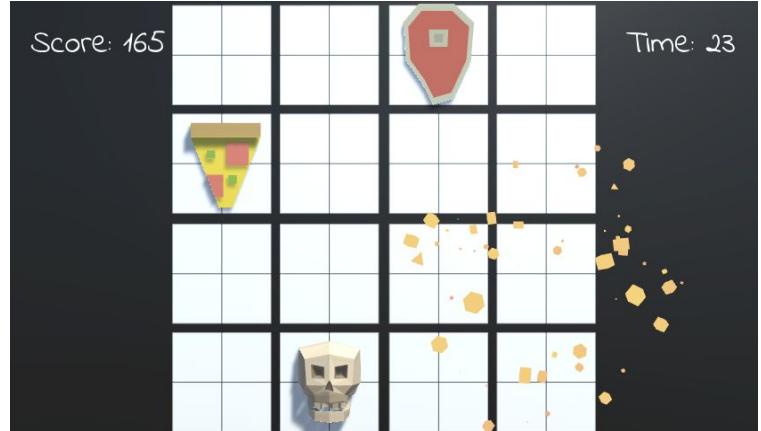




# Challenge 5

## Whack-a-Food



### Challenge Overview:

Put your User Interface skills to the test with this whack-a-mole-like challenge in which you have to get all the food that pops up on a grid while avoiding the skulls. You will have to debug buttons, mouse clicks, score tracking, restart sequences, and difficulty setting to get to the bottom of this one.

### Challenge Outcome:

- All of the buttons look nice with their text properly aligned
- When you select a difficulty, the spawn rate changes accordingly
- When you click a food, it is destroyed and the score is updated in the top-left
- When you lose the game, a restart button appears that lets you play again

### Challenge Objectives:

In this challenge, you will reinforce the following skills/concepts:

- Working with text and button objects to get them looking the way you want
- Using Unity's various mouse-related methods appropriately
- Displaying variables on text objects properly using concatenation
- Activating and deactivating objects based on game states
- Passing information between scripts using custom methods and parameters

### Challenge Instructions:

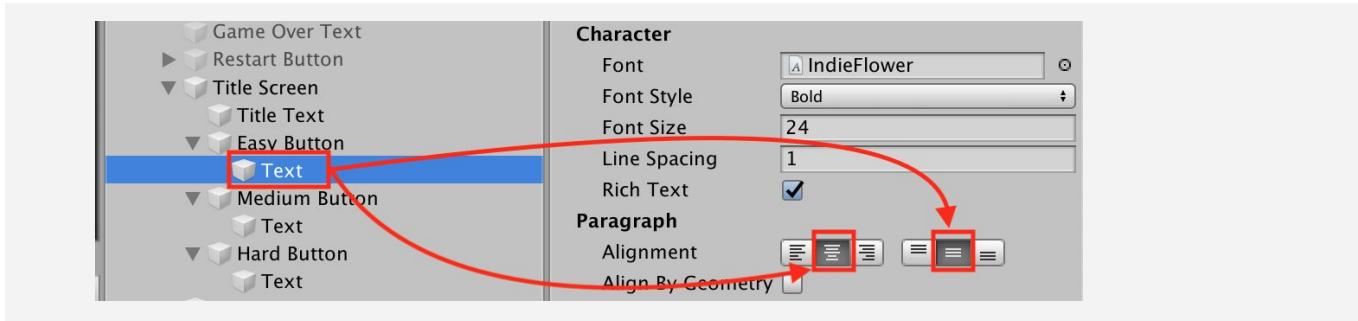
- Open your **Prototype 5** project
- **Download** the "Challenge 5 Starter Files" from the Tutorial Materials section, then double-click on it to **Import**
- In the *Project Window > Assets > Challenge 5 > Instructions* folder, use the "Challenge 5 - Outcome" video as a guide to complete the challenge

Challenge	Task	Hint
1 The difficulty buttons look messy	Center the text on the buttons horizontally and vertically	If you expand one of the button objects in the hierarchy, you'll see a "Text" object inside - you have to edit the properties of that "Text" object
2 The food is being destroyed too soon	The food should only be destroyed when the player clicks on it, not when the mouse touches it	OnMouseEnter() detects when the mouse <i>enters</i> an object's collider - OnMouseDown() detects when the mouse <i>clicks</i> on an object's collider
3 The Score is being replaced by the word "score"	It should always say, "Score: __" with the value displayed after "Score:"	When you set the score text, you have to add (concatenate) the word "Score: " <i>and</i> the actual score value
4 When you lose, there's no way to Restart	Make the Restart button appear on the game over screen	In the GameOver() method, make sure the restart button is being reactivated
5 The difficulty buttons don't do anything	When you click Easy, the spawnRate should be slower - if you click Hard, the spawnRate should be faster	There is no information (or parameter) being passed from the buttons' script to the Game Manager's script - you need to implement a difficulty parameter

Bonus Challenge	Task	Hint
X The game can go on forever	Add a "Time: __" display that counts down from 60 in whole numbers (i.e. 59, 58, 57, etc) and triggers the game over sequence when it reaches 0.	Google, "Unity Count down timer C#". It will involve subtracting "Time.deltaTime" and using the Mathf.Round() method to display only whole numbers.

## Challenge Solution

- 1 Expand each of the “Easy”, “Medium”, and “Hard” buttons to access their “Text” object properties, then select the horizontal and vertical alignment buttons in the “Paragraph” properties



- 2 In TargetX.cs, change OnMouseEnter() to OnMouseDown()

```
private void OnMouseEnterDown() {
```

- 3 In GameManagerX.cs, in UpdateScore(), concatenate the word “Score: ” with the score value:

```
public void UpdateScore(int scoreToAdd) {
    score += scoreToAdd;
    scoreText.text = "score" "Score: " + score;
}
```

- 4 In GameManagerX.cs, in GameOver(), change SetActive(false) to “true”

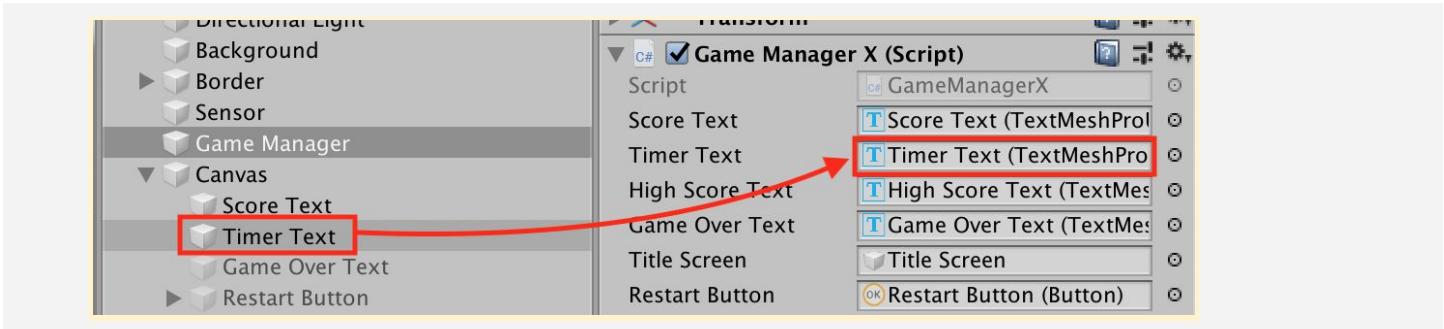
```
public void GameOver() {
    gameOverText.gameObject.SetActive(true);
    restartButton.gameObject.SetActive(false);
    ...
}
```

- 5 In GameManagerX.cs, in StartGame(), add an “int difficulty” parameter and divide the spawnRate by it. Then in DifficultyButtonX.cs, in SetDifficulty(), pass in the “difficulty” value from the buttons.

<code>GameManager.cs</code> <pre>public void StartGame(int difficulty){     spawnRate /= 5 - difficulty;     ... }</pre>	<code>DifficultyButtonX.cs</code> <pre>void SetDifficulty() {     ...     gameManagerX.StartGame(difficulty); }</pre>
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## Bonus Challenge Solution

- X1** Duplicate the “Score Text” object in the hierarchy to create a new “Timer text” object, then in GameManagerX.cs declare a new **TextMeshProUGUI timerText** variable and assign it in the inspector



- X2** In GameManagerX.cs, in StartGame(), set your new timerText variable to your starting time

```
public void StartGame(int difficulty) {
    ...
    timeLeft = 60;
}
```

- X3** In GameManagerX.cs, add an Update() function that, if the game is active, subtracts from the timeLeft and sets the timerText to a rounded version of that timeLeft. Then, if timeLeft is less than zero, calls the game over method.

```
private void Update() {
    if (isGameActive) {
        timeLeft -= Time.deltaTime;
        timerText.SetText("Time: " + Mathf.Round(timeLeft));
        if (timeLeft < 0) {
            GameOver();
        }
    }
}
```