Memory - Blocks – Microsoft Arcade

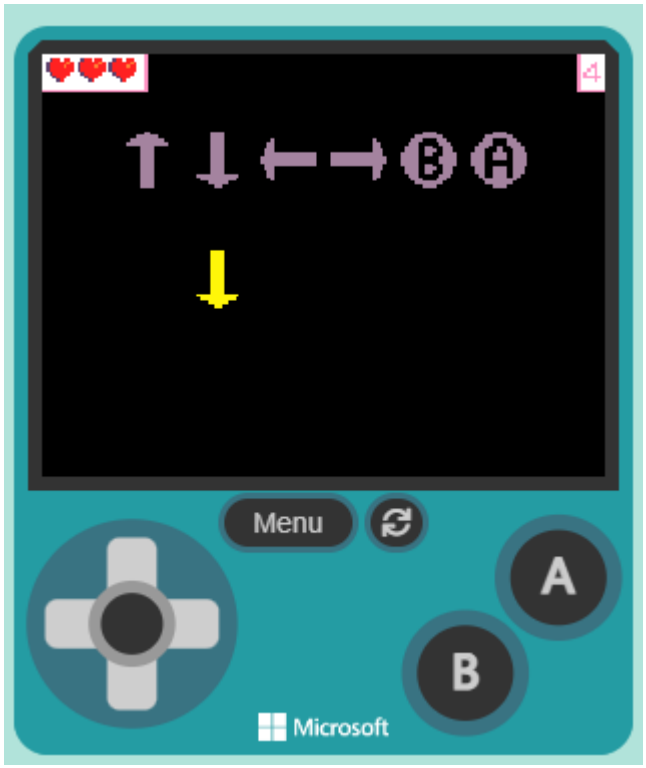
The following instructions will take you through the steps of creating a game where the computer plays a sequence of keypresses that the player memorises and then plays back.

The first sequence is 4 keypresses long.

Each time the sequence is played back correctly; the length of sequence increases by 1.

There are 3 attempts at each sequence.

The game ends when the player fails to get the sequence correct 3 times.



Controls

To control the tank, use the left and right direction keys on the console. Alternatively, it may be easier to use the keyboard mappings for the keys as follows. Use the A button to serve the ball.

	Up (↑ or W)			
Left (← or A)		**Right** (→ or D)	**B** (E, X or Enter)	**A** (Q, Z or Space)
	Down (↓ or S)			

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Step 1 – Draw the icons

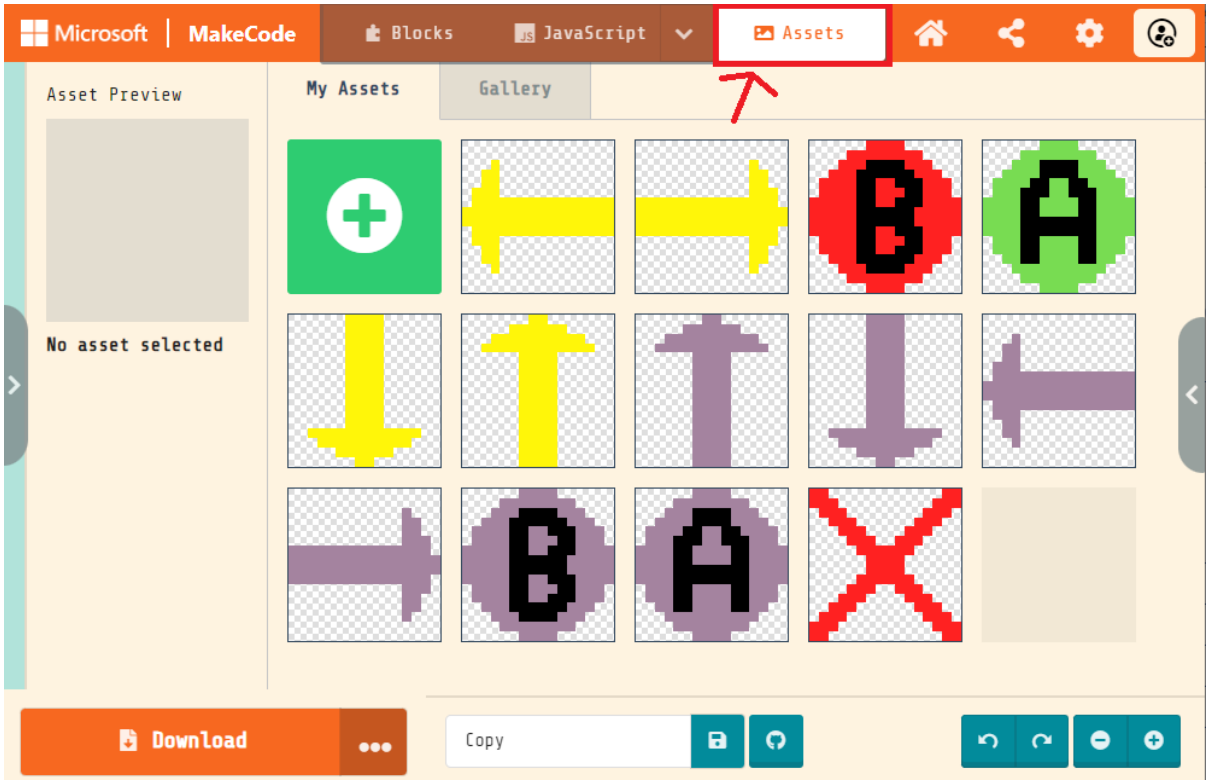
Because the game generates sequences of keypresses to memorise, the game requires 13 images to be created in the Assets section of MakeCode Arcade. The Assets section is accessed from the buttons on the top bar. Each image should be 16 x 16 pixels.

There will need to be 6 images representing the enabled keys and named “left”, “right”, “up”, “down”, “b”, and “a”.

There will need to be 6 images representing disabled keys and named “left-inactive”, “right-inactive”, “up-inactive”, “down-inactive”, “b-inactive”, and “a-inactive”.

There will need to be 1 image representing a cross and named “cross”.

Examples of all 13 images are shown in the screen shot below.



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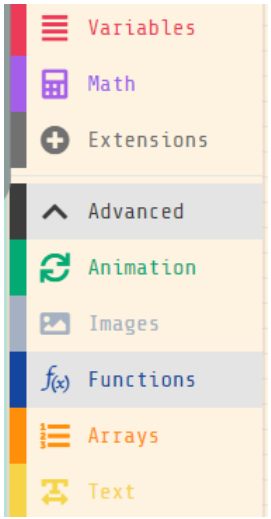
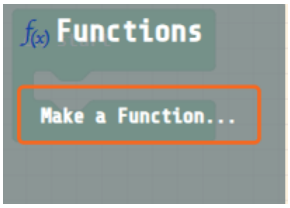
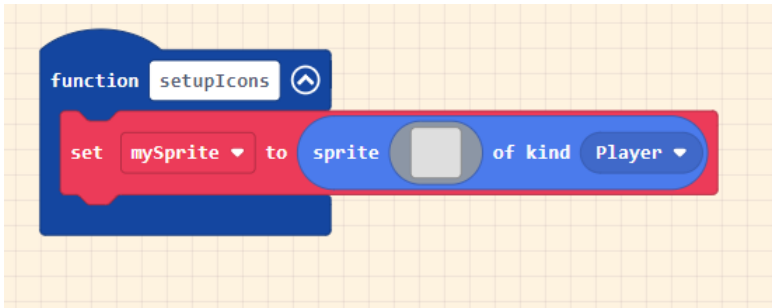
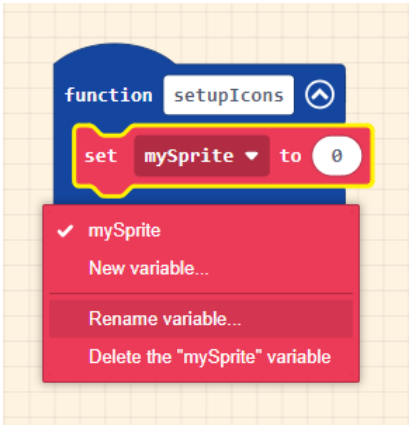
Step 2 – Setup the top row of icons

The top row of icons will be used as the focus of the game. We will use a function to setup the array of icons and position them correctly. Create a new function called setupIcons by selecting Advanced -> Functions -> Make a Function... as shown below.









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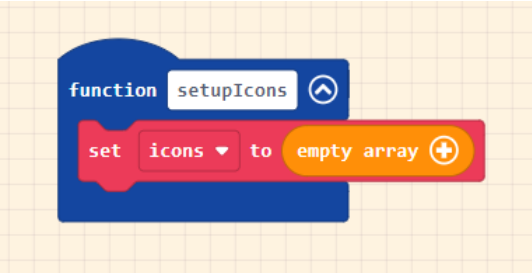

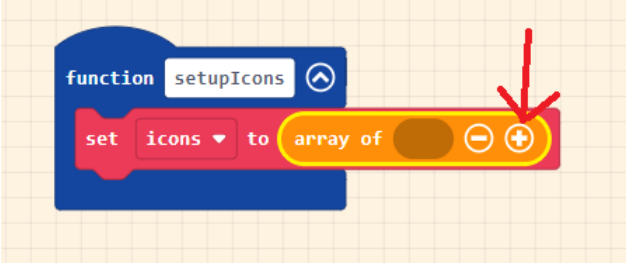

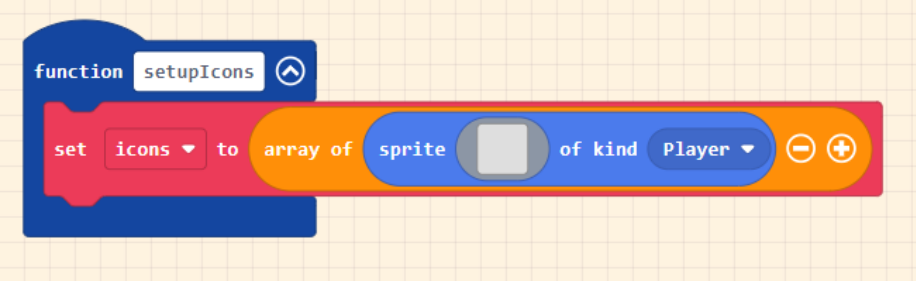

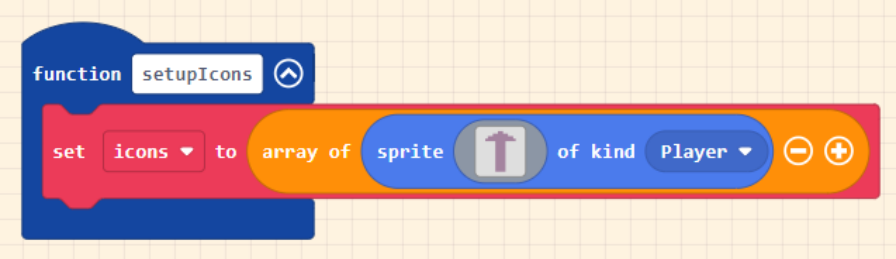

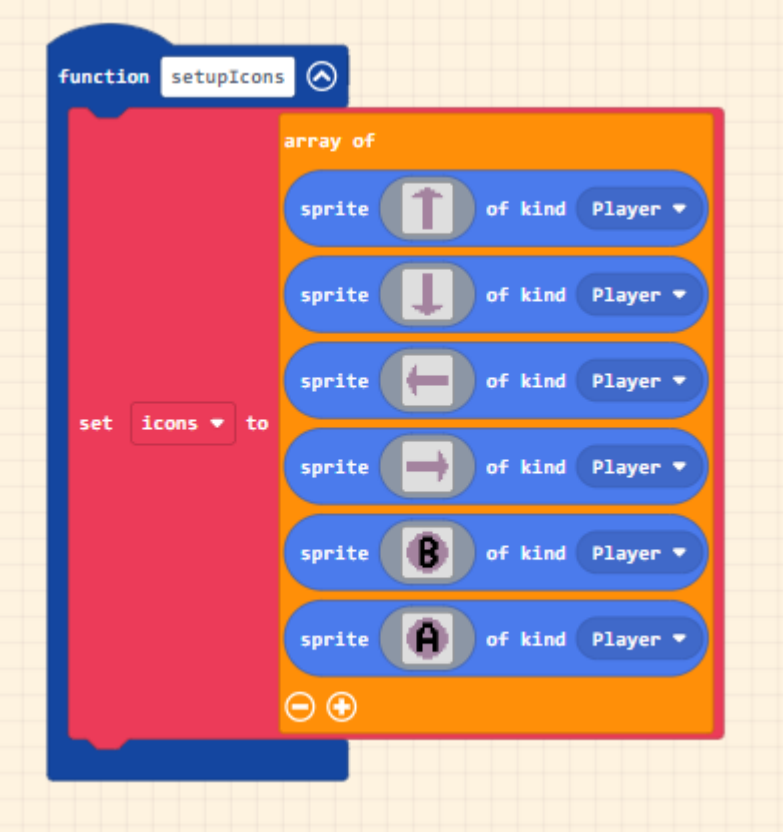

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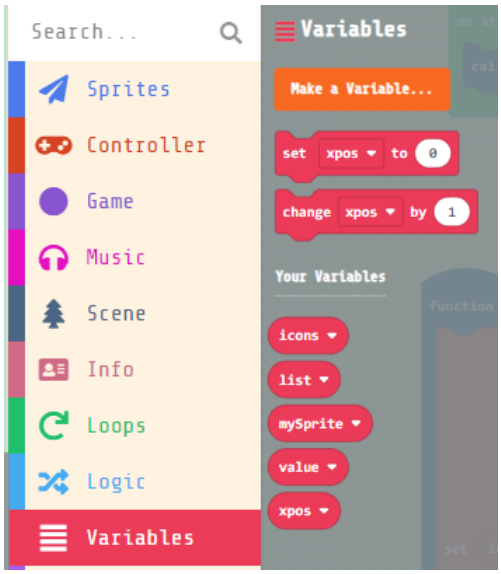

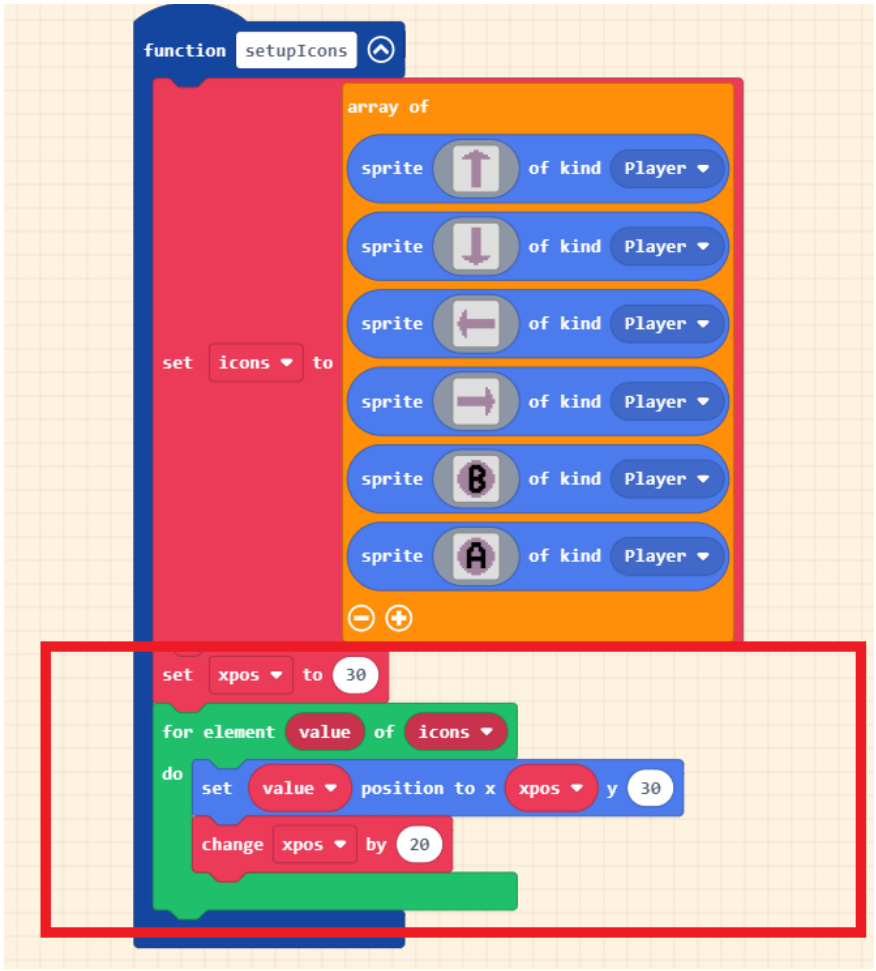

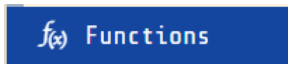

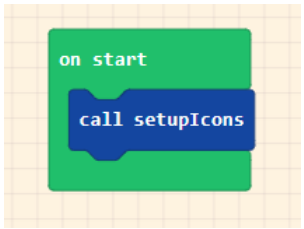

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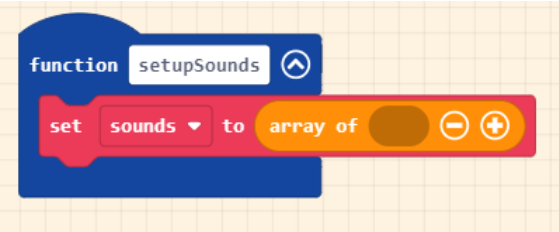
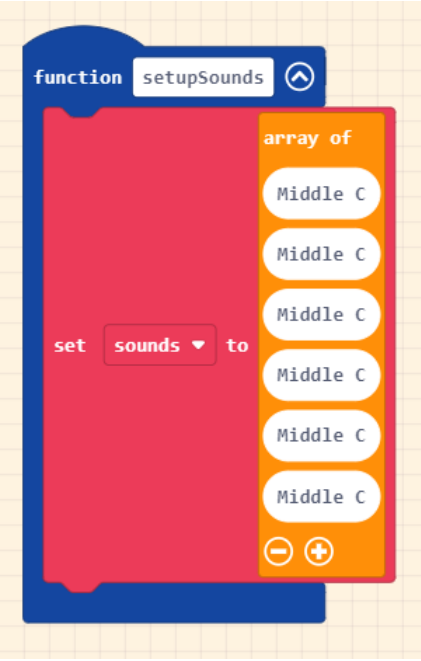
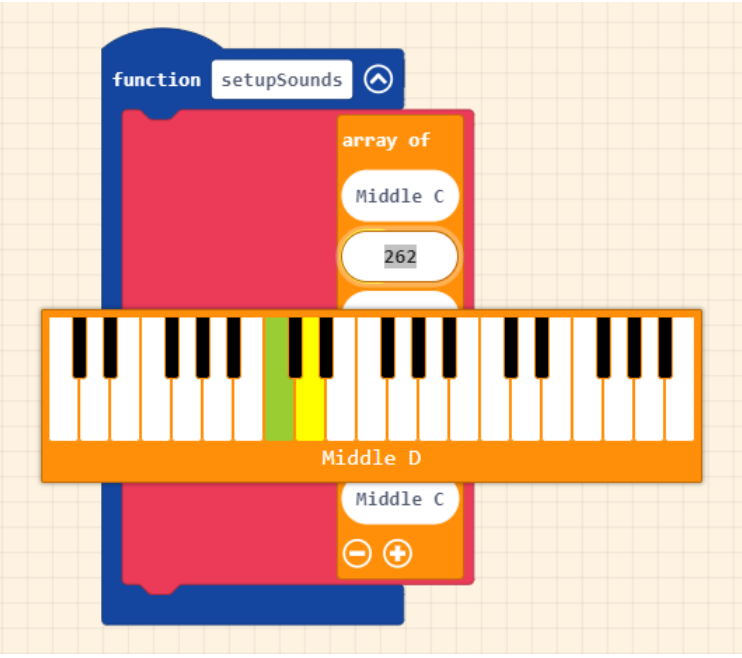
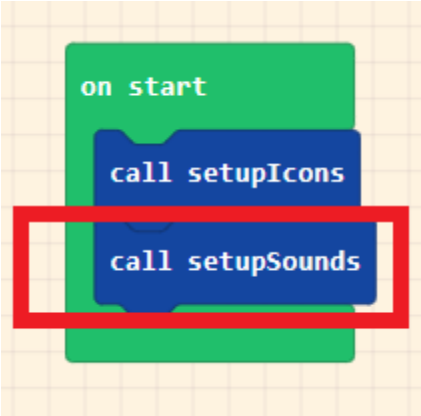
Step 3 – Setup the sounds to play

This is like the previous step but instead of icons, we are setting up sounds to play. Start by creating a new function called “setupSounds”.



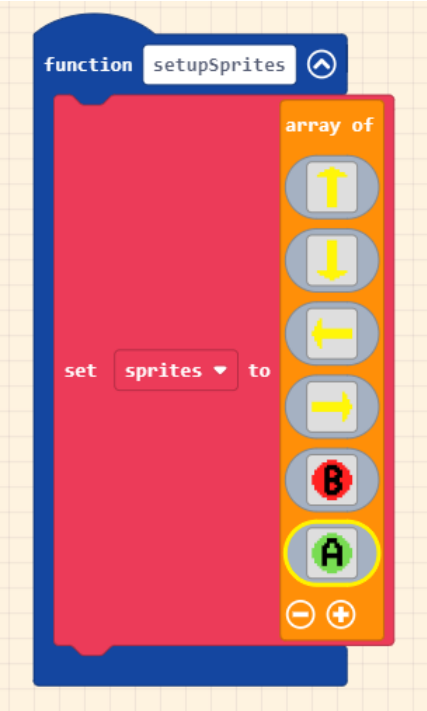


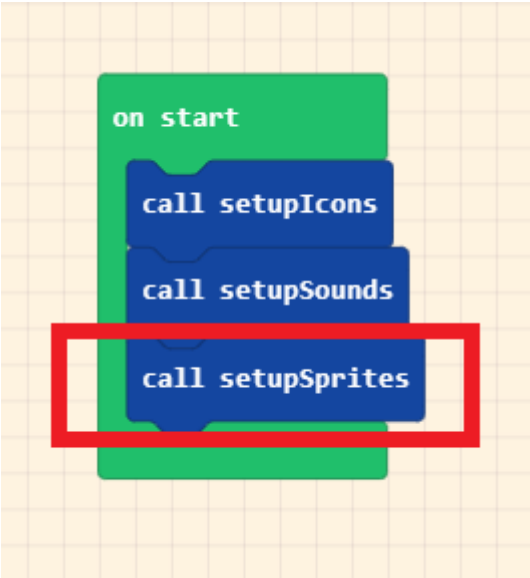




Step 4 – Setting up the sprites to show

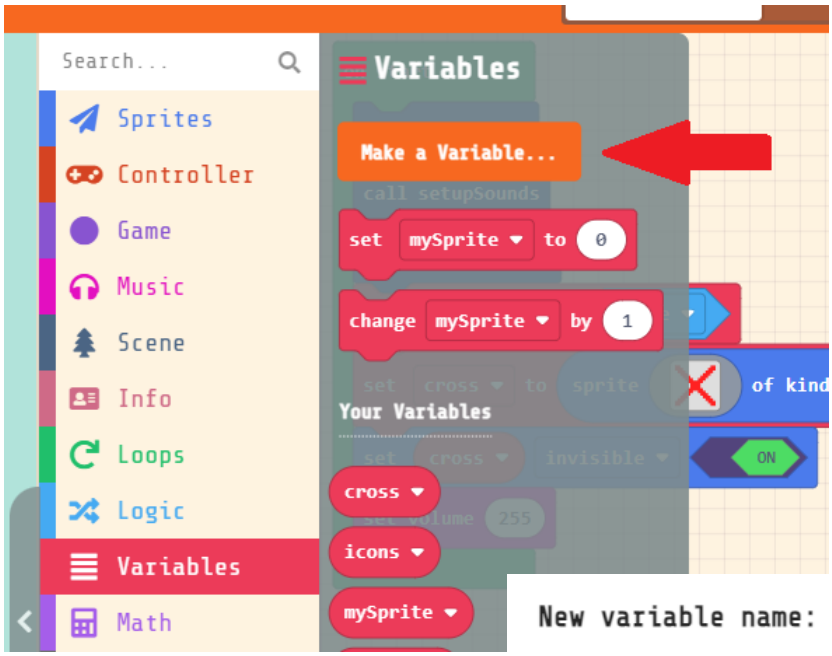
As in the previous 2 steps, a new function is to be created to setup the sprites that will be needed.

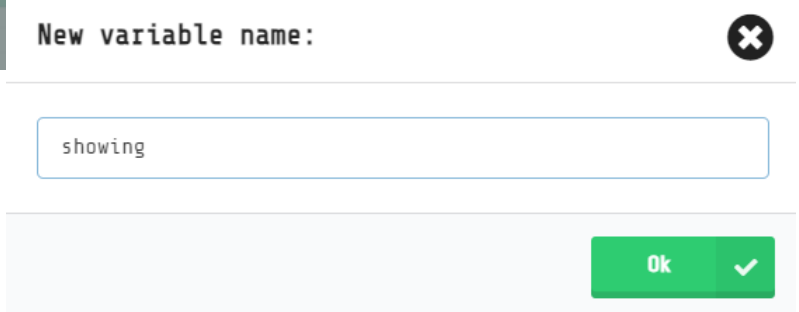




Step 5 – Setup the error indicator

When the player makes a mistake, we will want to let them know y showing a cross. Add the following code to your “on start” block. Start by making a new variable





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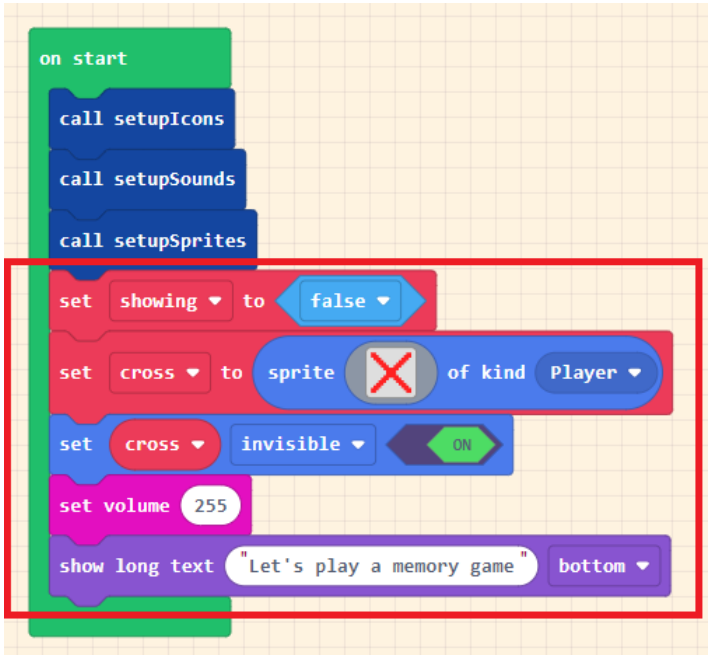
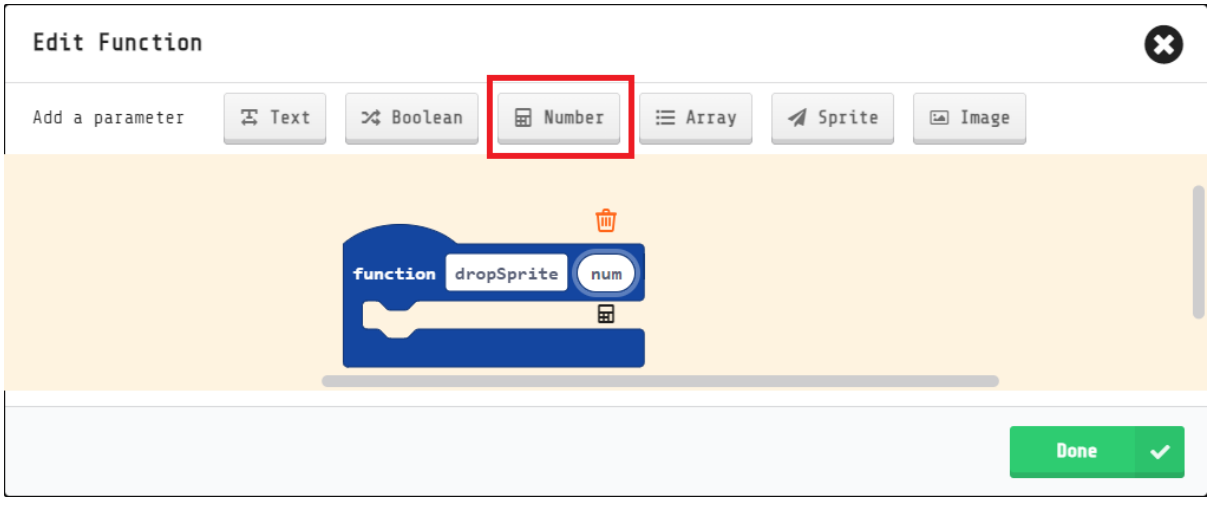


Step 6 – Dropping the sprites

Here a new function is to be created that will be used to make the sprites drop from the icons.

Create a new function by selection Extensions -> Functions – Make a function…

This function needs a number parameter called num.



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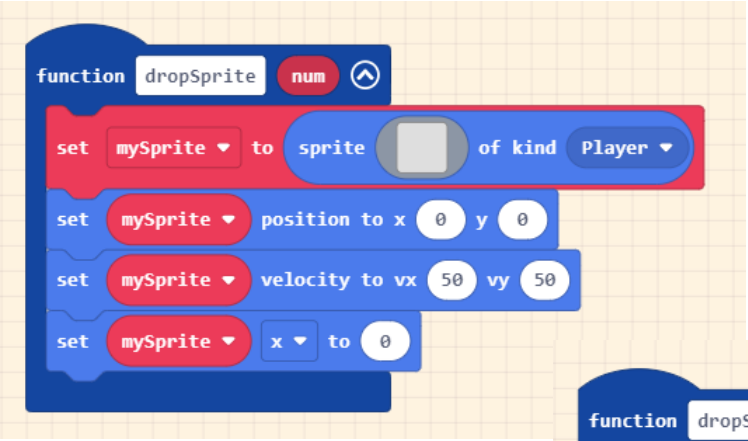
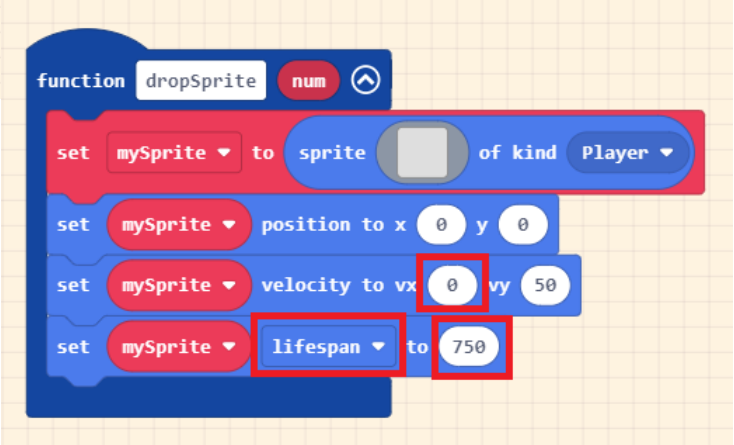
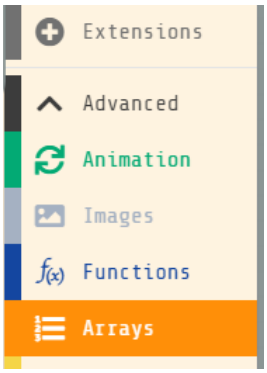
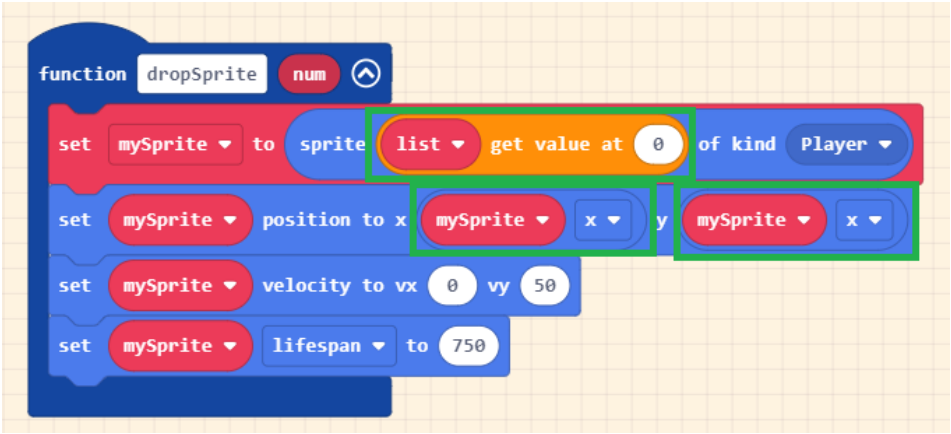
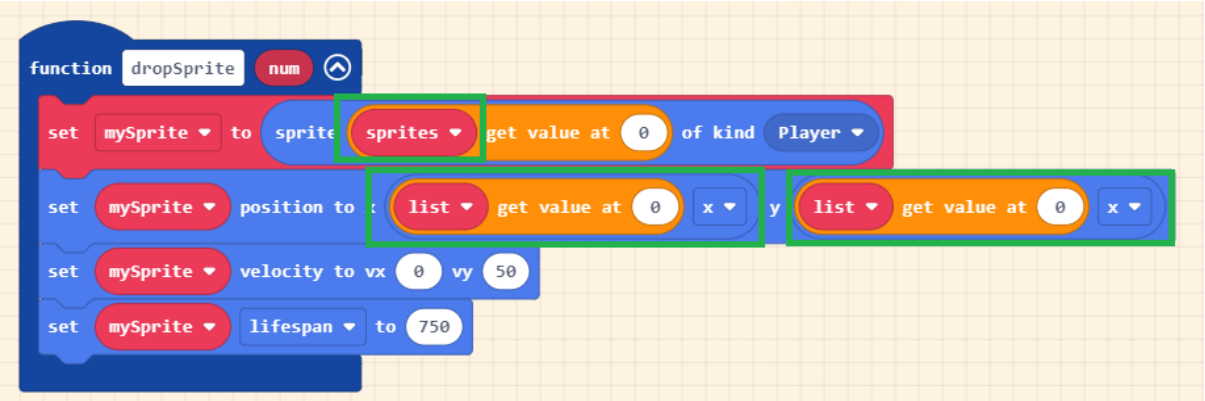


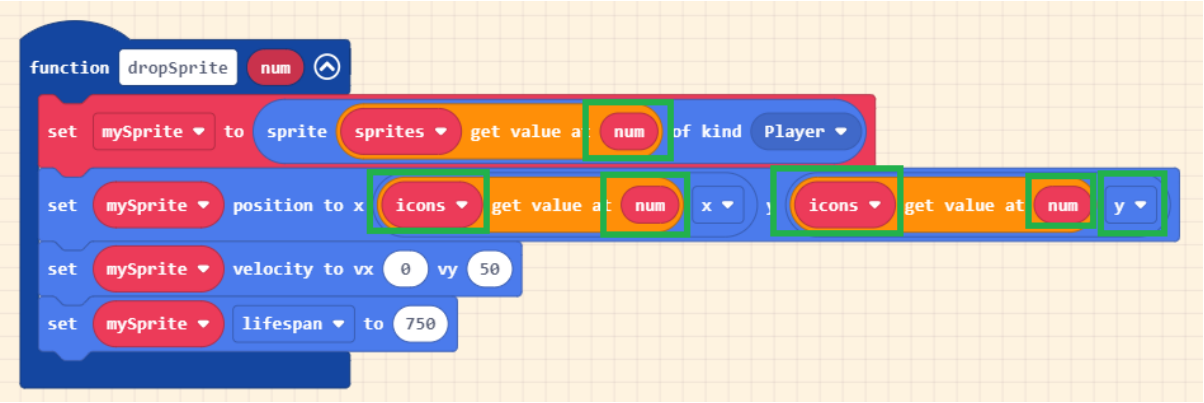


Use the Extensions -> Arrays section for the next section.



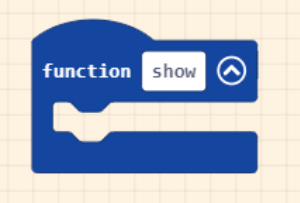


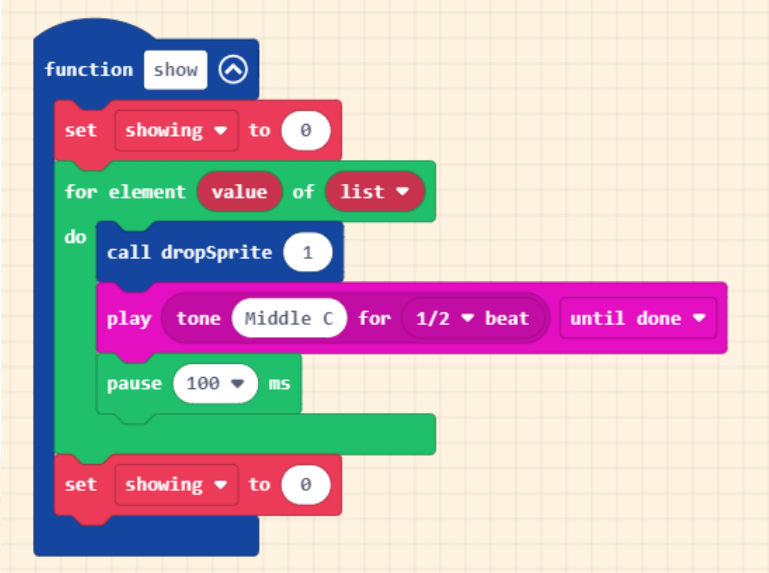


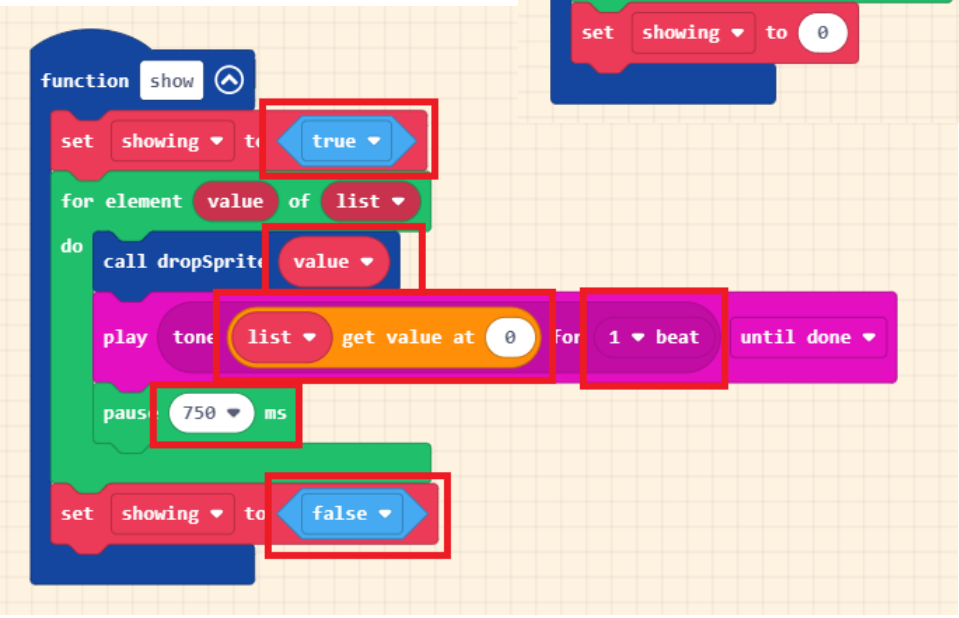


Step 7 – Showing the sprites

As in the previous step, create a new function but this time call it show.







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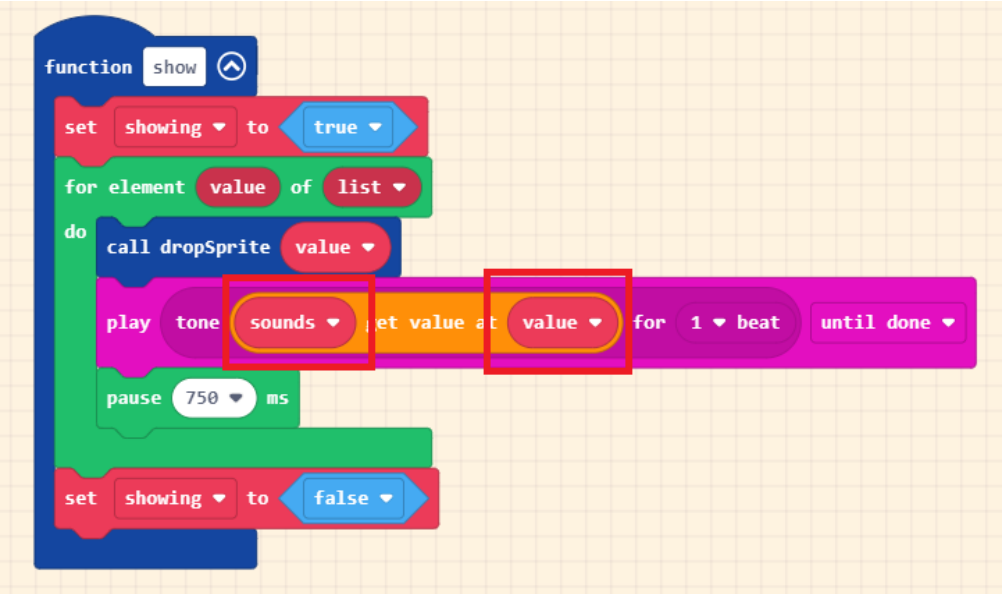
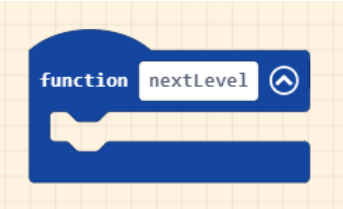
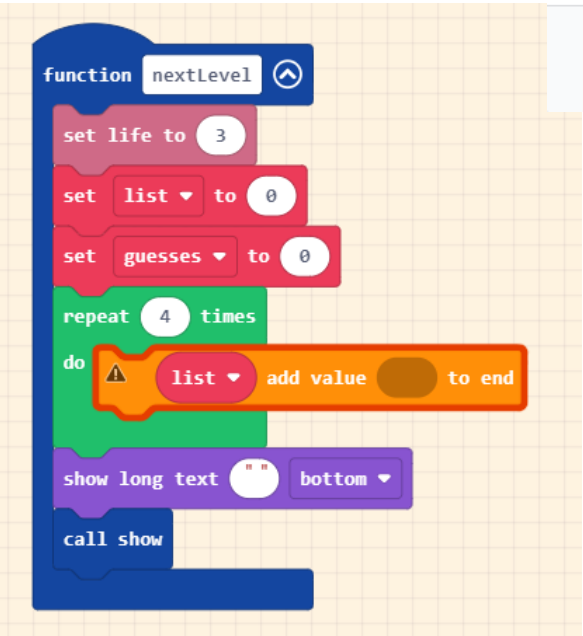


Step 8 – Creating a level

Create a new function called NextLevel





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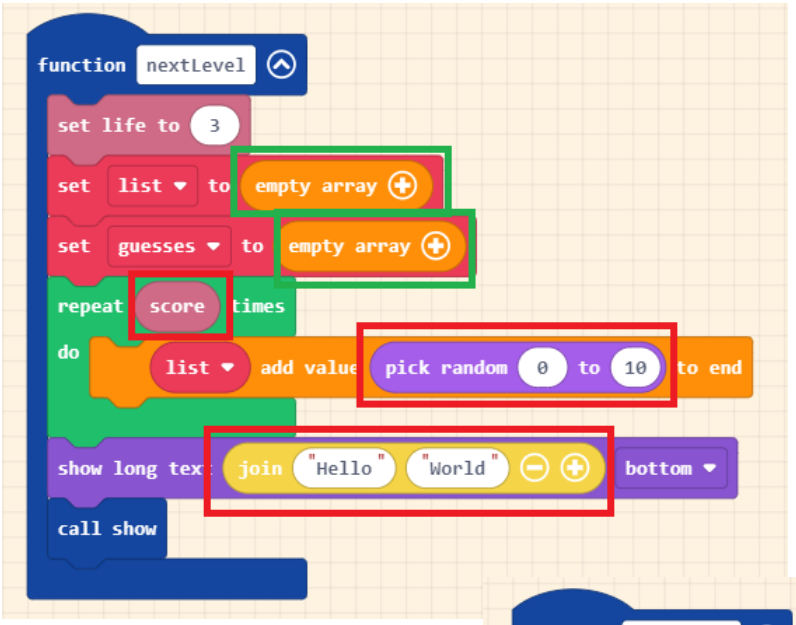

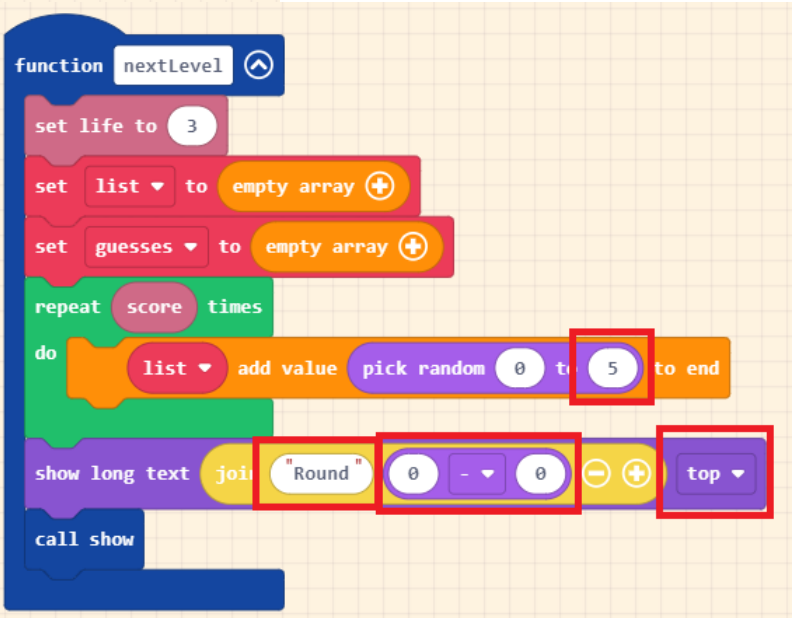

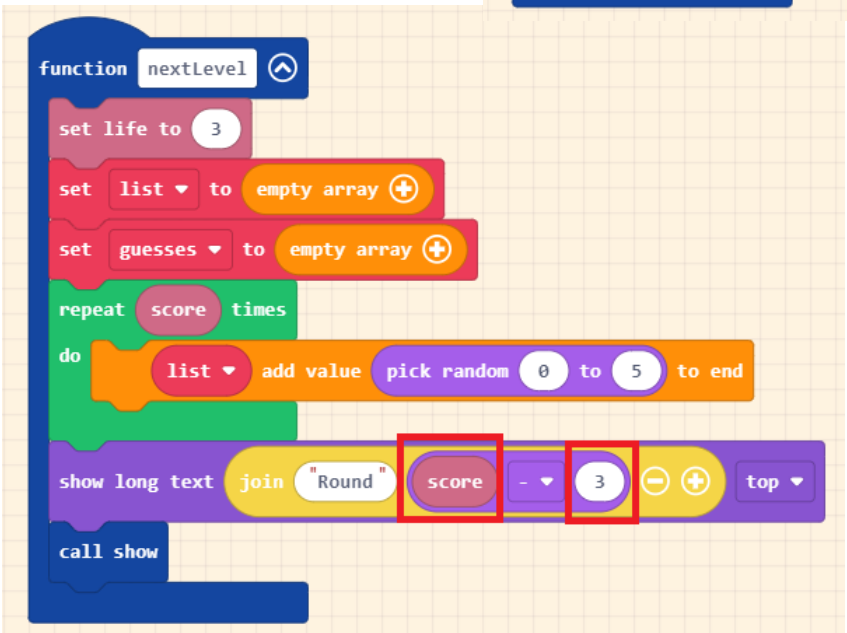

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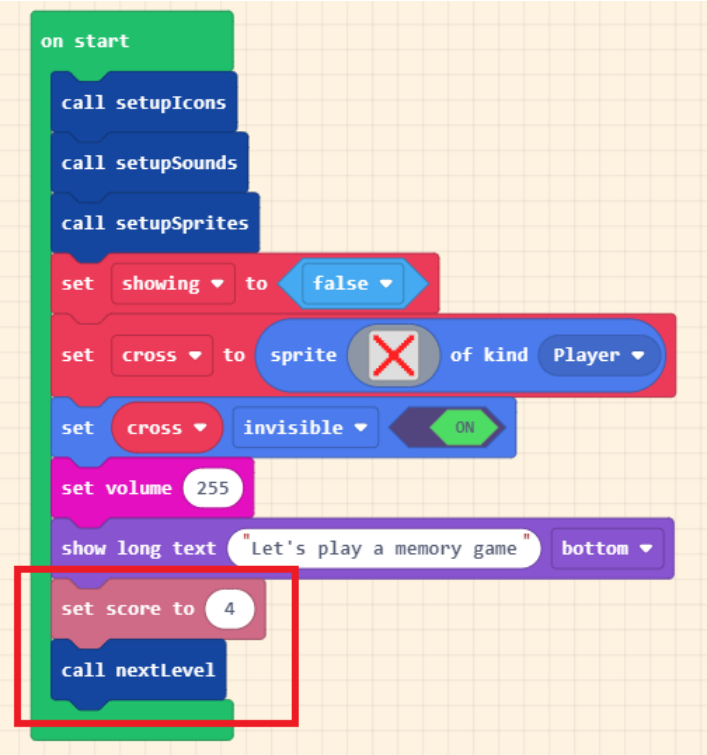
Step 9 – Hooking up the start

Add the following to the “on start” code; then try it out.

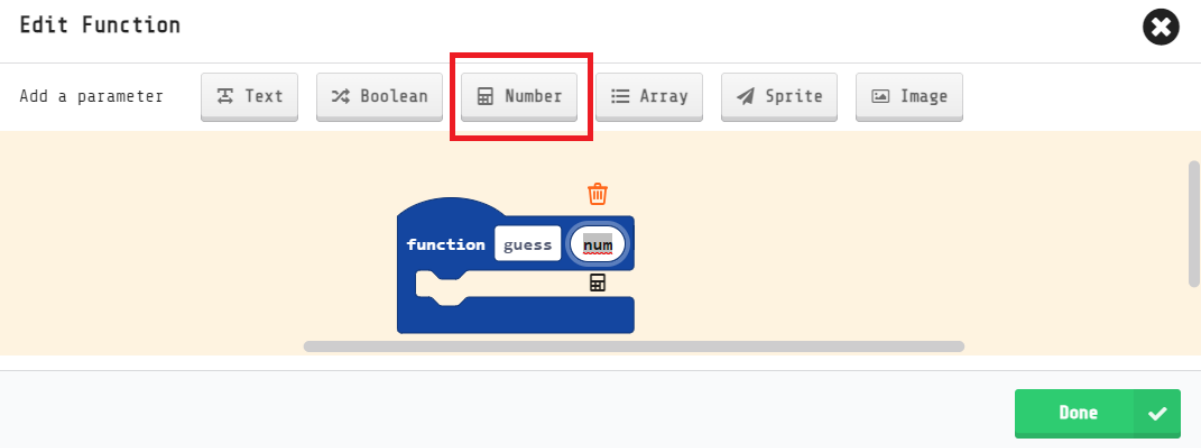


Step 10 – Guesses

Here a new function is to be created that will be used to make the sprites drop from the icons.

Create a new function by selection Extensions -> Functions – Make a function…

This function needs a number parameter called num.



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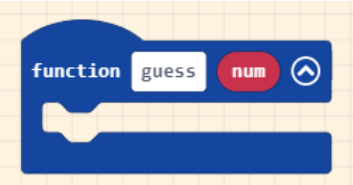

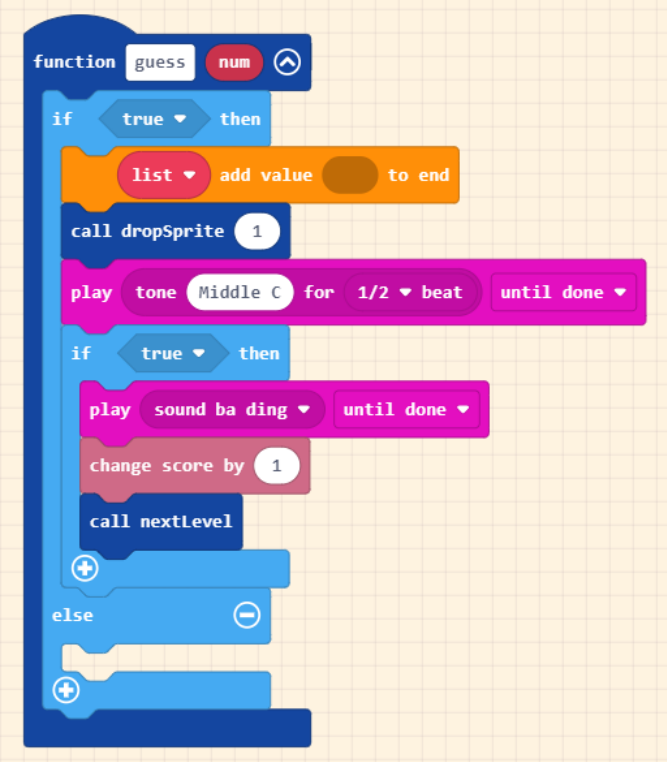

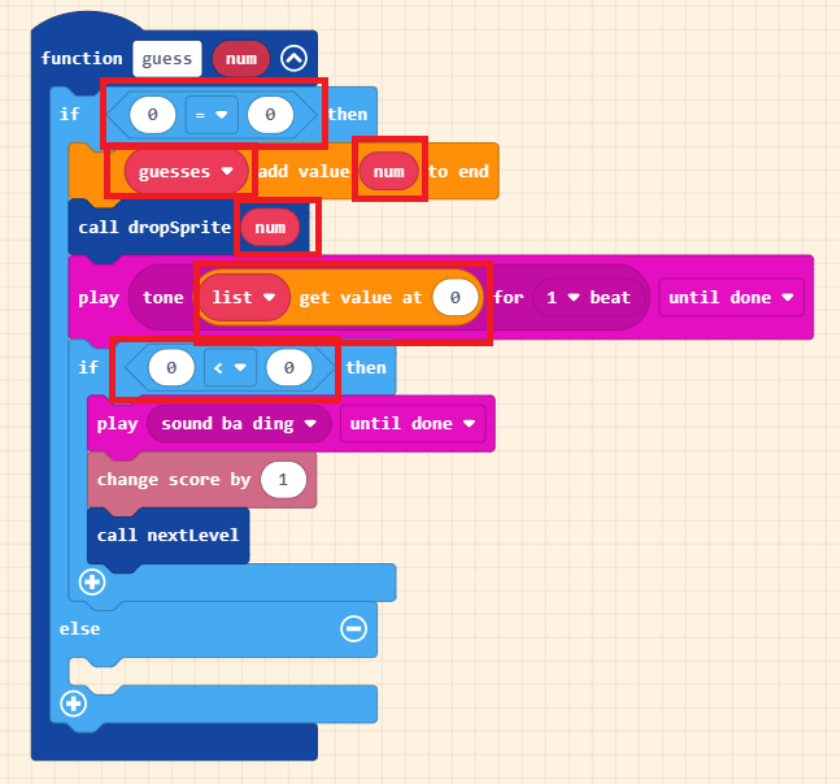

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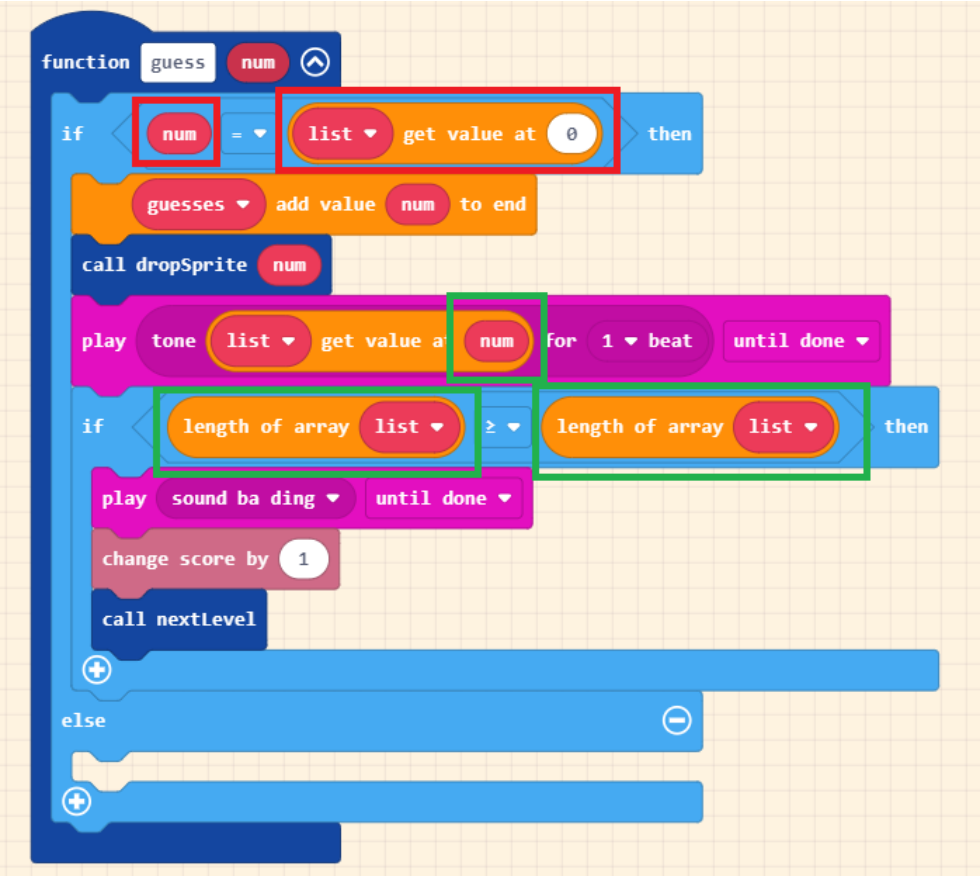

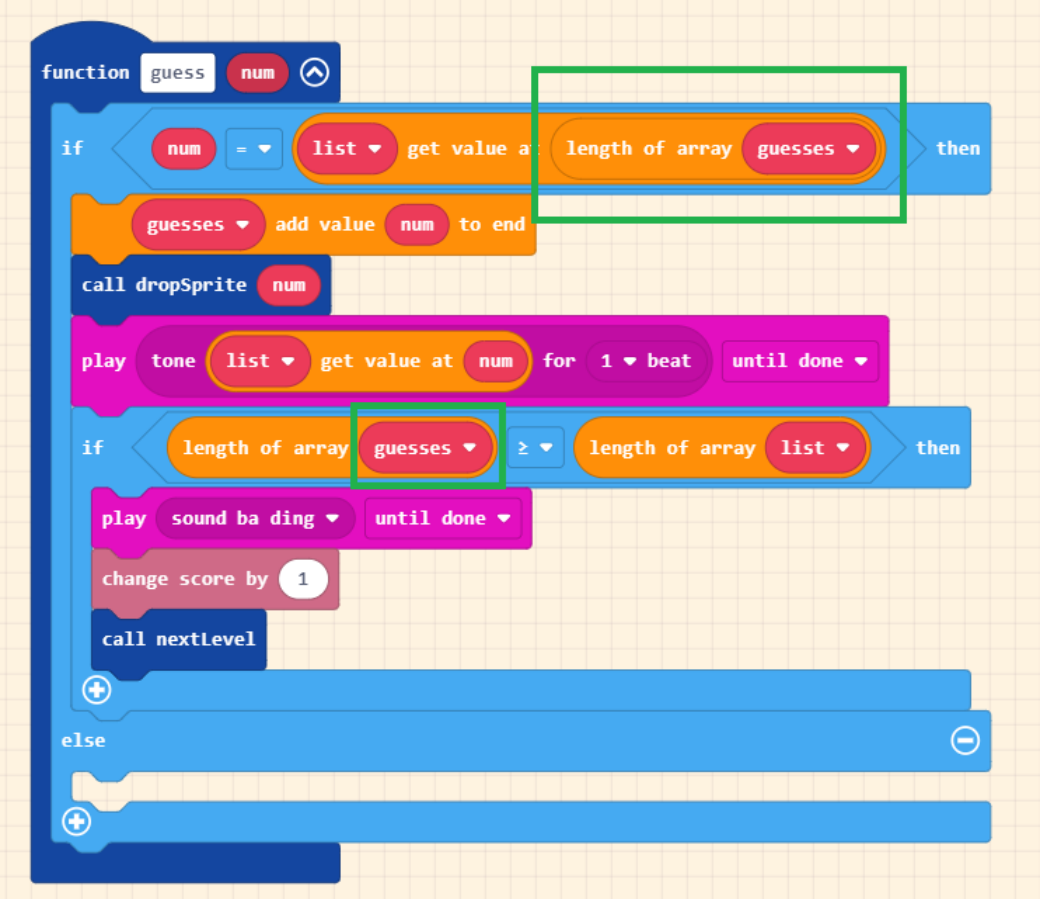

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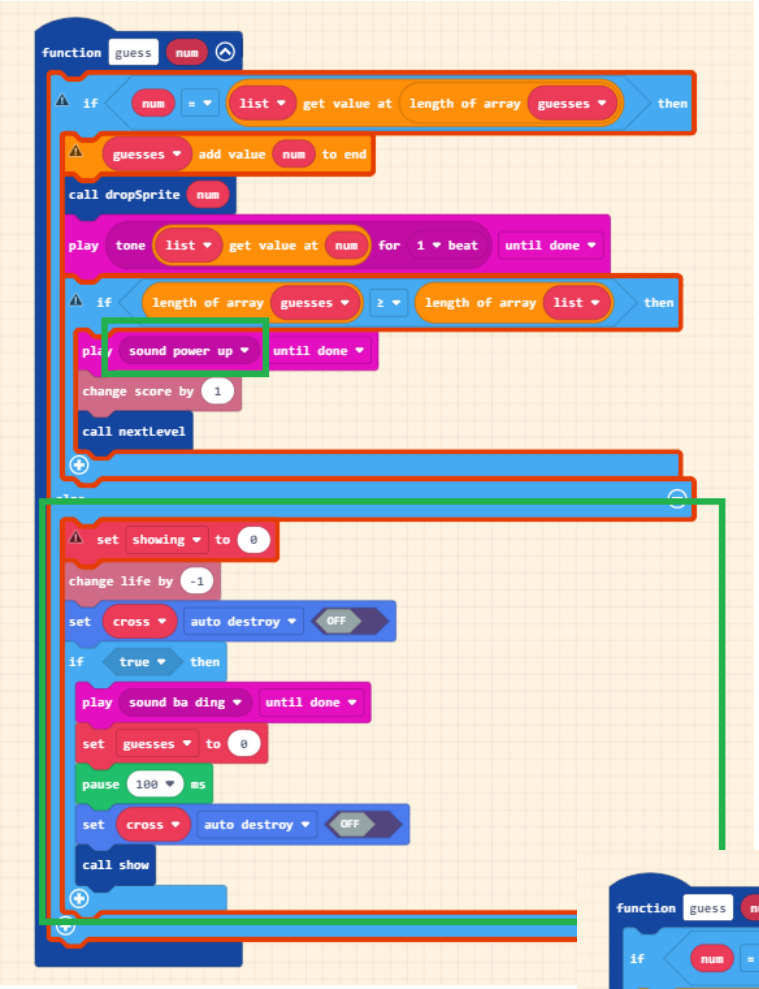

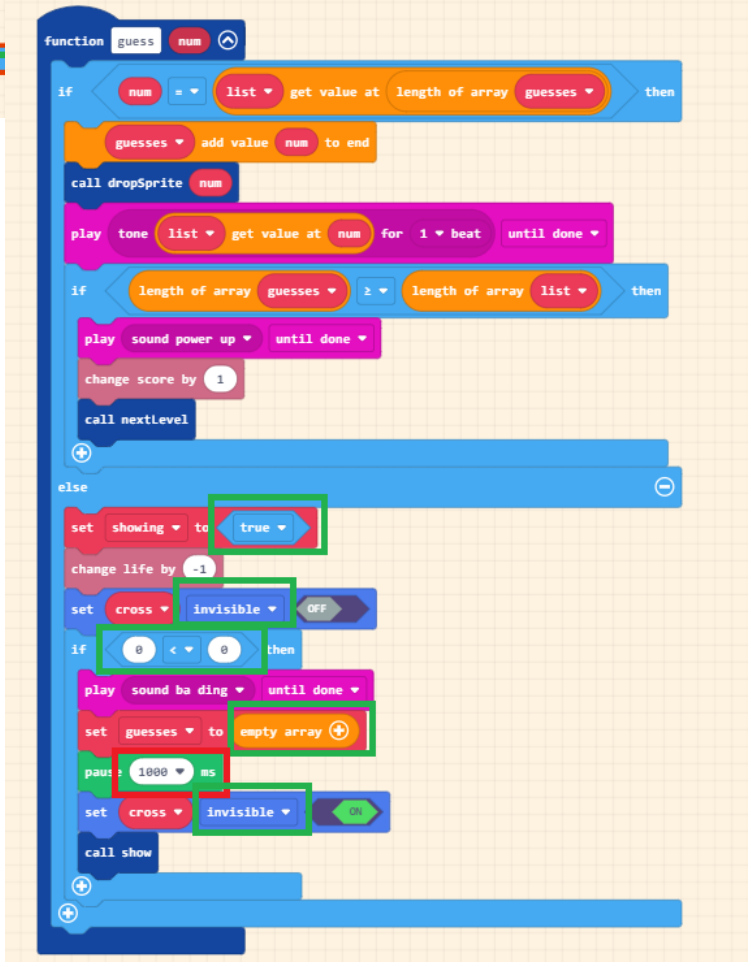

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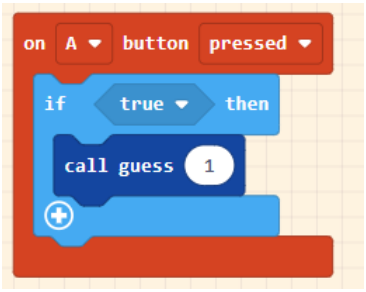
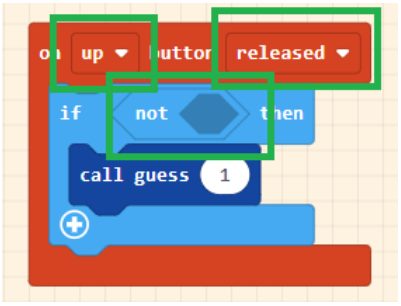
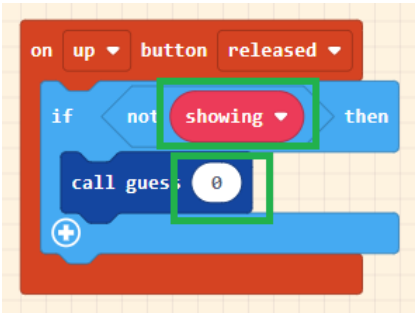
Step 11 – Keypresses

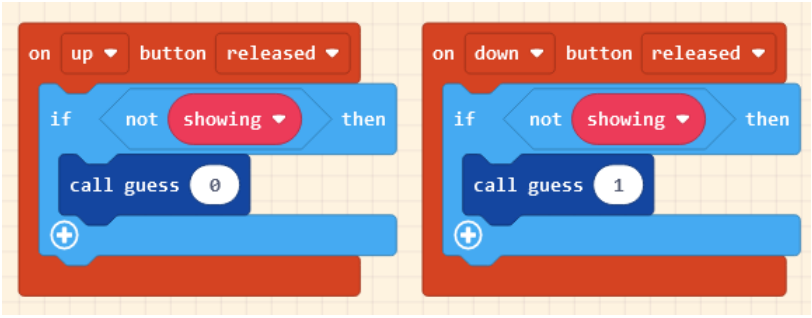
Now we need to hook up the key presses so the player can play back the tune. We will start with the up button.

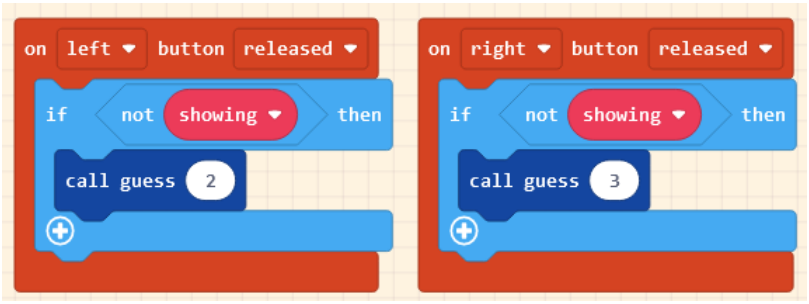


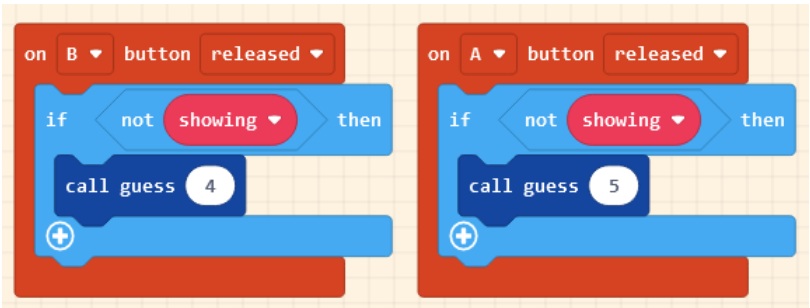




Now add the down, left, right, A and B buttons so you have 6 in total like the below:







Extending the game

There are many ways that this game can be extended. Just a few ideas are given below.

- Animate the sprites as they fall.
- Rather than randomly generating a sequence for each level, add to the existing sequence to make it longer.
- Rather than randomly generating a sequence, use the notes to play a tune.