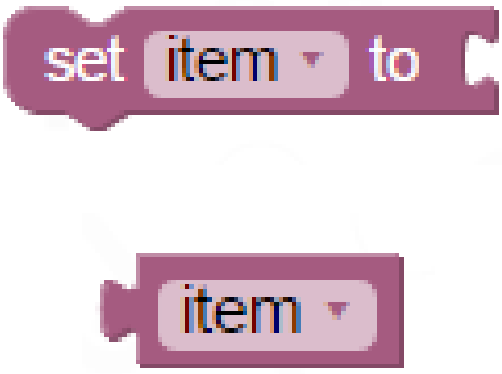
Section 3 Variables

What is a variable?

Variables are things that are remembered by the **BBC micro:bit (https://www.microbit.co.uk/device)** . Variables can take a few formats and can have functions applied to them. For example, we could create a string, which is text. Or we could create a calculator that stores whichever number the user inputs as an integer, or whole number.

We can modify variables but they must first be defined. Open the *Variables* drawer to the left of your code.

In the variables section you will see two blocks: **set item (https://www.microbit.co.uk/td/assign)** and **item (https://www.microbit.co.uk/td/assign)**



The set item block allows you to set a variable to another value or create a new variable.

Drag the **set item (https://www.microbit.co.uk/td/assign)** block into your code. Click the *down arrow* next to the word **item (https://www.microbit.co.uk/functions/assign)** and select *New Variable*, enter *Value* as the name. You have now created a new variable called value, however, you must set the initial value. Go to the *Maths* drawer and drag a **0 (https://www.microbit.co.uk/td/number)** block, connecting it to the empty socket in the **set value (https://www.microbit.co.uk/td/assign)** block. Your code should look like this:

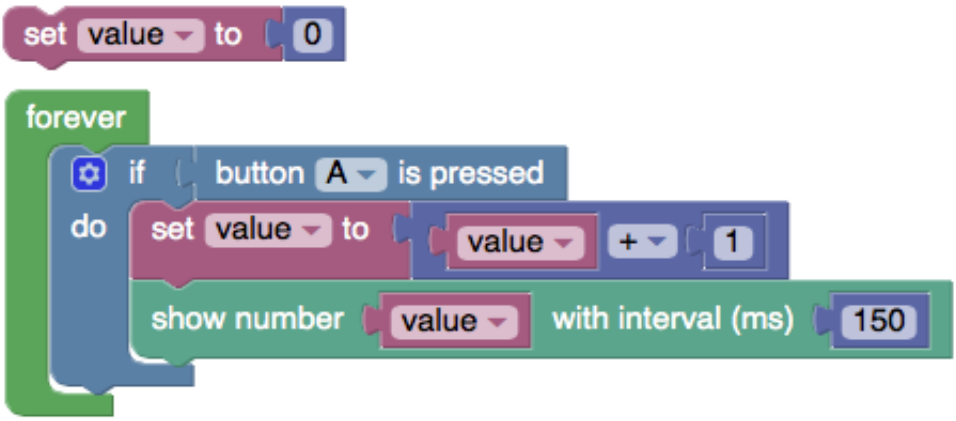
Using Variables

We can also set value to something else using this line. For example, we could use the functions in the *Maths* drawer to set value to a new value. If we combine this with the **forever (https://www.microbit.co.uk/functions/forever)** loop and if statements from the previous page then we can create a counter:

Drag a **forever (https://www.microbit.co.uk/functions/forever)** block from the *Basic* drawer and add an **if (https://www.microbit.co.uk/td/if)** block from the *If* drawer. Attach the **button is pressed (https://www.microbit.co.uk/functions/button-is-pressed)** block from the *Input* drawer.

Drag another **set item (https://www.microbit.co.uk/td/assign)** block from the *Variables* draw and click the *down arrow* next to item, however this time select *value*, we don't have to declare it again as we have already created it. Open the *Maths* drawer and drag an **arithmetic binary operator (https://www.microbit.co.uk/td/number)** + block before clicking it into place in the **set value (https://www.microbit.co.uk/td/assign)** block. Drag an **item (https://www.microbit.co.uk/td/assign)** block from the *Variables* drawer and again click the *down arrow* before selecting *value*. Add a **0 (https://www.microbit.co.uk/td/number)** from the *Maths* drawer and change the value from *0* to *1*.

Finally, beneath that line, drag a **show number (https://www.microbit.co.uk/functions/show-number)** block from the *Basic* drawer, and drag out the **0 (https://www.microbit.co.uk/td/number)** . Drag another **variable (https://www.microbit.co.uk/td/assign)** block from the *Variables* drawer, change it to *value*, and drop this into the space.



What does this code do?

- We create a new **variable (https://www.microbit.co.uk/td/assign)** called value and set it to 0
- The code runs **forever (https://www.microbit.co.uk/functions/forever)** and waits for the user to press the A **button (https://www.microbit.co.uk/functions/button-is-pressed)**
- When the user does, value will be set to value + 1 (value will be incremented by 1)
- Value will then be displayed on the BBC micro:bit's LEDS
- This effectively creates a counter

Variables can also be used for conditions with loops. See the **Loops (https://www.microbit.co.uk/blocks/book/loops)** section to learn about this.

Where next?

Section 2 If Statements (https://www.microbit.co.uk/blocks/book/if-statements)

Section 3 Variables (https://www.microbit.co.uk/blocks/book/variables)

Section 4 Loops (https://www.microbit.co.uk/blocks/book/loops)

Table of Contents (https://www.microbit.co.uk/blocks/book)