

# Computing Outcomes Portfolio



Year 5 - Autumn 2  
Coding; Game Creating using Scratch

## Intent

This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. This unit assumes that learners have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.

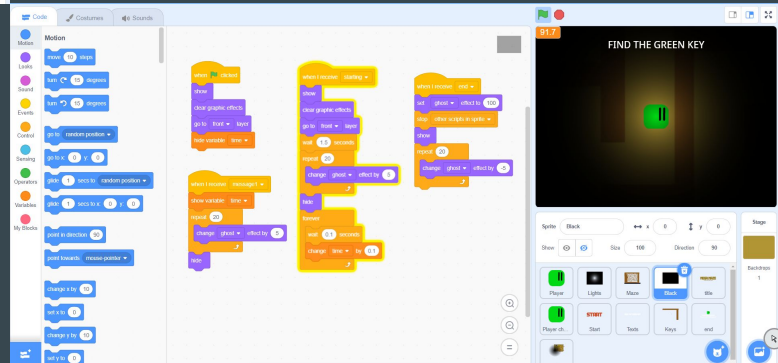
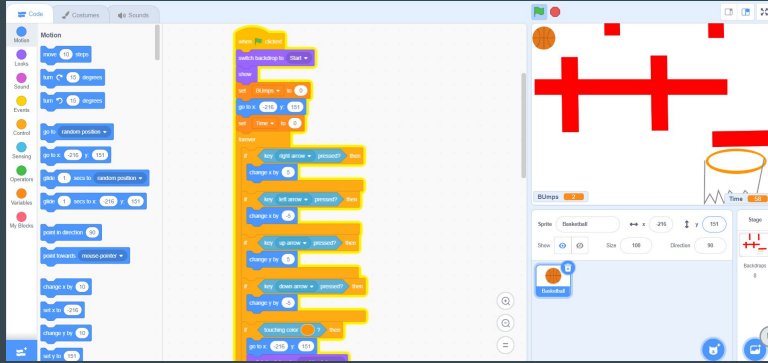
# Lesson 1: L.Q. What consequences should be programmed into a maze game?

The image displays the Scratch code editor interface for a maze game. The left sidebar shows the 'Motion' category with various blocks like 'move 10 steps', 'turn 15 degrees', 'go to random position', and 'glide 1 secs to random position'. The main workspace contains several scripts:

- Script 1 (Yellow):** Starts with 'when clicked', followed by a 'forever' loop containing an 'if p1 = 0 then show else hide' block.
- Script 2 (Yellow):** Starts with 'when I receive: singleplayer', followed by a 'forever' loop with 'if i < 11 then show else hide' blocks.
- Script 3 (Yellow):** Starts with 'when clicked', followed by a 'forever' loop with 'if touching color green? then go to x: -101 y: -56' and 'if i = 8, 9, 10 then go to x: 37 y: 87, 126 y: 43' blocks.
- Script 4 (Yellow):** Starts with 'when I receive: message1', followed by 'set p1 to 0' and 'set p2 to 0'.
- Script 5 (Yellow):** Starts with 'when I receive: multiplayer', followed by a 'forever' loop with 'if i < 11 then show else hide' blocks.
- Script 6 (Yellow):** Starts with 'when clicked', followed by 'wait 0 seconds', a 'forever' loop with 'if touching color red? then start sound meow' and 'go to x: item i of x y: item i of y' blocks.
- Script 7 (Yellow):** Starts with 'when clicked', followed by a 'forever' loop with 'if touching color blue? then go to x: -31 y: -41' and 'if i = 8, 9, 10 then go to x: -81 y: 87' blocks.

The right side of the editor shows a maze stage with a 'Cat1' sprite at the entrance. The stage properties are set to x: 4, y: -89, size: 10, and direction: 90. The 'Backdrops' section shows 5 backdrops.

# Lesson 2: L.Q. Why are themes important when designing a game?



# Lesson 3: L.Q. Which features and effects can enhance your game?

The image shows the Scratch code editor with a script for a game titled "FIND THE GREEN KEY". The script is divided into three main sections:

- When clicked:** A sequence of blocks including "show", "clear graphic effects", "go to front layer", and "hide variable time".
- When I receive starting:** A sequence of blocks including "show", "clear graphic effects", "go to front layer", "wait 1.5 seconds", a "repeat 20" loop containing "change ghost effect by 5", "hide", and a "forever" loop containing "wait 0.1 seconds" and "change time by 0.1".
- When I receive end:** A sequence of blocks including "set ghost effect to 100", "stop other scripts in sprite", "show", and a "repeat 20" loop containing "change ghost effect by -5".

The right side of the editor shows the stage with a black background and a green key icon. The stage title is "FIND THE GREEN KEY". The bottom right panel shows the sprite properties, including "Sprite: Black", "Size: 100", and "Direction: 90".

## Lesson 4: L.Q. What prior aspects are the same when creating a different type of game?

The image displays the Scratch code editor interface. On the left, the 'Code' tab is active, showing a script for a basketball game. The script begins with a 'when green flag clicked' event, followed by 'switch backdrop to Start', 'show', 'set BUmps to 0', 'go to x -216 y 151', and 'set Time to 0'. A 'forever' loop contains several 'if' blocks: 'if key right arrow pressed? then change x by 5', 'if key left arrow pressed? then change x by -5', 'if key up arrow pressed? then change y by 5', and 'if key down arrow pressed? then change y by -5'. A 'touching color?' block is also present, with a 'go to x -216 y 151' block as its 'then' action.

The right side of the image shows the stage area. A basketball sprite is positioned at the top left. A red cross-shaped backdrop is visible. A basketball hoop and basket are located on the right side. The 'BUmps' variable is shown as 2, and the 'Time' variable is shown as 58. The 'Sprite' panel shows the 'Basketball' sprite with x-coordinate -216 and y-coordinate 151. The 'Stage' panel shows the 'Basketball' backdrop selected.

# Lesson 5: L.Q. What are sprite 'costume changes' and do they serve more than one purpose?

The image shows the Scratch code editor interface. On the left, the 'Code' tab is active, displaying a script for a sprite named 'Player choose'. The script is as follows:

```
when clicked
  show
  switch costume to pick random 1 to 4
  point in direction 75
  forever
    repeat 30
      turn 1 degrees
    repeat 30
      turn 1 degrees
  forever
  point in direction 90
  point towards mouse-pointer
  change x by 10
  set x to 0
  change y by 10
  set y to 0
```

On the right, the 'Costumes' tab is active, showing a script for a sprite named 'Player dt...':

```
when clicked
  forever
    if touching mouse-pointer ? then
      set size to 220 %
    else
      set size to 200 %
```

Below the main script, there are two additional blocks: 'when this sprite clicked' containing 'start sound pop' and 'next costume', and 'when I receive starting' containing 'hide'.

The stage area on the right shows a maze with a green key icon in the center. The text 'FIND THE GREEN KEY' is displayed at the top of the stage. The sprite 'Player choose' is currently visible on the stage.

The bottom right of the interface shows the 'Sprite' and 'Stage' panels. The 'Sprite' panel shows 'Player choose' with a size of 200 and a direction of 89. The 'Stage' panel shows a single backdrop named '1'.

## Lesson 6: L.Q. How can point-scoring and adding levels to a game enhance user experience?

The image displays the Scratch code editor interface, showing a script for a basketball game. The script is written in the 'Code' tab and is triggered by a 'when green flag clicked' event. It begins by switching the backdrop to 'Start', showing the sprite, and setting the 'BUmps' variable to 0 and the 'Time' variable to 0. A 'forever' loop follows, containing several conditional blocks: 'if key right arrow pressed?' then 'change x by 5'; 'if key left arrow pressed?' then 'change x by -5'; 'if key up arrow pressed?' then 'change y by 5'; and 'if key down arrow pressed?' then 'change y by -5'. Additionally, there is a 'if touching color?' block with a red circle, which triggers 'go to x -216 y 151'. The visual representation on the right shows a basketball sprite on a stage with a red cross backdrop. The 'BUmps' variable is displayed as 2, and the 'Time' variable is displayed as 58. The 'Sprite' panel shows the 'Basketball' sprite with its position set to x: -216, y: 151, size 100, and direction 90. The 'Backdrops' panel shows 8 backdrops, with the current one being a red cross.

```
when green flag clicked
  switch backdrop to Start
  show
  set BUmps to 0
  go to x -216 y 151
  set Time to 0
  forever loop
    if key right arrow pressed? then
      change x by 5
    if key left arrow pressed? then
      change x by -5
    if key up arrow pressed? then
      change y by 5
    if key down arrow pressed? then
      change y by -5
    if touching color? then
      go to x -216 y 151
```