

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

Title Text

QUIZ-I-COOL

Score: 100%

Score Text

Timer Image



This box will contain the question text

Question Text

Answer Buttons

Answer 1

Answer 2

Answer 3

Answer 4

Progress Slider



Gameplay Overview Screen

QUIZ-I-COOL

Score: 80%



Sorry, the correct answer was [Answer 3]

Confirmation Text

Answer 1

Answer 2

Answer 3

Answer 4

Highlight Correct Answer



Gameplay Overview Screen

QUIZ-I-COOL

Win Message →

Congratulations!
You scored 85%

Play Again?

↗
Replay Button



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:

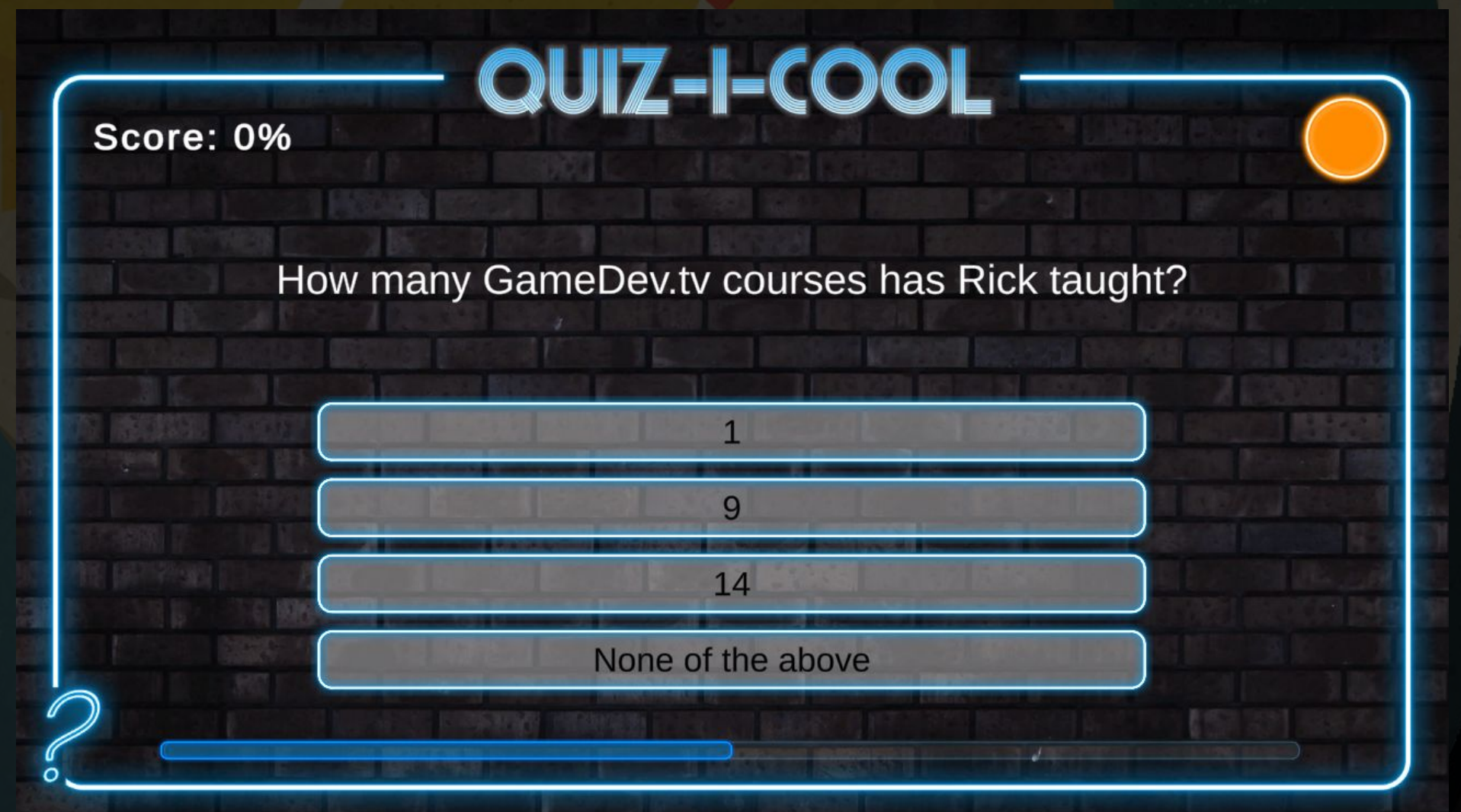
Knowledgeable / Intelligent

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.



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



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



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



Scriptable Objects



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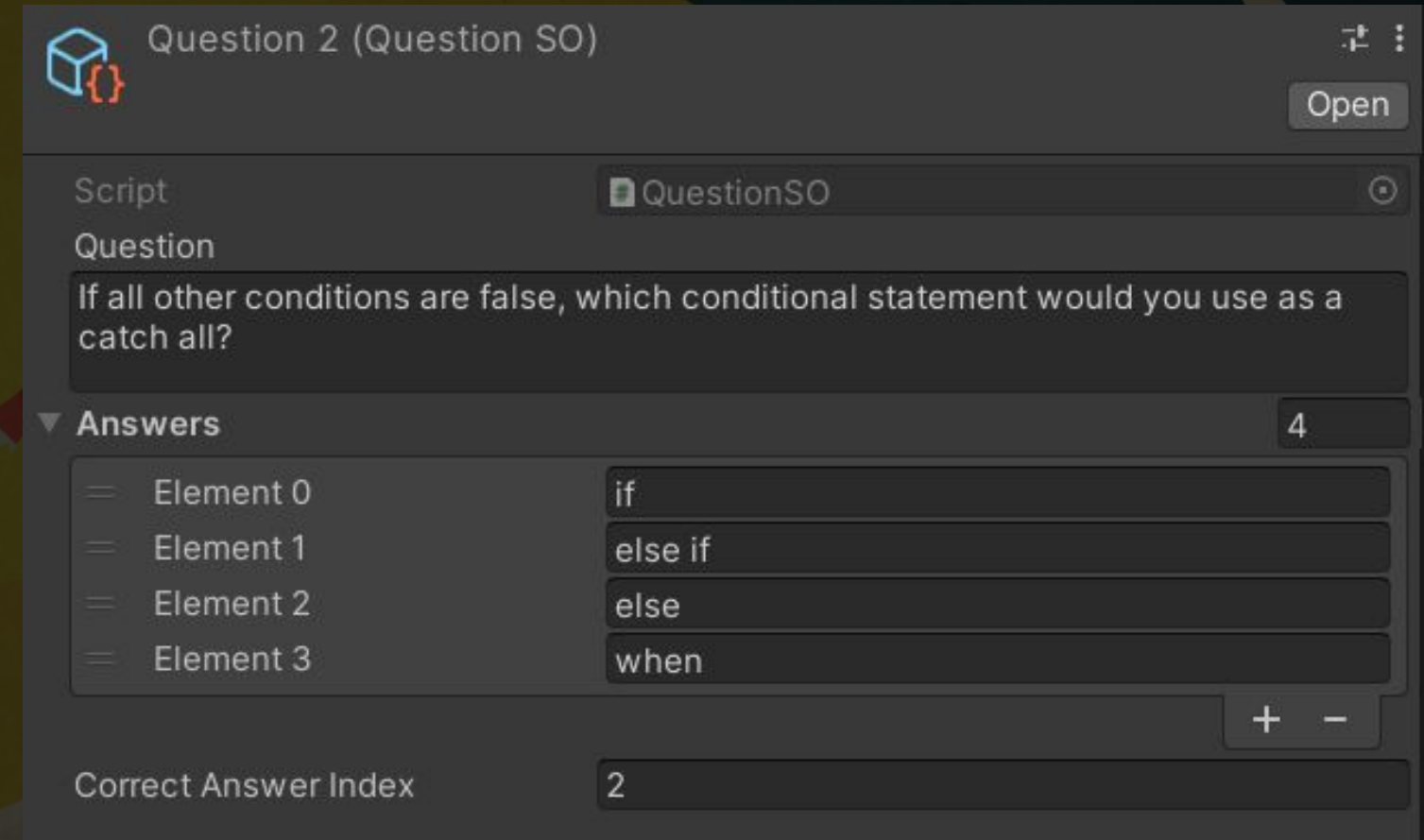
What is a Scriptable Object?

- 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



The screenshot shows a question editor window titled "Question 2 (Question SO)". It includes an "Open" button in the top right. The "Script" section shows "QuestionSO" as the selected script. The "Question" text field contains the text: "If all other conditions are false, which conditional statement would you use as a catch all?". The "Answers" section is expanded, showing a list of four elements with their corresponding answers: Element 0 is "if", Element 1 is "else if", Element 2 is "else", and Element 3 is "when". There are plus and minus buttons to the right of the answers list. At the bottom, the "Correct Answer Index" is set to "2".

Element	Answer
Element 0	if
Element 1	else if
Element 2	else
Element 3	when

Structure

Our Code

Quiz.cs

GetQuestionData()

Question 3

DisplayQuestion()

CheckAnswer()

Scriptable Objects

Question 1

Question 2

Question 3

Question 4



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

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 = {1, 3, 5, 7, 9}
```

```
↑  
oddNumbers[2] = 5;
```

[] = array

↑ ↑ ↑ ↑ ↑
0 1 2 3 4

Challenge

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



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.

Remember:

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

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.



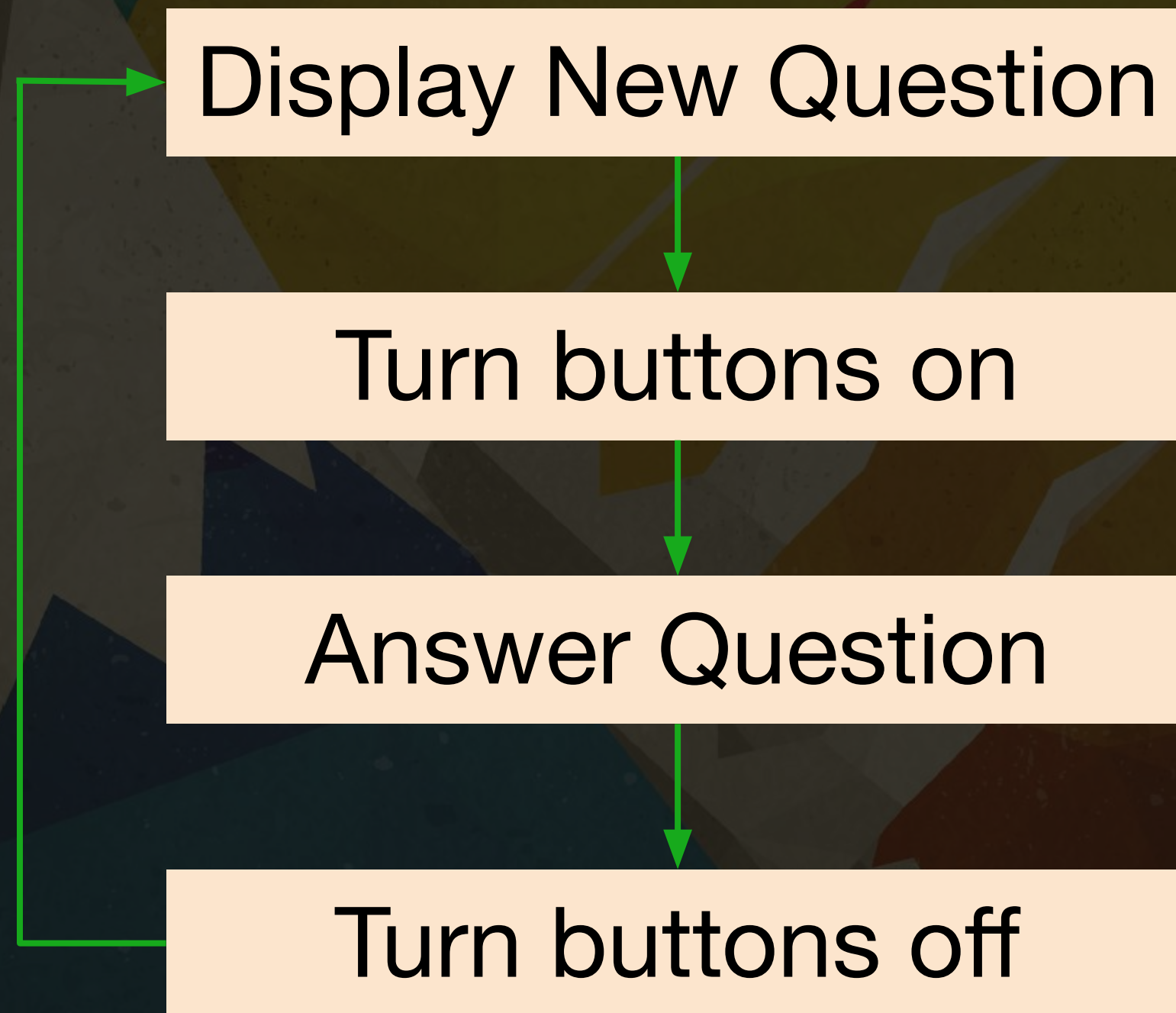
Button States



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Game Flow



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



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 match the state that we are in.



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



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



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



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 / sprites
- Set up (or disable) the handle



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



Game Manager



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Challenge

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



Wrap Up - Quiz Master



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