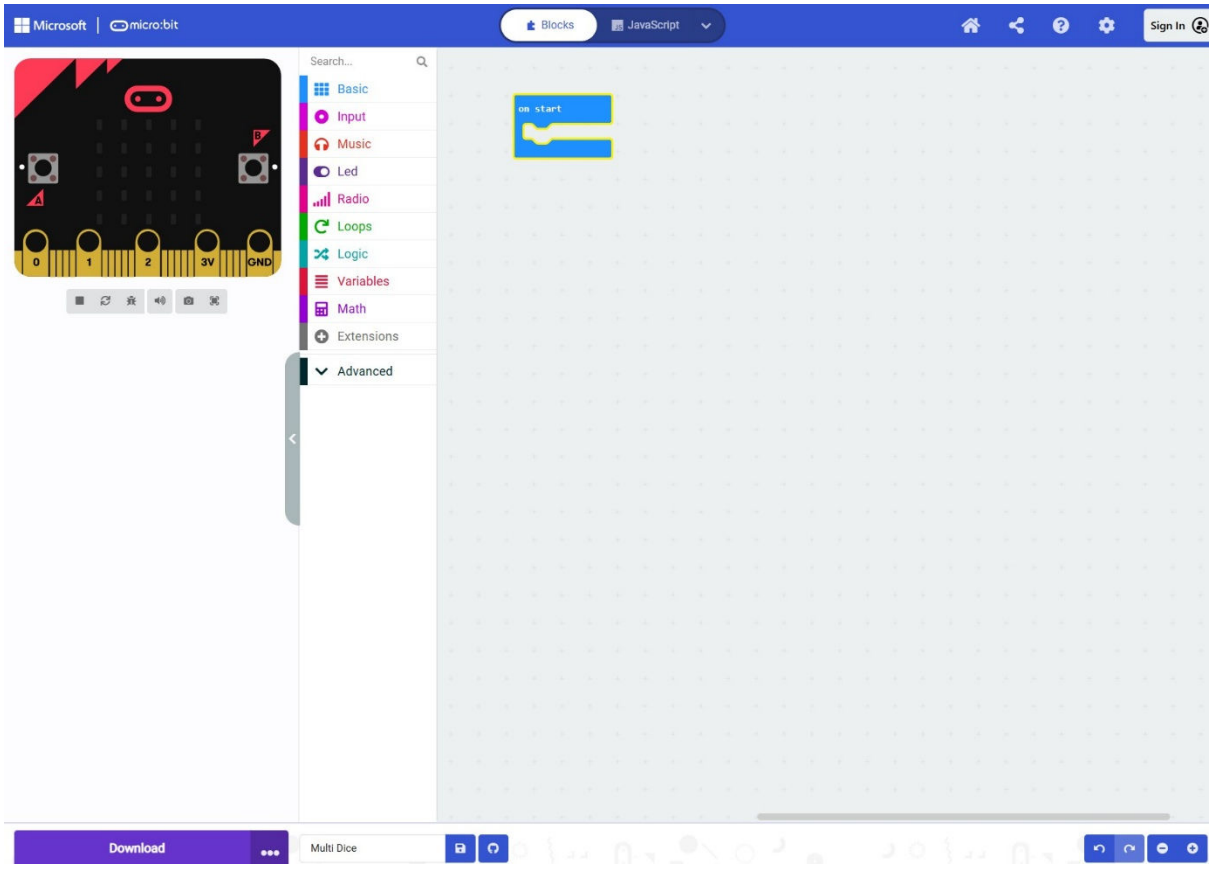
micro:bit Multi Dice

When using our iPads the pass code is **1616**. This will get you into the main screen

We are going to use the Block Code editor MakeCode. This is represented by the micro:bit logo (no text)

Each iPad will have a numbered label on the back. This should match the number on your micro:bit. These devices have been linked already so it is easier to do the downloads over Bluetooth.

From the iPad home screen select the micro:bit makecode program. Select the option to ‘Create Code’. After a short while you should see the screen below –



The image on the left is a SIMULATOR. This will show what your micro:bit will do before we program your code into it. In the middle of the screen is a ‘Tool bar’. We select our tools from here. On the right hand side is the ‘Program Window’. This is where we ‘write’ our program.

If there is a program already present in the right hand window, just drag this to the tool bar in the middle of the screen and it will delete it.

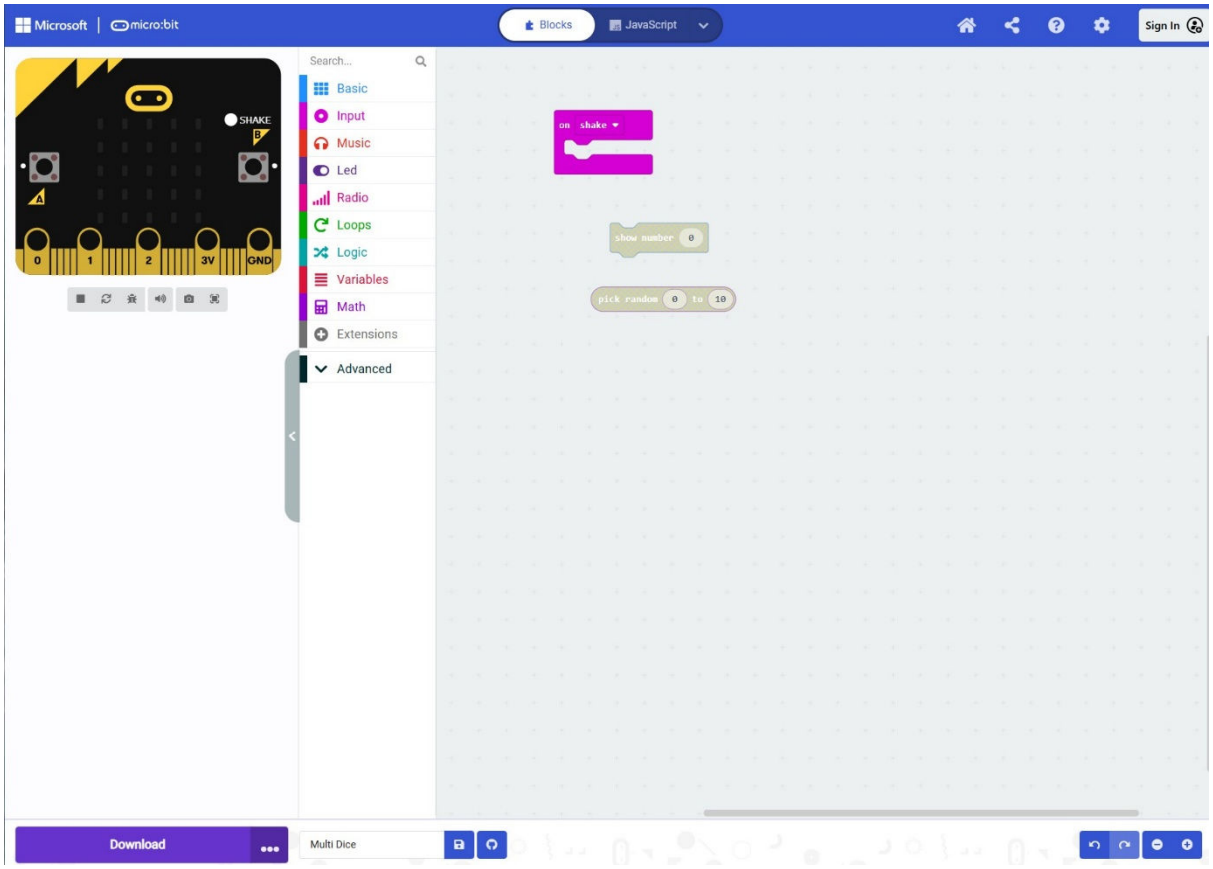
Start by creating a basic Dice game.

From the tool bar in the middle click on the ‘Input’ tool and select ‘On Shake’ tool dragging it to the ‘program window’.

From ‘Basic’ we want ‘Show Number’ so select and place this on our program window.

From ‘Math’ we want ‘Pick Random’ so select and place this on our program window.

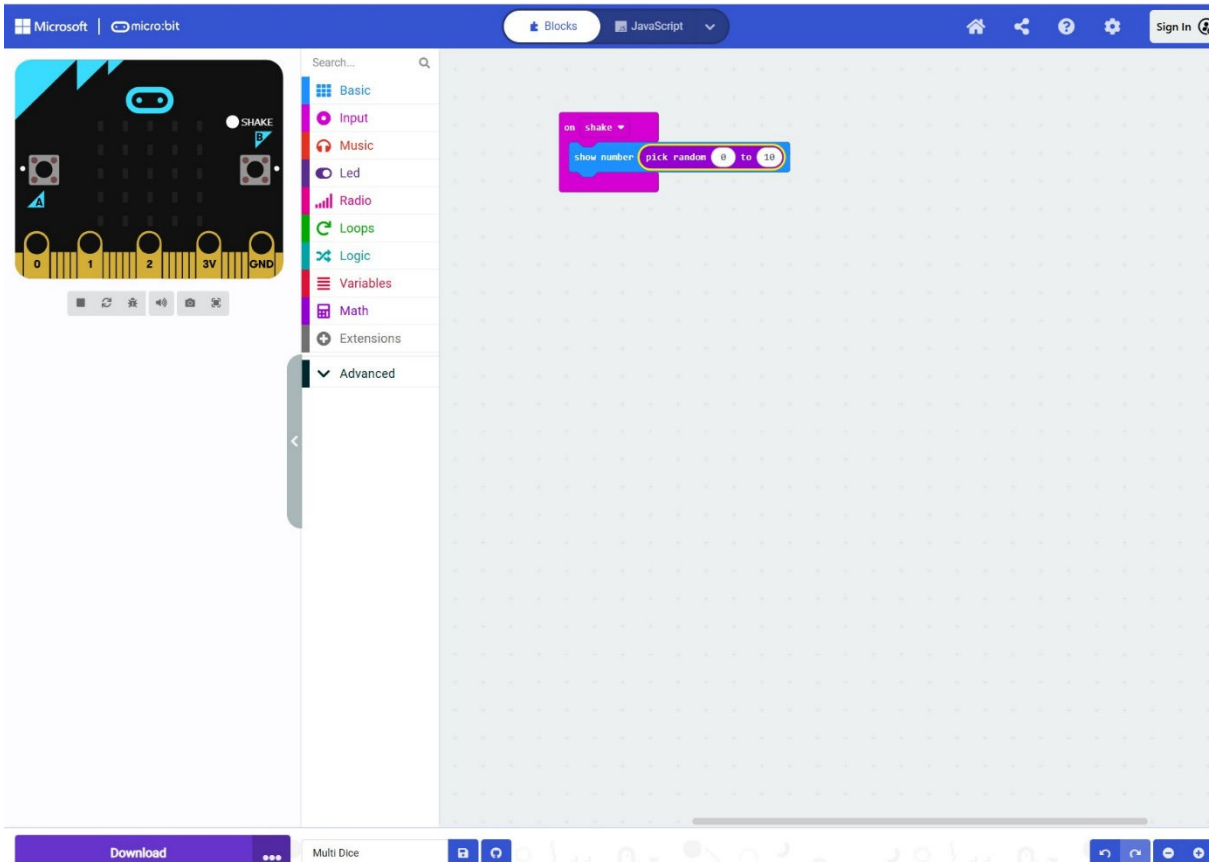
Your screen should now look like this (does not matter where they are at the moment.



Drag the ‘Show Number’ block and drop it into the space under the ‘On Shake’ text. Select the ‘Pick

Random’ block and drop it on the ‘0’ of the ‘Show Number’ block.

Your screen should now look like that below



If we were to program this now when we shake the micro:bit it will return an number between 0 and 10. We need to change these to 1 and 6 so that the dice will return then numbers 1,2,3,4,5 and 6 only. Select the ‘0’ and change it to ‘1’. Select the ‘10’ and change it to ‘6’.

To test it just click on the ‘Shake’ button on our simulator in the left window. Each time you click a

number will be displayed. It should only display numbers 1, 2. 3, 4, 5 or 6.

We have now created a basic dice that you can play games with.

Download your program and run it

To download your program we need to download it to your micro:bit. We have already linked the iPad and micro:bit (using the same numbers) so this should work easily.

On your micro:bit PRESS and HOLD buttons ‘A’ and ‘B@. While still holding these PRESS and RELEASE the button on the back of the micro:bit. You should see a Bluetooth icon appear and the a pattern on the LEDs. Once this comes up you can RELEASE buttons A & B. Your micro:bit is now waiting for the program.

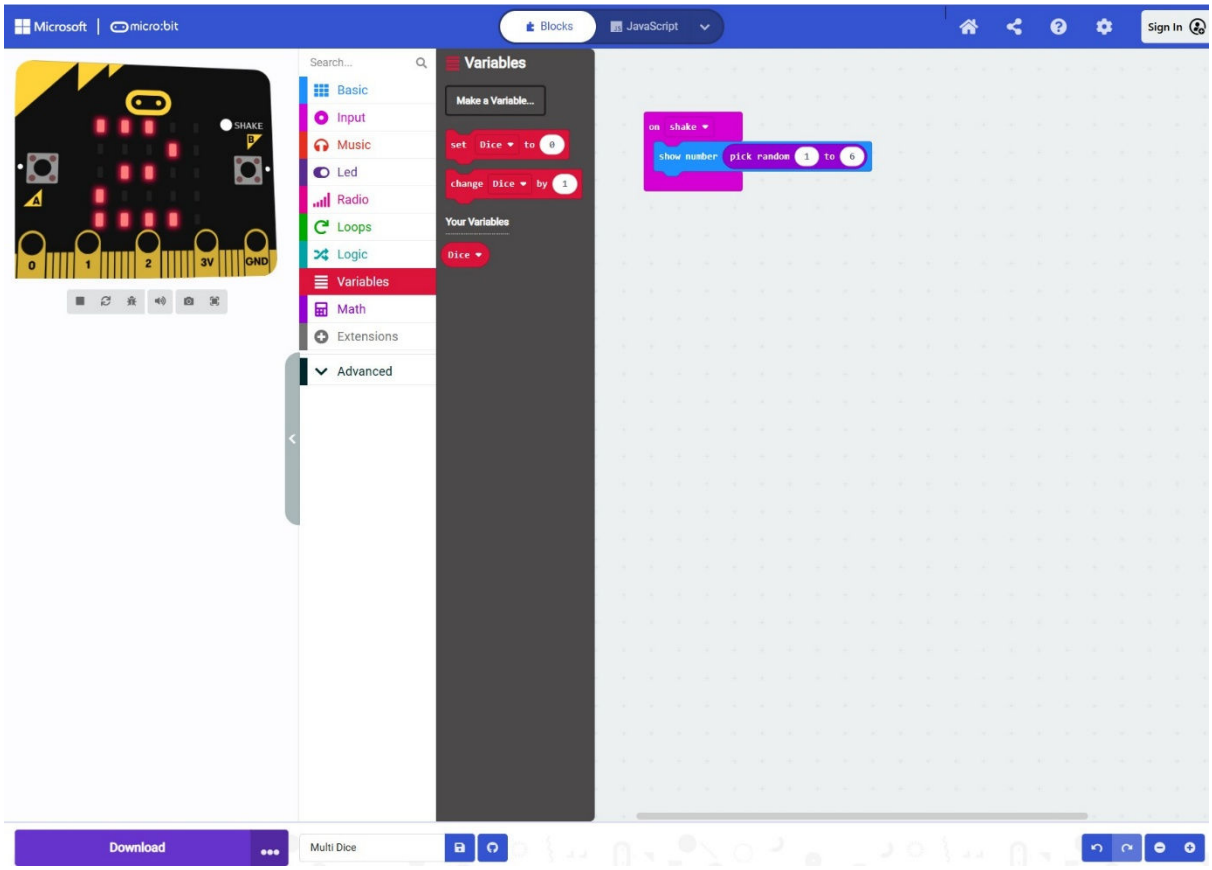
Click on the ‘Download’ button on the bottom left of the iPad. Continue on the next pages as we have already completed this task. The download should now begin. When it has finished your program will be running.

Adding a Variable

Next we are going to make some small changes to our program so that we are storing the value of out dice so we can use it in another routine.

From the Tool bar select ‘Variables’ and ‘Make a Variable’ We are going to call our variable ‘Dice’.

Now we have a variable to use.



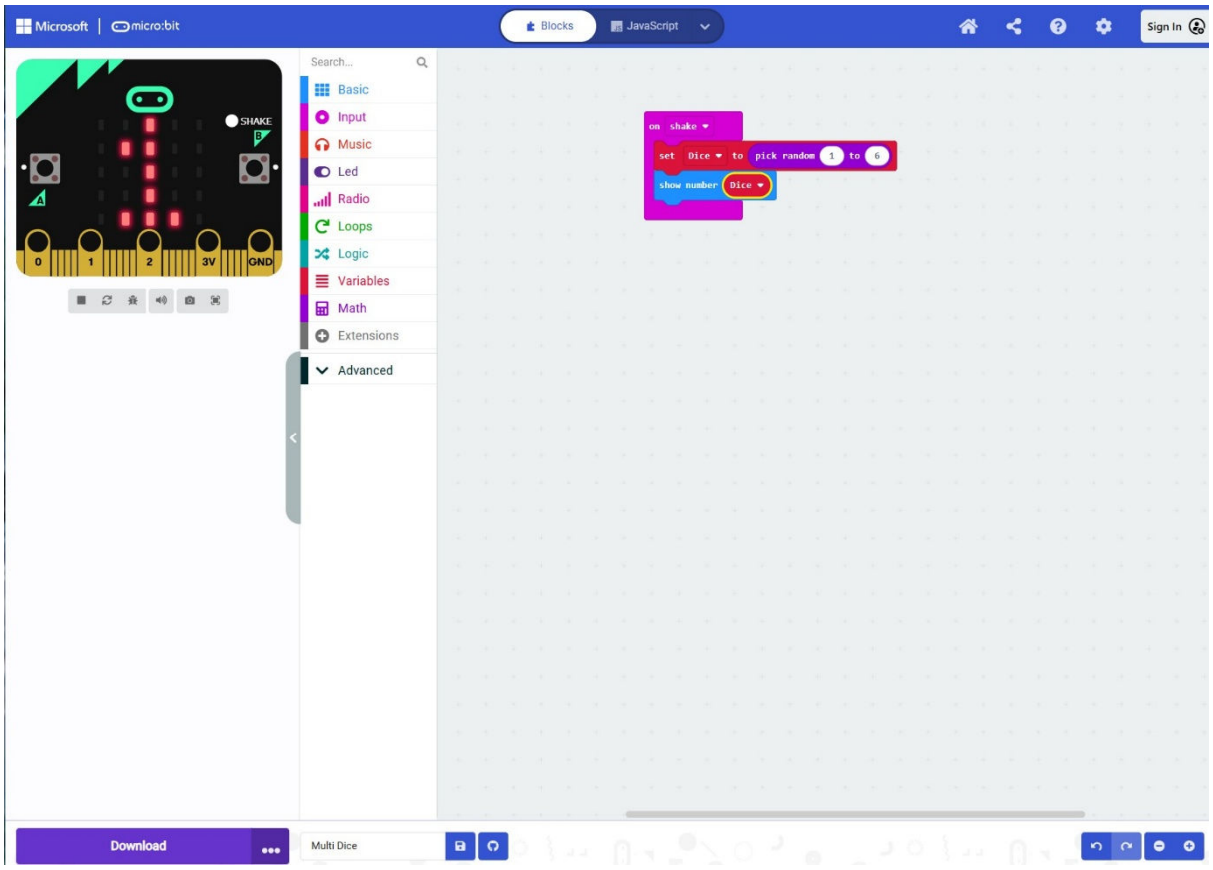
From ‘Variables’ pick out the ‘Set Dice to’ command and ‘Dice’ and place them in the program window.

Put the ‘Set Dice to’ command underneath the ‘On Shake’ text (above Show Number).

Pick up the ‘Pick Random’ block and place that on the ‘0’ in the ‘Set Dice to 0’ block.

Pick up the ‘Dice’ and place that on the ‘0’ of ‘Show Number’.

You should now have the following –



In reality we have not really changed anything from our last program. We have just added a variable in that we can use in other routines. Check this with the simulator if you like. You can repeat the download steps too if you want.

Add in Radio

To use a Radio we have to define which channel we want to use. Use the same channel as one of your friends to play with them!

To set a Radio Channel from ‘Basic’ we need the ‘On Start’ block. This is only run once when we first start the program so it initialises things for us.

From ‘Radio’ we need ‘Radio set Group’ and ‘ Radio send number’. We will also need another ‘Dice’ from ‘Variables’.

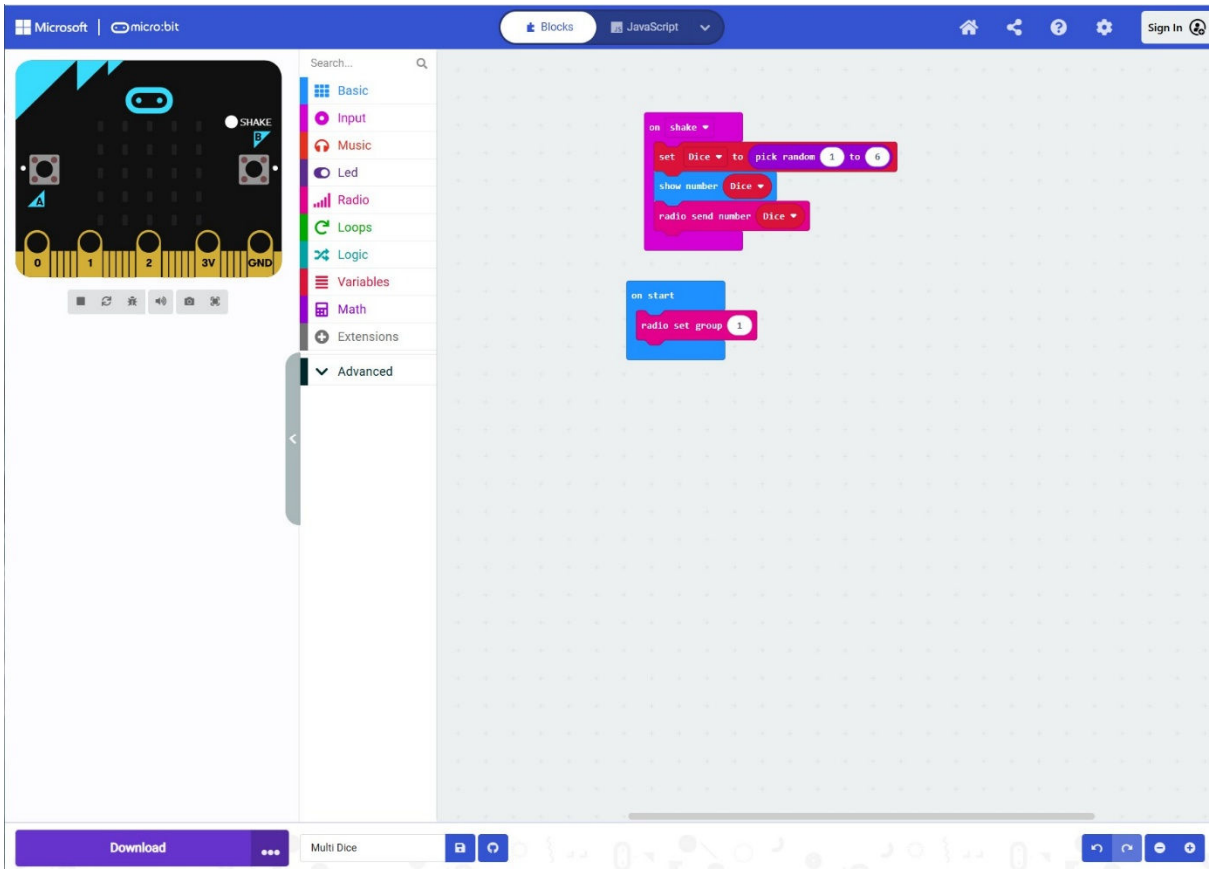
Put ‘Radio Set Group’ into the space below ‘On Start’. Set the number to match a friend if you want to play with them.

After the ‘Show Number’ command place the ‘Radio Send Number’ and drop the ‘Dice’ on top of the ‘0’ in Radio Send Number’

Put in a send number and a dice to send the value stored in the dice variable via radio. Make sure to add a set group to on start with the group number set to the group you want to use.

Now when we shake the micro:bit we will display our number but also send this out over radio to anyone that is on the same radio channel as us.

Your program should look like that below (using radio channel 1).

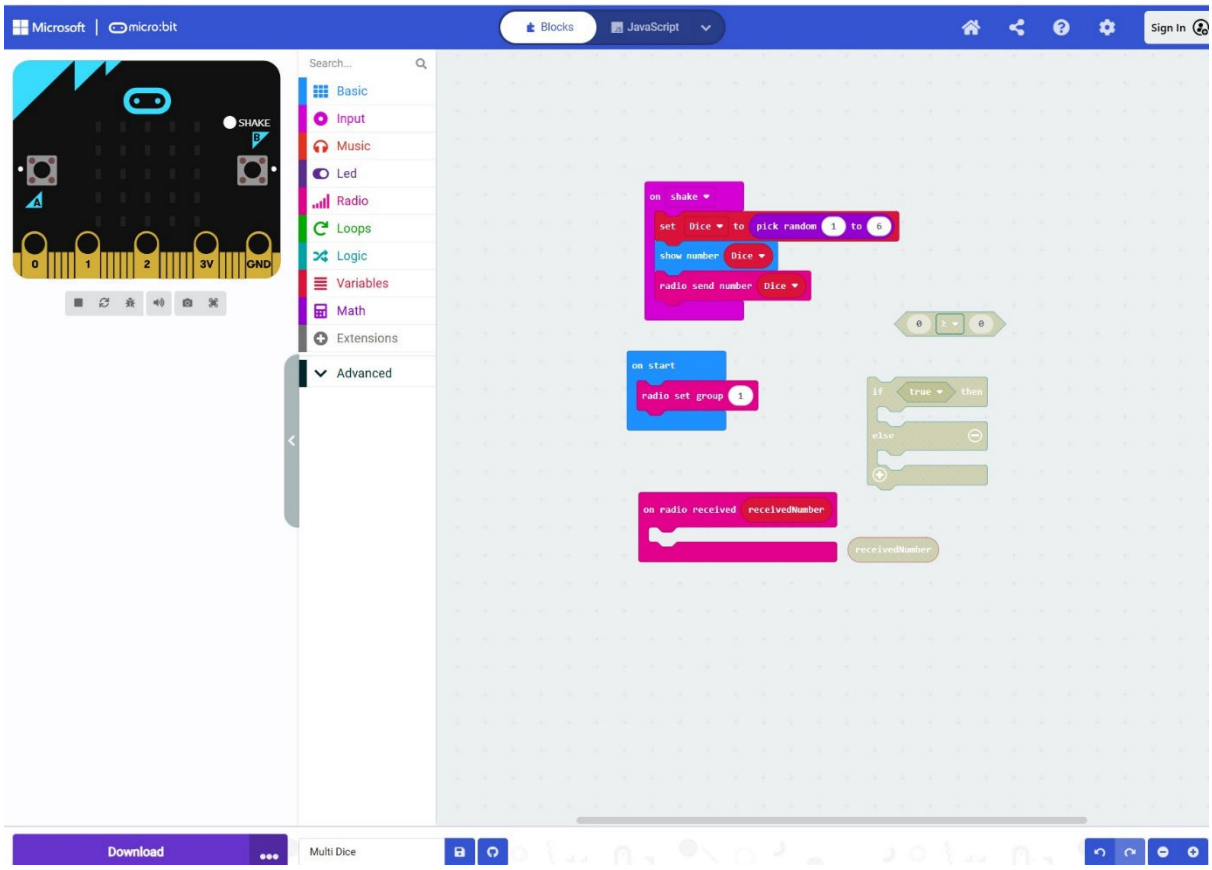


Receive the Dice over Radio

Get ‘on received number’ block from ‘Radio’ and add this to your program. This routine will run when the micro:bit receives a radio message.

‘received number’ is the dice number sent from the other micro:bit.

We need to check if this number is greater than or equal to our ‘Dice’ value to see who ‘wins’. To do this we add an ‘if’ block from ‘Logic’ tool bar. We also need ‘0 = 0’ from ‘Logic’. Click on ‘receivedNumber’ and drag this across to the workspace as shown below.



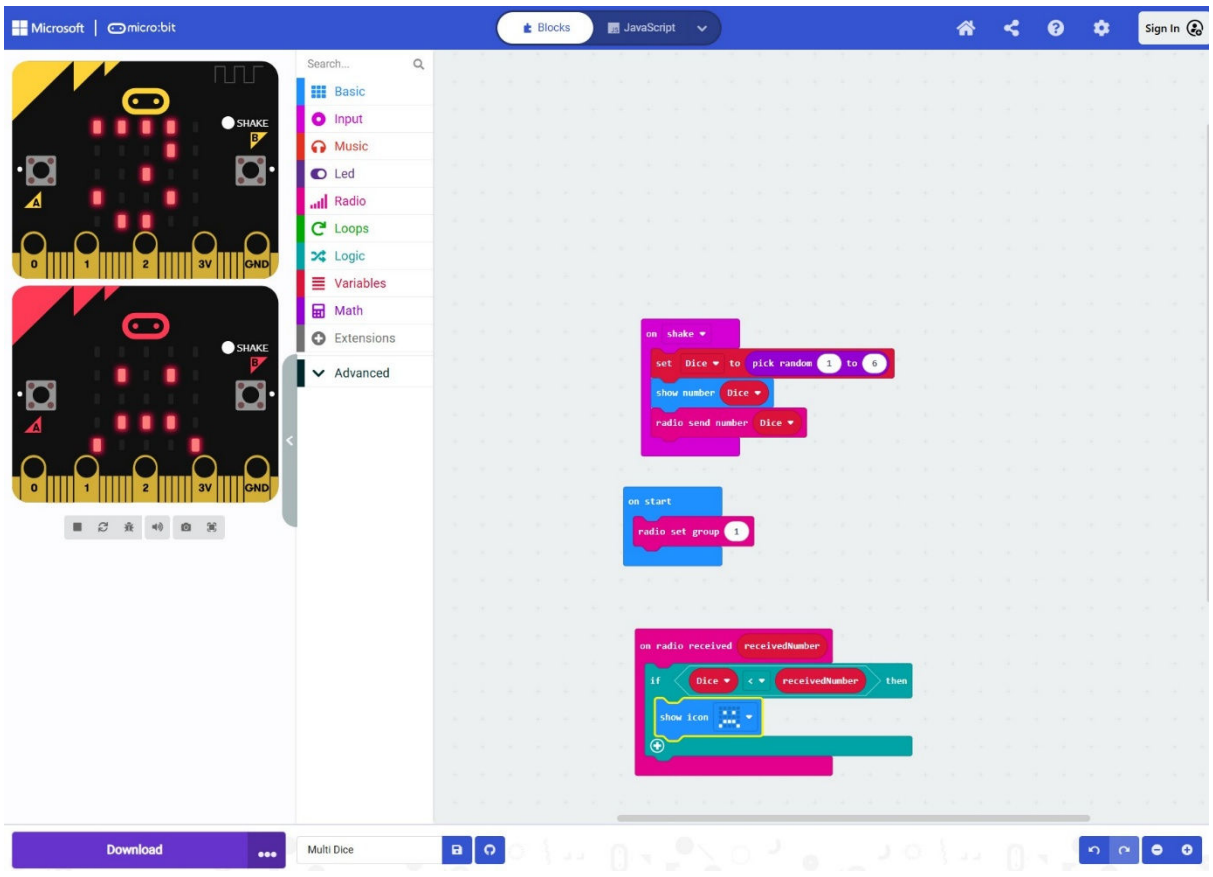
Between the ‘0 = 0’ click on the ‘=’ symbol and change this to ‘<’. Drop ‘Dice’ onto the first of the two 0 in ‘0 < 0’ and ‘receivedNumber’ onto the second. It should now read ‘Dice < receivedNumber’.

Drop this whole block into the ‘if true then’ in place of the ‘true’.

Drop the whole ‘if’ block into he ‘on radio received’ block.

Next from ‘Basic’ select ‘Show Icon’. Click on the icon and change this to a ‘Sad’ face.

The whole of he ‘Show Icon’ block goes into the ‘body’ of the ‘if’ statement as shown below.



That is it.

You can now test your program on the simulator before downloading it as before.

Once you have downloaded the program you should be able to play with you friend to see who throws the highest number each time.