

## Topic 6

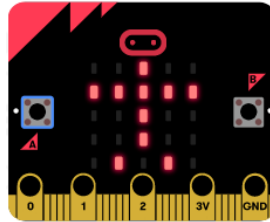
### Icons and Animation

An animation is just a sequence of different icons, displayed one after the other quickly.

#### Task

Design an animation consisting of 10 separate frames of a dancing stick man that moves his arms and his legs

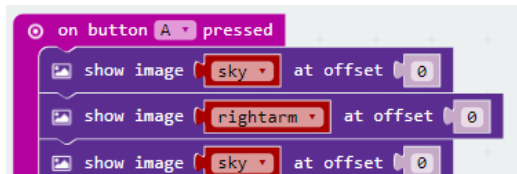
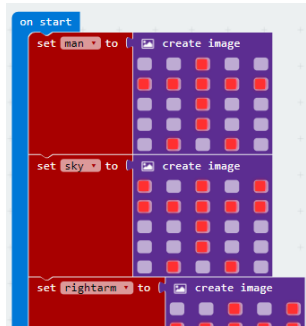
Create the code to display this on the micro:bit.



#### Assigning animations to variables

It's often useful to assign each frame of your animation to a variable. Do this with your stickman animation.

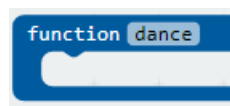
To use the main body of code looks like this



Test your animation again to make sure it is correct.

If you were to build a product or a game that had lots of animations in it, the program would still get very big and unmanageable very quickly. You can solve this problem by storing a complete animation inside a [Function] block.

Create a new function with the [Function] block and give it a name. Drag all of your animation frames into your new function block.

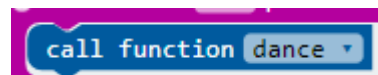


Inside the code for your input method, call your new Function block like this

[Function(name)]

Test your program

again, and make sure it still works.



#### Learning Objectives

1. Investigate and decide what problems scrolling text introduces
2. Tell a story using just icons
3. Design and show a simple animation



#### Computing Concepts



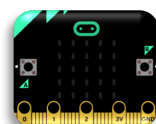
Understand and describe animations as an ordered series of icons or images

Design and use an animation appropriately in a simple project

Use Javascript to modify the delay behaviour of animations

Use variables and icons together to simplify a program, by introducing reuse

Use a function to help decompose a bigger project into smaller parts



## Using Javascript

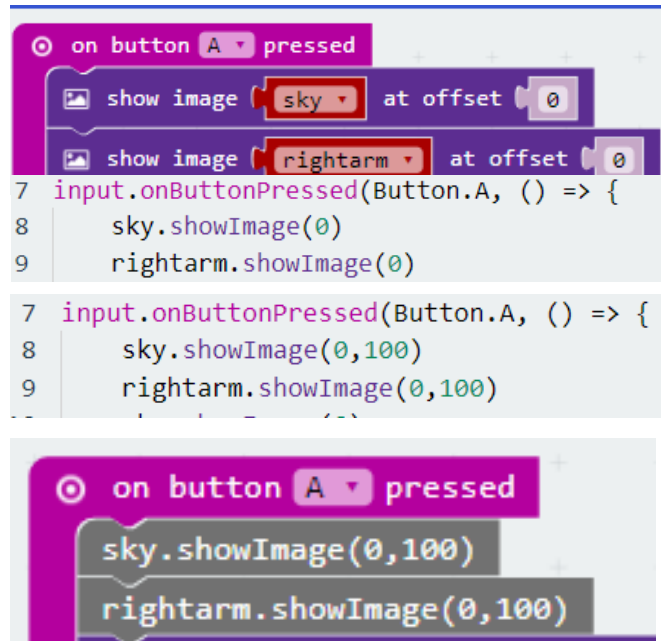
One feature of the Javascript Blocks editor, is that there is a fixed delay inserted after each Show LEDs block. This makes animations easy and quick to design, but limits the playback speed.

Click to change to JAVASCRIPT and change each of the basic→showLEDs so that it has an extra parameter, use the number 100, which means 100 milliseconds.

The default delay for images is 400ms, so this will make your animation faster.

Click back to BLOCKS mode – you will see that the code will look a bit different.

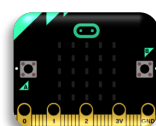
Test your program again and make sure that your animation now runs much faster!



The image shows three screenshots of the Micro:bit code editor. The top screenshot shows the 'on button A pressed' event block with two 'show image' blocks. The first 'show image' block has 'sky' selected and 'at offset' set to 0. The second 'show image' block has 'rightarm' selected and 'at offset' set to 0. The middle screenshot shows the corresponding JavaScript code: 

```
7 input.onButtonPressed(Button.A, () => {  
8   sky.showImage(0)  
9   rightarm.showImage(0)  
}
```

 The bottom screenshot shows the same code in Blocks mode, where the 'show image' blocks are now represented as 'sky.showImage(0,100)' and 'rightarm.showImage(0,100)'.



What have you learnt in this topic?

What else do you think you need to know about this topic and how will you find this out?

How might you introduce this topic to other teachers?

What areas of this topic might be difficult to teach or understand for other teachers?

## Topic 6

Icons and Animation

### Practice exercises

Build simple stories with animation. Use functions and variables.

