Catch Single Player

The following instructions will take you through the steps of creating a game where you try to catch the balls that fall from the sky. The more balls you catch the faster they drop. This game makes use of the micro:bit game blocks and also contains extension points where you can develop the game further. The following link is the reference page for the micro:bit game blocks.

https://makecode.microbit.org/reference/game

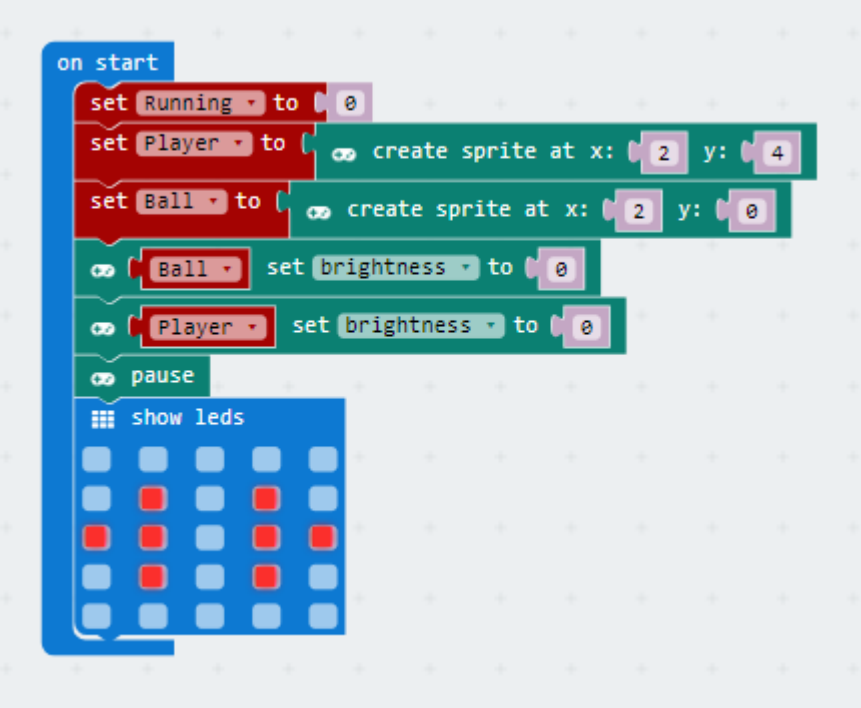
Step 1 – Create the Player and Ball

The Player will be created as a sprite that can be moved along the bottom line of the micro:bit LED matrix when the game is running. The A button will move the Player to the left and the B button will move the Player to the right. Starting the game will be achieved by pressing the A and B buttons together. If the Player fails to catch a Ball (by placing the Player sprite underneath the falling Ball) then a life is lost.

A variable called Running is used to control if the game is currently running or not. 0 means not running and 1 means running. When the game first starts, we do not want it to start running.

A variable called Player is used for the Player sprite.

A variable called Ball is used for the Ball sprite.

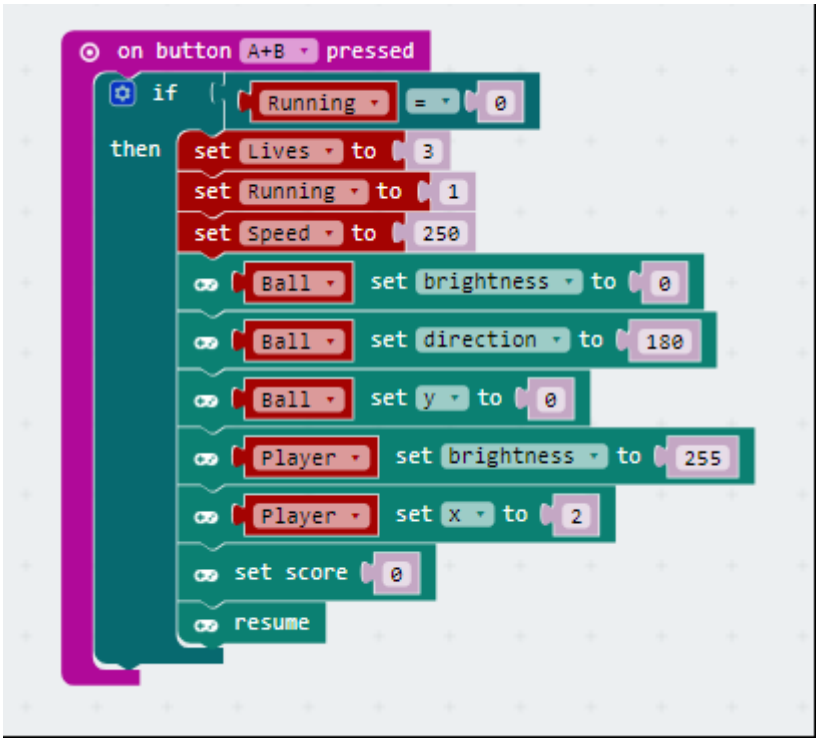


Step 2 – Start the game

The A+B buttons used together will be used to start the game, by setting running to 1 and resetting the game variables.

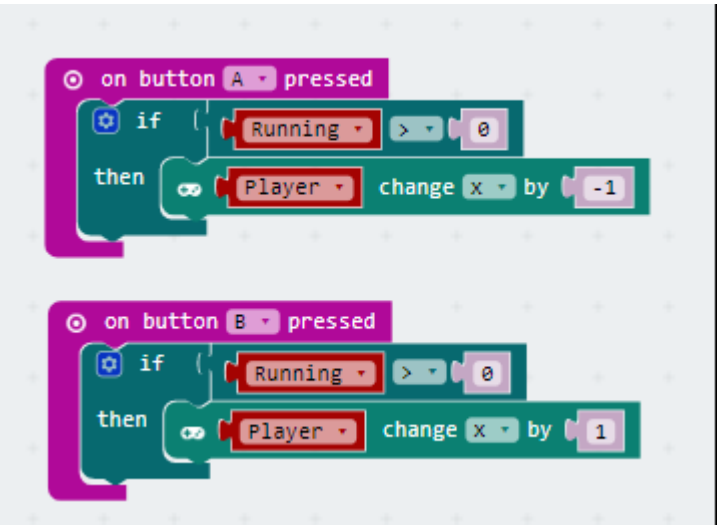
We also create a new variable called Lives that is used to record the number of lives that the player has left. We default this to 3.

Another variable called Speed is created that is used to control how fast the Ball falls. We default this to 250.



Step 3 – Move the Player

The A button will be used to move the Player left and the B button will be used to move the Player right.



Step 4 – Making the Ball fall

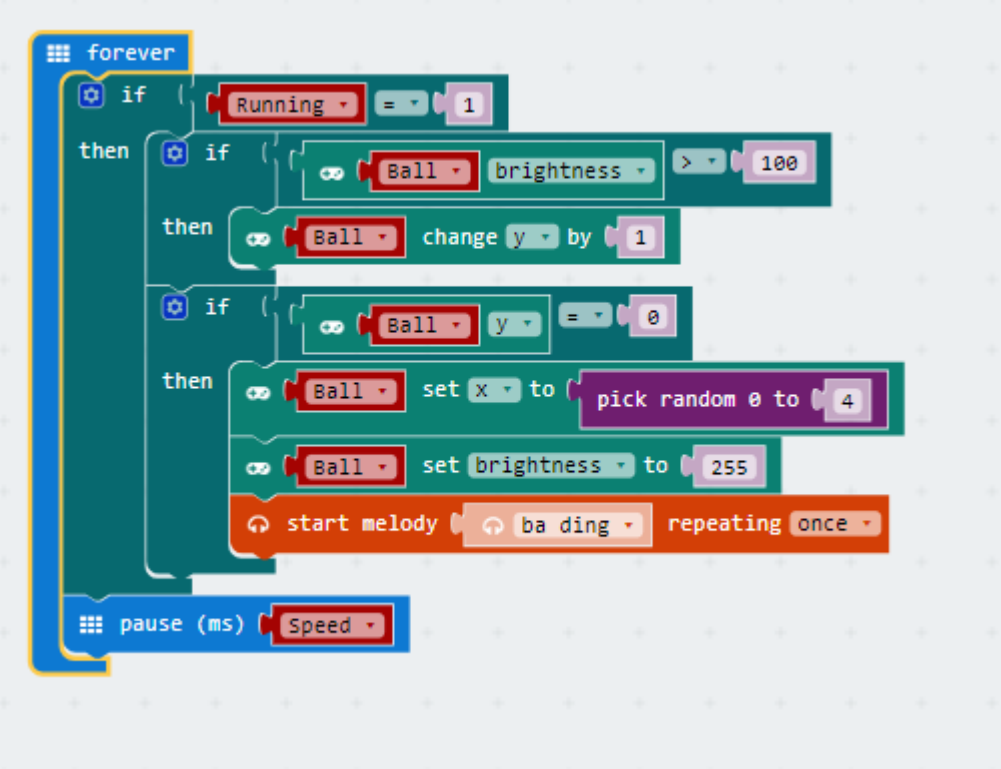
The Ball will be made to fall by the main game loop which is controlled within a forever block. The ball only falls when the game is Running (i.e. when Running has the value 1).

If the Ball is visible (i.e. it has its brightness set to a value greater than 100 we make it drop.

If the Ball is not visible, we select at random a column to drop the Ball in and make the Ball visible; we also play a sound.

The Speed of the Ball is controlled by the pause loop that uses the Speed variable.

What happens when the ball reaches the bottom?



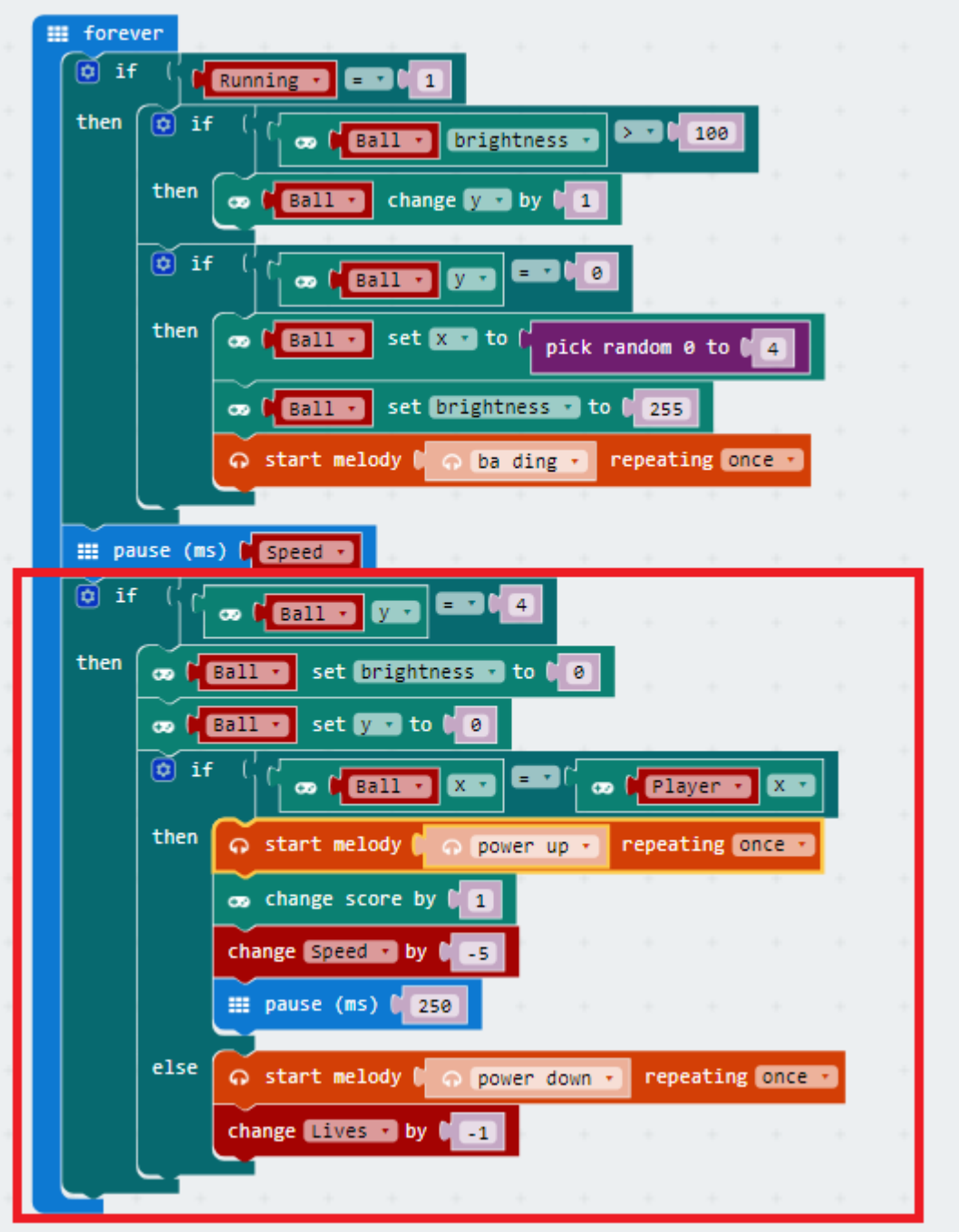
Step 5 – Catching or Dropping the Ball

In the previous code, when the Ball reaches the bottom, it just stopped there. Now we need to add some more code that detects when the Ball reaches the bottom and reset it back to the top of the screen to fall again (also making it invisible).

At the same time, we also want to check if the Player has caught the Ball (the Ball and Player will have the same X co-ordinate). If the Player caught the Ball we increase the score and make the Ball drop faster by adjusting the speed. If the Player misses the Ball then we want to reduce the number of Lives.

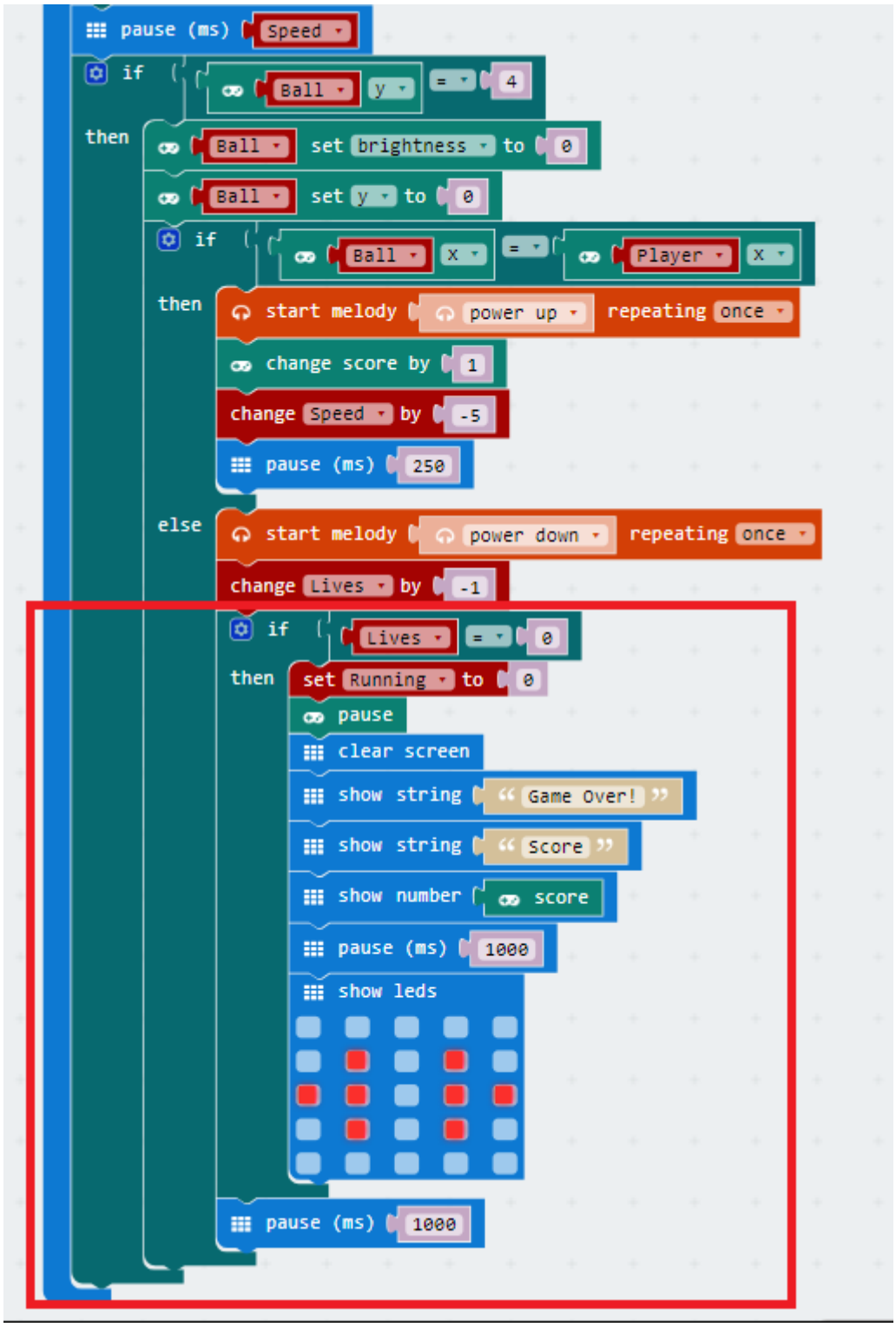
The new code to add is highlighted by the red box in the code below.

What happens when the Player runs out of Lives?

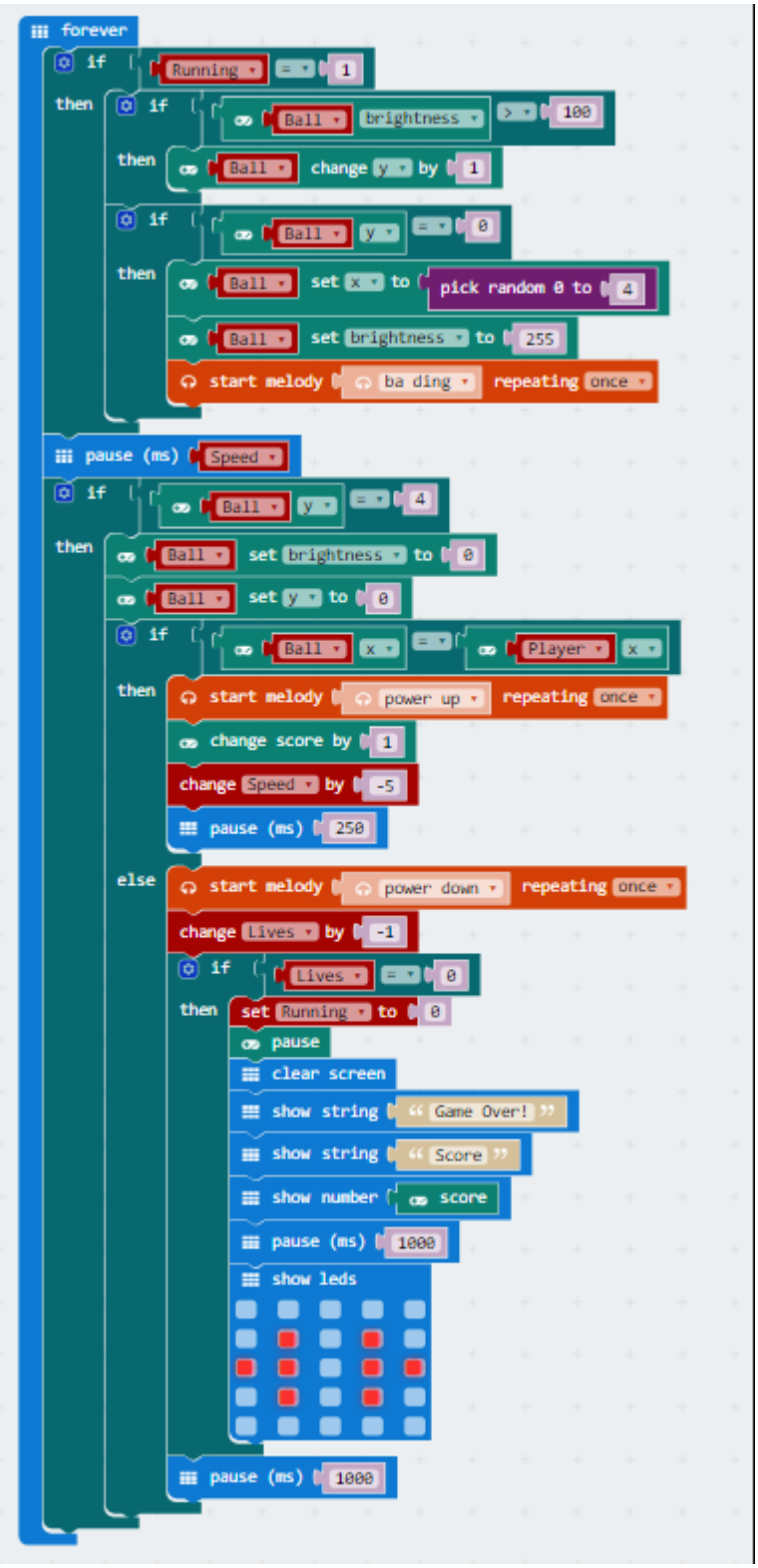


Step 6 – Running out of lives and ending the game

In the previous code, the game did not end when the Player ran out of lives. What we now need to do is after we reduce the number of Lives, check the number of lives the Player has left and if it is zero, end the game and show the Player their score. The new code to add in the forever loop below reducing the lives is given below. The full forever loop is given on the next page.



The full code:



Extending the game

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

- Award the player an extra life for each 10 Balls that are caught.
- When a new Ball falls, make sure it is in a different X position to the last one.
- Add in extra sound effects to the game. Maybe play a melody on the home screen or something when the players game ends
- Maintain the high score between games and let the player know if they have beaten the highest score.
- Add in a second Ball when the player scores 20 points.