**Game Design**

Performance Task

# **Create — User Interface**

## **Overview**

In this performance task, you will program a game to test the player’s reflexes, where the goal is to click and destroy objects randomly tossed in the air before they can fall off the screen. In creating this prototype, you will learn how to implement a User Interface - or UI - into your projects. You will add a title screen with a difficulty select menu that will control how challenging the gameplay is, you will add a score display that will track how many points the player has earned, and you will add a Game Over screen, which will allow the player to restart and try again. In learning these skills, you will be able to create a fully “playable” experience that the user can enjoy from start to finish without having to restart the application to try it again.

## **Assessment**

You will be provided with 16 hours of class time to complete and submit the following:

* A video of your game being planned or a trailer for the game
* Written responses about your game and design process
* Digital Game Prototype

Your teacher will share submission guidelines that include suggestions for creating video and PDF files.

## **General Requirements**

You are required to:

* Describe systematic strategies for finding bugs based on observed errors.
* Use debugging strategies to identify errors in code.
* Analyze the essentials of storytelling, including visual and environmental storytelling
* Create rules for a game, e.g., levels and/or interactive flow
* Develop objectives and outcomes for a game
* Prototype a digital project that accounts for different user perspectives and needs.
* Research terrains for a specific environment
* Describe the impact of story (explicit, implicit and emergent) on level design
* Explain the importance of usability and how it impacts user experience
* Produce a game design document
* Compare categories of game mechanics
* Discuss relationships between game mechanics, game play, and interactivity
* Utilize compound boolean Expressions.
* Develop programs with sequences and simple loops, to express ideas or address a problem.
* Model the way programs store and manipulate data by using numbers or other symbols to represent information.
* Create programs that use variables to store and modify data.
* Describe the implications of access modifiers (private/public, local/global)
* Explain different types of errors which can occur in code.
* Modify events and their handlers to work with code.

## **Submission Requirements**

### 1. **Video**

Submit one video in .mp4, .wmv, .avi, or .mov format that demonstrates the running of your game. Your video must not exceed 1 minute in length and must not exceed 30MB in size.

### 2**. Written Responses**

Submit one PDF document in which you respond directly to each prompt. Clearly label your responses. Your response to all prompts combined must not exceed 950 words.

You may use images to show off or to explain things in your written responses.

## **Purpose and Development**

1. Provide a written response or audio narration in your video that:

Identifies the changes you made to your prototype. Identifies the changes.

* Explains what the video illustrates.

(Approximately 150 words)

1. Describe systematic strategies for finding bugs based on observed errors. Use debugging strategies to identify errors in code.

(Approximately 200 words)

1. Analyze the essentials of storytelling, including visual and environmental storytelling. Create rules for a game, e.g., levels and/or interactive flow. Develop objectives and outcomes for a game. Describe the impact of story (explicit, implicit and emergent) on level design.

(Approximately 200 words)

1. Describe the implications of access modifiers (private/public, local/global). Explain different types of errors which can occur in code.

(Approximately 200 words)

1. Explain the importance of usability and how it impacts user experience. Compare categories of game mechanics. Discuss relationships between game mechanics, game play, and interactivity in digital games.

(Approximately 200 words)

## Tasks

### **Activity 1 - Explore**

**Description**

Students will learn about securing their video games from cyber threats. They will then research the CIA Triad which are widely-accepted security measures that should be guaranteed in every secure system. It stands for Confidentiality, Integrity, and Availability.

* Confidentiality is the protection of information from people who are not authorized to view it.
* Integrity aims at ensuring that information is protected from unauthorized or unintentional alteration.
* Availability is the assurance that systems and data are accessible by authorized users when and where needed.

Students learn about the impacts of having a diverse team for the creation of computer science games. Students will learn the role of governing bodies and developers in creating games that are ethical. The lesson presents different points of view for students to consider and explore. Students will learn what copyright laws are and how to avoid copyright infringement. They will explore how these laws relate to video game design and take a look at one of the first copyright law cases to involve video games.

* Security in Game Design
* Representation in Technology
* Ethical Considerations
* Copyright Rules

Time To Complete: 2-3 Hours

### **Activity 2 - Research**

**Description**

What is genre? What genre does your game fall into? How is genre defined and different from theme? How does genre define how your game functions? What rating would you give your game?

* Digital Game Genre

Time To Complete: 1-2 Hours

### **Activity 3 - Ideate**

**Description**

Now that you have working versions of the environment and player, your goal here is to prototype the actual gameplay. By this we mean, think about your 4 good game elements (challenge, choice, change, and rules) and add the pieces needed to achieve them.

* Prototype Gameplay

Time To Complete: 5-6 Hours

### **Activity 4 - Evaluate**

**Description**

Students will self evaluate their game idea, and then peer review the idea looking for input and helpful feedback to finalize the idea before building the prototype.

Time To Complete: 1-2 Hours

### **Activity 5 - Construct a Prototype**

**Description**

It’s time for the final unit! We will start off by creating a new project and importing the starter files, then switching the game’s view to 2D. Next we will make a list of target objects for the player to click on: Three “good” objects and one “bad”. The targets will launch spinning into the air after spawning at a random position at the bottom of the map. Lastly, we will allow the player to destroy them with a click!

Objects fly into the scene and the player can click to destroy them, but nothing happens. In this lesson, we will display a score in the user interface that tracks and displays the player’s points. We will give each target object a different point value, adding or subtracting points on click. Lastly, we will add cool explosions when each target is destroyed.

We added a great score counter to the game, but there are plenty of other game-changing UI elements that we could add. In this lesson, we will create some “Game Over” text that displays when a “good” target object drops below the sensor. During game over, targets will cease to spawn and the score will be reset. Lastly, we will add a “Restart Game” button that allows the player to restart the game after they have lost.

It’s time for the final lesson! To finish our game, we will add a Menu and Title Screen of sorts. You will create your own title, and style the text to make it look nice. You will create three new buttons that set the difficulty of the game. The higher the difficulty, the faster the targets spawn!

* Clicky Mouse
* Keeping Score
* Game Over
* What’s the Difficulty?
* Whack-a-food
* Challenge 5

Time To Complete: 6-8 Hours

### **Activity 6 - Improve the Design**

**Description**

Once the prototype is built the students will now test the games. Students should play 2-3 games and provide useful feedback to the creator. Students will then take their feedback and plan how to improve their game, play test it once more and get some final feedback.

* Extras

Time To Complete: 2-3 Hours

### **Activity 7 - Share**

**Description**

Students will share their feedback, prototype and whole design process with the class in a formal presentation, or gallery walk.

Time To Complete: 1-2 Hours

### **Activity 8 - Reflect**

**Description**

Students will reflect on their design process and how they went about creating their game, what struggles they encounter and how what worked and didn’t work for them. They will submit a video of game play, along with their written reflection.

Time To Complete: 1 Hour