

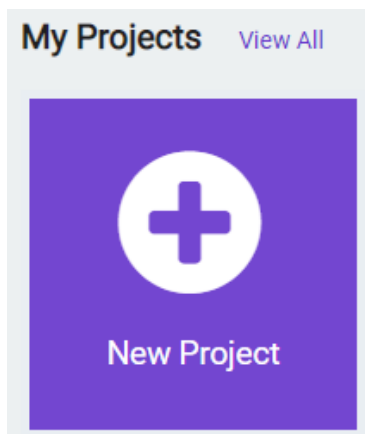
MICROBIT PROGRAMMING (BLOCK-BASED)

(Time required 30-minutes session)

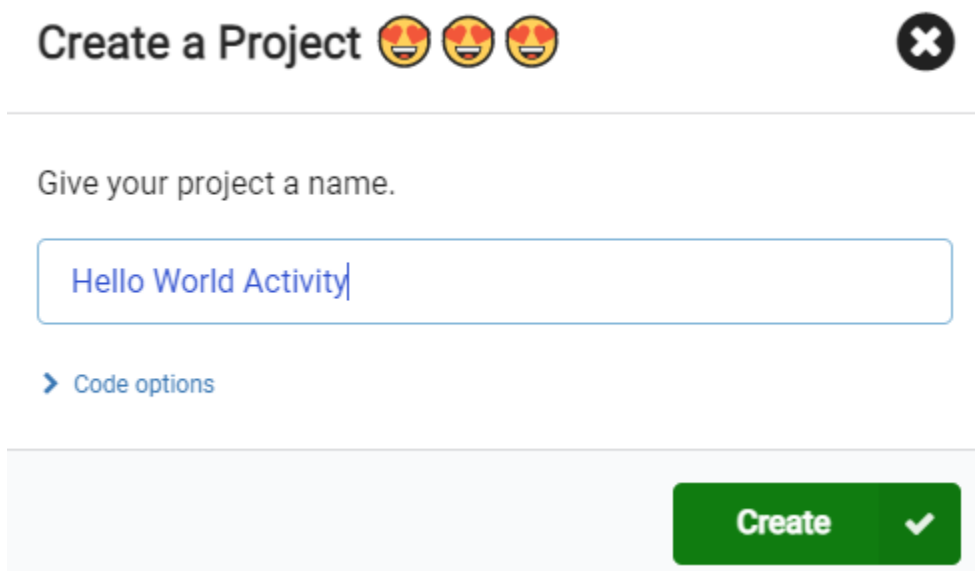
"Hello World" is the term we use to define that first program you write in a programming language or on a new piece of hardware. Essentially it is a simple piece of code that gives you a quick win (fingers crossed) and a first step in learning. For your first "Hello World" we are going to create a simple animation on the LED array that repeats forever.

Building the "Hello World"

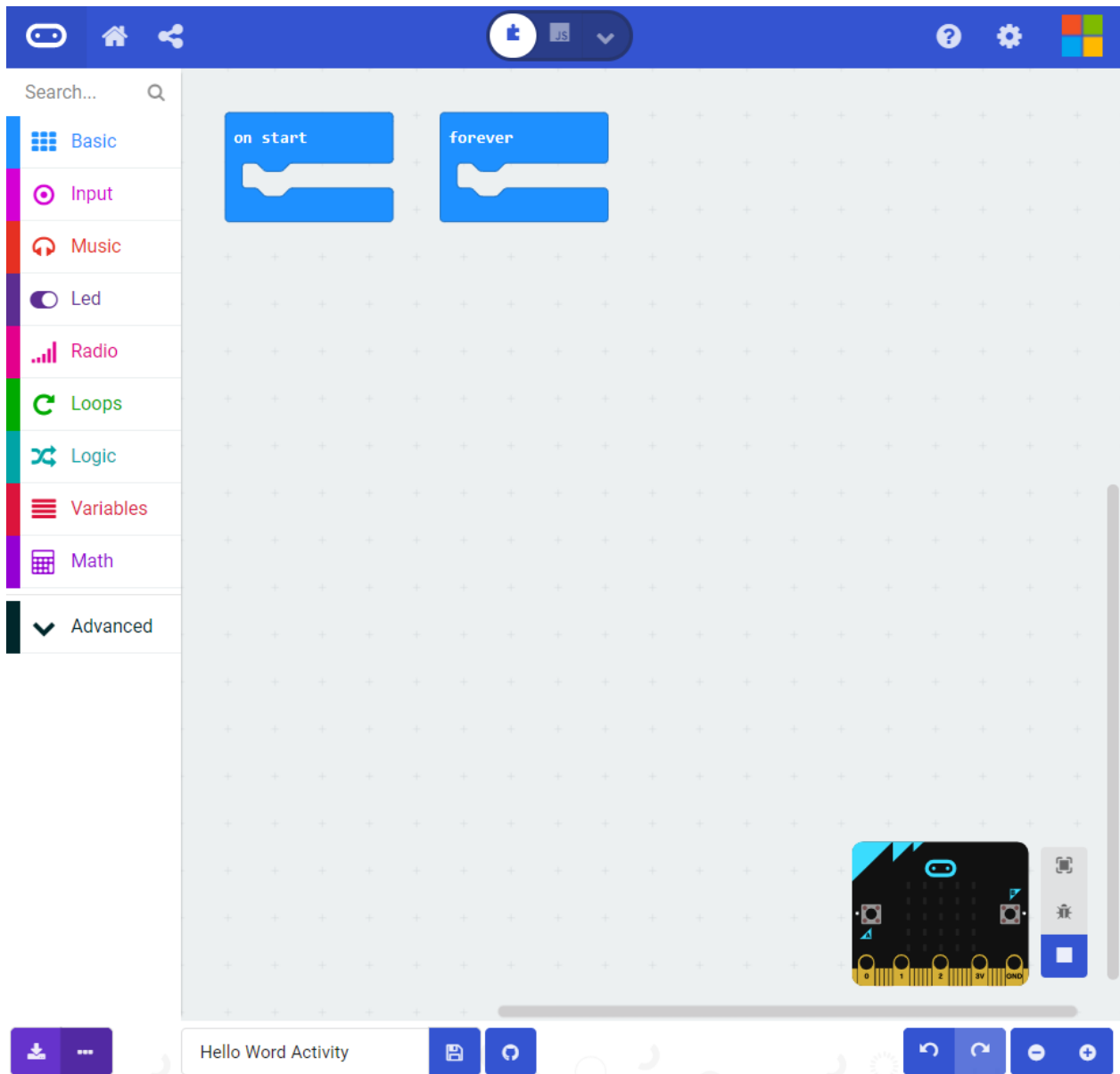
Step 1: Go to <https://makecode.microbit.org/#> and create a New Project



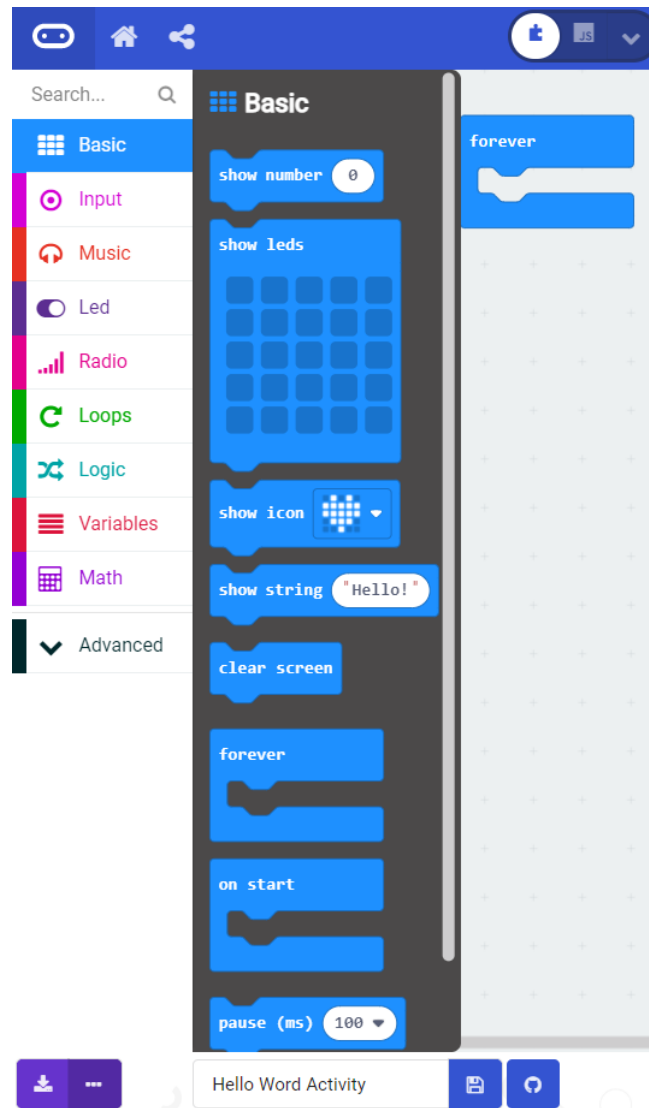
Step 2: Click on New Project and give it a project name – **Hello World Activity** and click Create



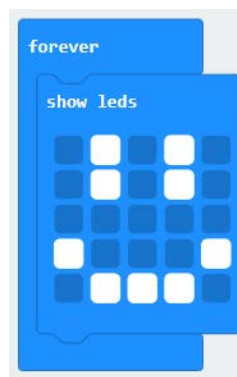
Step 3: Once the MakeCode is launched you are greeted with two blocks: the On Start and forever. The On Start block is needed to execute all the code at the very beginning of your program and it only executes (run) once. The forever block is code that will loop over and over...it will run forever.



Step 4: click on the **Basic** category. These blocks are, well, the basic building blocks of a BuildCode program. It will expand into a number of options. Click and drag the **show leds** block over and place it inside of your forever block. Notice that the block is keyed to fit inside of the forever block, and if you have the volume up on your computer you will hear a satisfying 'click' noise when you let go of the block.

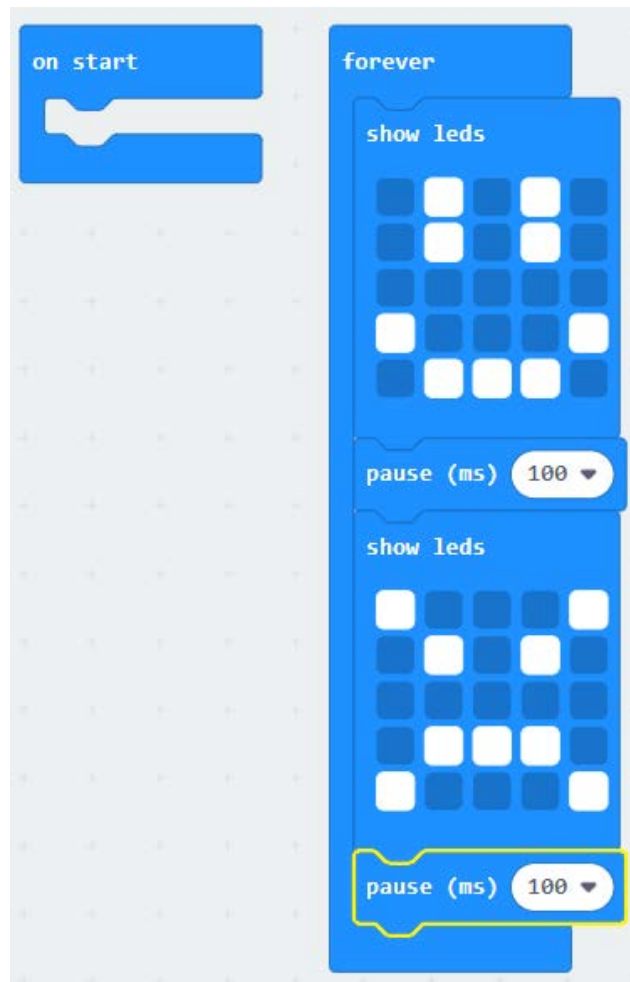


Step 5: The **show leds** block has an array of squares that symbolize the LED array. If you click on a square, it will turn white (program space) and red (simulator), which means that it is on. Draw a simple pixel art shape by turning different LEDs on or off; you should be able to see the outcome in your simulator on the lefthand side of your window.



Step 6: To turn this static image into an animation, we need another **show leds** block to place just under the first block. You can then make a second drawing with this set of rectangles. In your simulator you will see the images switching really, really fast. We need to slow this down!

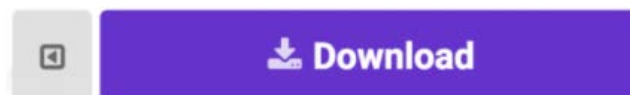
To slow your animation down, you will use the pause block, which is under the basic block set. The pause block is just what it says; it tells the micro:bit to pause and wait for a certain amount of time. Place two pause blocks in the program as shown.



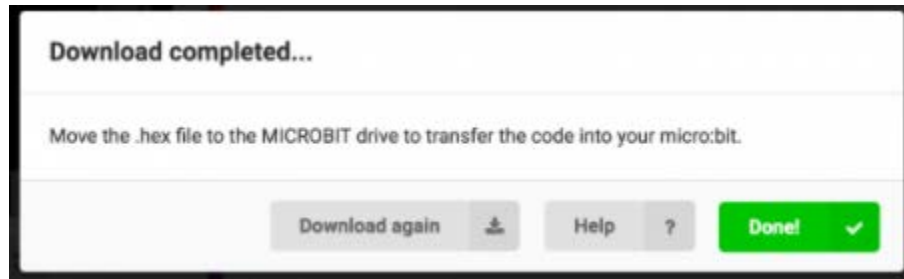
The reason we are using two and placing one at the end is that this program is a loop. Without the block at the end, the image in your animation will change really, really fast.

We have built up an example in the next section where you can download the file and try it out on your own micro:bit, or use the simulator. If you want to play around with the code and make some changes, go ahead.

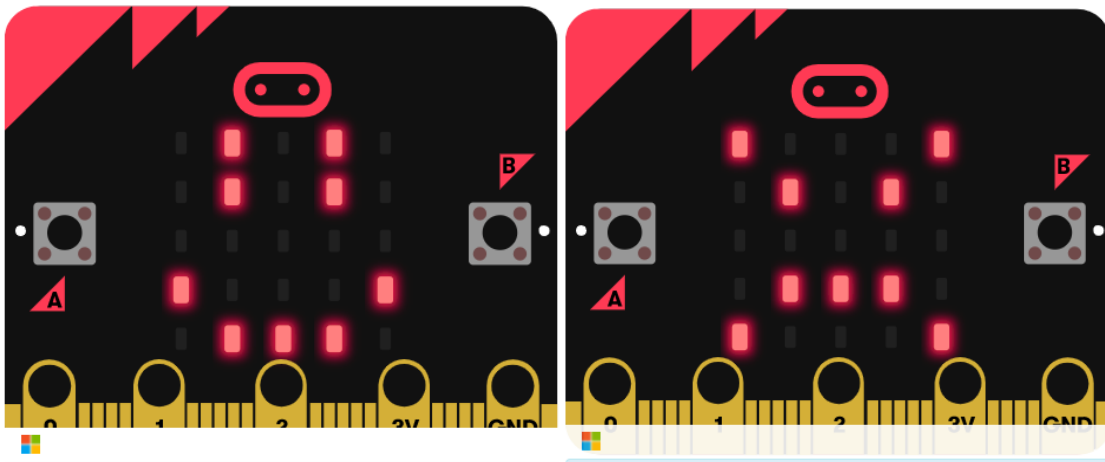
Step 7: Click the download button in the lower lefthand corner of the code window. It will download most probably in the Downloads folder



Step 8: Simply click and drag your program file from its download location to your micro:bit drive, which shows up as an external device.



Step 9: Your micro:bit will flash for a few seconds, and then your program will start automatically.



Congratulations! You have successfully completed this activity.

Reference: Sparkfun Inventor's Kit for micro:bit Experiment Guide

<https://learn.sparkfun.com/tutorials/sparkfun-inventors-kit-for-microbit-experiment-guide>