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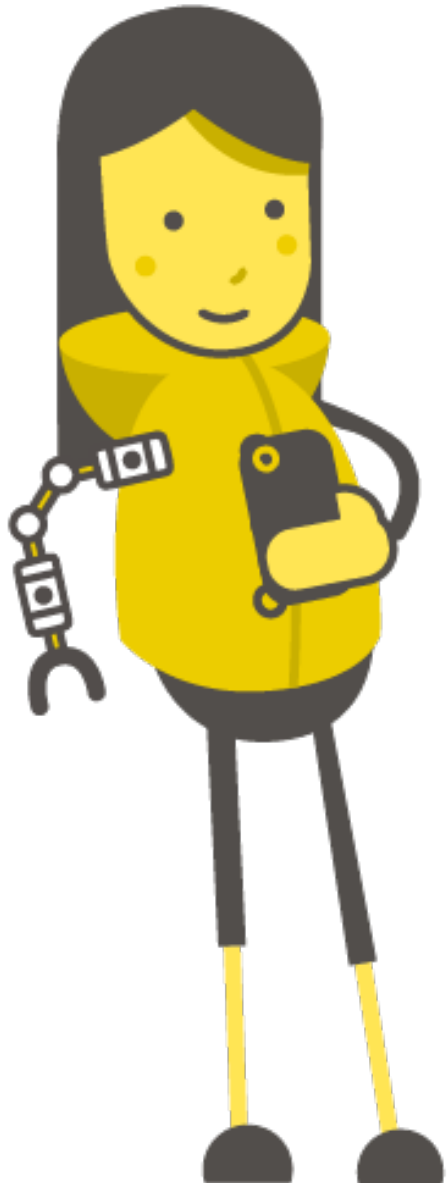
Health and Wellness micro:bit



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Intro to micro:bit

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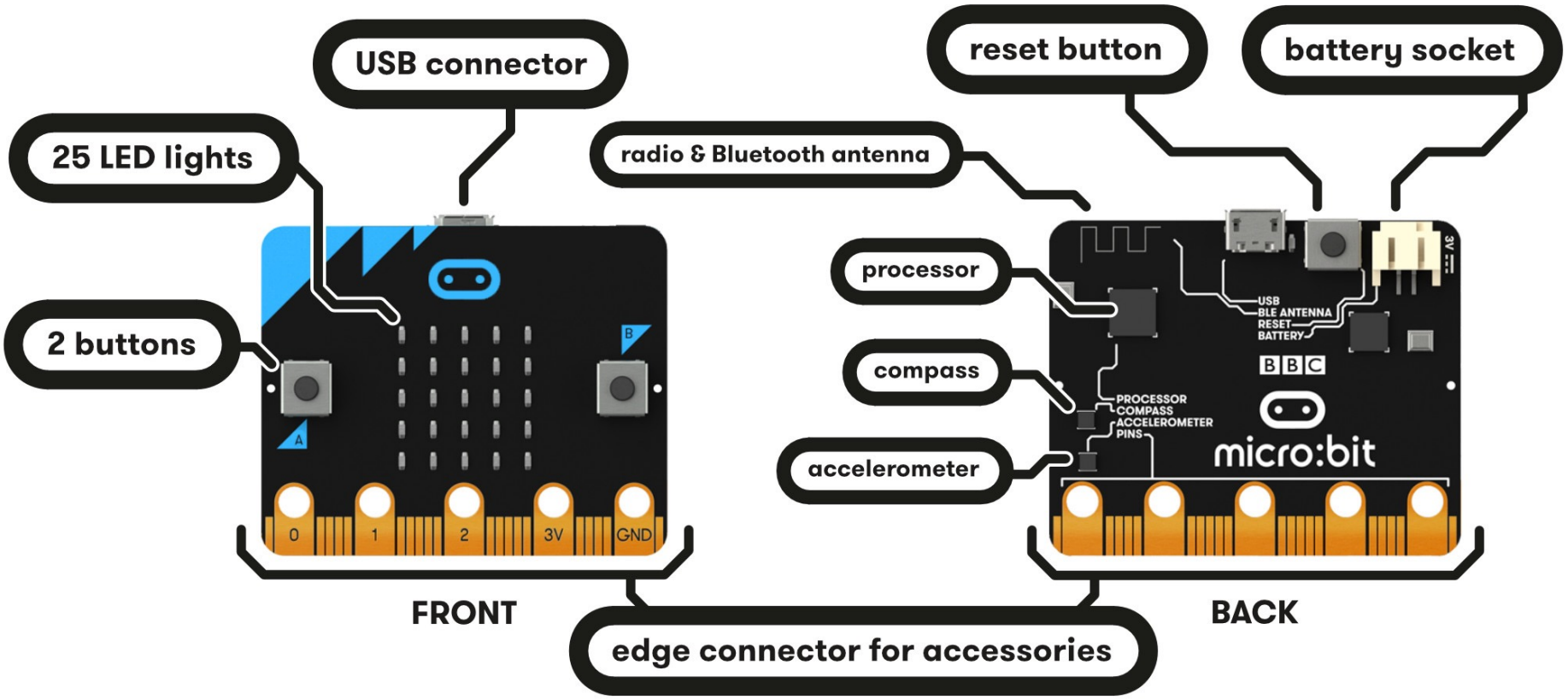
What is a micro:bit?



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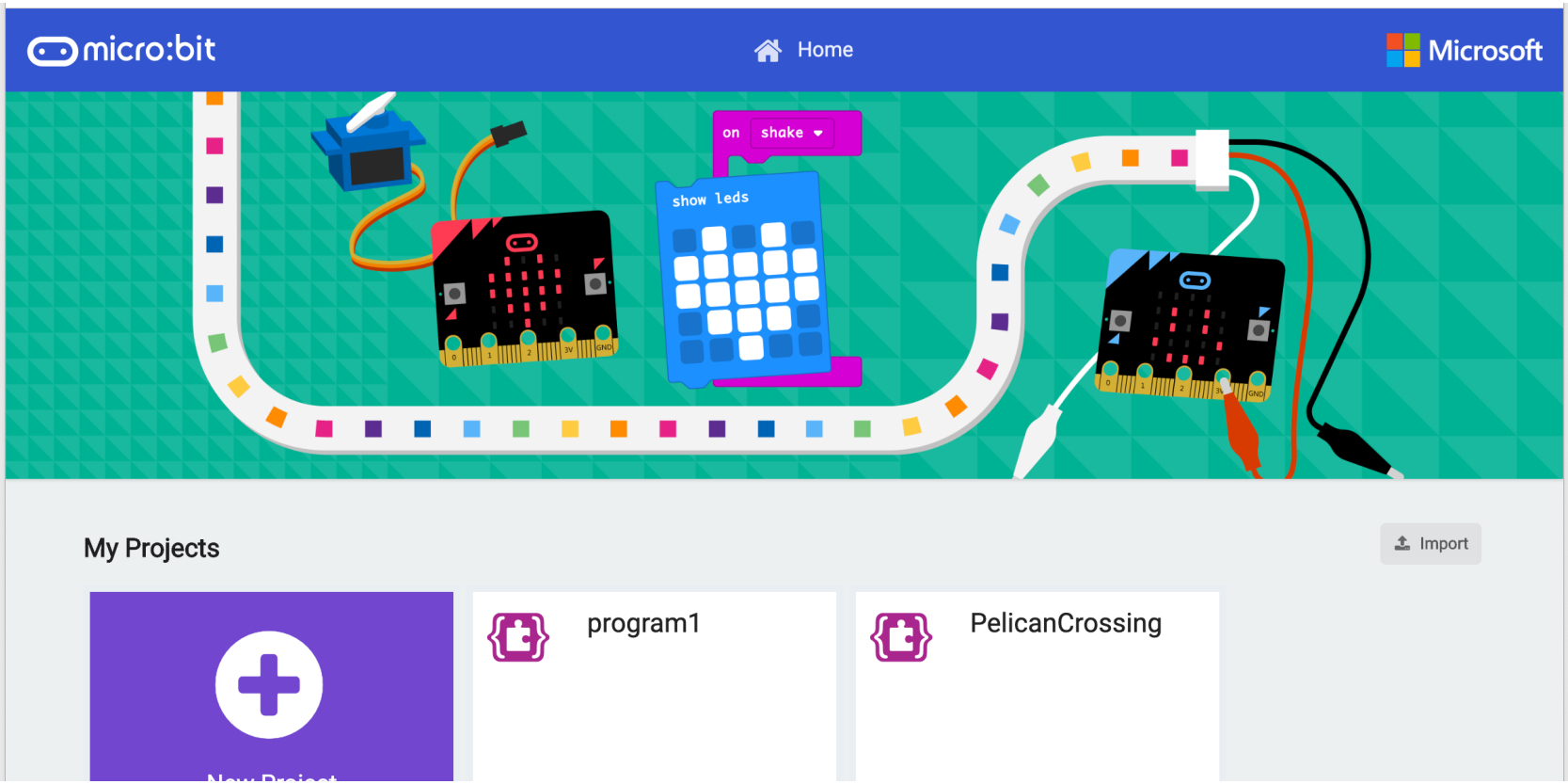
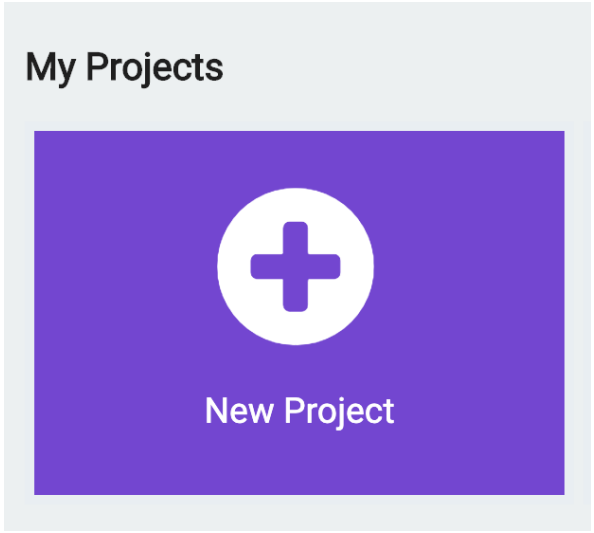
Starting with MakeCode

makecode.microbit.org

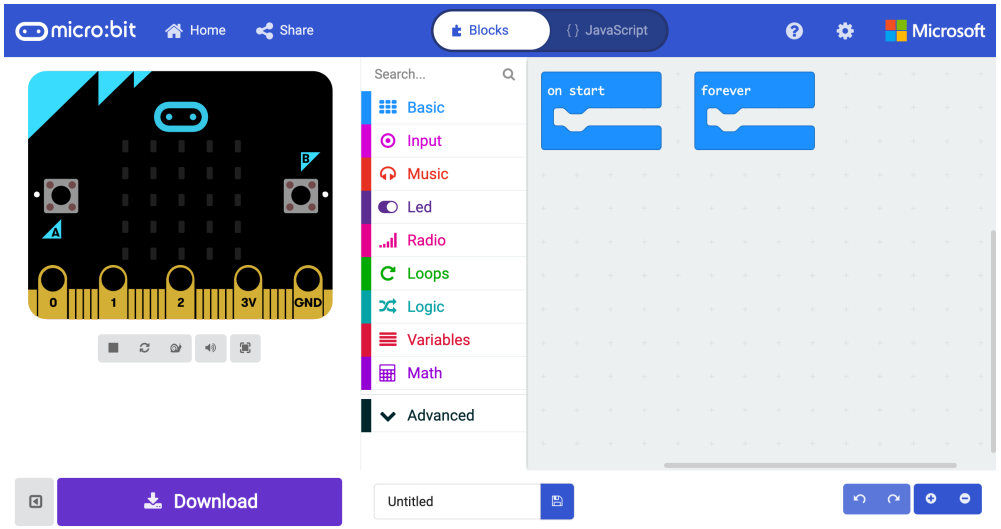


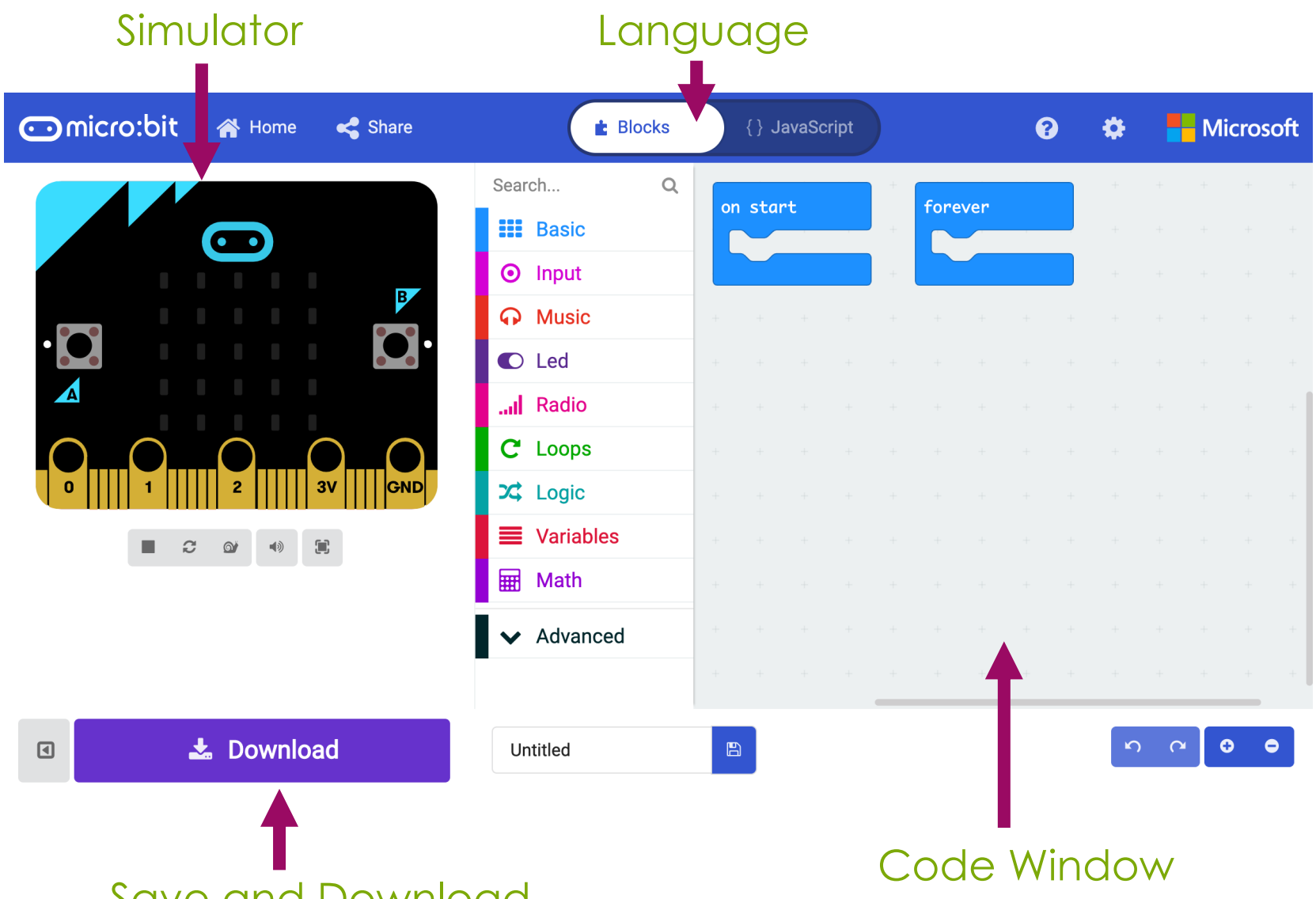
Starting with MakeCode

Click New Project



It should look like this!




Simulator
Language
micro:bit
Home
Share
Blocks
{ } JavaScript
Microsoft
Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Advanced
on start
forever
0
1
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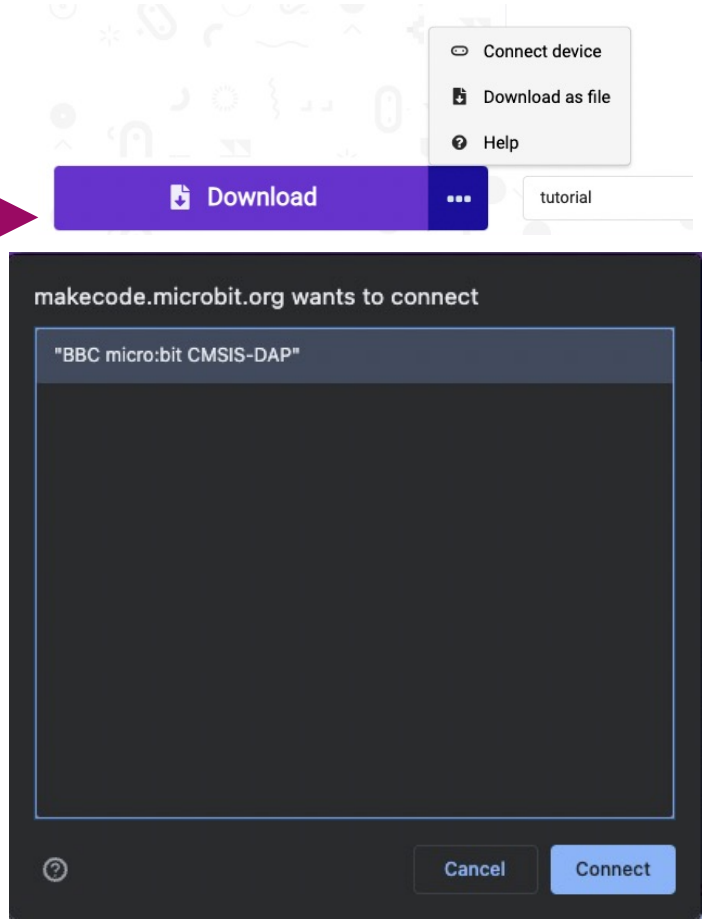
Download
Untitled
Save and Download
Code Window

Connecting the micro:bit

1. Plug the micro:bit into your computer
2. In the bottom left of your screen, click the 3 dots next to 'Download', then click 'Connect Device'
3. Follow the on-screen instructions until you see this popup
4. Click the name of your device (it should be the only option)
5. Click connect



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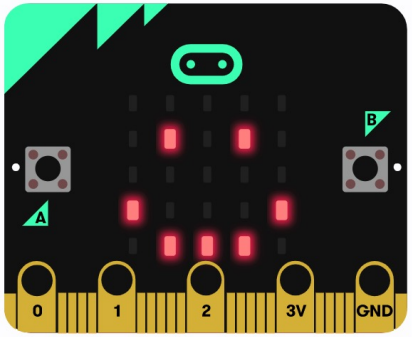
Mental Health

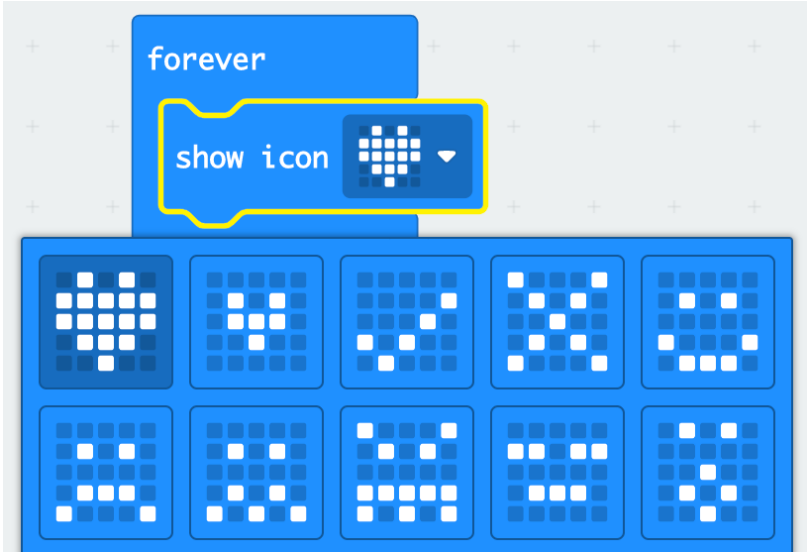
Activity: Smile!

Smile!

Let's start by displaying a happy face:

1. Click on basic
2. Click on the show icon command
3. Drag and drop it into the forever block
4. Use the dropdown menu to change the icon to a happy face
5. Click on download





What happens to the micro:bit?

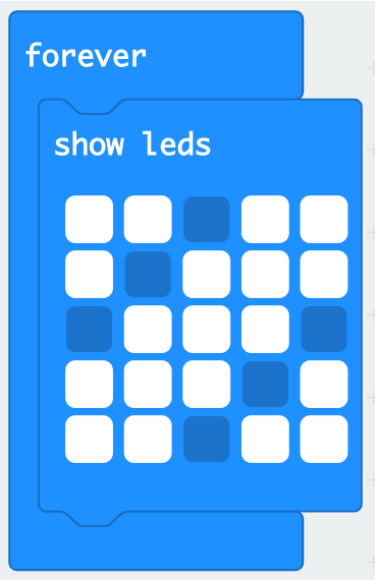
Try choosing a different icon!

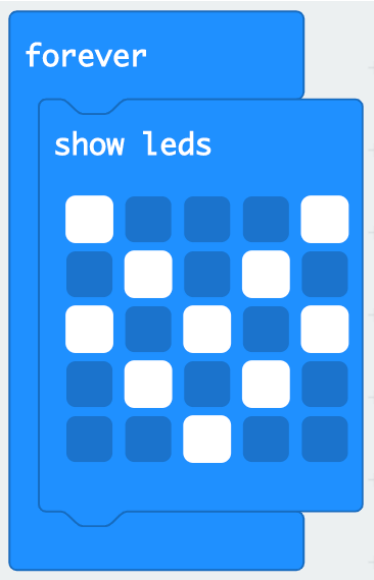
Custom Icons

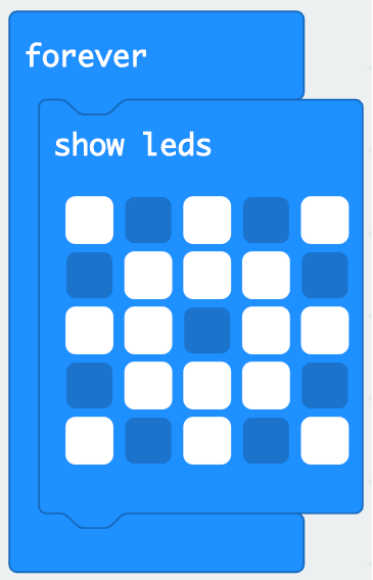
The show leds command lets us choose exactly which LED lights we want to light up.

This can be used to create your own icons.

See which shapes you can make. Remember to click download!



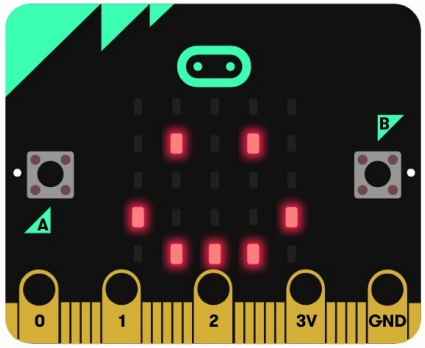




Activity: Emotion Badge

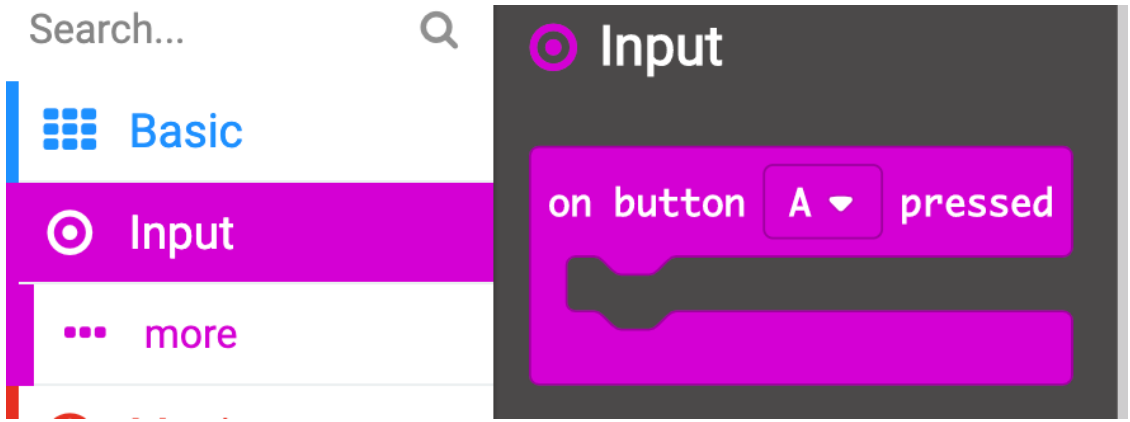
Emotion Badge

- 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.

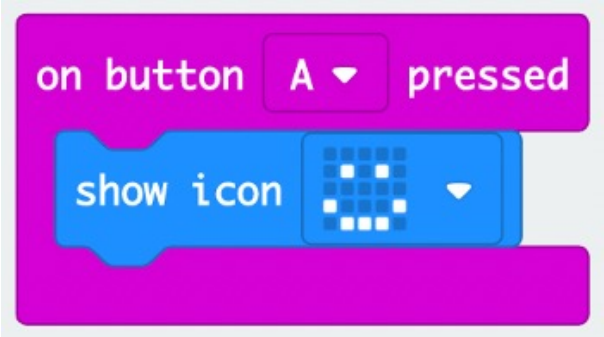


Events

Let's try using an event for button A:

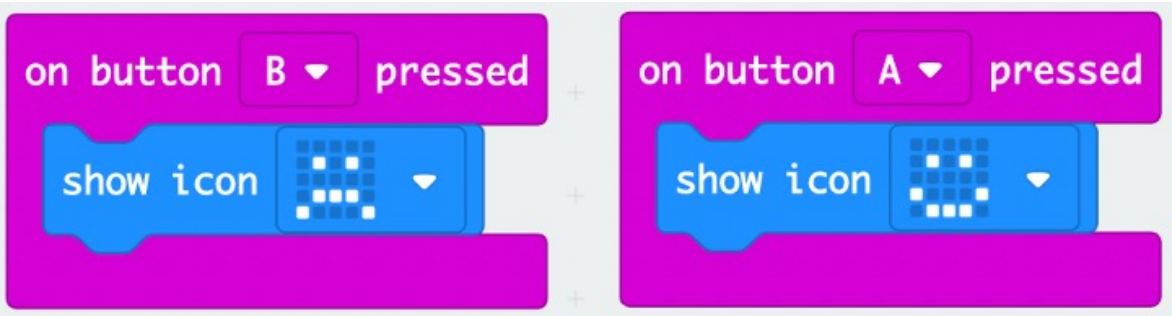
1. Click on input
2. Drag and drop the on button A pressed block into your code
3. Now click on basic and drag and drop the show icon into the event block
4. Choose the happy face and download the code.

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.

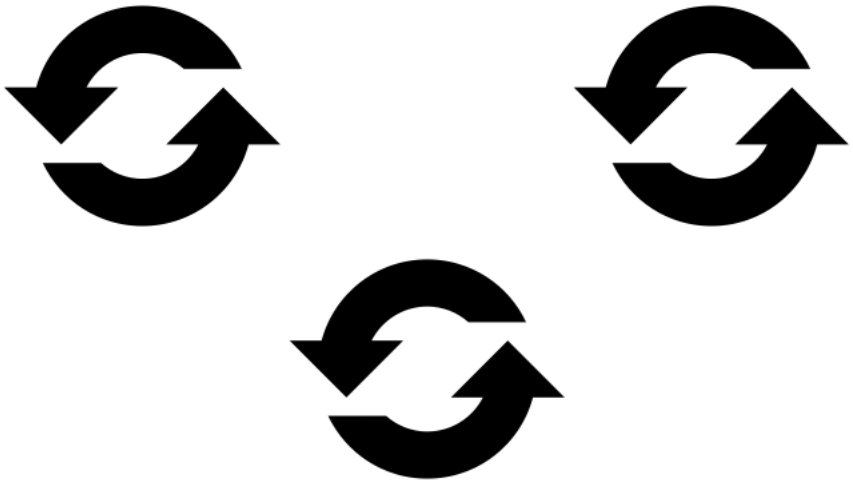
Activity : Deep Breaths

Breathing Exercises

- Deep, regulated breathing can help reduce stress and anxiety by helping you relax.
- This can be done by breathing in regular intervals.
- We can program our micro:bit to display an animated sequence that repeats over and over, helping us to time our breaths.
- To do this, we need to use loops.

Loops

- Loops allow us to repeat commands.
- They can be repeated forever, for a certain number of times, or for a given condition.
- These commands are found in the Loops section

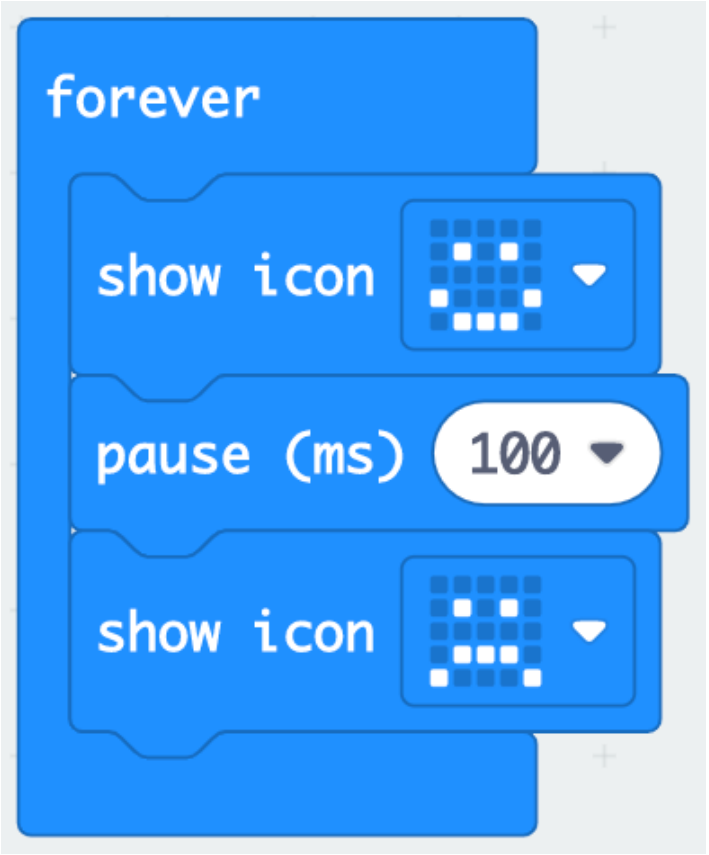


Default Loop

- We have a default loop command when we start the micro:bit project – the forever loop.
- The forever loop runs a set of commands until the micro:bit is unplugged or reset.
- You can only have one forever loop in the micro:bit code.

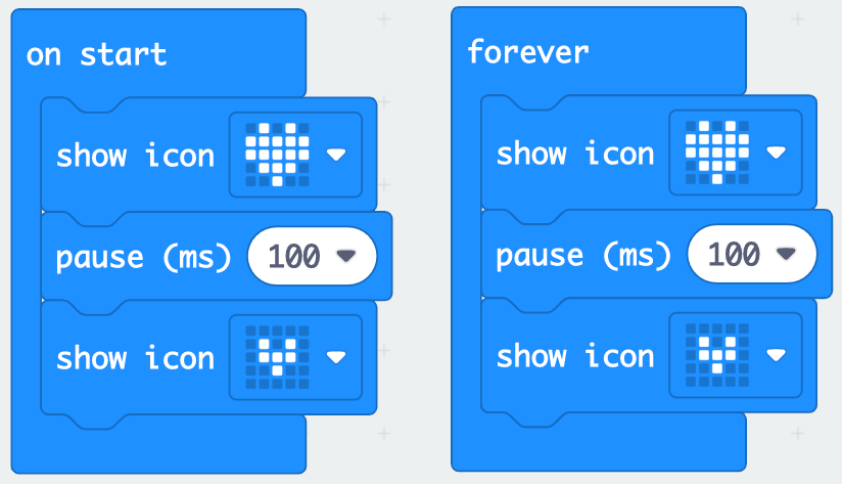
Changing Faces

- We have created an application which shows an icon on the micro:bit.
- Now we can extend our application to show an animation.
- Add a pause (ms) 100 command and add a sad face icon after the pause.
- What happens when you download the program onto the micro:bit?

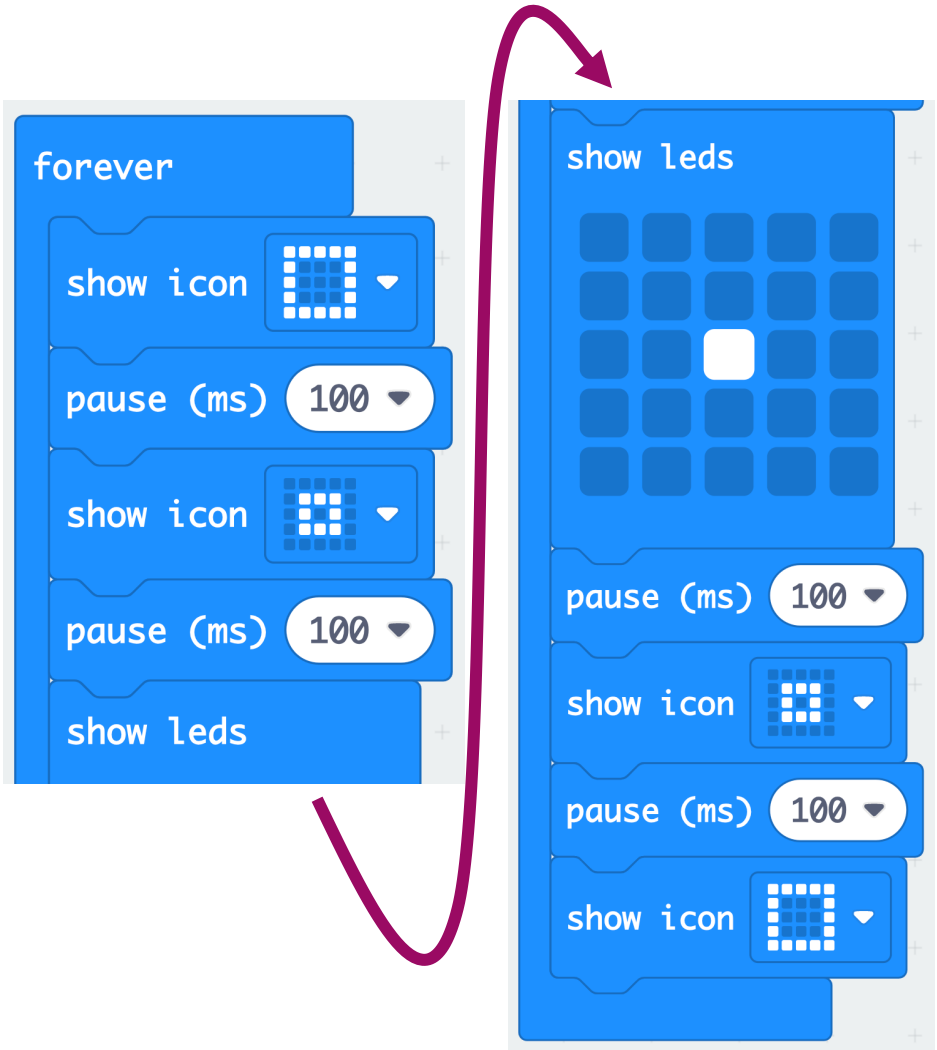


On Start vs Forever

- on start will run the code as soon as the micro:bit starts and ends once the code ends.
- forever will run the code well…forever.
- Try these two examples. What happens differently when you put the code in the on start loop instead of the forever block?



Breathing Exercise



- Try using the '**show leds**' command you saw earlier to create your own repeating animation to help regulate breathing.
- You may need to add longer pauses in between the icons to time it with your breaths.

Activity: Positivity!

Positivity Generator

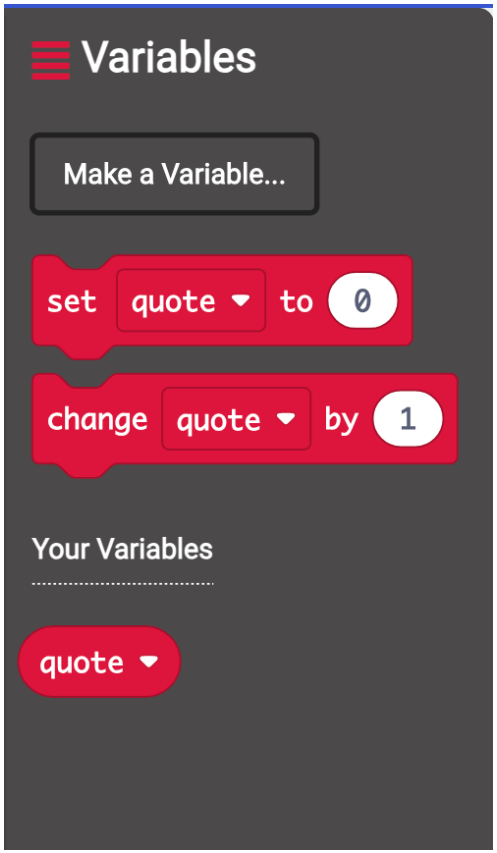
- A positivity generator is a device that displays a random positive statement when prompted.
- It works like a magic eight ball that shows you a random answer when you shake it.
- To do this, we need to use variables to define the quotes.

Variables

- Variables are items that can be remembered and changed by the micro:bit.
- They can take different forms such as a number or a text.
- We can change their value and use them in many ways in our code, but first we need to define them.
- They are found in the Variables section on MakeCode.

Creating Variables

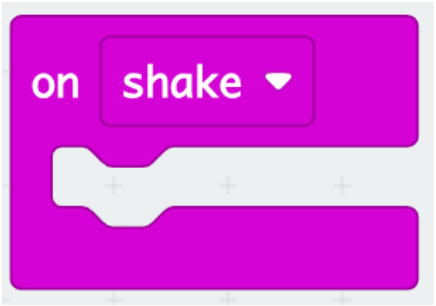
- To create a variable, click on the Variables section and "Make a Variable".
- Make a variable called quote.
- There should now be a few commands available to use in the Variables section.



Positivity Generator

Let's make our positivity generator!

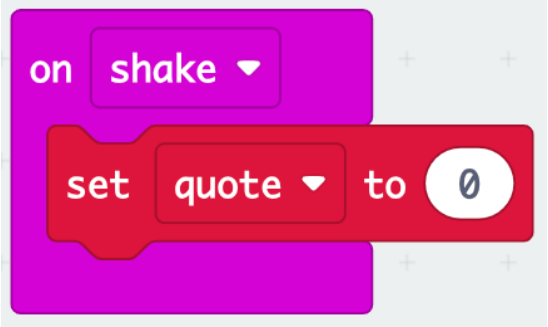
1. Start by adding the on shake input block.



Positivity Generator

Let's make our positivity generator!

1. Start by adding the on shake input block.
2. Next, add a set quote to 0 block from the Variables section.



Positivity Generator

Let's make our positivity generator!

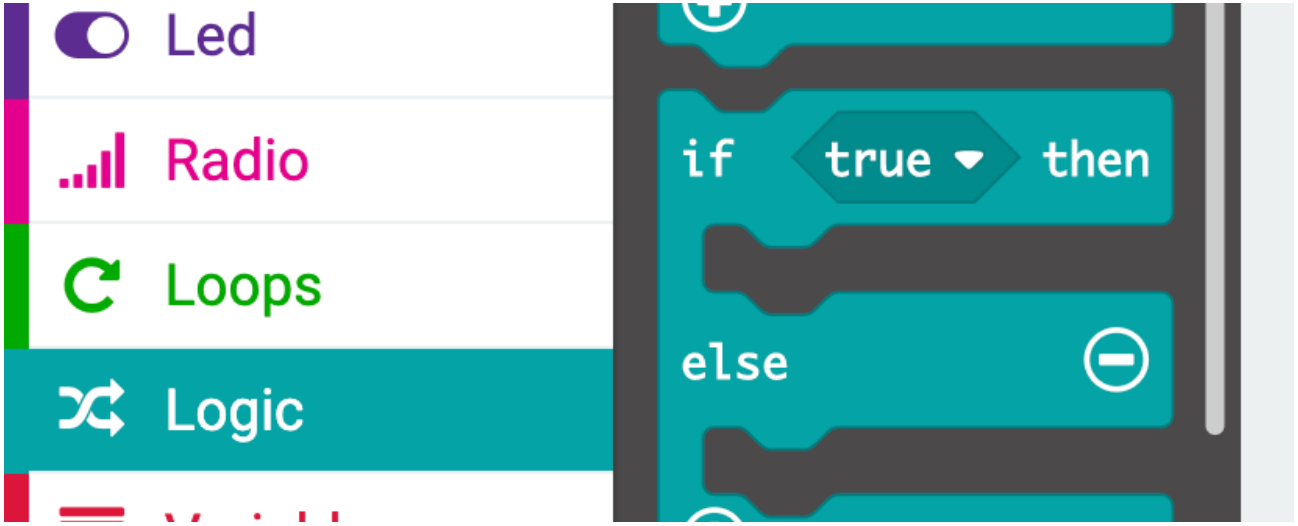
1. Start by adding the on shake input block.
2. Next, add a set quote to 0 block from the Variables section.
3. Drag the pick random 0 to 10 block to your code. Change the numbers to 1 to 5.

When we shake the device, the quote variable will be set as a random number between 1 and 5. But how will the micro:bit know what to do with each number? For this we need conditionals.

Conditionals

- Conditionals help us perform different actions based on different conditions.
- For example:
  - **If** my homework is done, **then** I can go outside to play.
  - **If** I have eaten my dinner, **then** I can have dessert.
- Can you think of some more examples?

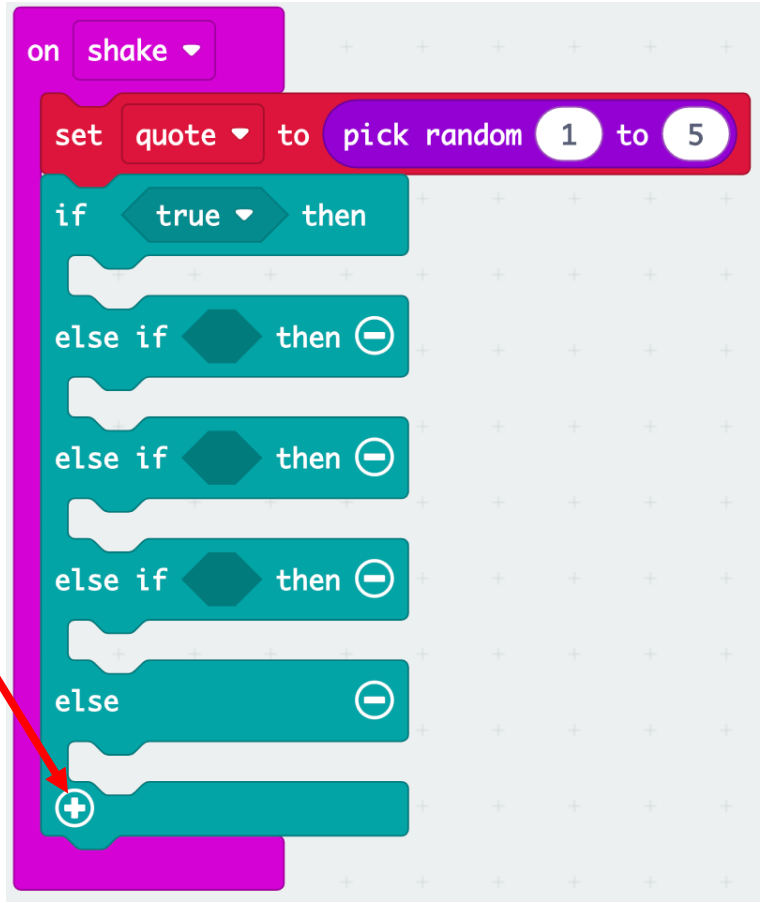
Logic



- In MakeCode these conditional statements are found under Logic section.

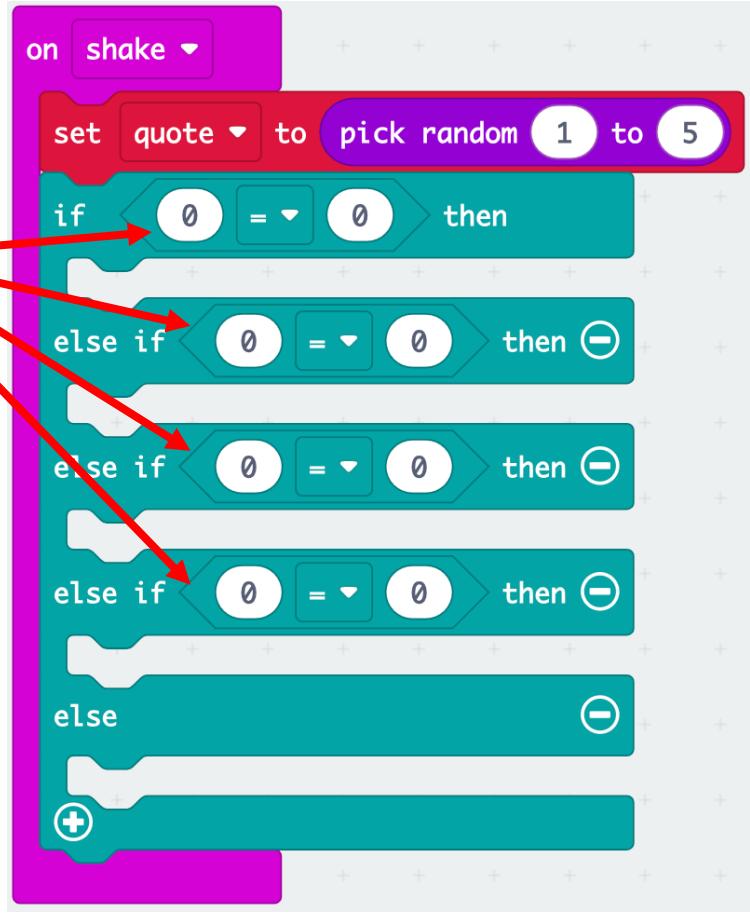
Positivity Generator

4. Add an if statement to your code and press the ⊕ symbol to extend the block.



Positivity Generator

4. Add an if statement to your code and press the ⊕ symbol to extend the block.
5. Add a 0 = 0 block to each if statement.



Positivity Generator

4. Add an if statement to your code and press the ⊕ symbol to extend the block.
5. Add a 0 = 0 block to each if statement.
6. Drag the quote variable to each if statement.

Positivity Generator

4. Add an if statement to your code and press the ⊕ symbol to extend the block.
5. Add a 0 = 0 block to each if statement.
6. Drag the quote variable to each if statement.
7. Add a different quote to each if statement using the show string block.

Now you have a positivity generator! Try running the code!

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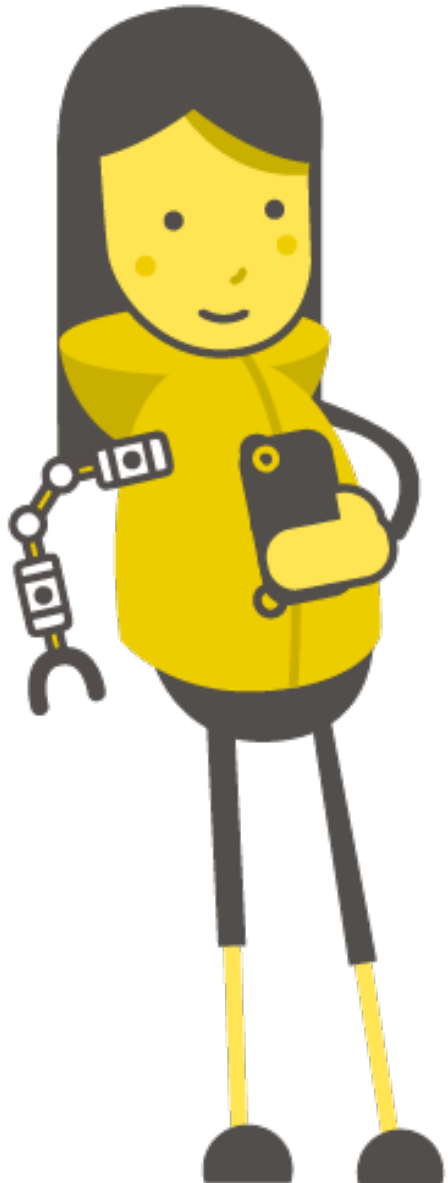
Physical Health

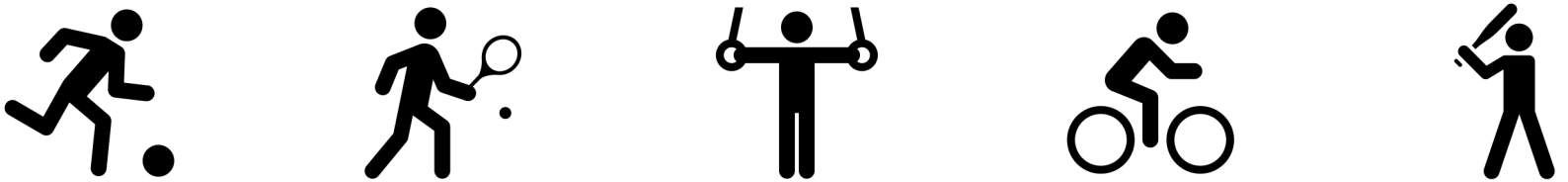


Activity: Exercise Counter

Exercise Counter

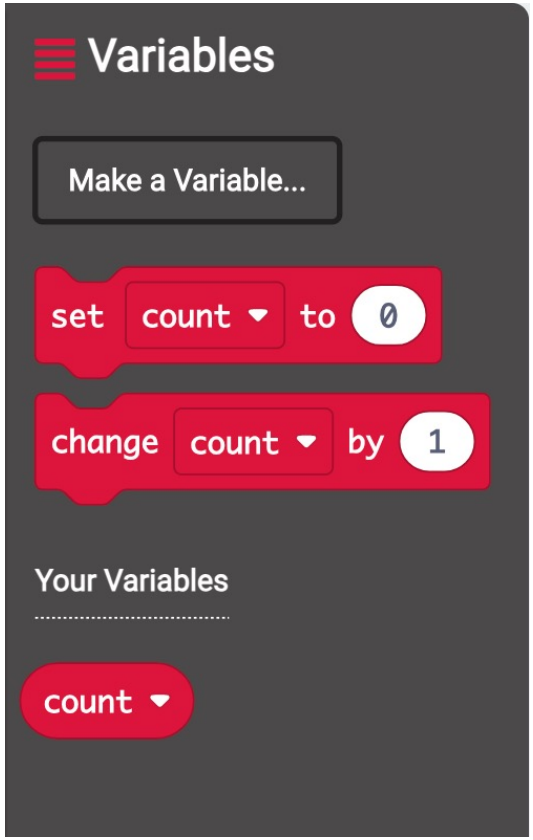
- We can create a counting device using the micro:bit.
- We can use this to count star jumps, laps around a track, goals scored, or anything else you can think of that can help with exercise.
- We want to be able to display the number on the counter, or increase the number, using button A and button B.

- Can you think of how we can make this program?
- Hint: We need to use variables and events again!

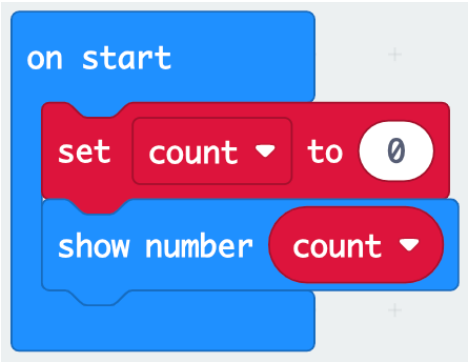


Exercise Counter

- First, we need to create a variable called count. This is the variable we will need to change.
- Drag the set count to 0 block to the on start block.
- Add the show number block and the count variable.
- This means that when we download the program, the micro:bit will display a 0.

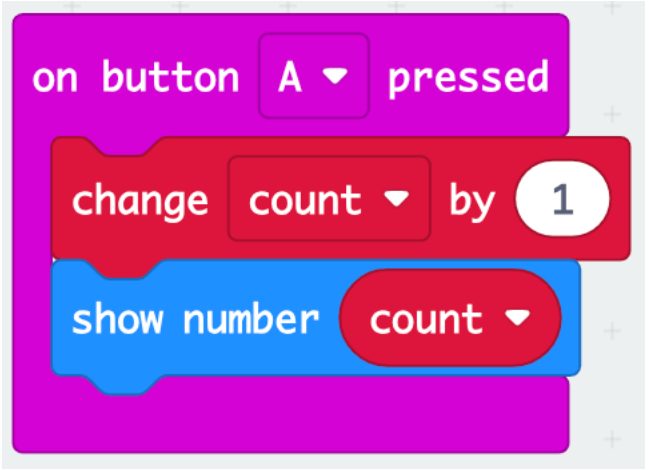


- Next, we need to add a command to increase the count. How can we do this?

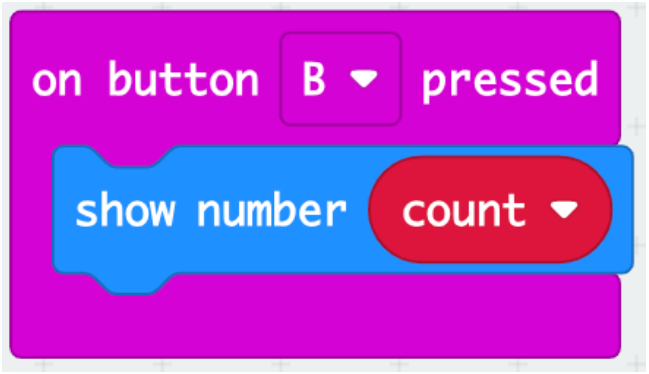


Exercise Counter

- Drag an on button A pressed block to your code.
- Add a change count by 1 block.
- We can add another show number block so that we know what the number is.

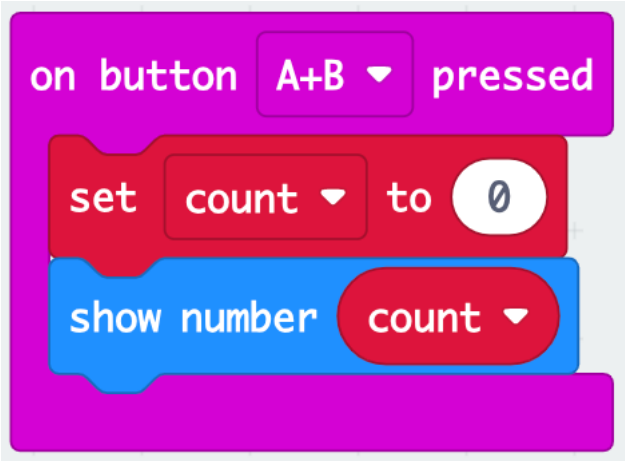


- We can use another event to show the number without changing it.
- Try running the program. Does it work?
- What if we want to reset the counter?



Counter Reset

- Using another event block, we can reset the count.
- Drag a set count to 0 block into an on button A + B pressed block.
- Add another show number block.

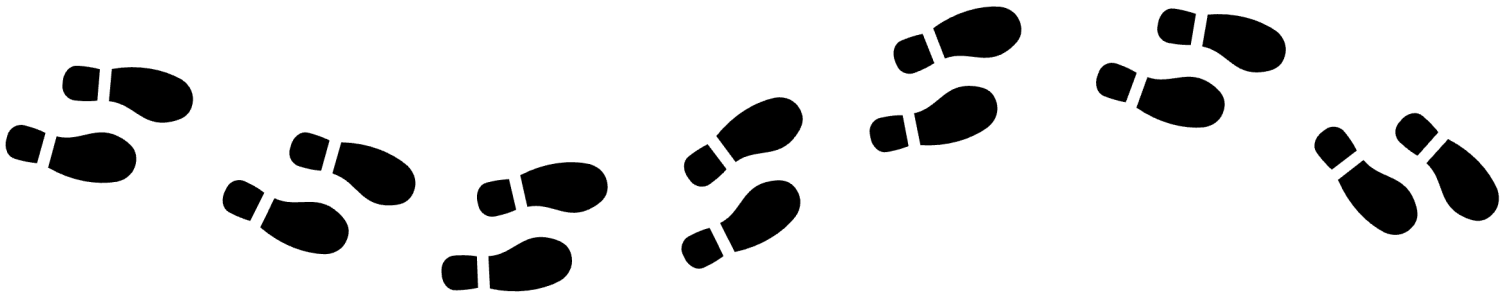


- Try using your new exercise counter!

Activity: Step Counter

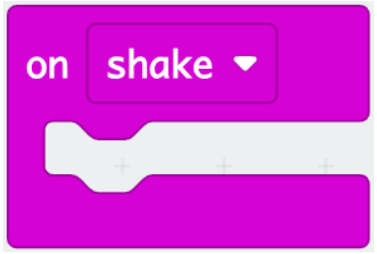
Step Counter

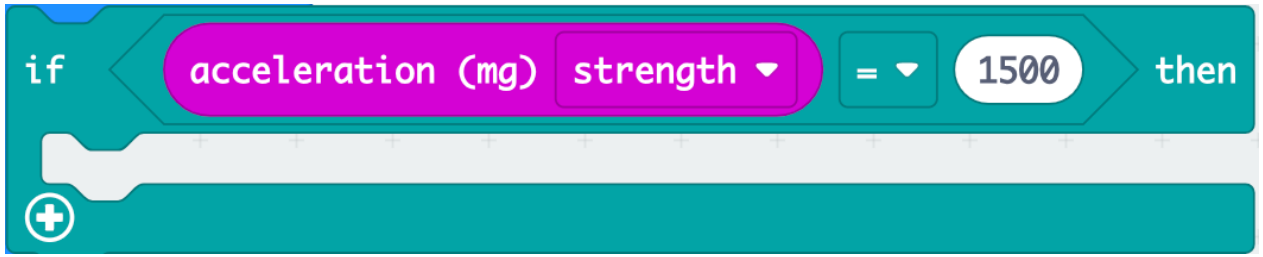
- A step counter (or pedometer) will work in the a very similar way to the exercise counter, but we want the micro:bit to react to movement instead of pressing a button.
- How do you think we can use movement as an input?



Movement Sensing

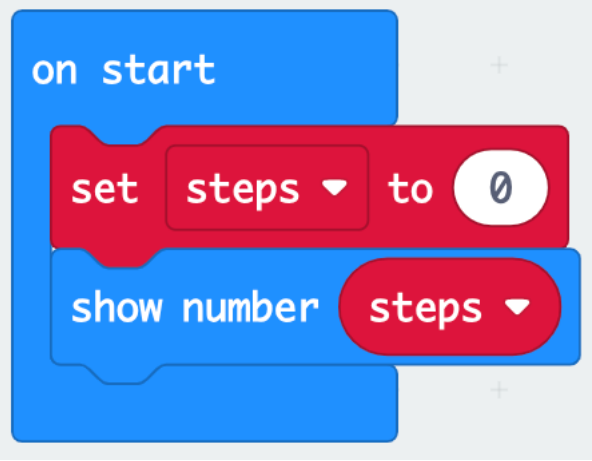
- One option is to use the on shake input. The micro:bit will carry out an action when it is shaken. However, this can be unreliable.
- Another option is to make the micro:bit react to a certain amount of acceleration. This value can be changed so can be customized to each person's step.
- Try making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

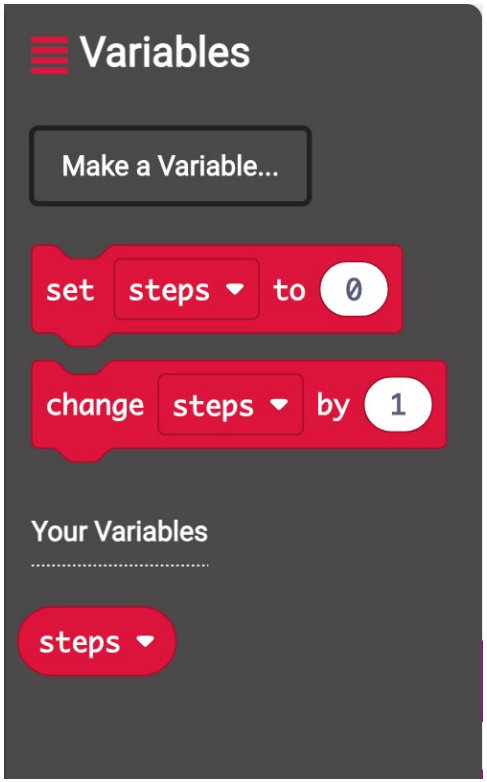




Step Variable

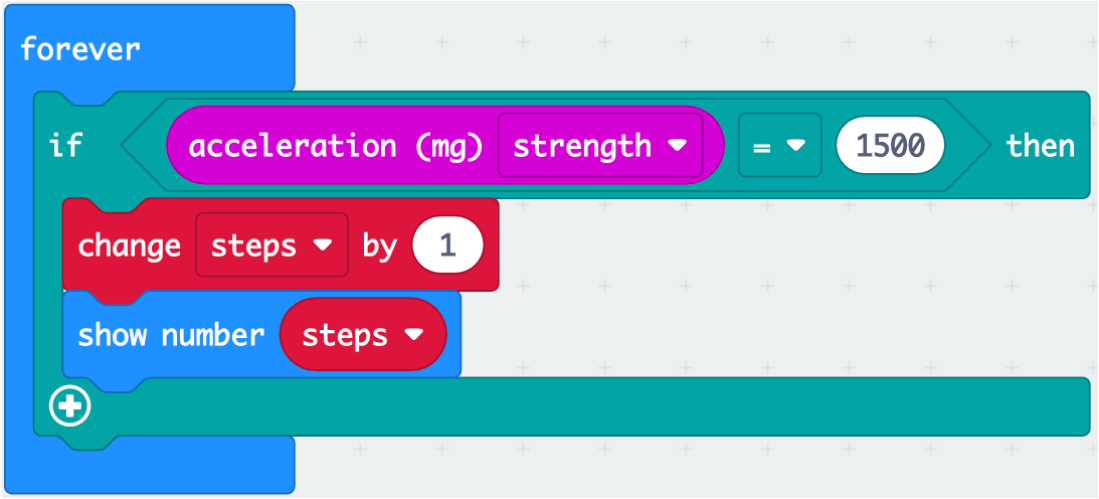
- Once again, we need to start by making a variable that we can modify. Let's call this "steps".
- Set the step count to 0.





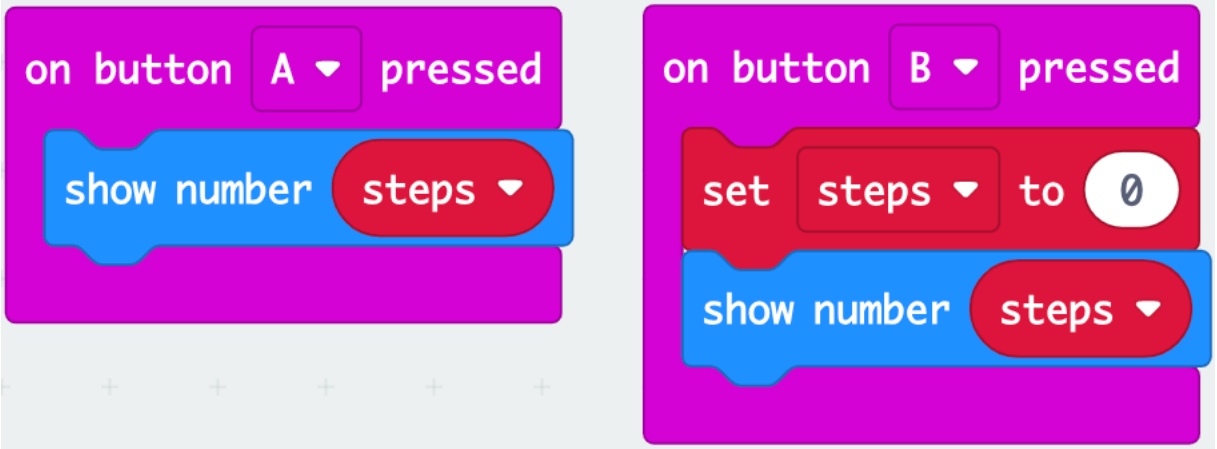
Step Counter

- 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

- Try running the code and see if it works!
- You can attach the micro:bit to your shoe using an elastic band.
- Does it accurately count your steps? You may need to change the acceleration value.