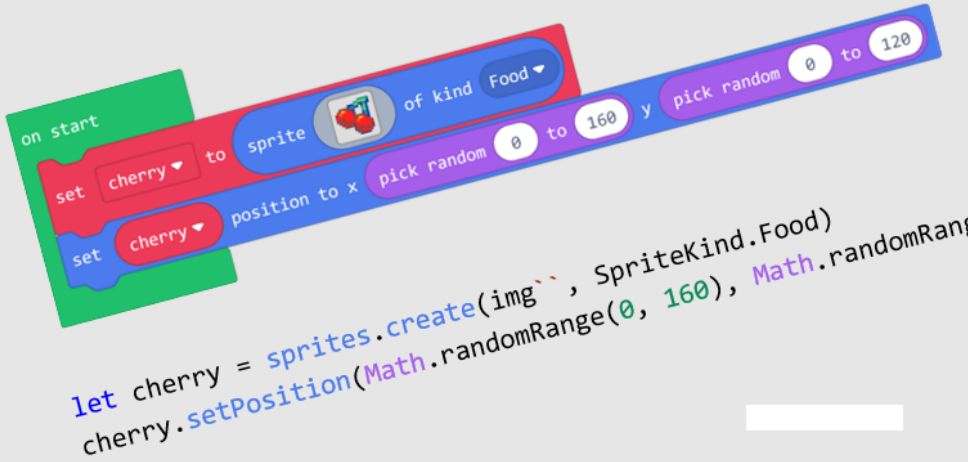
Microsoft



Microsoft MakeCode

< Instructor Name >

< Title >

How to create an Arcade Game

Microsoft MakeCode

Inspiring new generations of technology creators through immersive, hands-on computing education

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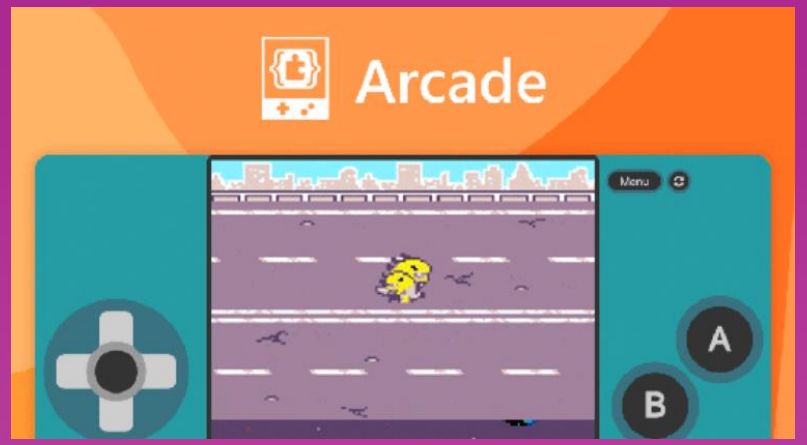
makecode.com

Microsoft

Three Main Code Editors

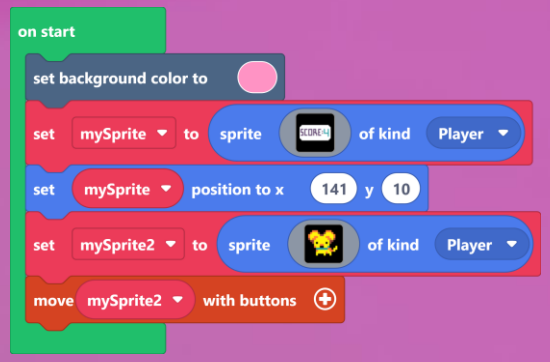
Physical Computing with micro:bit

Mods in Minecraft

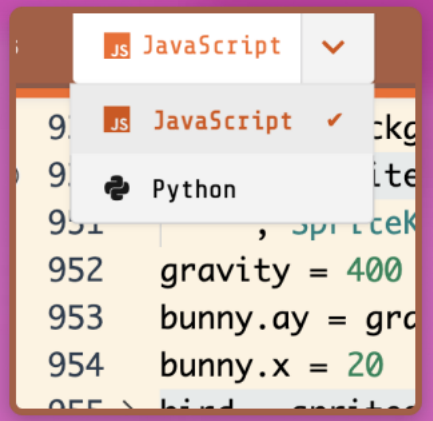


Retro Arcade Games

Blocks



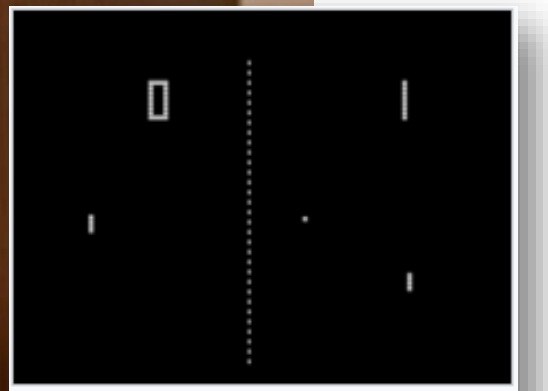
Text



What is an Arcade game?

History of Arcade Games

An arcade game is a coin-operated video game machine installed in a public place like a restaurant, or an amusement park. Arcade games rose to popularity in the 1970's and 1980's.



The two paddles return the ball back and forth. The score is kept by the numbers (0 and 1) at the top of the screen.

The first successful Arcade game was called Pong, created by Atari in 1972.

Examples of Arcade Games?

Pac-Man

Space Invaders

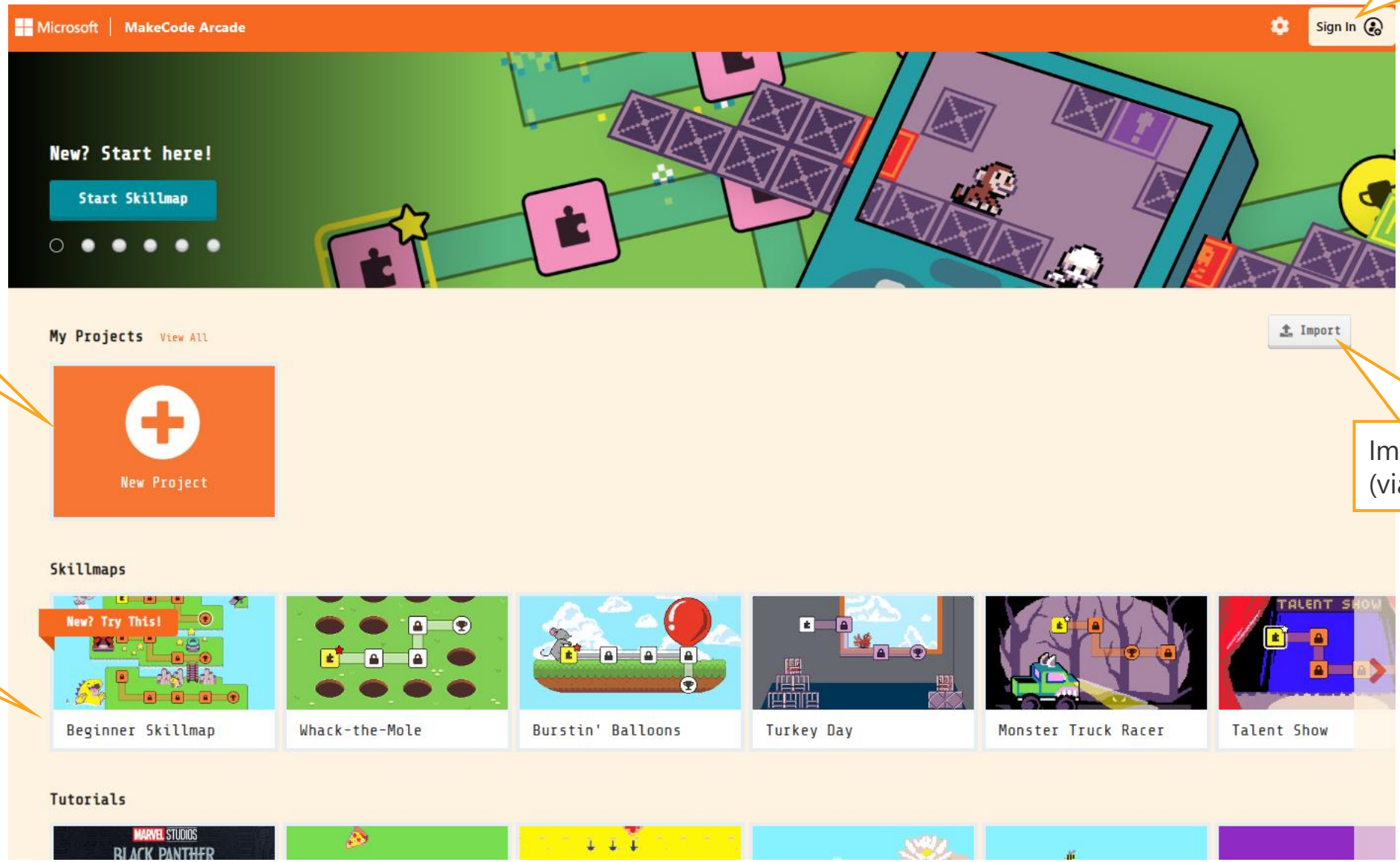
Donkey Kong

Let’s code a game!

Eat the Fruit – move your sprite around the screen and eat as much fruit as you can before the time runs out!

Open Browser: **arcade.makecode.com**

Optionally sign in to save to projects cloud



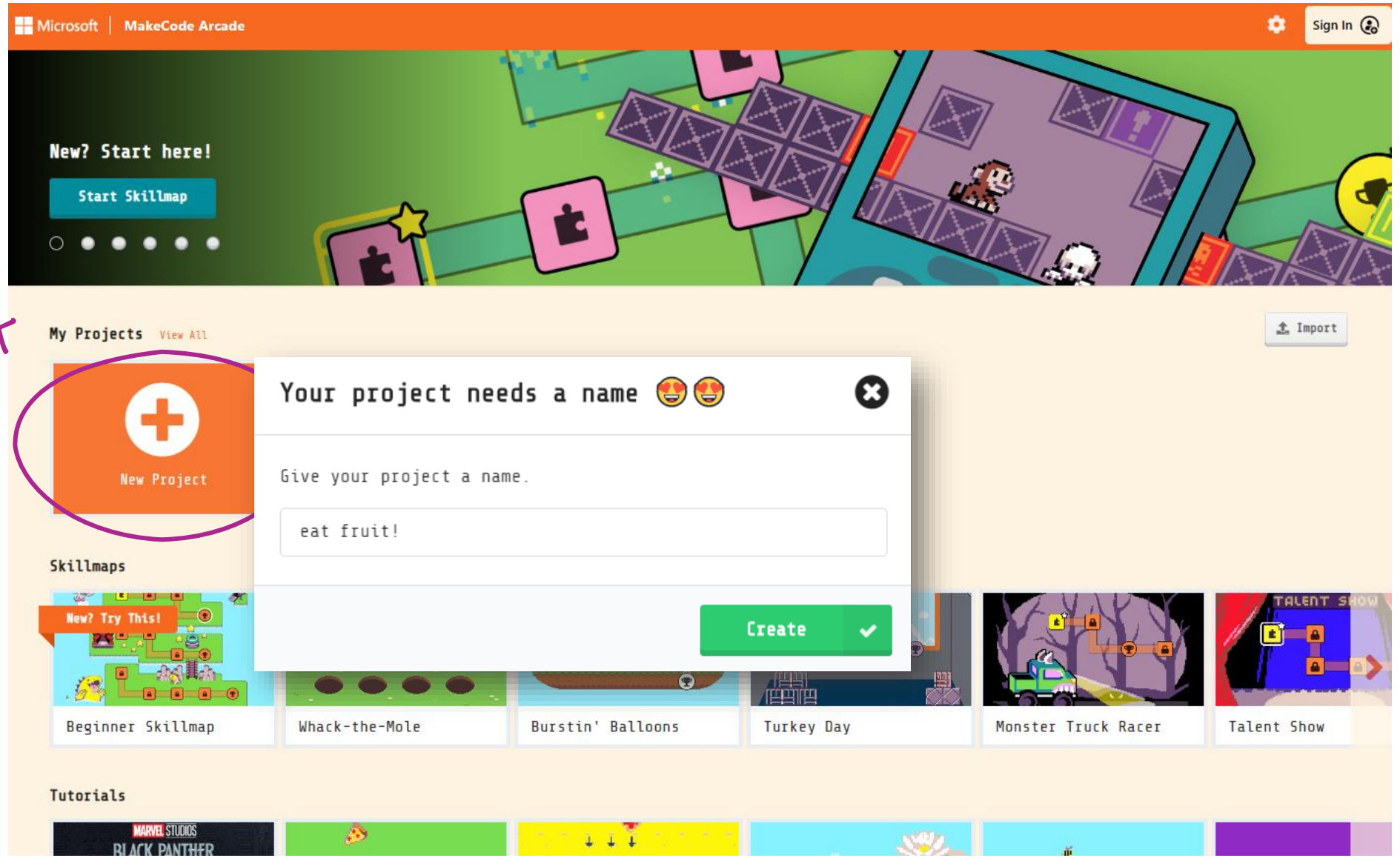
Create a New blank Project

Import Projects (via a File, or URL)

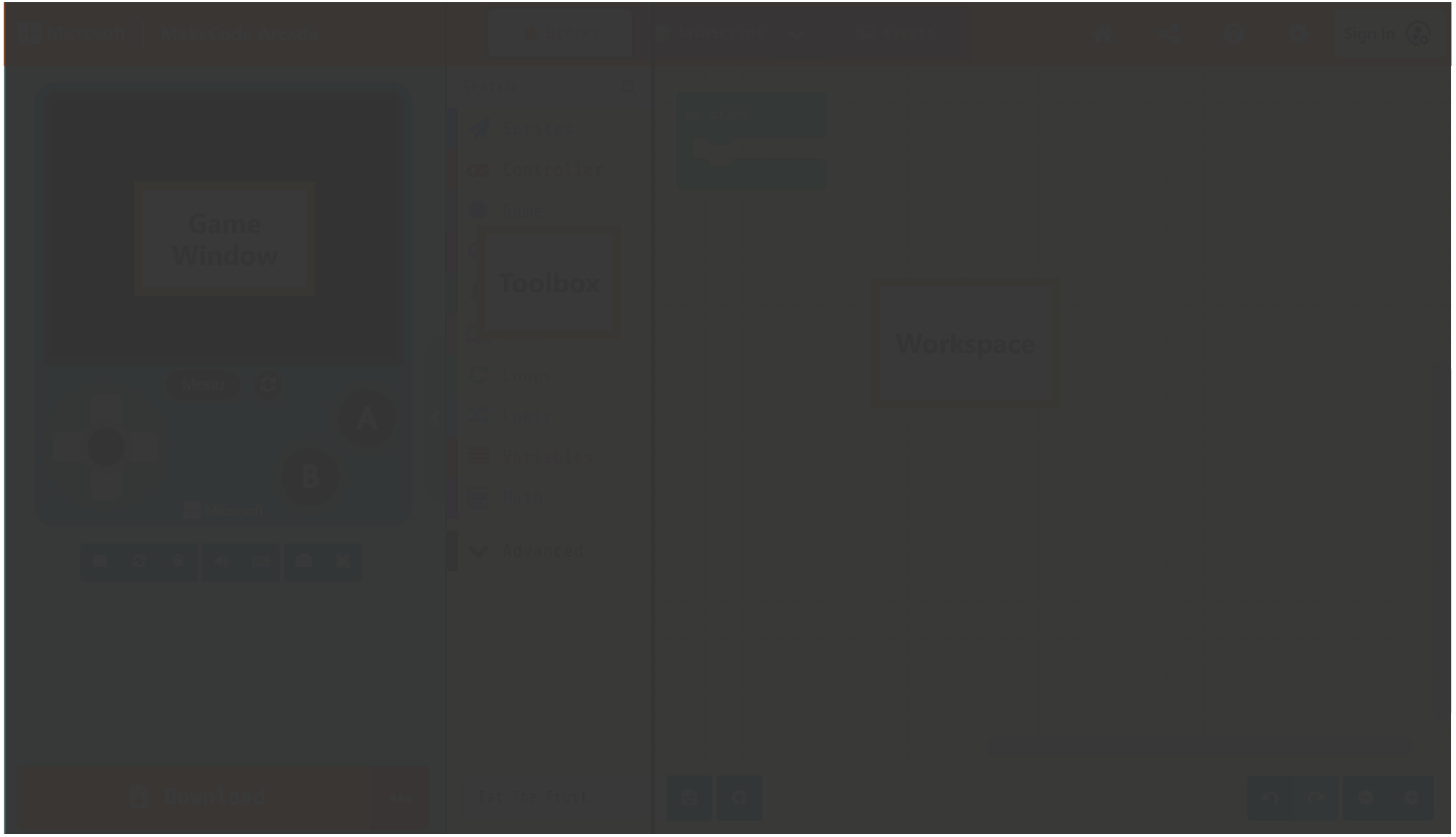
Step-by-step Skillmaps and Tutorials

Create a New Project

Click on New Project

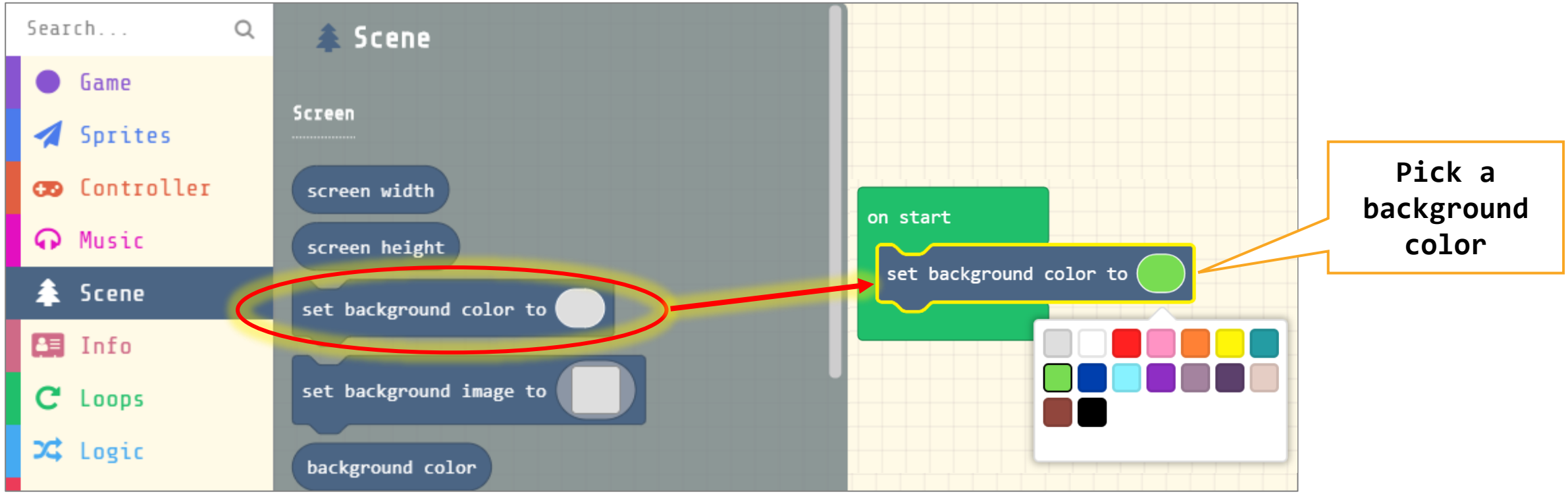


Getting familiar with MakeCode Arcade



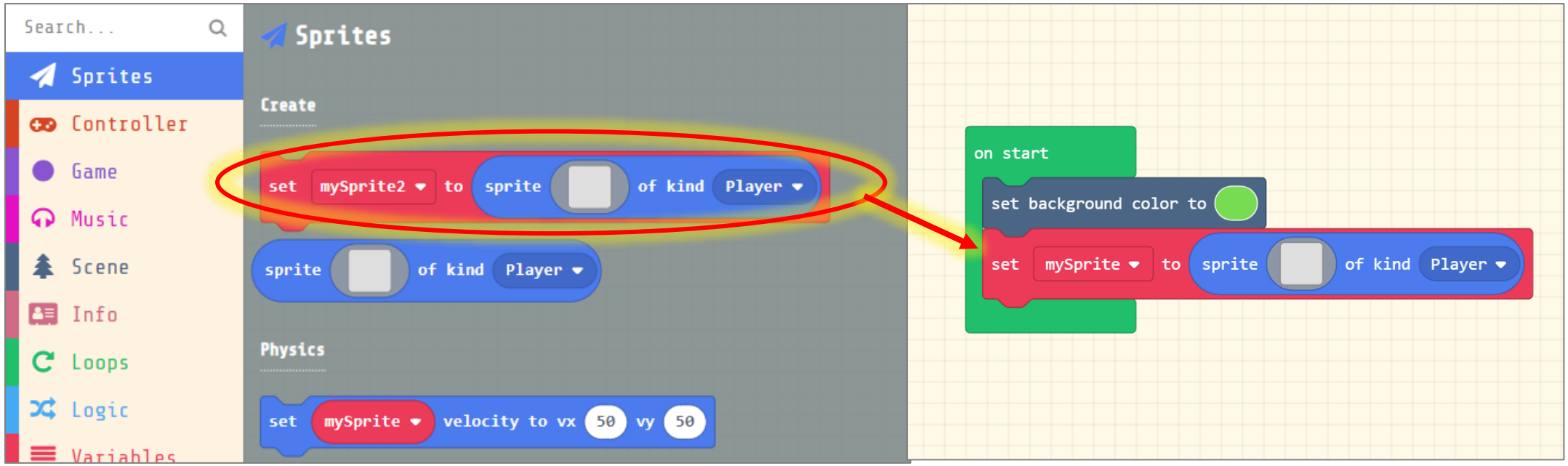
Set the background

- From the **Scene** Toolbox drawer, drag a **Set Background Color** onto the Workspace
- Drop into the **On Start** block



Create a Player Sprite

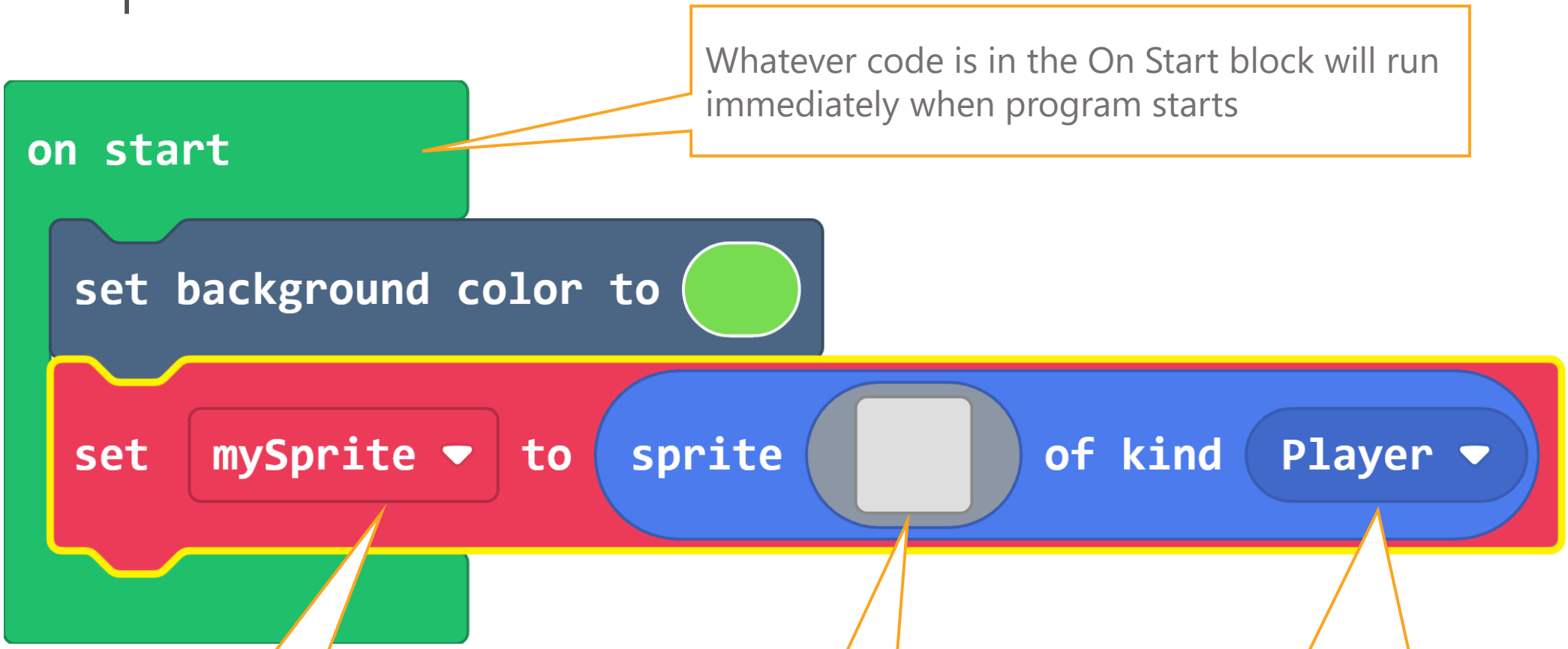
- From the **Sprites** Toolbox drawer, drag a **Set** sprite block onto the Workspace
- Drop into the **On Start** block after the **Set Background** block



Sprites

any object in a game that has properties and behaviors

Set Sprite block



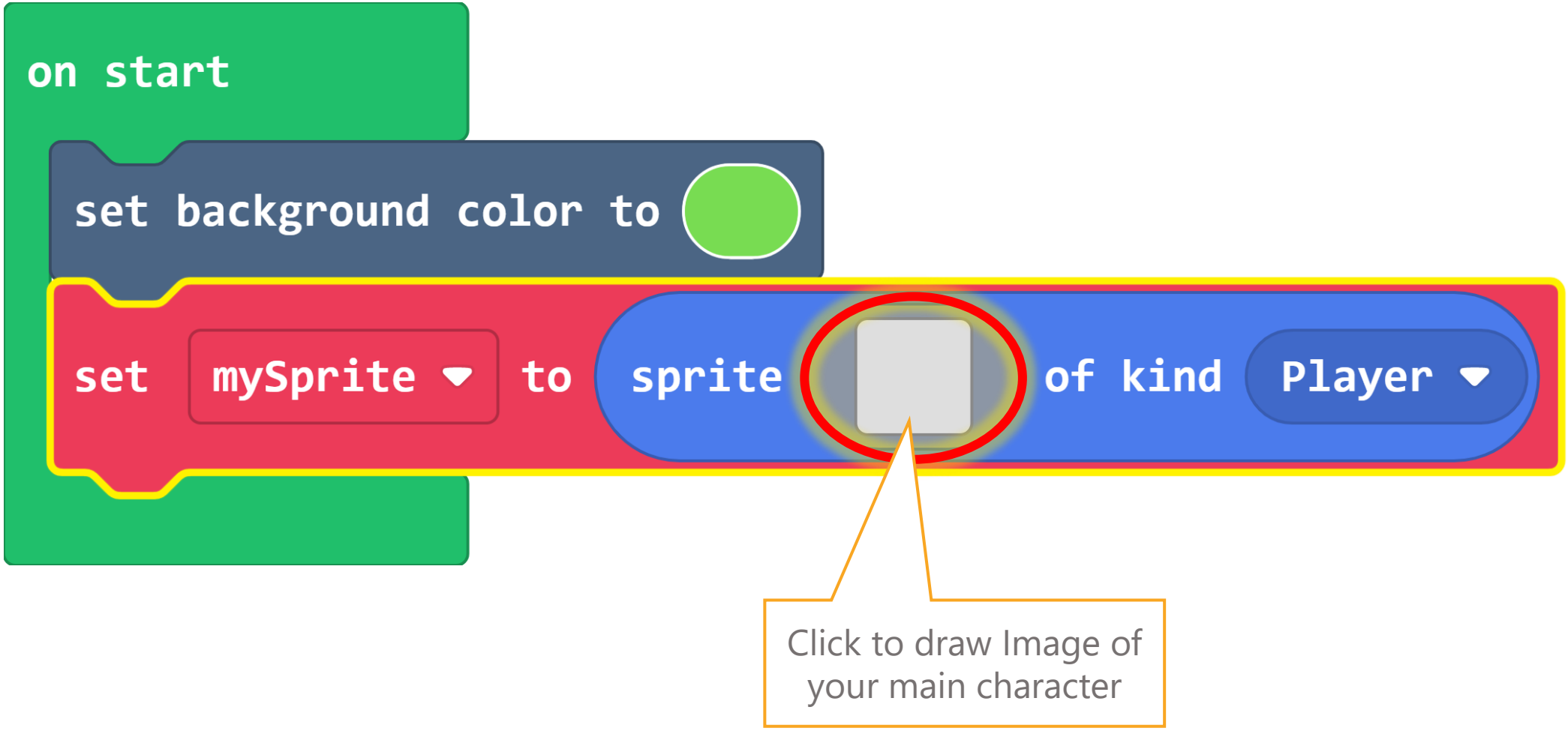
Whatever code is in the On Start block will run immediately when program starts

Sprite name

Sprite image

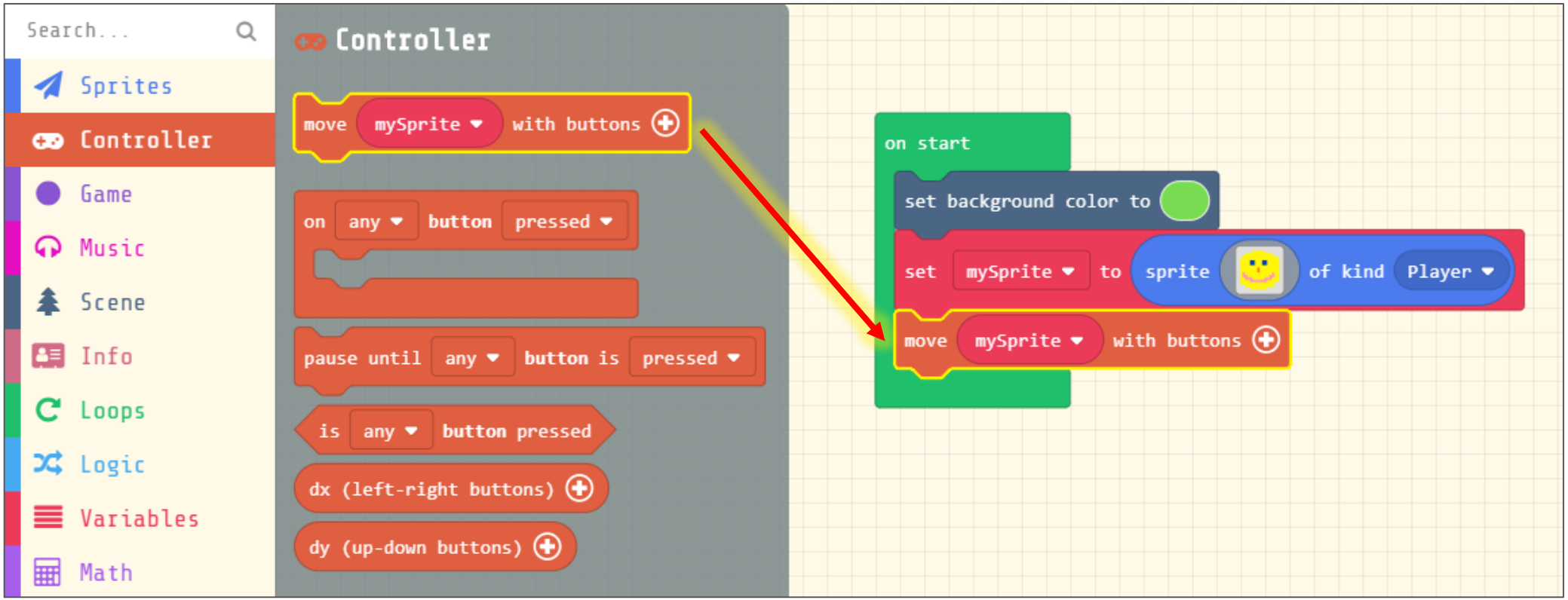
Sprite kind
(or the type of Sprite in your game)

Set Sprite block



Control the movement of your Sprite

- From the **Controller** Toolbox drawer, drag a **Move** block onto the Workspace
- Drop into the **On Start** block after the **Set** sprite block

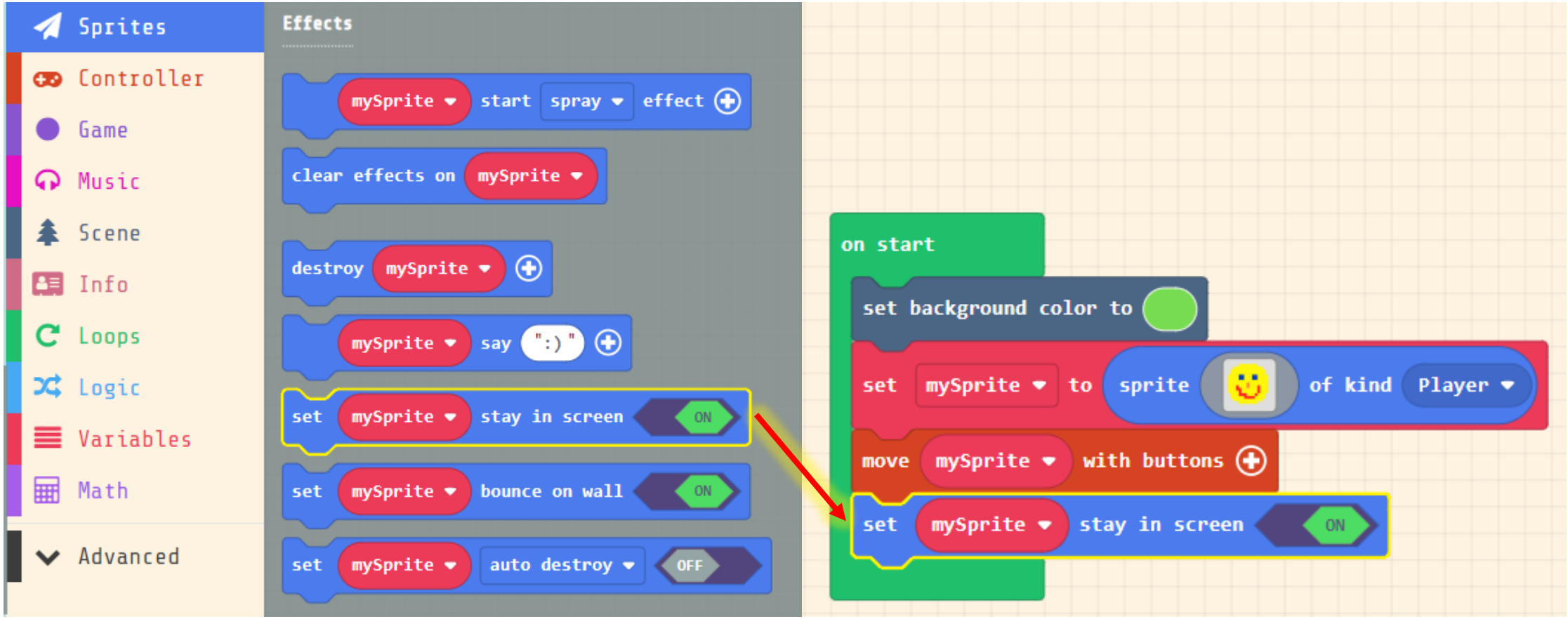


Try it out in Simulator

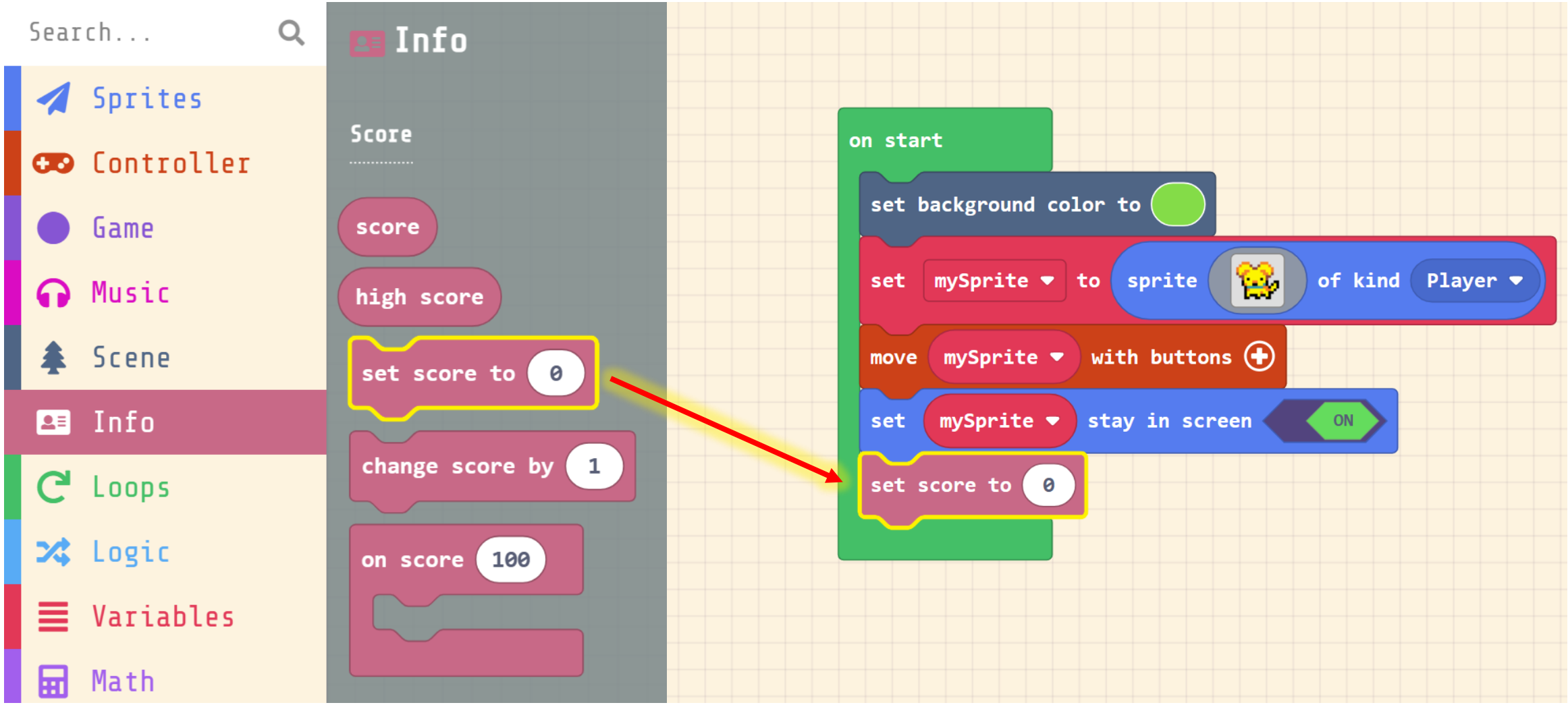
- Click on the joystick buttons in the Simulator to move your Sprite around the screen

- Or use the arrow keys on the keyboard (make sure the mouse is hovered over the Game window to activate controls)

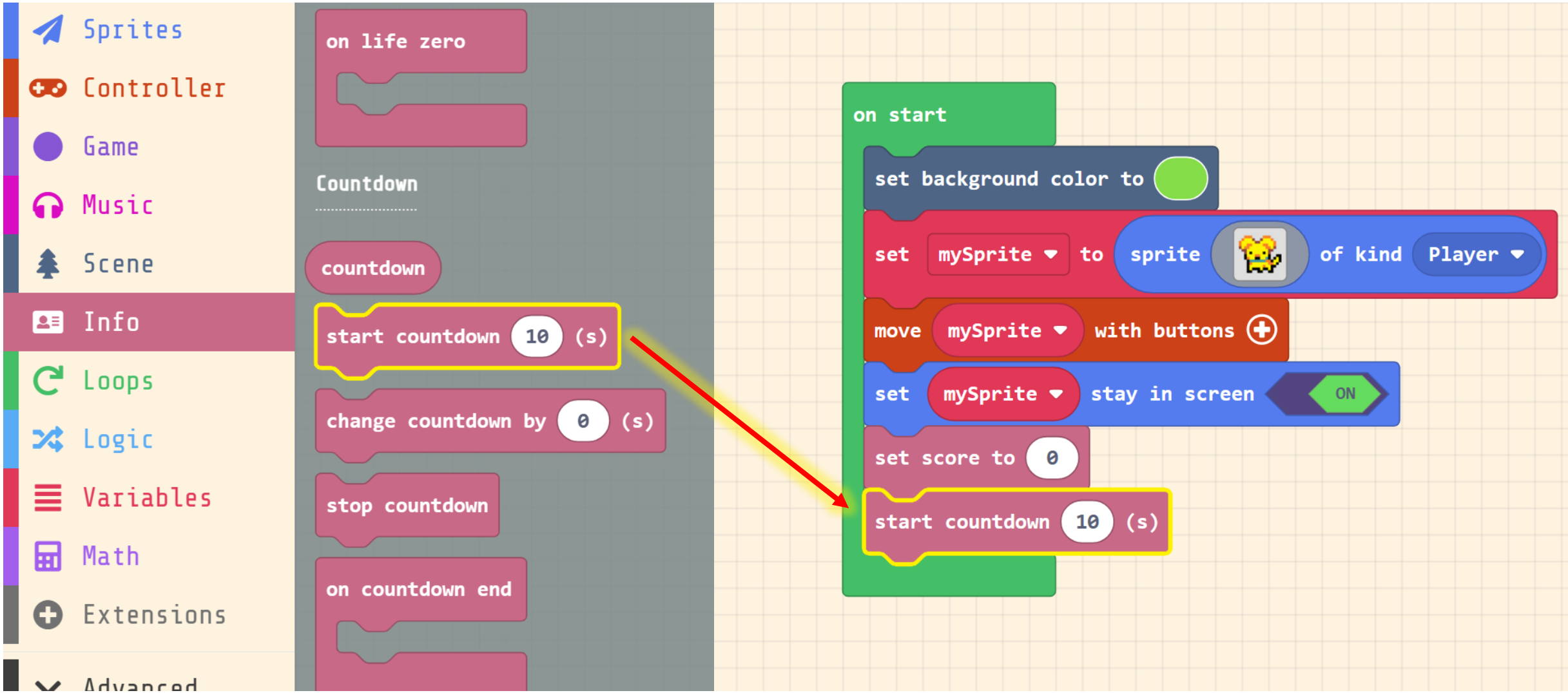
Keep Sprite in Screen



Set Score

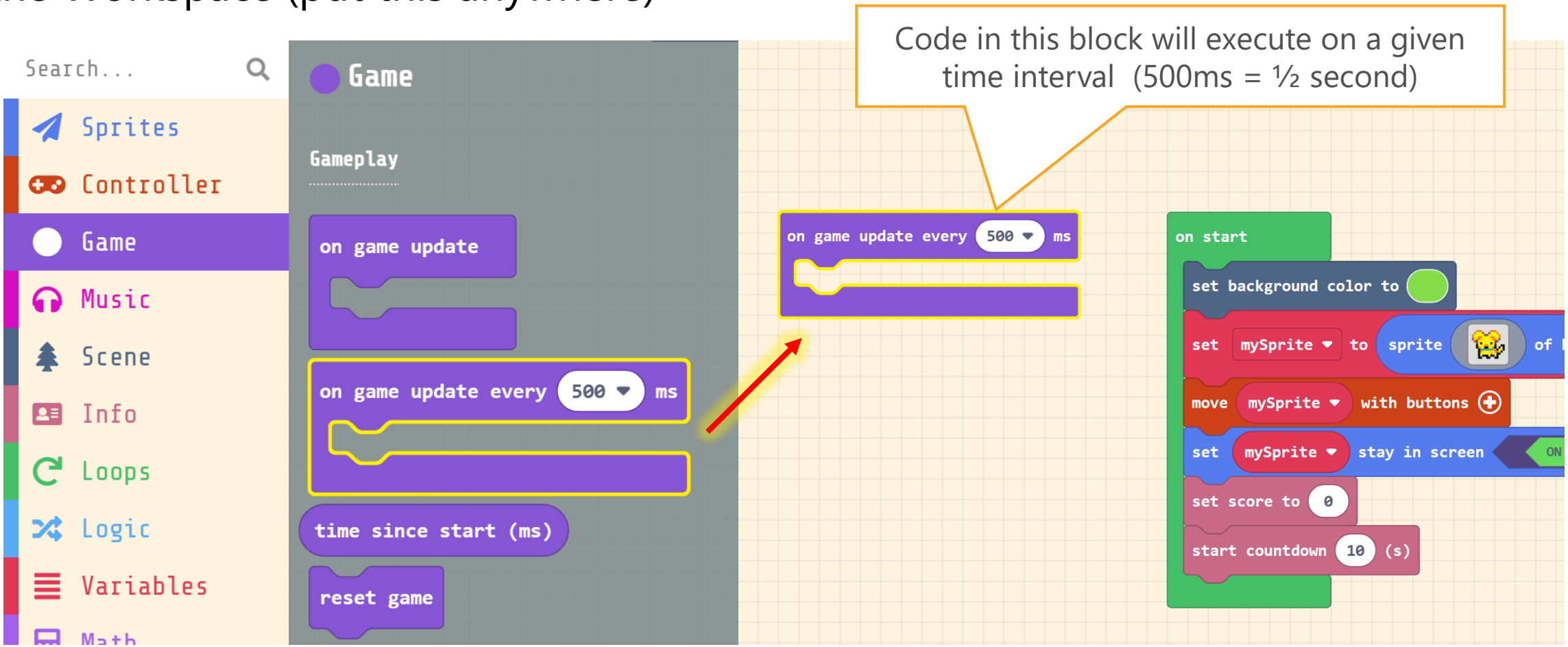

Search...
Sprites
Controller
Game
Music
Scene
Info
Loops
Logic
Variables
Math
Info
Score
score
high score
set score to 0
change score by 1
on score 100
on start
set background color to
set mySprite to sprite of kind Player
move mySprite with buttons
set mySprite stay in screen ON
set score to 0

Start Countdown



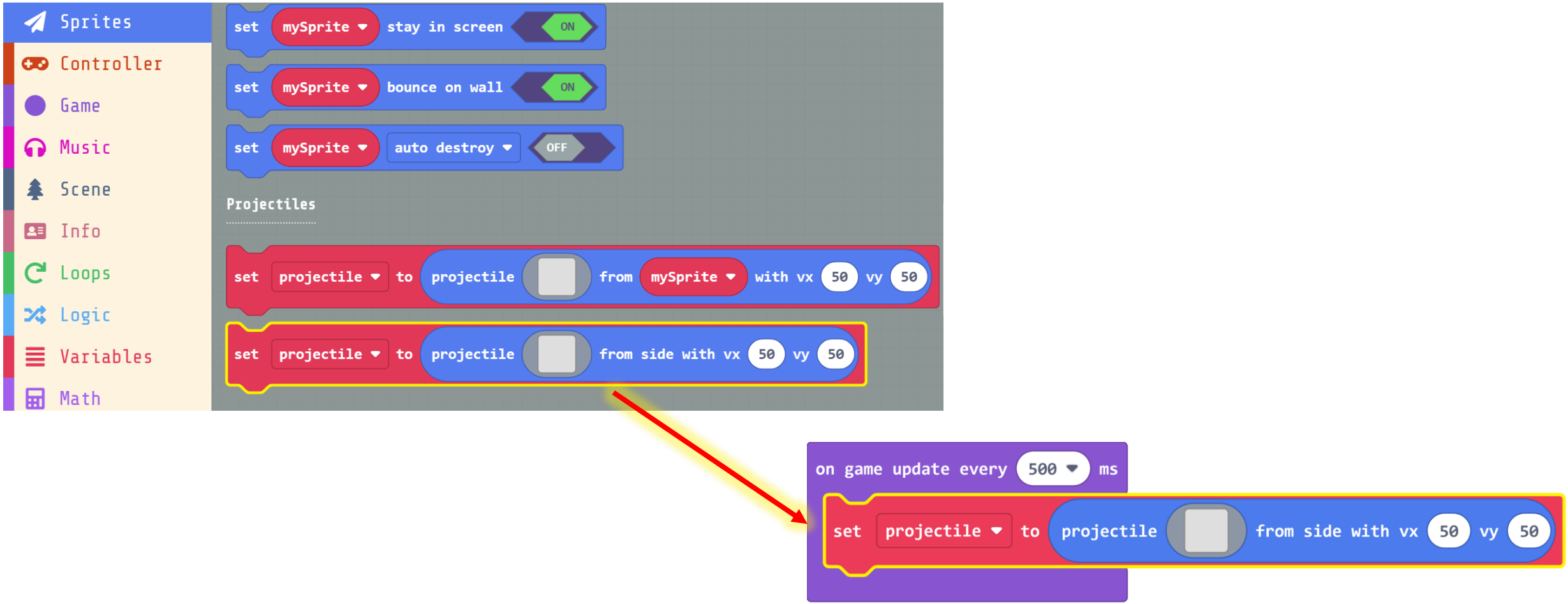
Create a flying fruit Sprite every ½ second

- From the **Game** Toolbox drawer, drag a **On Game Update Every** block onto the Workspace (put this anywhere)

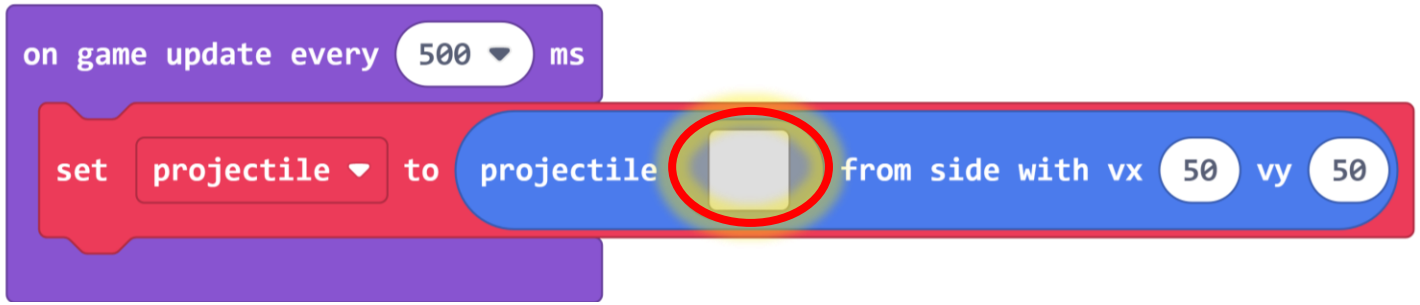


Create a flying fruit Sprite

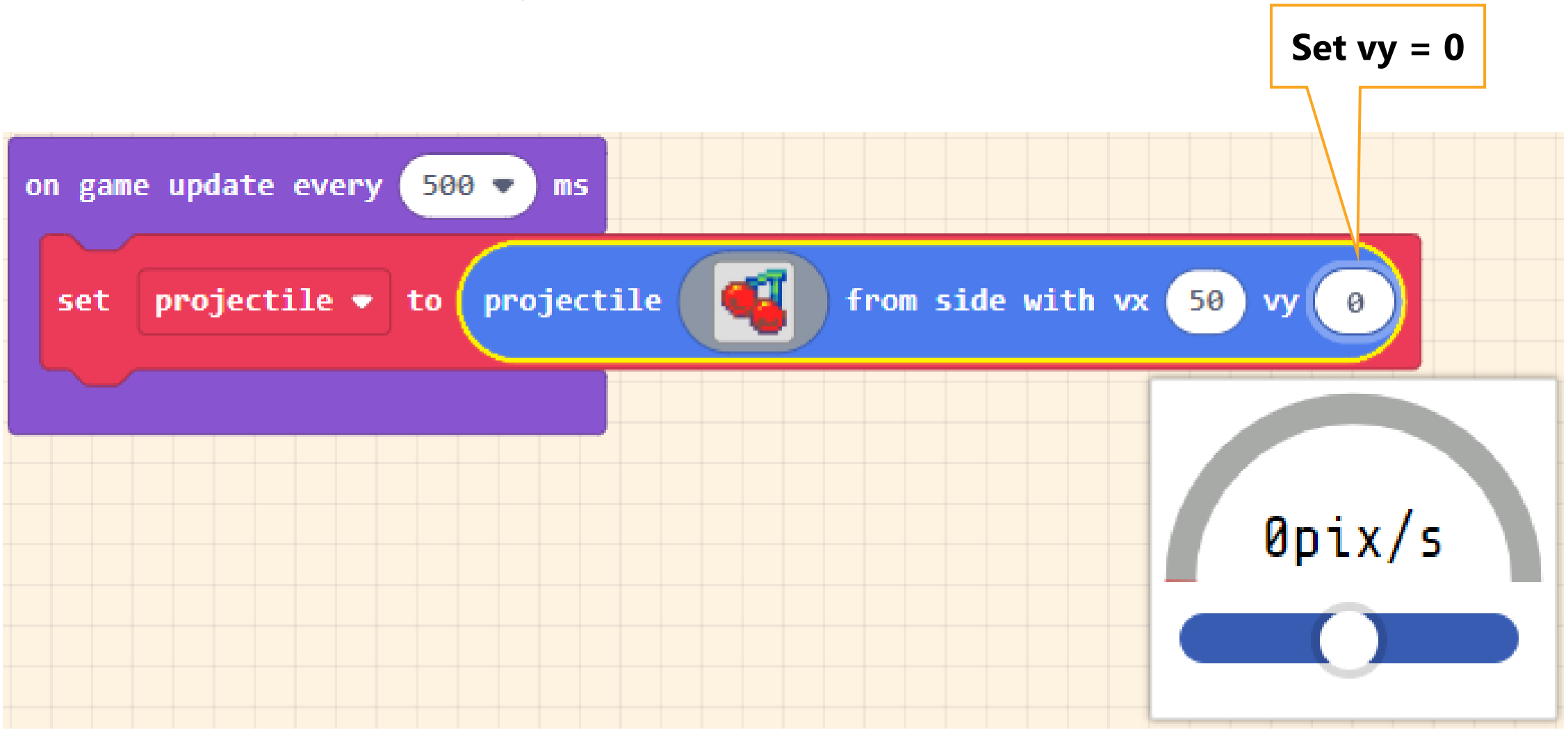
- From the **Sprites** Toolbox drawer, drag a **Set Projectile from side** block into the **On Game Update Every** block



Draw a Fruit Sprite



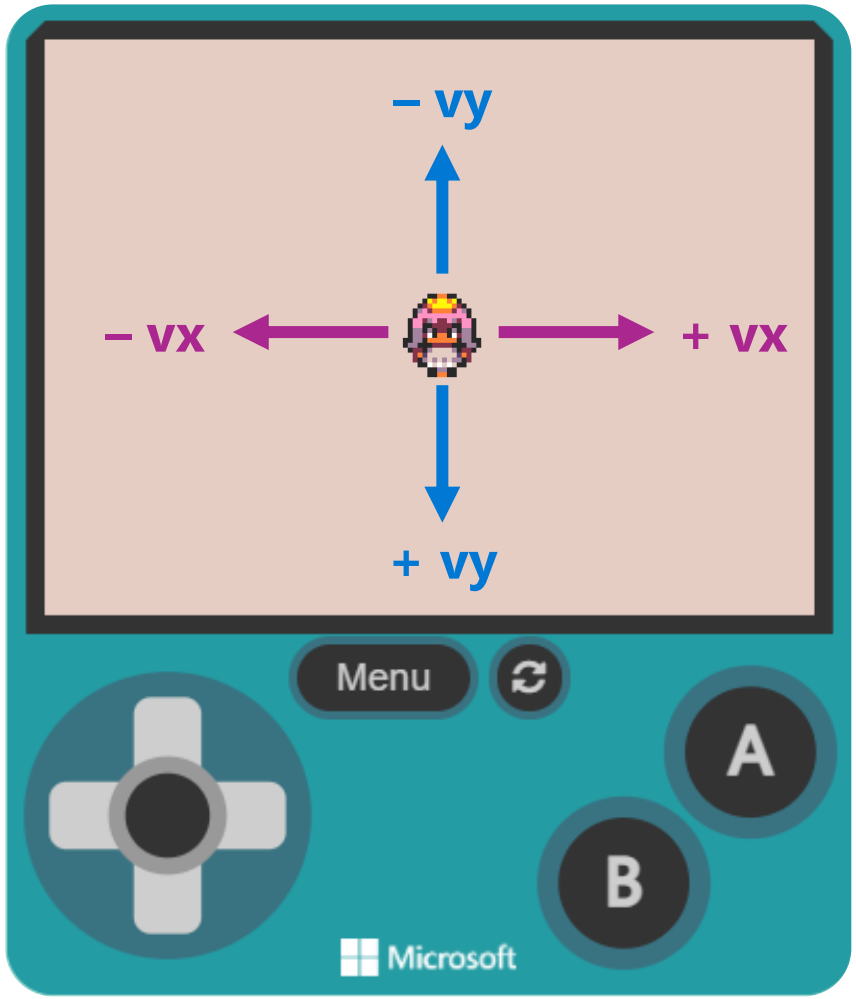
Set the Velocity



Velocity = speed and direction

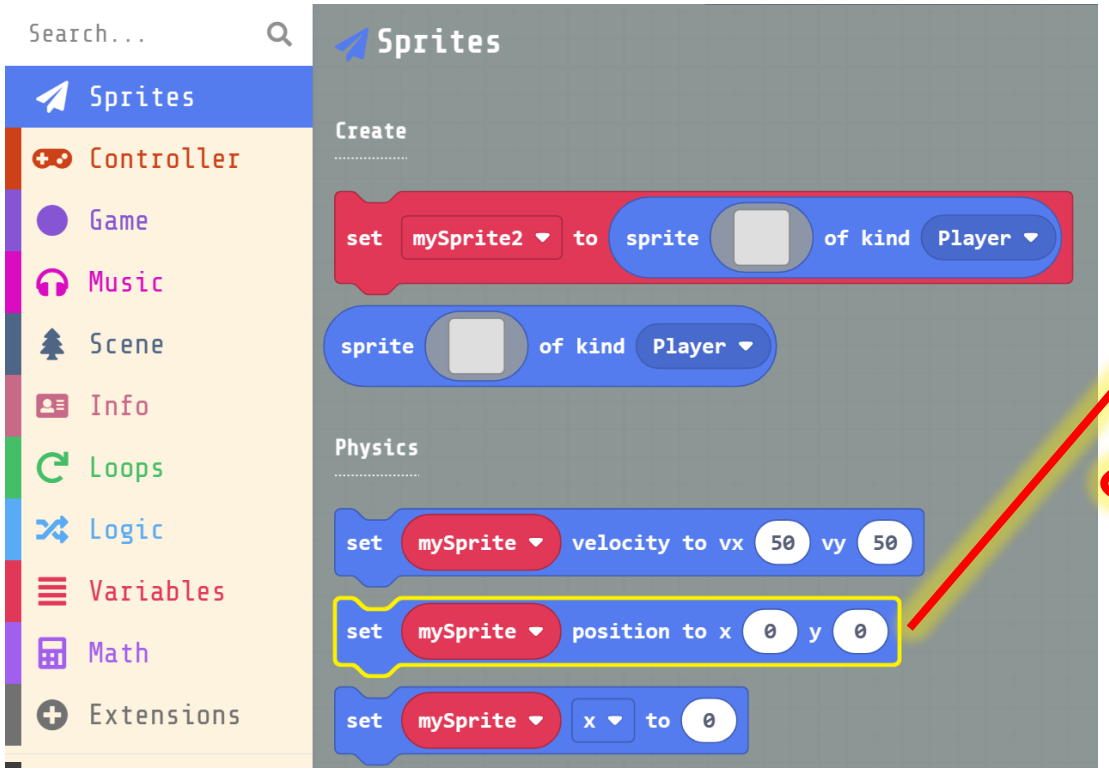
vx = horizontal movement
- positive value = left to right
- negative value = right to left

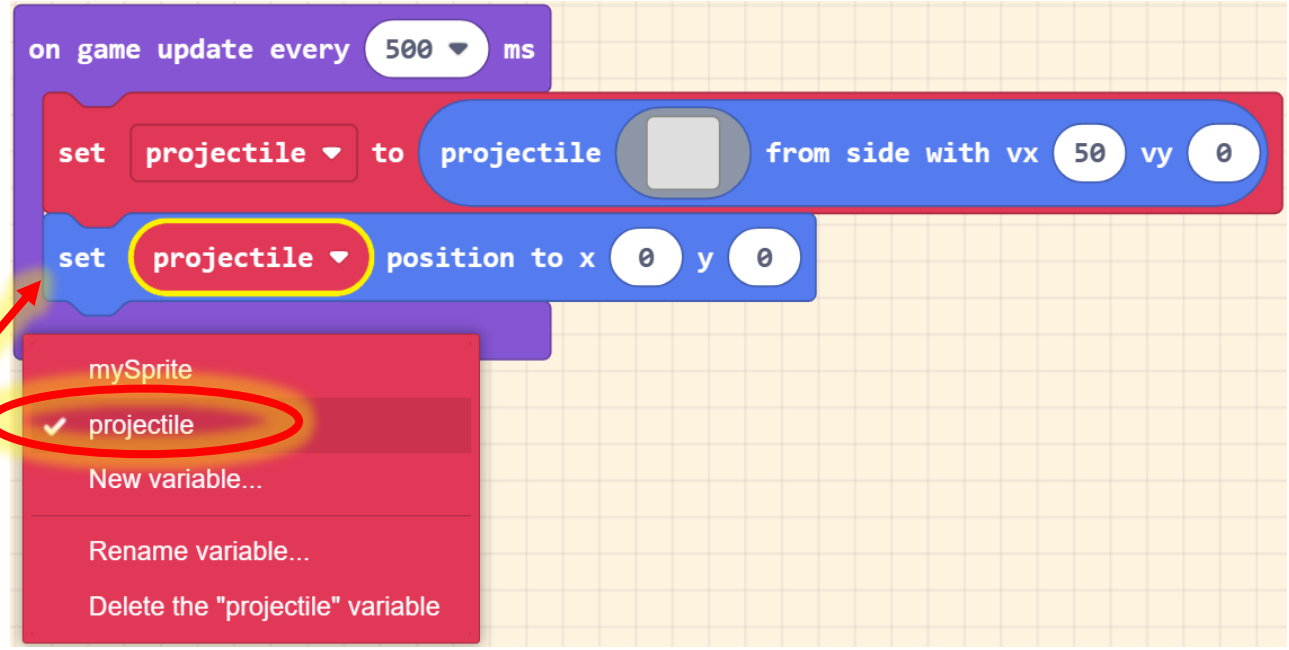
vy = vertical movement
- positive value = top to bottom
- negative value = bottom to top



Set the fruit starting position

- From the **Sprites** Toolbox drawer, drag a **Set Position** block into the **On Game Update Every** block
- Change mySprite variable to **projectile**





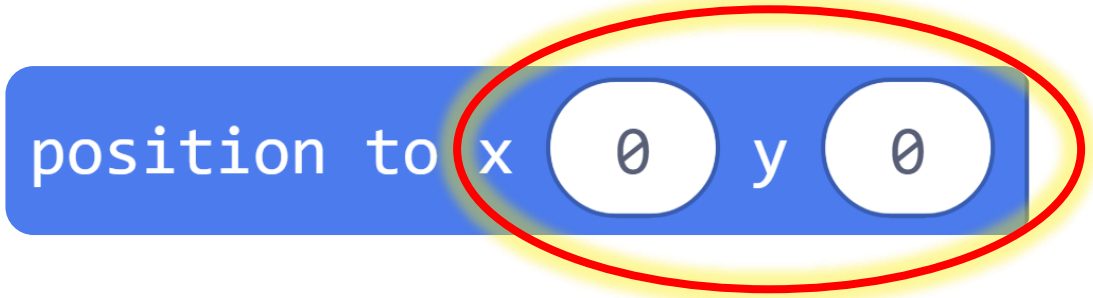
Coordinates

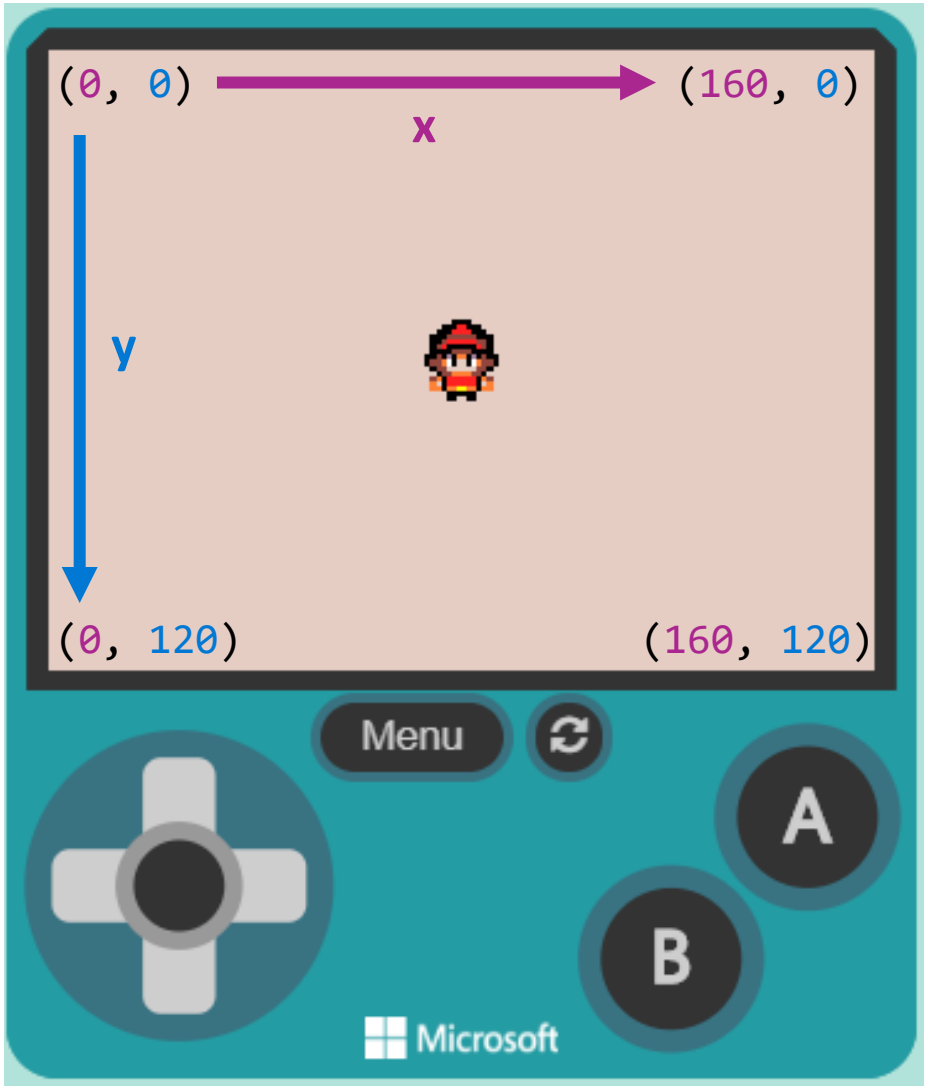
The Arcade game screen dimensions are:

160 pixels wide x **120** pixels high

x is horizontal

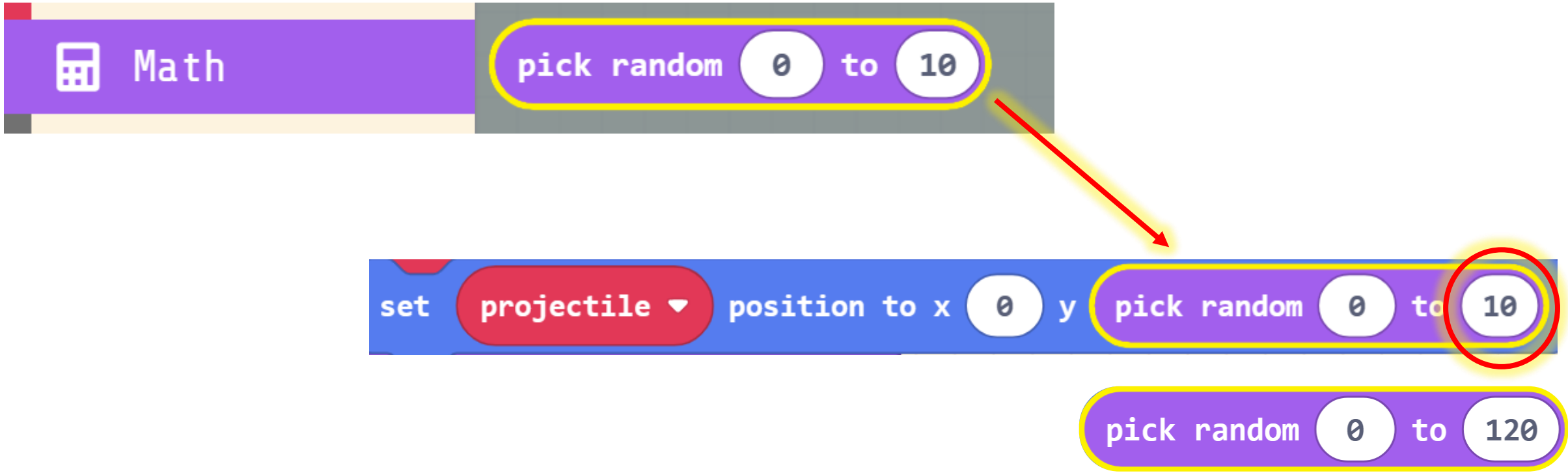
y is vertical





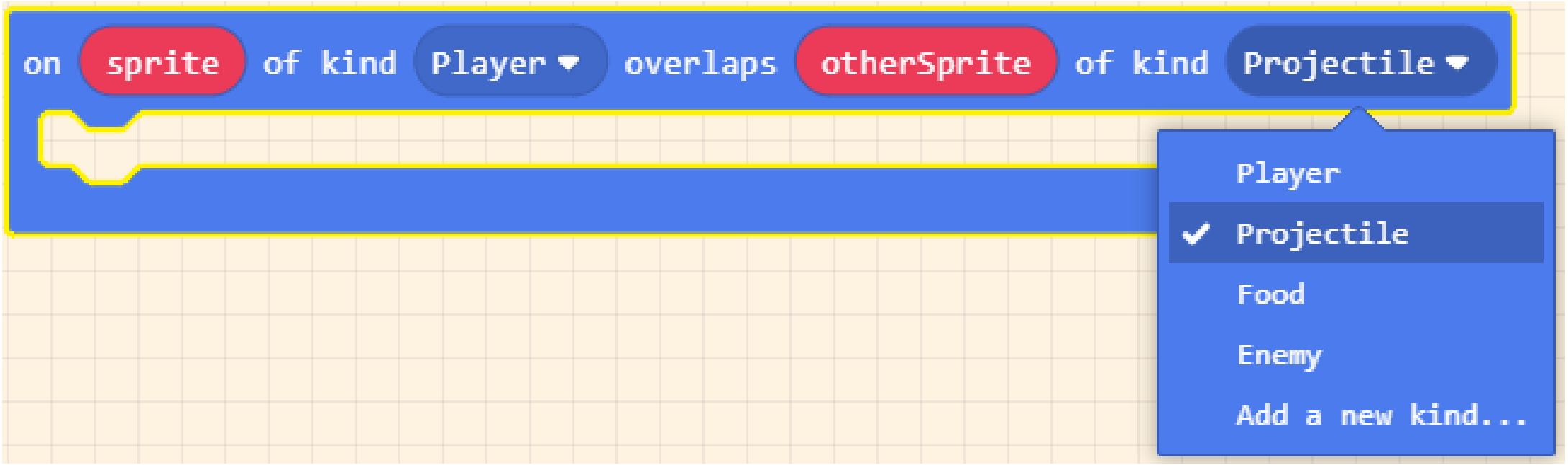
Start from the left at random heights

- From the **Math** Toolbox drawer, drag a **Pick Random** block, and drop into the **y** field of the **Set Position** block
- In Pick Random block, change maximum value to **120**



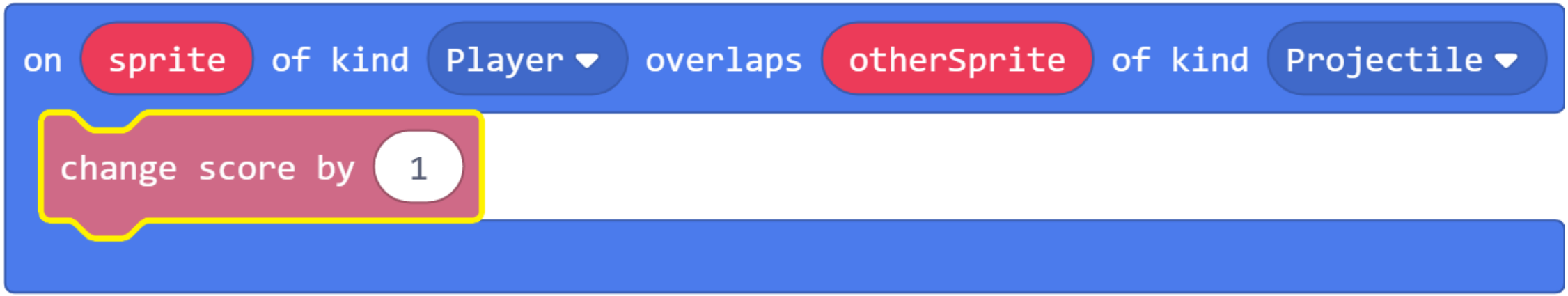
Add a point when you eat fruit

- From the **Sprites** Toolbox drawer, under the **Overlaps** category, drag an **On Sprite Overlaps** block onto the Workspace
- Change the second sprite kind to **Projectile**



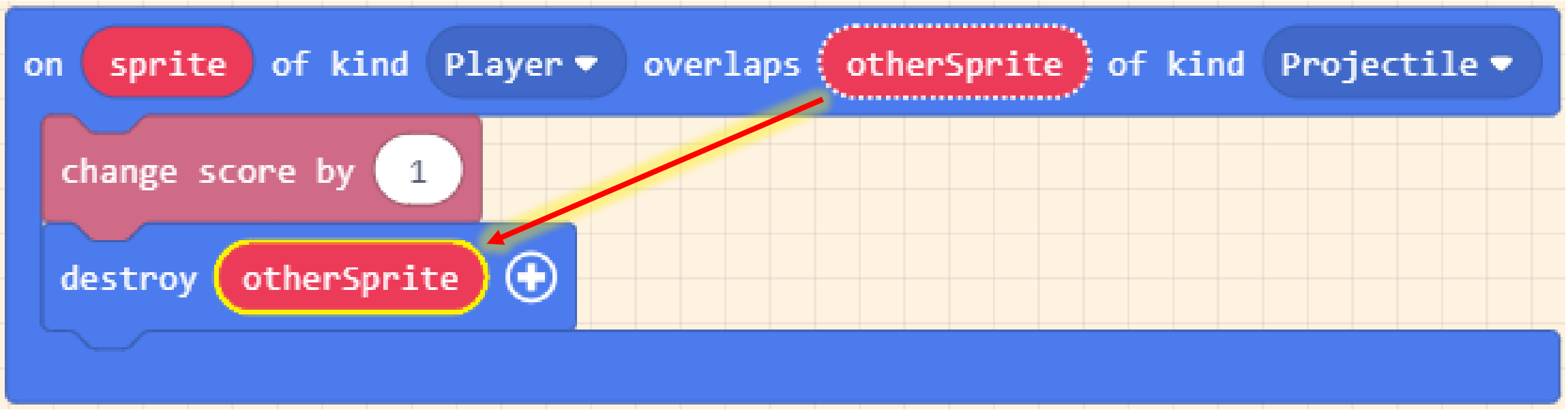
Add a point when you eat fruit

From **Info** Toolbox drawer, add **Change Score** block



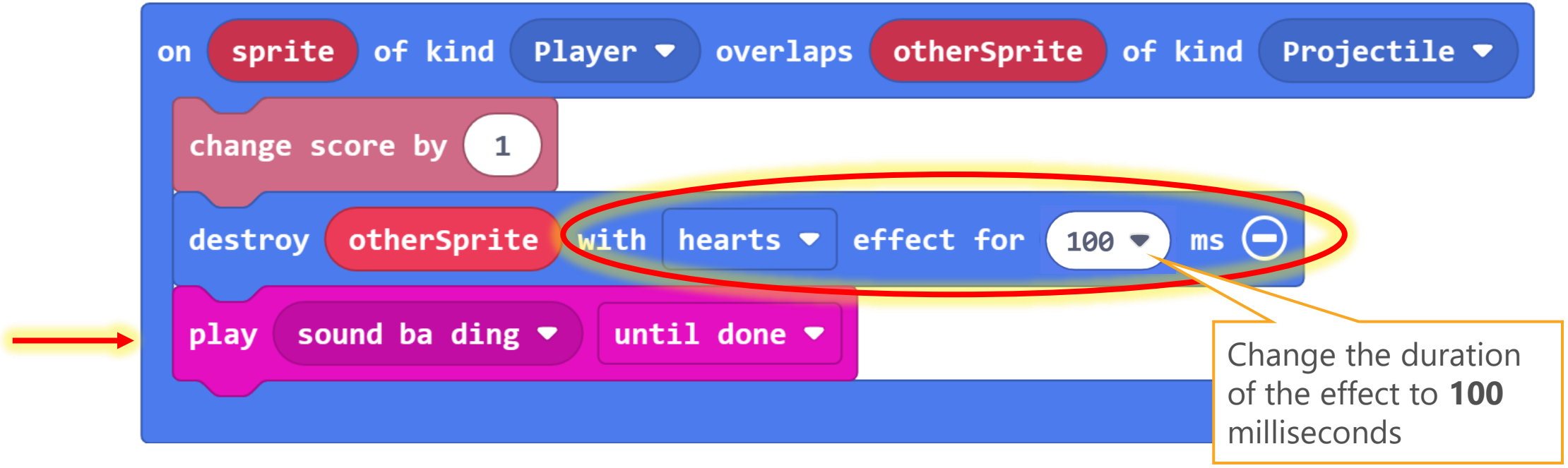
Destroy the Fruit

- From the **Sprites** Toolbox drawer, Add **Destroy mySprite** block
- Drag the **otherSprite** local variable block into the **Destroy** block

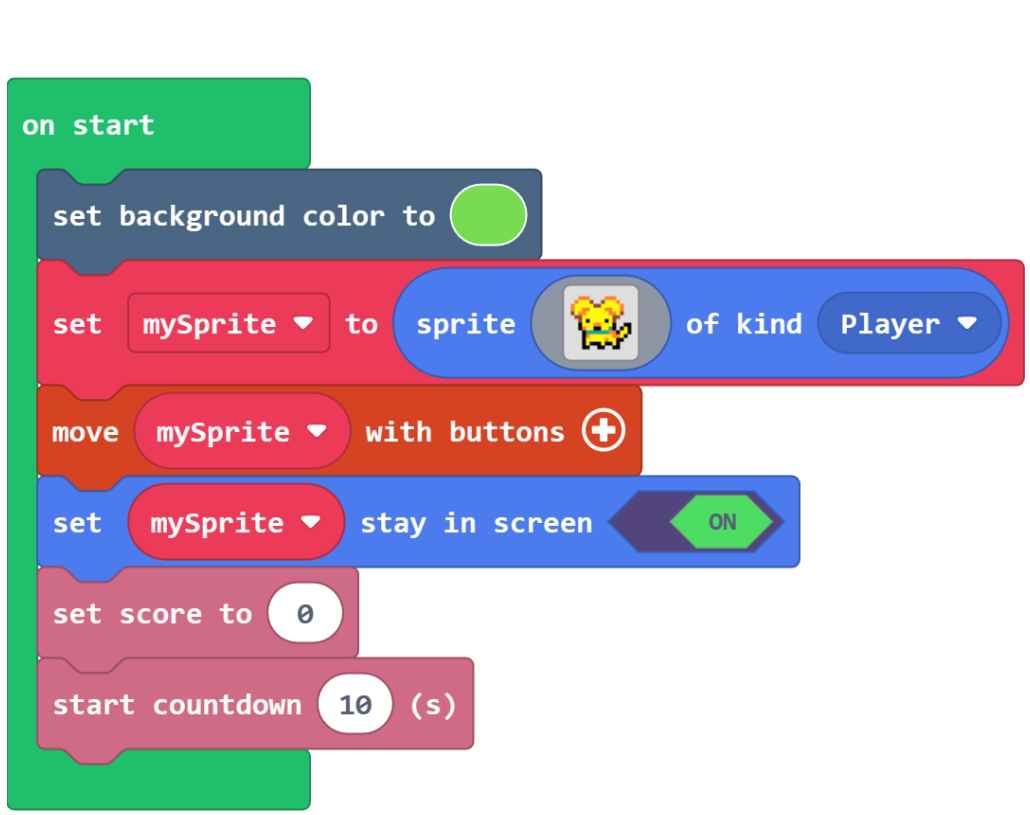


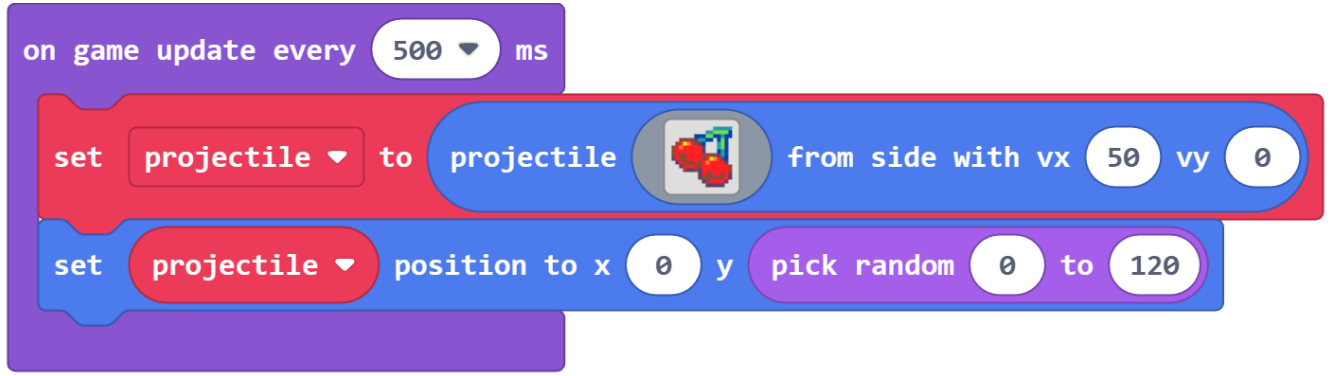
Add effects and music

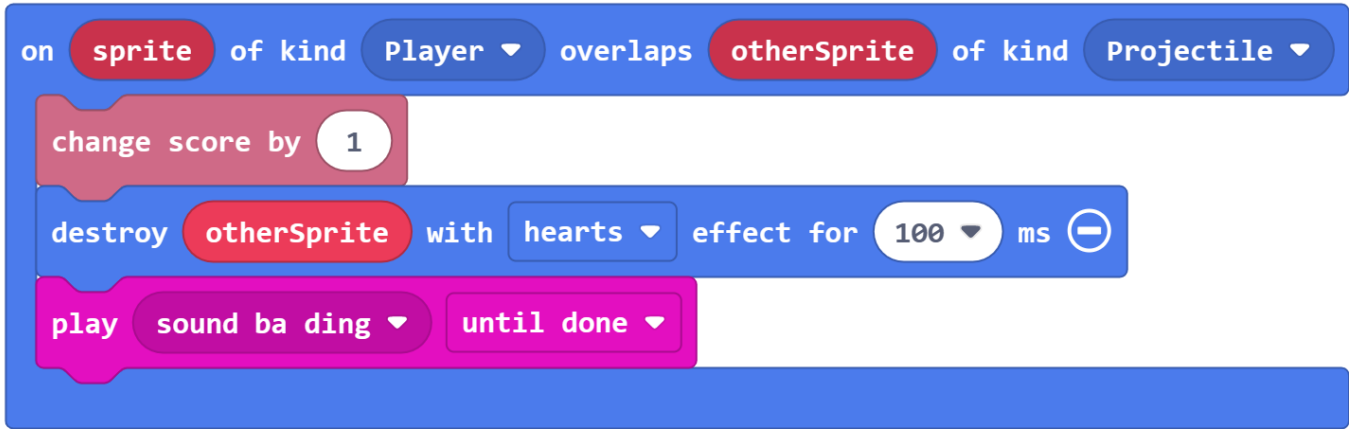
- In the **Destroy** block, click the plus **(+)** icon
- Select an effect to show when our fruit is destroyed
- From the **Music** Toolbox drawer, drag a **Play Sound** block into the **On Sprite Overlaps** block



Complete Program



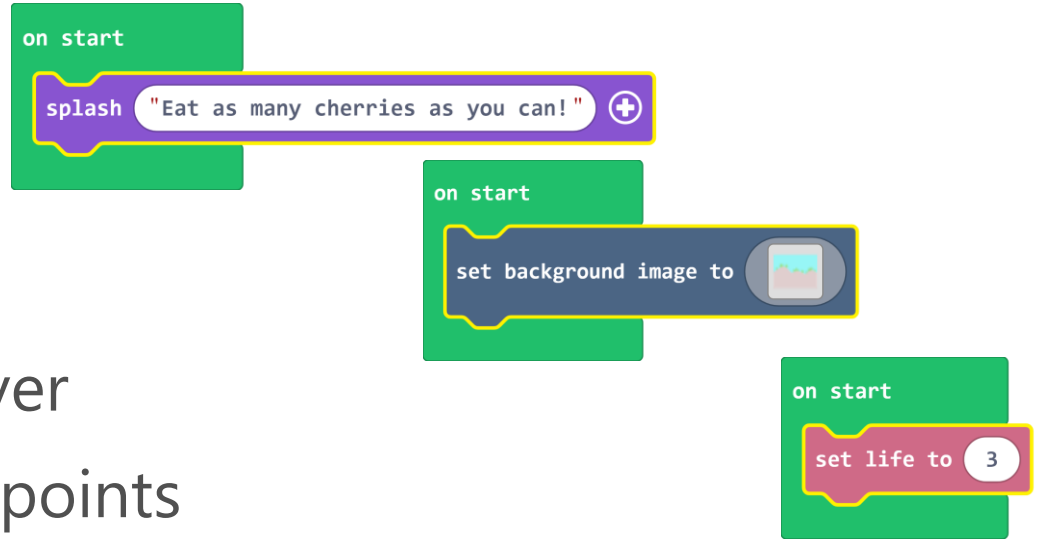




https://makecode.com/_Lbi84LcCVf1k

Try modding your game

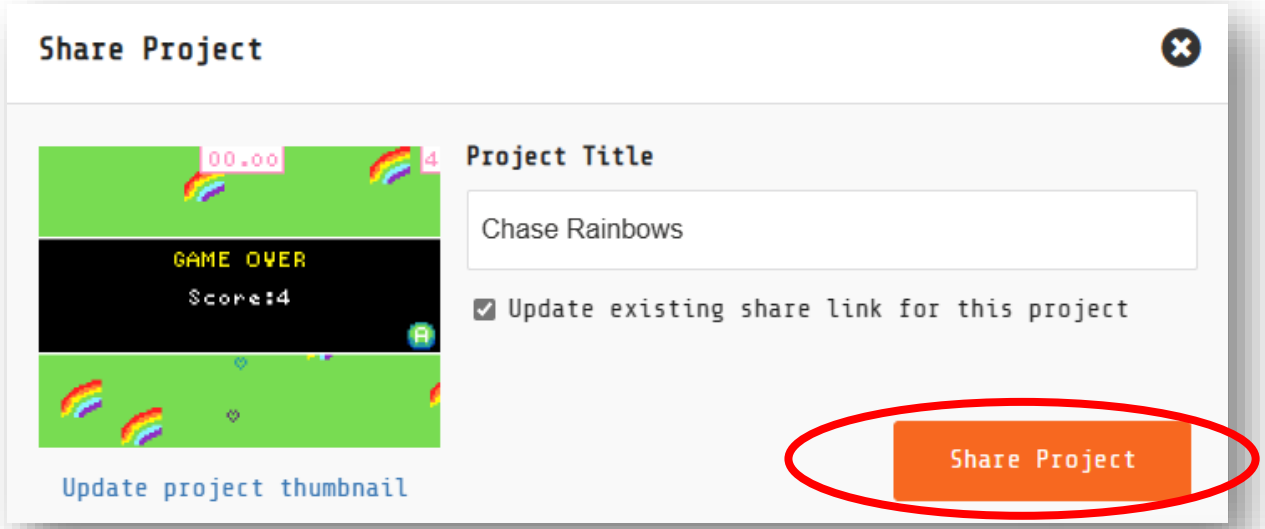
- Add a beginning Splash screen
- Add a background image
- Add Life count instead of countdown
- Change the speed of the food or player
- Add other types of Fruit for different points
- Add “junk food” Enemy Sprites that remove points
- Add more sounds and effects
- Change how often each type of food appears
- Change the direction of the food sprites
- Add Animations



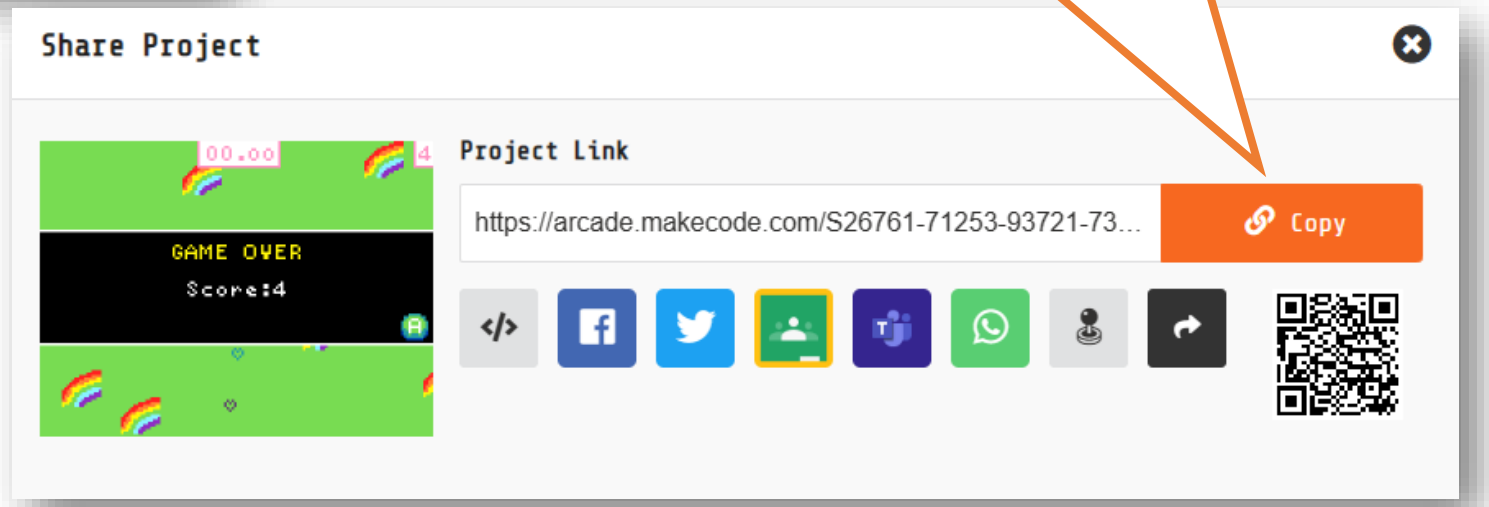
https://makecode.com/_2ueXE8HFhhF9

Share your game!

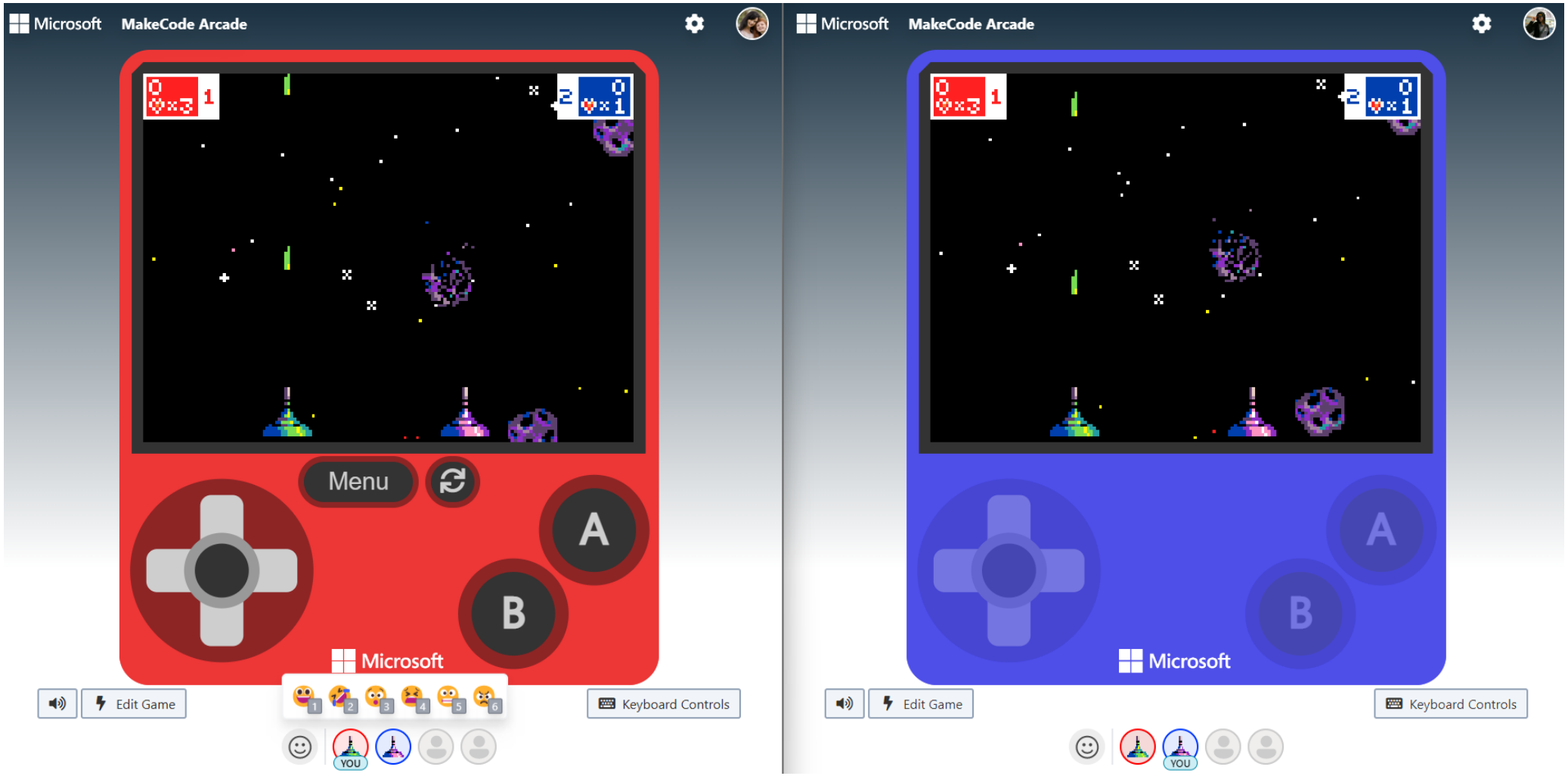
Click the Share button in the top left of the screen



Copy and Paste link into Chat window



Playing games together



arcade.makecode.com/--multiplayer

Eat the Fruit – Multiplayer!

https://arcade.makecode.com/S73249-29024-14612-80286

Arcade Hardware

Boards

These boards run MakeCode Arcade games. Choose a board to find out more about it and where you can get one!

BrainPad Arcade

Learn how BrainPad Arcade lets you run games on a small handheld console.

Meowbit

A retro game console for STEM education from Kittenbot team.

Adafruit PyBadge

It's a badge, it's an arcade, it's a PyBadge.

Adafruit PyGamer

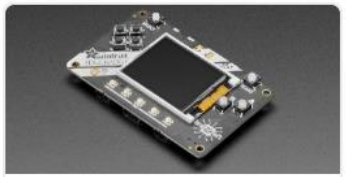
The upgraded PyBadge.

Kitronik ARCADE

ARCADE is a programmable gamepad for use with MakeCode Arcade.

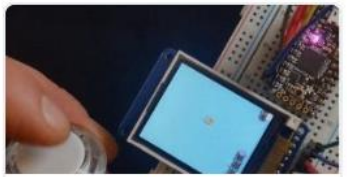
Ovobot Xtron

A programmable microcomputer that can be used for making MakeCode Arcade games.



Adafruit EdgeBadge

It's the PyBadge with a zest of Machine learning.



Adafruit M4

Learn how to run your games on micro-controllers from Adafruit.

Adafruit Joy Bonnet

Learn how to run your games on Raspberry Pi Zero and Adafruit Joy Bonnet.

arcade.makecode.com
/hardware

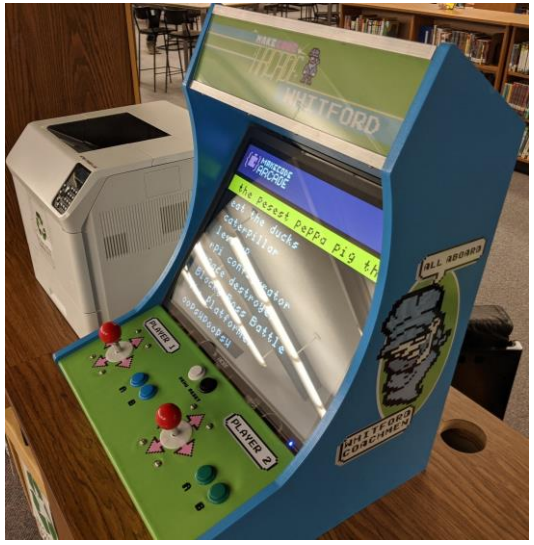
Arcade Cabinets & Controllers

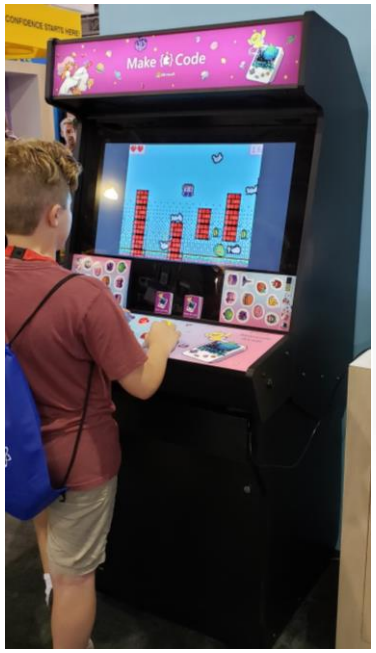
Cardboard Panel

Turn a cardboard box into a tabletop arcade.

Arcade table

Turn an IKEA FLISAT table into an arcade.





Arcade Kiosk Mode

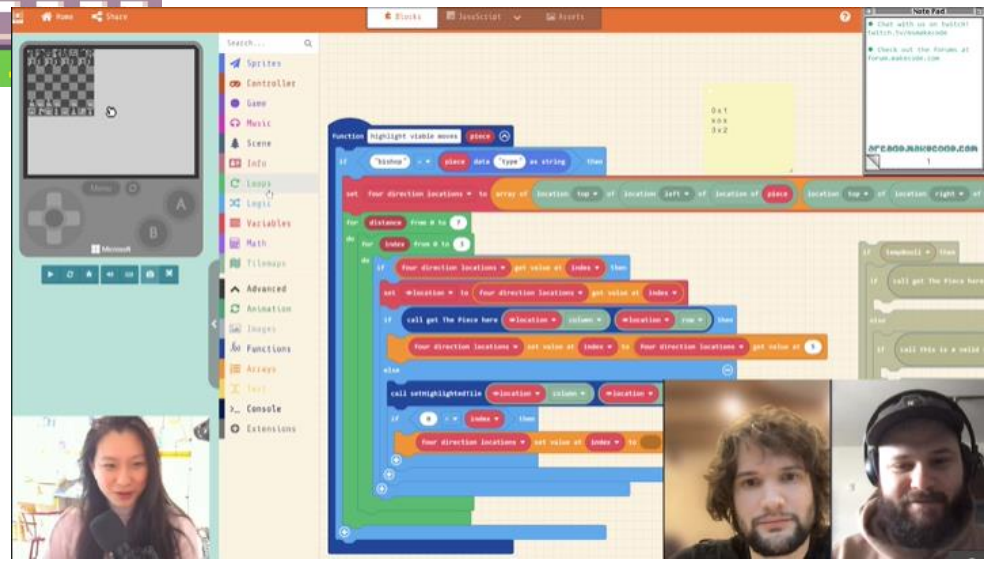
arcade.makecode.com/hardware/kiosk

MakeCode Arcade Live Stream & Forum

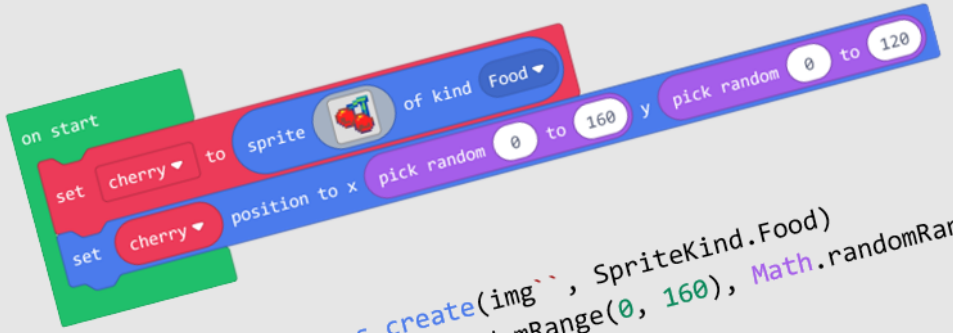
1pm Pacific / 3pm Eastern MWF

twitch.tv/msmakecode

forum.makecode.com



MakeCode Engineers




```
let cherry = sprites.create(img`` , SpriteKind.Food)
cherry.setPosition(Math.randomRange(0, 160), Math.randomRange
```

Thank You!