

The Tilt Game

Game idea

Create a game so that by moving the micro:bit (or simulator) by tilting left / right (roll) or forward / backward (pitch) you cause the LED to move L/R or F/B – if you wish you can put other constraints into the game to make it harder.

How to Approach

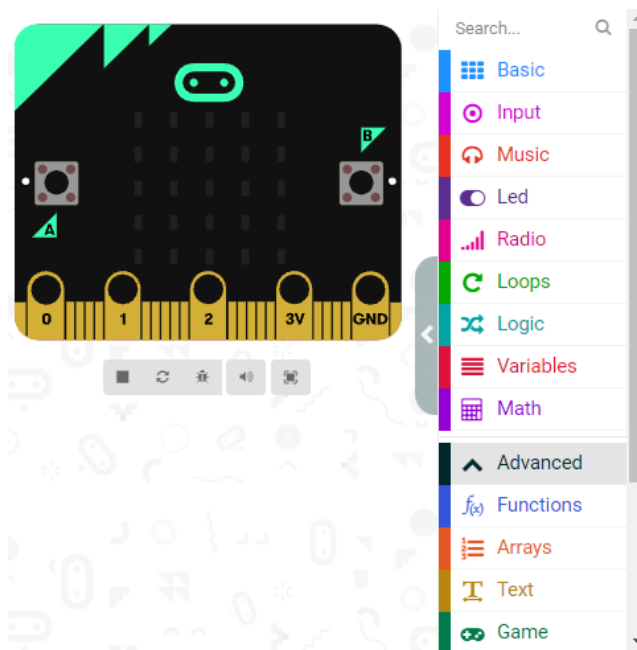
The micro:bit has an accelerometer and we are going to use its features to move a LED around the screen by tilting the micro:bit.

Each LED has a coordinate – x and y so starting from the top left its position 0,0 to the bottom right its position 4,4, the middle LED is position 2,2.

The Accelerometer can detect rotation - roll (left / right movement) and pitch (forward / backward) movement so to an extent the x plane tilt is roll and the y plane tilt is pitch.

Also from the flat position the tilt is zero (0) and if you tilt to the left the roll will increase as a positive number, roll to the right and it's a negative number.

For this game we will need to use the Game extension if it is not displayed on your screen then click the 'Advance' and select Games.

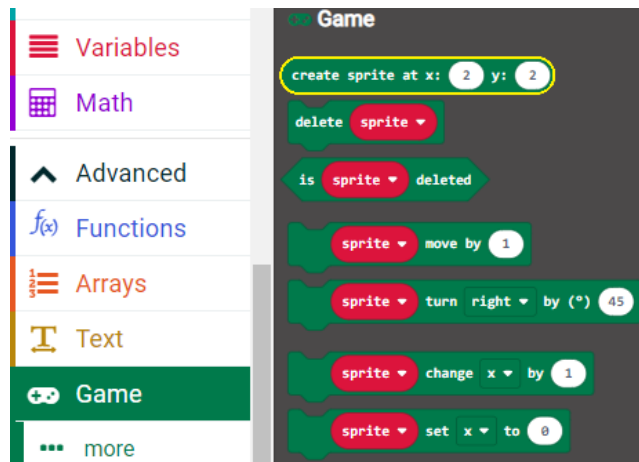


Possible Solution approach.

This time out you should try to create the game yourself (there is a possible solution at the end).

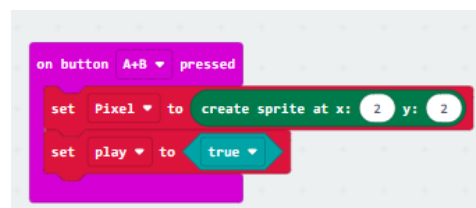
Initialise:

As a starting point you can use the on button A+B pressed to initialise the game – here you might for example centre the LED in the middle, you will need to remember the position of which LED is on so create a variable – maybe name it **pixel**, and use this to store the location of the led. There is a



Create sprite at x,y block in the Games section – check out the other blocks in the code type you might want to ‘change’ x or y later !!

Also it would be an idea to have an indicator of if the game is on or not so a variable named maybe **‘play’** and set it to True (using the Logic codes) to indicate if the game is on or not.



Next up create a forever loop, then insert a While **‘play’** is True loop.

Firstly lets work on getting the left / right tilt working. Now for x Tilt you will need to create a variable and then set it to rotation, roll – this will detect changes to the roll with positive change being to the left and negative change to the right.

Then you can check using ‘if’ the x tilt variable is greater than say 10 (the greater this number the less sensitive it is, 10 seems to work ok). If it is greater than 10 then you need to change the pixel x position by -1 and it might be an idea to put a pause in as well to slow down the change.

You will of course need to repeat this for the right roll and then also for forward and backward pitch !!

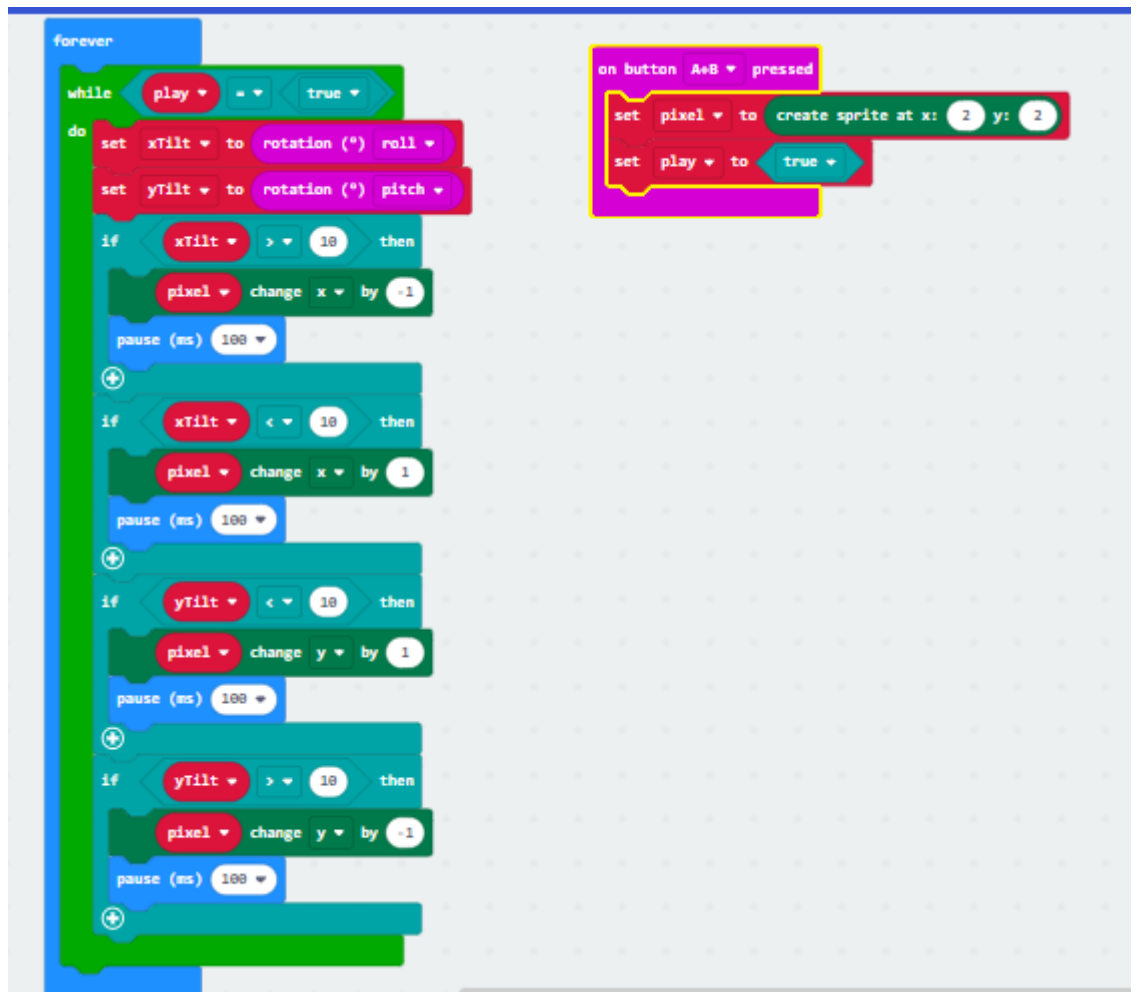
As mentioned a possible solution is on the next page but try it out yourself.

There are many more interesting projects you can try with micro:bit why not check out your local Coderdojo and see if they are running any sessions on it.

Don't forget to look at the game code in JavaScript and Python – maybe try to make changes in a different language and get it to work!!!

Good Luck

Possible solution to Tilt Game



The image shows a Scratch script for a game called 'The Tilt Game'. The script is divided into two main parts: a main game loop and a button press event.

Main Game Loop (Forever Loop):

- While Loop:** A 'while' loop that runs as long as the 'play' variable is set to 'true'.
 - Do Block:**
 - Set 'xTilt' to 'rotation (*) roll'.
 - Set 'yTilt' to 'rotation (*) pitch'.
 - Right Tilt:** If 'xTilt' is greater than 18, then 'pixel' changes x by -1, followed by a 100ms pause.
 - Left Tilt:** If 'xTilt' is less than 18, then 'pixel' changes x by 1, followed by a 100ms pause.
 - Up Tilt:** If 'yTilt' is less than 18, then 'pixel' changes y by 1, followed by a 100ms pause.
 - Down Tilt:** If 'yTilt' is greater than 18, then 'pixel' changes y by -1, followed by a 100ms pause.

Button Press Event (on button A+B pressed):

- Set 'pixel' to 'create sprite at x: 2 y: 2'.
- Set 'play' to 'true'.