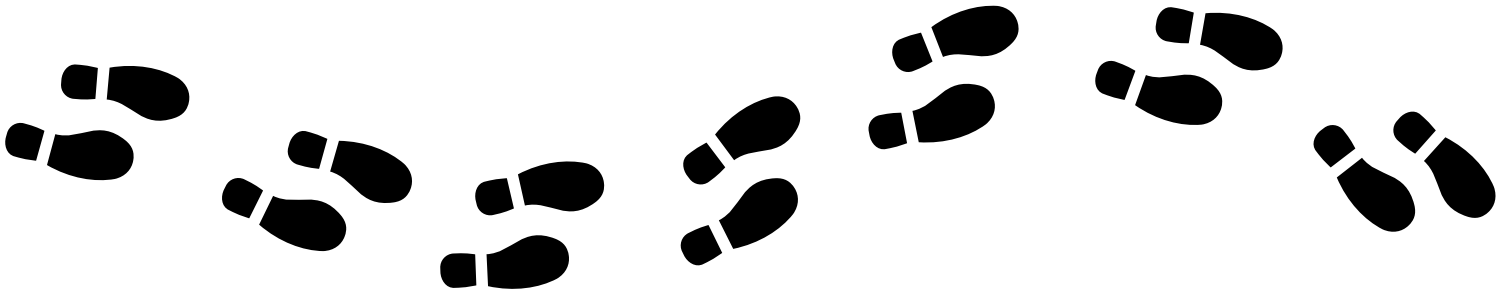
Step Counter

- You can add some commands to the button A and button B input blocks.
- This will allow you to reset the counter.



Step Counter

- Let the learners try running the code to see if it works!
- The learners can attach the micro:bit to their shoes using an elastic band.
- Does it accurately count their steps? They may need to change the acceleration value.



Using my micro:bit Across the Curriculum

Across All AoLEs

Part of our mission at Technocamps is to support the Digital Literacy Framework by demonstrating how digital literacy can be incorporated across all AoLEs, and should not be resigned to the IT classroom.

Science and Technology

Mathematics and Numeracy

Humanities

Expressive Arts

Languages, Literacy and Communication

Across All AoLEs

Science and Technology

The micro:bit can be used to measure aspects of its environment:

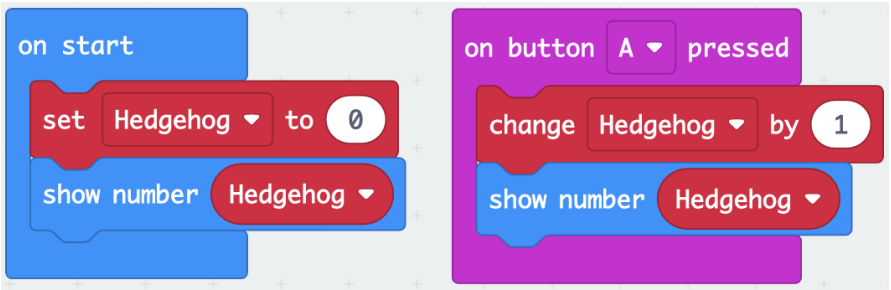
- Use the pins to detect an electrical circuit.
- Use the light sensor to plot a simple graph.

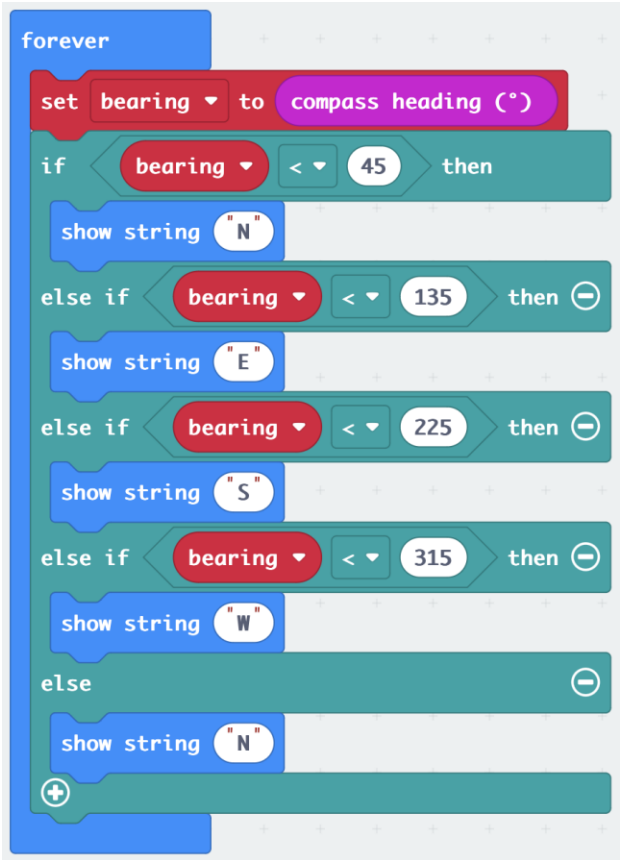
Across All AoLEs

Humanities

The micro:bit can be used to measure aspects of its environment:

- Use the internal compass to use the micro:bit as a compass.
- Use the buttons to create a species counter to analyse biodiversity.



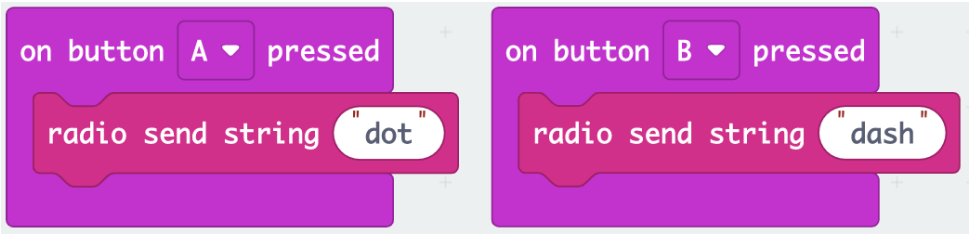


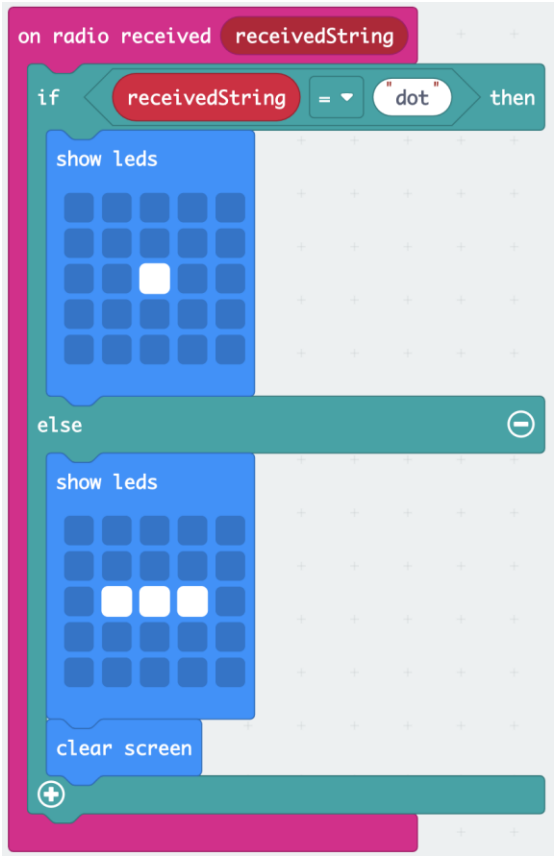
Across All AoLEs

Languages, Literacy and Communication

Using the radio transmitter, we can communicate using the micro:bit.

This can be used to send secret codes (such as the morse code shown).



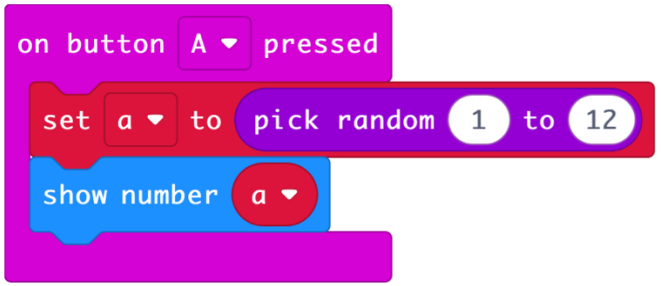


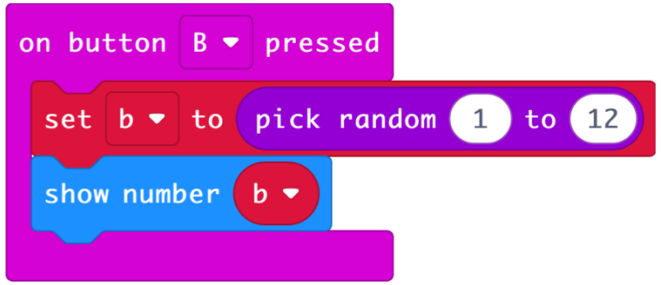
Across All AoLEs

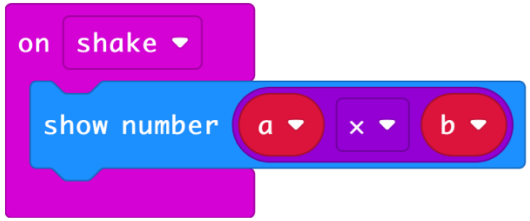
Mathematics and Numeracy

The micro:bit has many built in mathematical functions and can therefore be used to teach almost anything in a maths lesson:

- A times table checker
- A dice





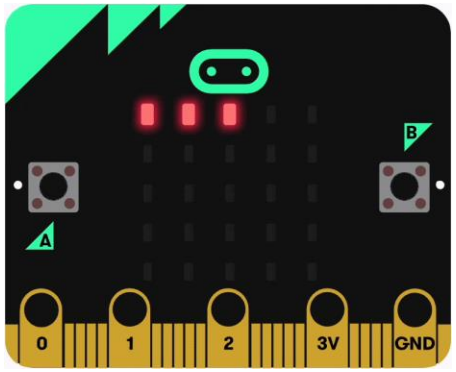


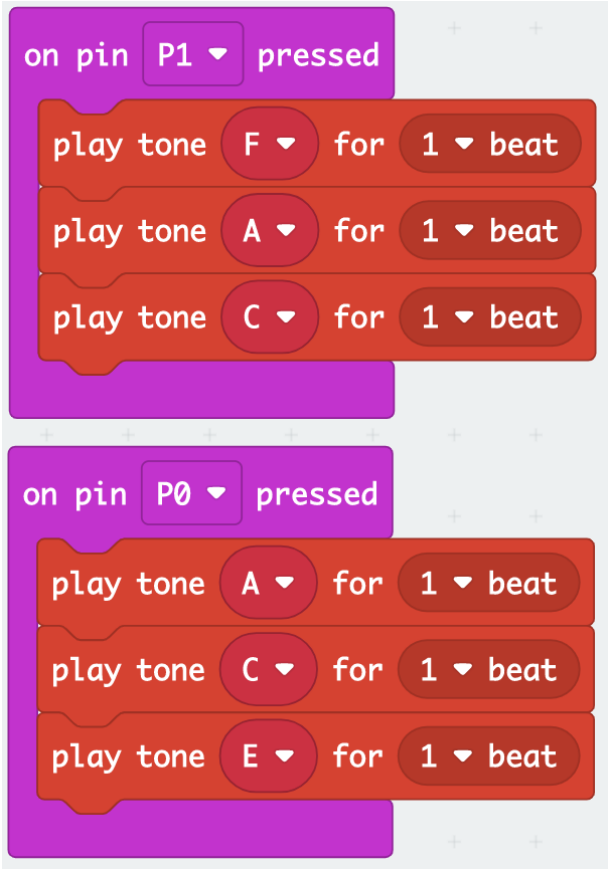
Across All AoLEs

Expressive Arts

The micro:bit also provides plenty of opportunity for exploring the arts!

- Learn music theory by building chords.
- Create animations.





micro:bit – Workshops

We have 9 new workshops focused on developing learners' skills with the micro:bit across all AoLEs and progression steps 2 and 3:

- Climate Control
- Electrifying micro:bit
- Helping Animals
- Morse Code micro:bit
- Networks and Communication
- Cyber Security
- Health and Wellness
- micro:bit Math Game
- Musical micro:bit


micro:bit – Musical micro:bits


micro:bit – Mathematics Game


micro:bit – Health and Wellness


micro:bit – Electricity


micro:bit – Helping Animals


micro:bit – Morse Code

micro:bit – Resources

As well as our workshops, many of our resources are available for free on our website!

If you would like to use any of our resources in the classroom, or to support you in developing your own classroom activities, you can download them for free at:

tc1.me/microbit-activities


micro:bit – Musical micro:bits


micro:bit – Mathematics Game


micro:bit – Health and Wellness


micro:bit – Electricity


micro:bit – Helping Animals


micro:bit – Morse Code