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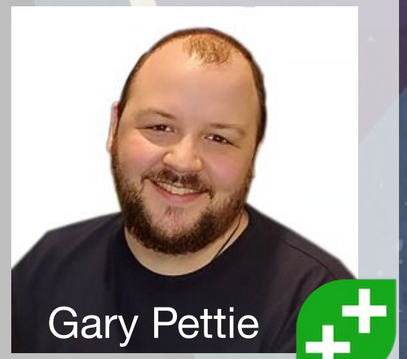
Quiz Master Section



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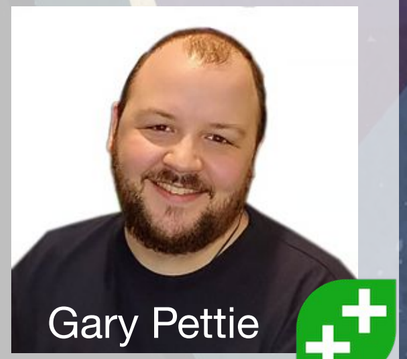
Section Intro - Quiz Master



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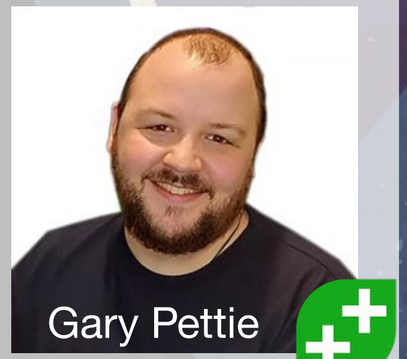
Game Design - Quiz Master



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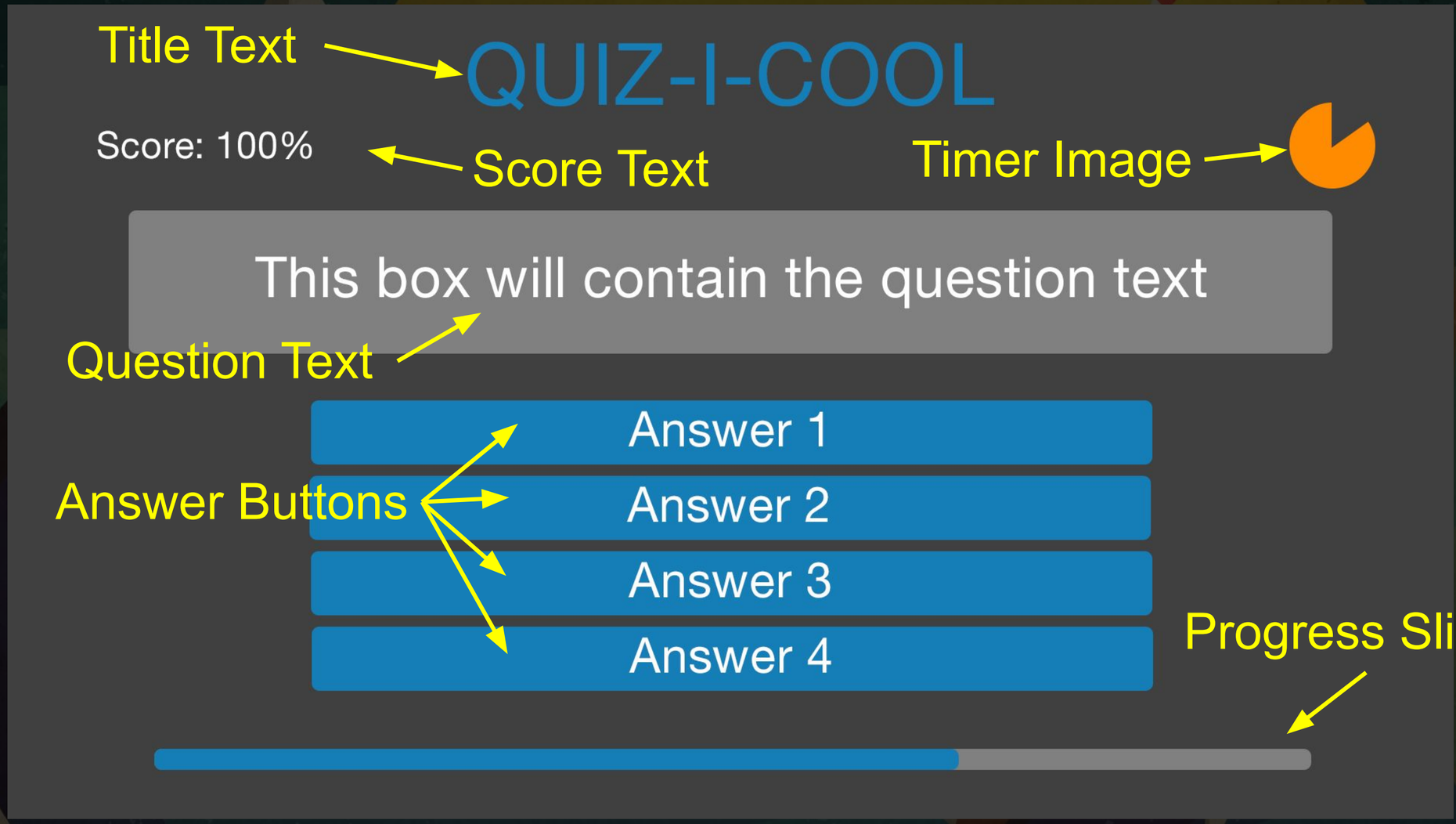
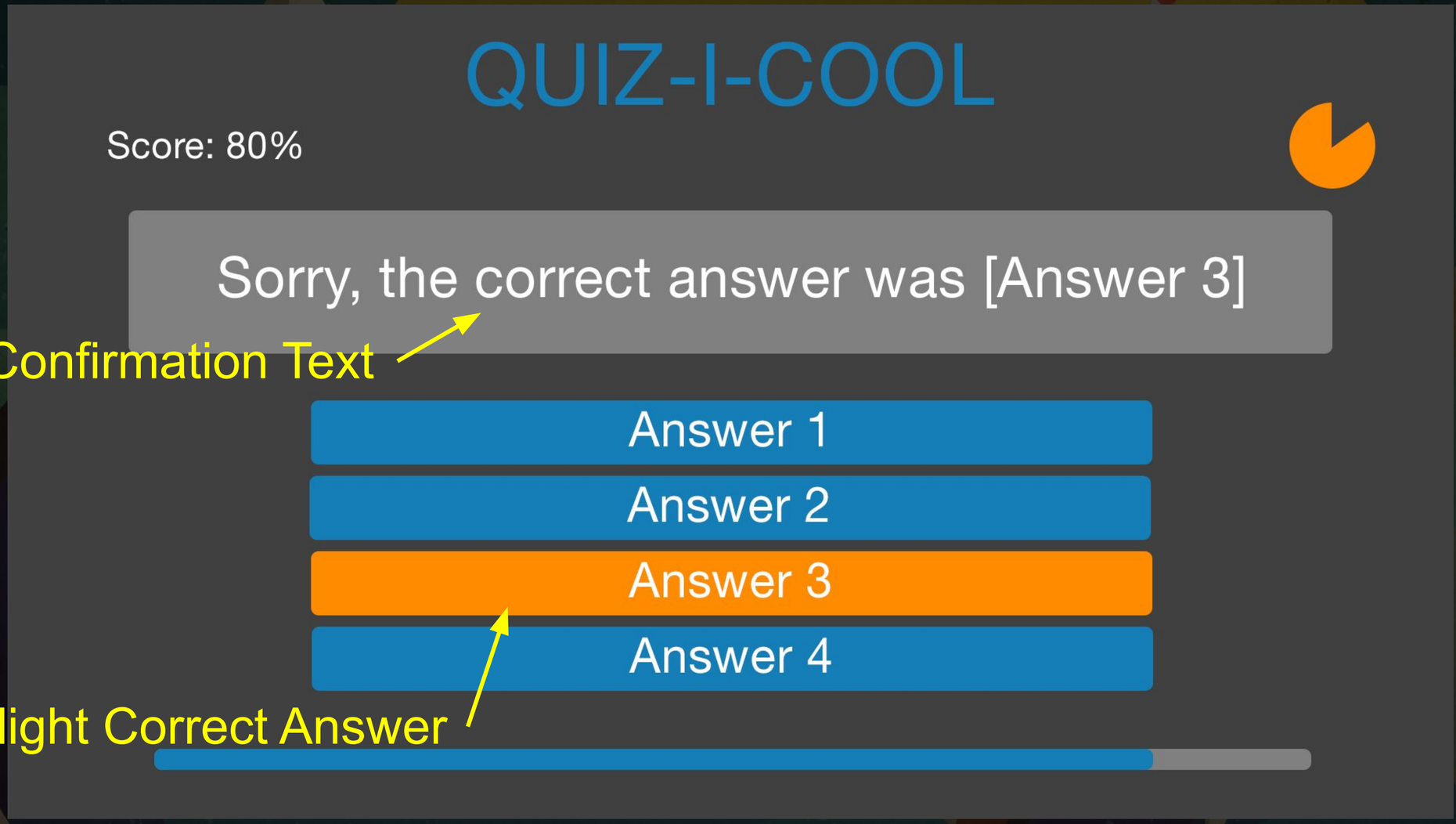
Concept

- Quiz game
- Answer a set number of multiple choice questions
- Limited time to answer each question
- UI focused gameplay

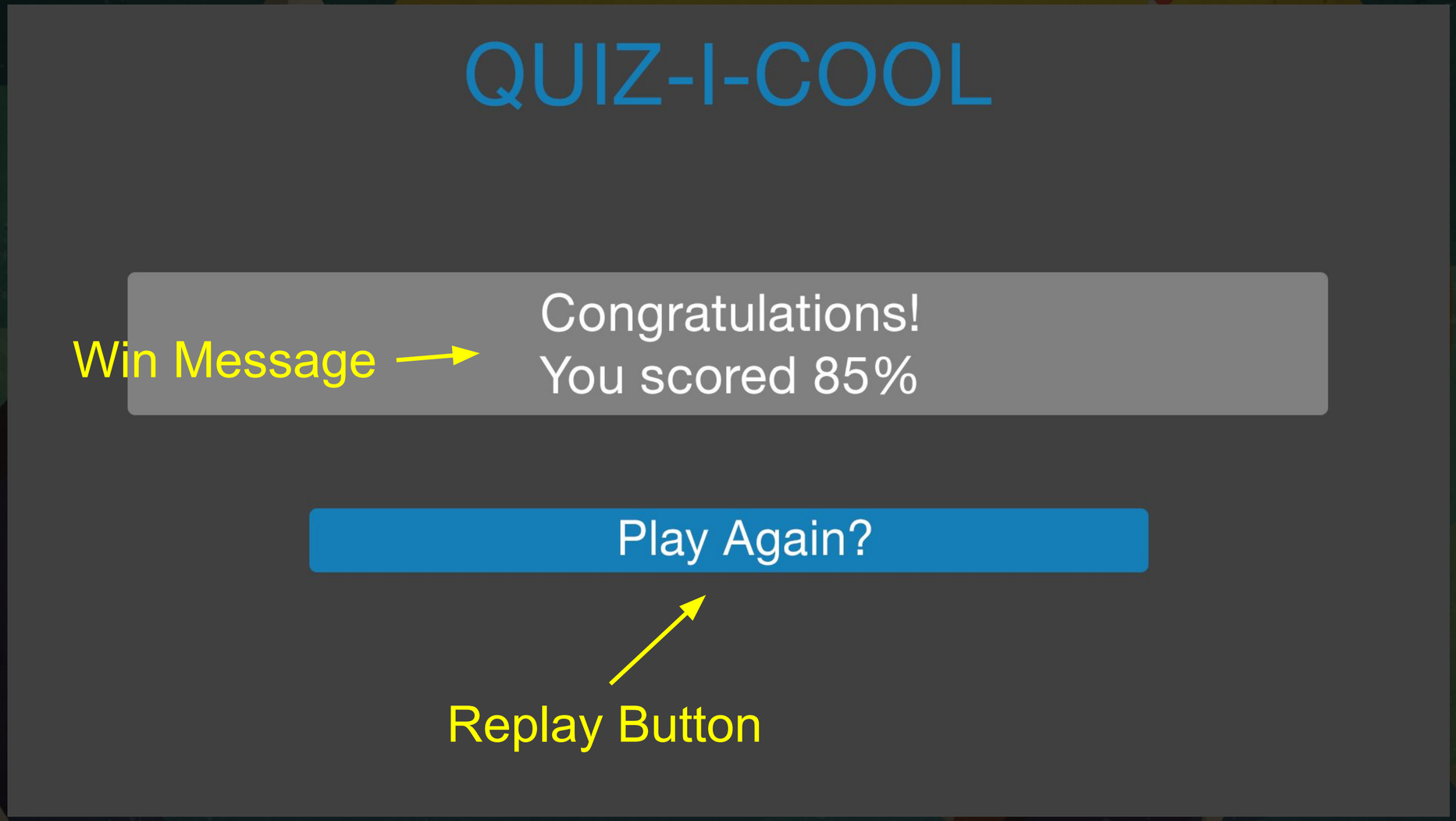
Gameplay Overview Screen



Gameplay Overview Screen



Gameplay Overview Screen



Game Mechanics We Need

- Mechanism to store and retrieve questions
- Buttons to select an answers
- Timer to put some pressure on the player
- Progress bar to show how many questions remain
- Scoring to show the player how well they did
- A way to restart the game when the quiz ends

Game Design

Player Experience:

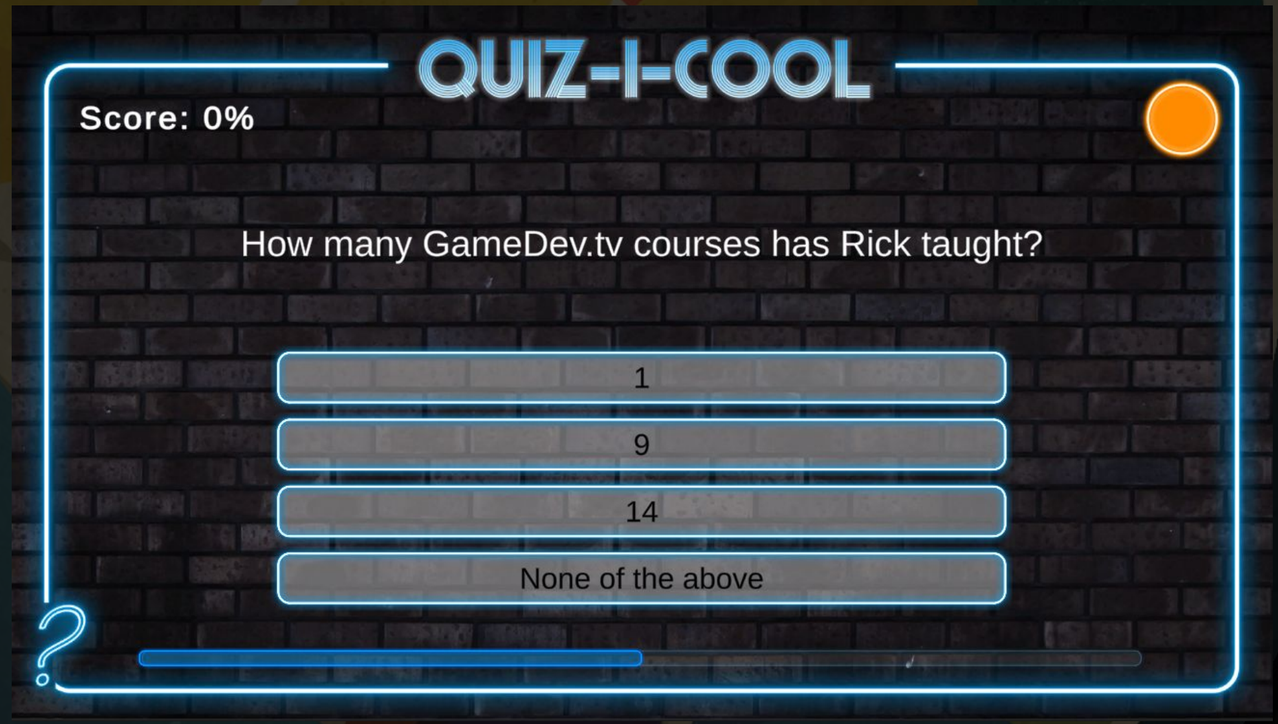
Knowledgeable / Intelligent

Core Mechanic:

Test your knowledge

Game Loop:

Answer a set number questions on a topic within the given time



A Quick Challenge

- Let us know in the forum discussions what topic your quiz will cover.
- For my game:
  - I’m going to ask questions about Unity and C# to help people study.

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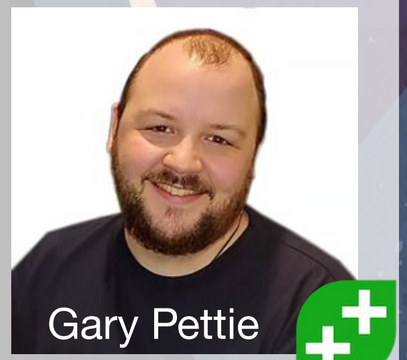
UI Canvas



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UI Canvas

- UI = User Interface
- Text, buttons, sliders, menus, etc.
- UI elements live on the “Canvas”
- The canvas generally exists in “Screen Space” and is mostly separate from the game world
- You can have multiple canvases

Challenge Time!

- Add a second canvas to the hierarchy
- Add a background image
- Make the image stretch to fill the entire screen

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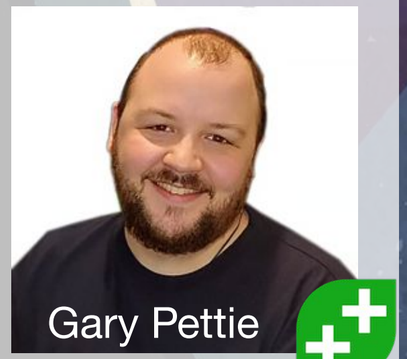
TextMesh Pro



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Find a Font!

- Do some font shopping
- Find a free font and add it to your asset folder
- Double check the usage rights!

More Text!

- Fine tune your title text
- Play around with TMPro to see what you can make
- Add a new “QuizCanvas” to the hierarchy
- Add a TextMesh Pro element for the question text

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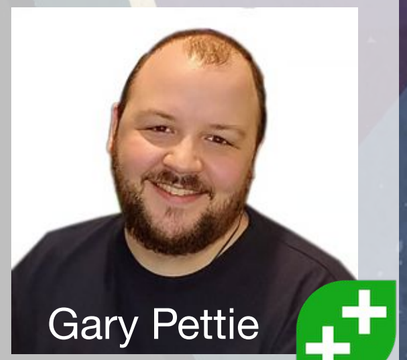
Button Layout



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Set Up Your Buttons

- Add an image to your buttons
- Remember to slice your sprites!
- Organize your buttons using a layout group
- Change the spacing, padding, and alignment

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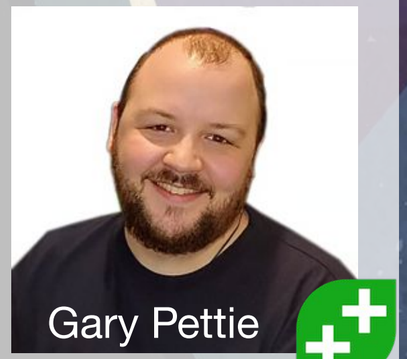
Scriptable Objects



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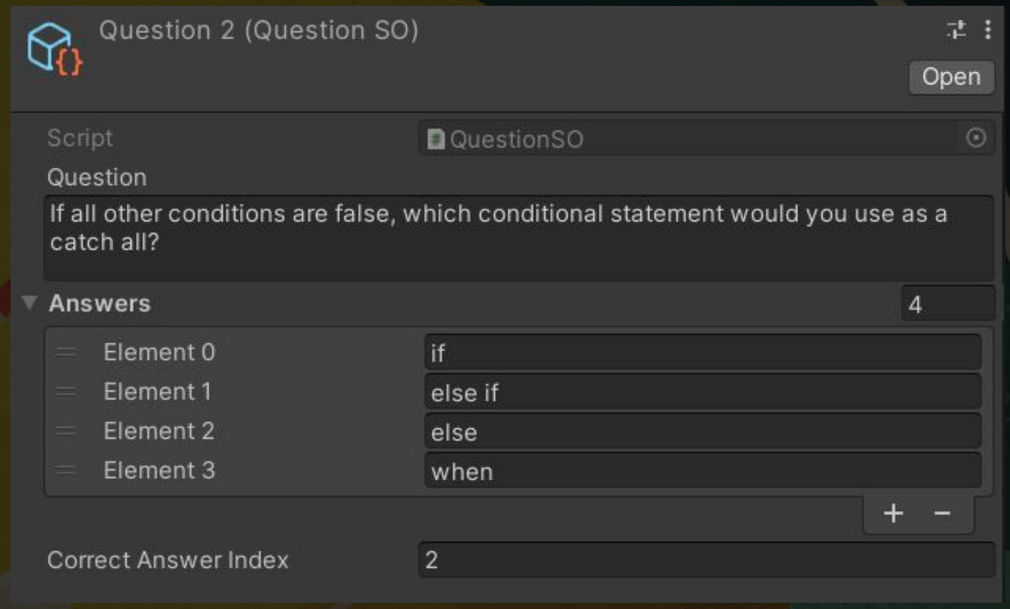
What is a Scriptable Object?

- It’s just a data container!
- Keeps the data out of our scripts
- Help us save memory by storing data in one place
- They don’t need to be attached to game objects
- They’re lightweight and convenient
- Act as a template for consistency

Examples

- Weapon stats in an RPG
- Card data in a CCG



- We'll be using them to store question data
  - Question text
  - Possible answers
  - Correct answer

Structure

Our Code

Quiz.cs

GetQuestionData()

Question 3

DisplayQuestion()

CheckAnswer()

Scriptable Objects

Question 1

Question 2

Question 3

Question 4

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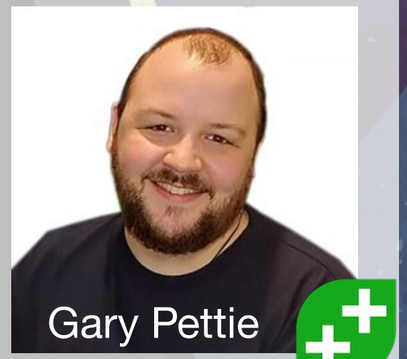
Getter Methods



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Getter Methods

- Gives a script read-only access to a private variable
- Protects the contents of a private variable

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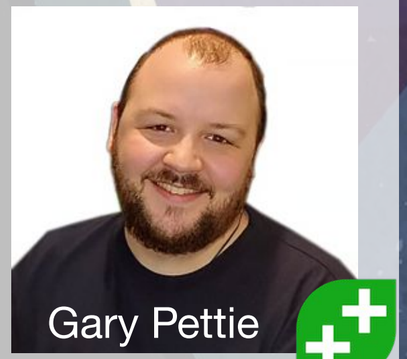
Arrays



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What is an Array?

- A grouping of multiple variables of the same type
- Each item stored in an array is called an ‘element’
- Each element can be accessed by its index number
- Counting starts at zero!

```
int[] oddNumbers = new int[5];
oddNumbers[2] = 5;
```

[] = array

0 1 2 3 4

Challenge

- Create two getter methods called;
  - GetCorrectAnswerIndex()
  - GetAnswer(int index)

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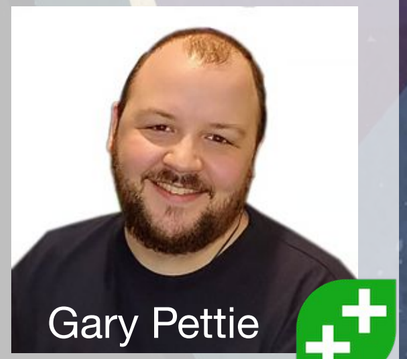
TextMeshProUGUI



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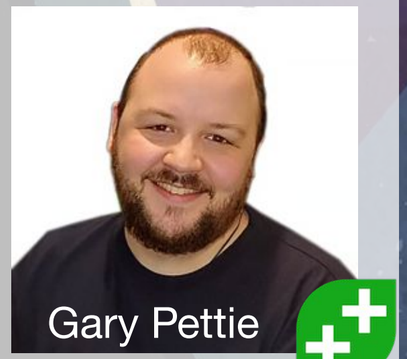
For Loops



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Challenge

- Change the text displayed on the button to the first answer stored in our QuestionSO.

<u>Remember:</u>

Our scriptable objects contain the getter method:

```
GetAnswer(int index)
```

What is a Loop?

- Repeat an event until some condition is met
- Very powerful for counting or iterating
- One type of loop is called a ‘For Loop’
- Loop a set number of times

For Loop

```
for(int i = 0; i < n; i++)
{
    //do stuff
}
```

- Runs once before the code block is executed
- Sets up the iterator

For Loop

```
for(int i = 0; i < n; i++)
{
    //do stuff
}
```

- Defines the loop condition
- Tells the loop when to stop
- Be careful of infinite loops!

For Loop

```
for(int i = 0; i < n; i++)
{
    //do stuff
}
```

- Executes at the end of every loop
- Used to increment or decrement the iterator

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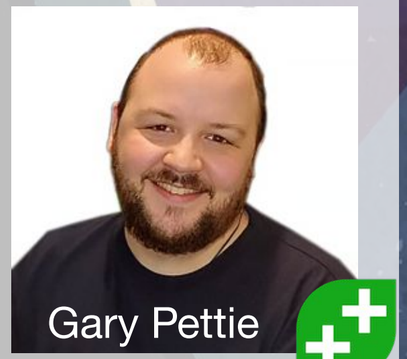
Swapping Sprites



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Challenge

- Change the question text to display the correct answer.
- Change the image on the button that contains the correct answer.

Remember:
The correct answer index is stored in the scriptable object.

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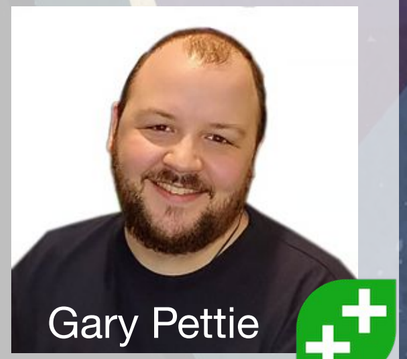
Button States



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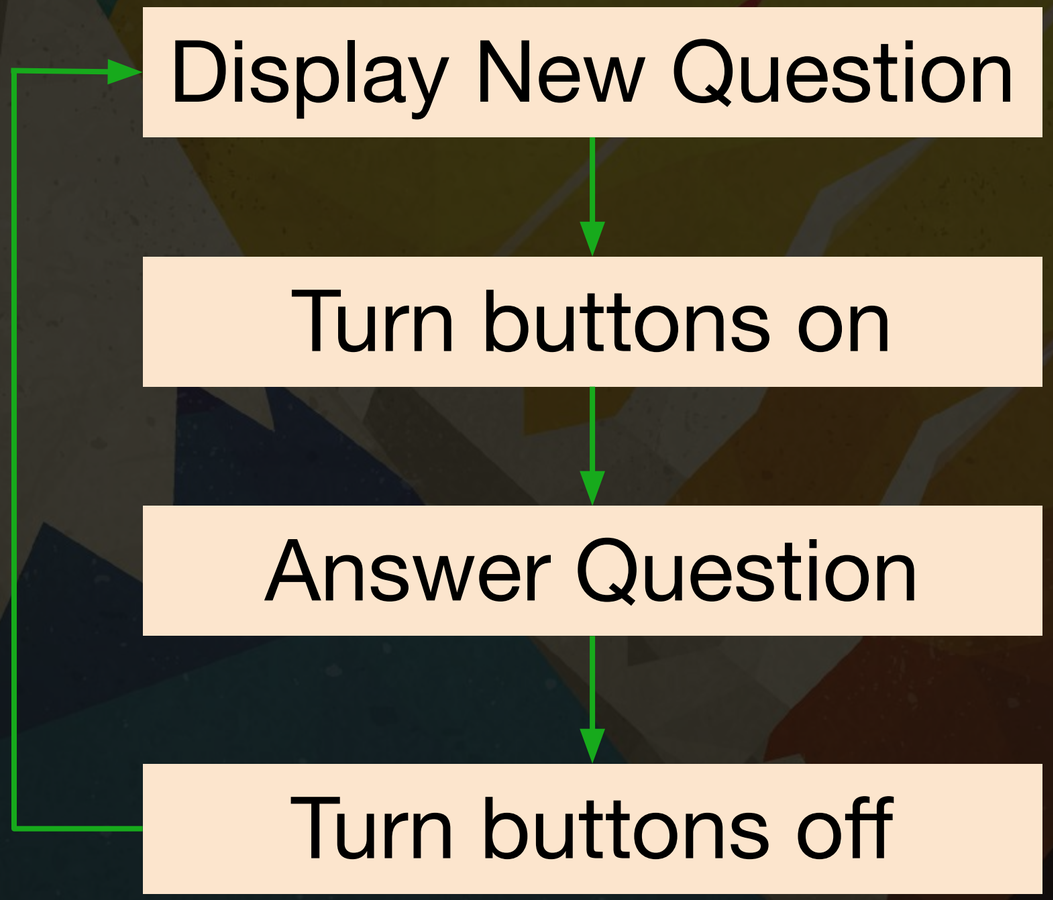
Game Flow


Display New Question
Turn buttons on
Answer Question
Turn buttons off

Challenge

- Write SetDefaultButtonSprites()

Logic:

- Loop through all the answer buttons
- Get the Image component on each button
- Change the sprite back to the default sprite

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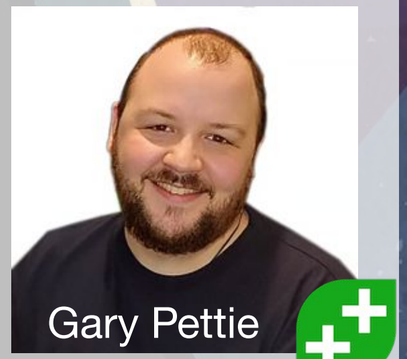
Simple Timers



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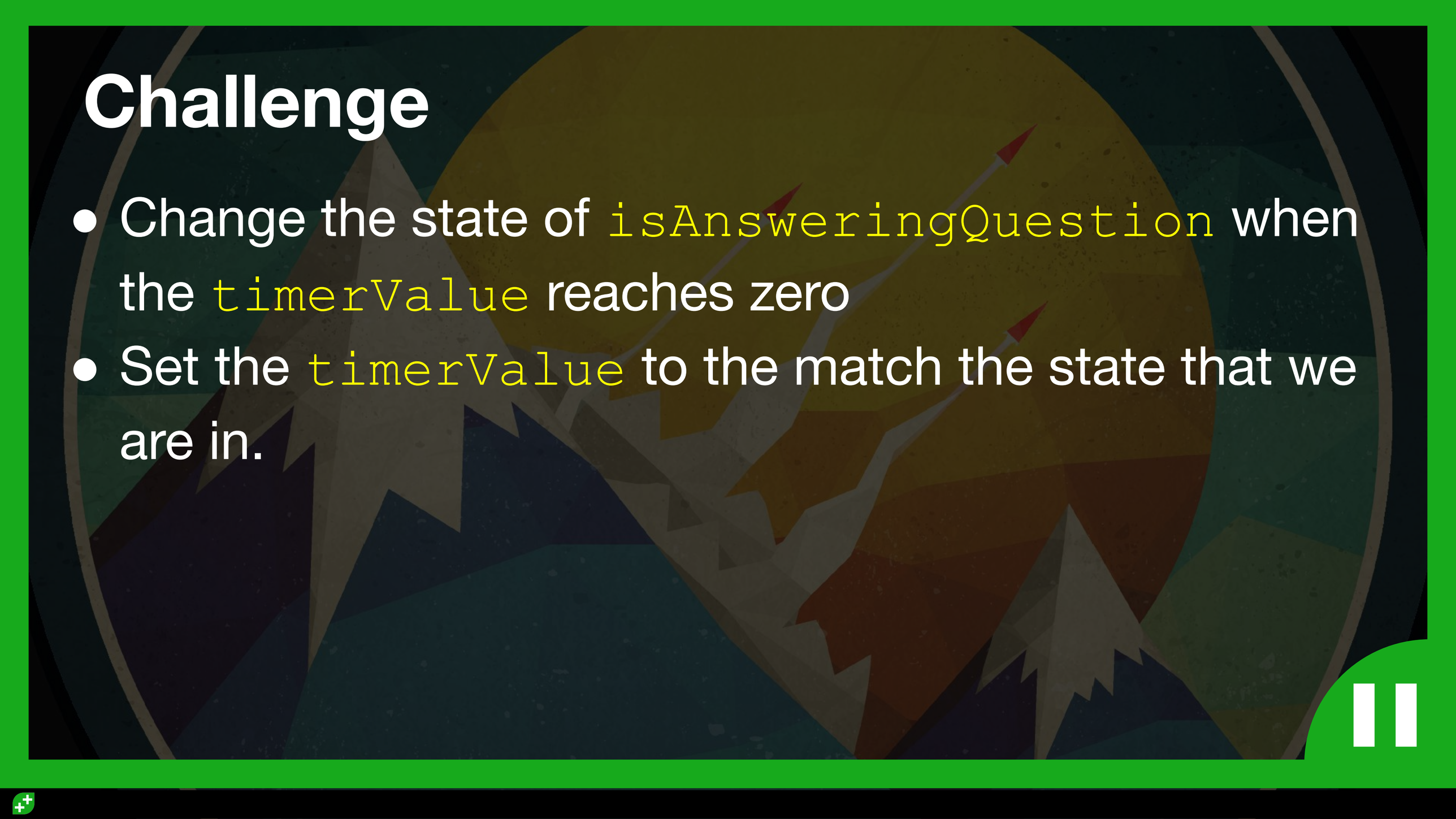
Timer

- What state is the game in?
  - answering question or showing answer
- Has the timer run down?
- Change the fill amount of the timer image
- When time runs out, change the state of the game

Challenge

- Change the state of `isAnsweringQuestion` when the `timerValue` reaches zero
- Set the `timerValue` to the match the state that we are in.



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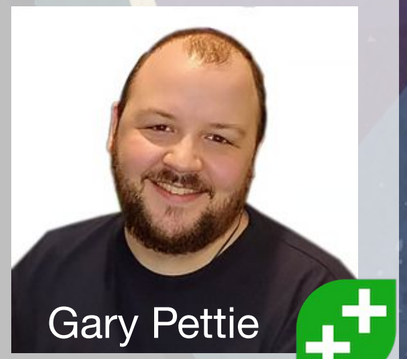
Connecting the Timer



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Challenge

- Change the fill amount of the timer image every frame

Hint:

We’ve already worked out the fill fraction in Timer.cs

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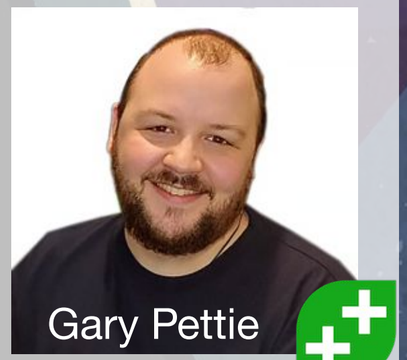
Lists



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What is a List?

- They’re kind of like arrays!

- A grouping of multiple variables of the same type
- Each item stored in an List is called an ‘element’
- Each element can be accessed by its index number
- Counting starts at zero!

- They’re mutable - meaning we can change their size!

Syntax

Array

```
Int[] oddNumbers = new int[5]
```

List

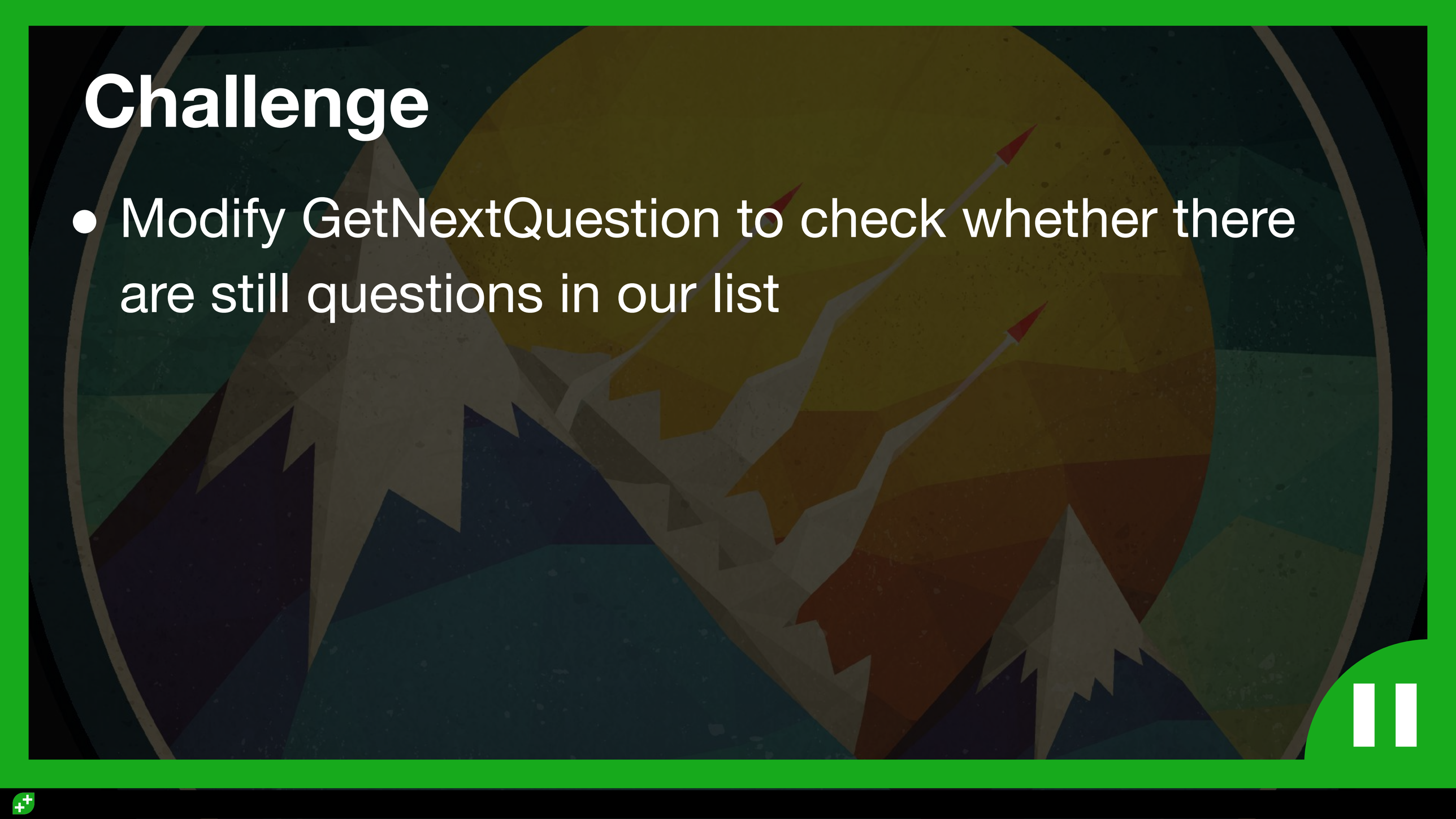
```
List<int> oddNumbers = new List<int>()
```

Useful Methods & Properties

Check item count:	`List.Count`
Check if item exists:	`List.Contains(3)`
Add an item:	`List.Add(3)`
Remove an item:	`List.Remove(3)`
Remove item at index:	`List.RemoveAt(0)`
Clear the list:	`List.Clear()`

Challenge

- Modify GetNextQuestion to check whether there are still questions in our list



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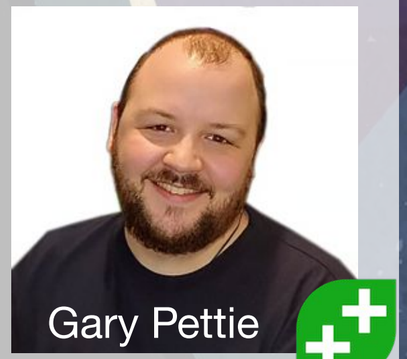
Keeping Score



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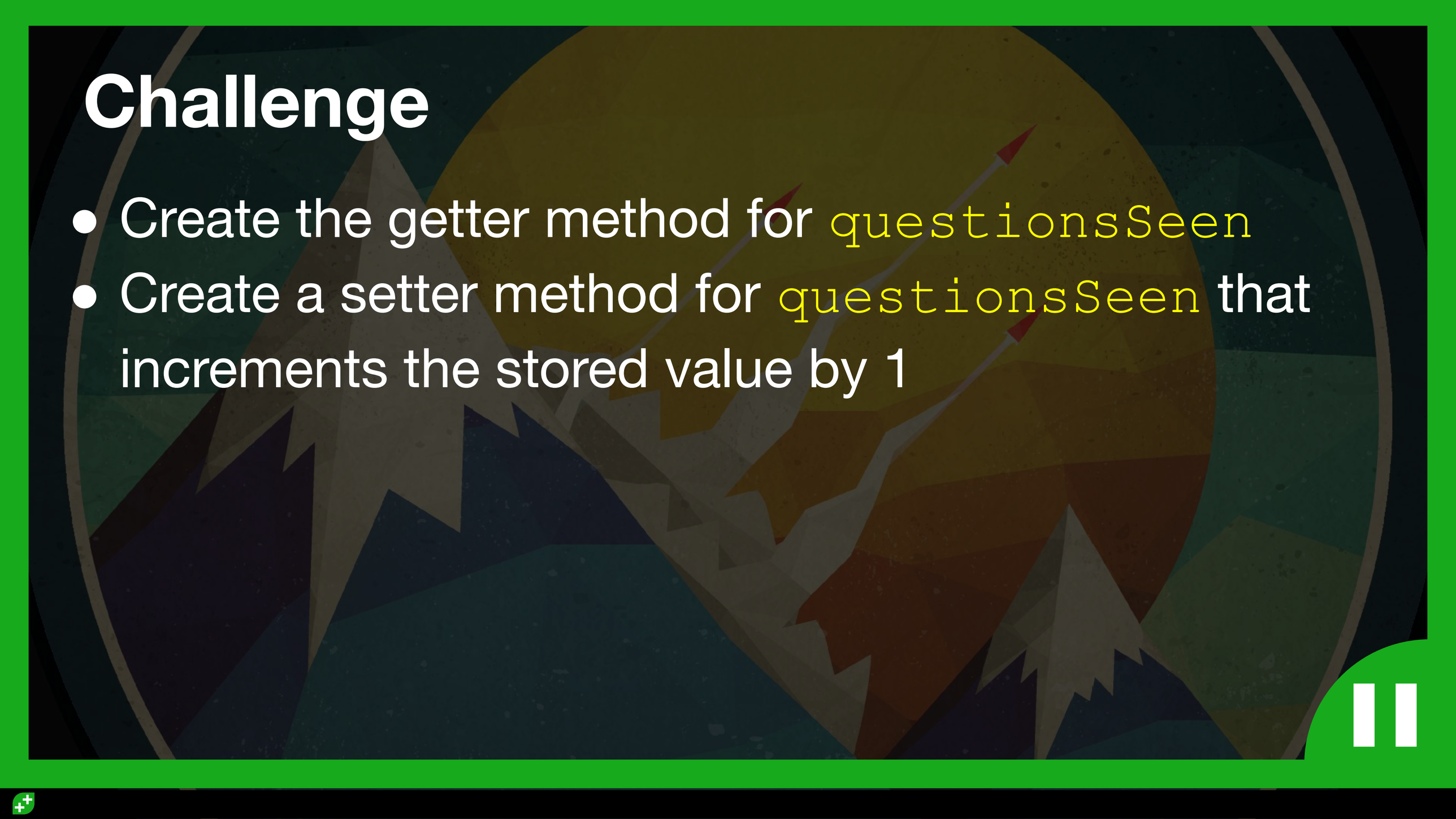
Challenge

- Create the getter method for `questionsSeen`
- Create a setter method for `questionsSeen` that increments the stored value by 1



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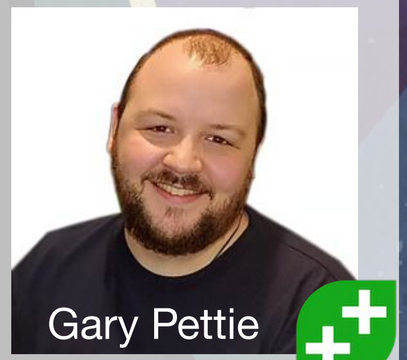
Sliders



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Challenge

- Set up your progress bar!

- Resize and position your slider on the canvas
- Change the background and fill colors / spites
- Set up (or disable) the handle

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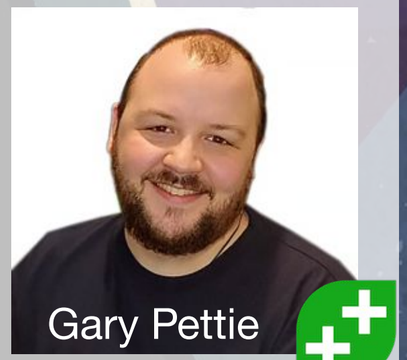
End Screen



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Challenge

- Set up your WinScreen canvas!

- Add a Text field to display the final score
- Add a button for the player to reload the game

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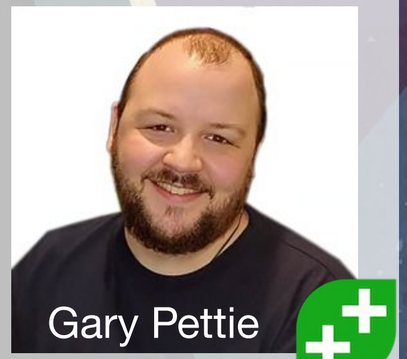
Game Manager



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Challenge

- Check if the game has been completed
- Disable the QuizCanvas
- Enable the WinCanvas

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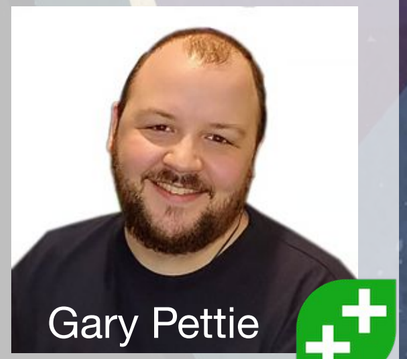
Wrap Up - Quiz Master



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