Game Design Document

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Project Sudoku Island

M.F.A. Game Design
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High Concept

Project Sudoku Island is a 3D puzzle game with a great focus on narrative and puzzle variation, with satisfying game design and plot points told via audio logs and environmental storytelling.

Pillars

- **Narrative** - The game's story is going to be emotionally resonant, exploring the life and romance of two people until the moment of one's passing. The player will explore the island, a shrine made to their love, and solve the puzzles to unlock new areas.
- **Puzzle Solving** - The game's main mechanic is the puzzles, which are scattered across the island. Each area of the island will contain a new twist to the sudoku game, and then later these twists will be combined into new and interesting mechanics.
- **Level Design** - The island will be a small open world that can be explored as the player wishes. New areas will be unlocked as puzzles are solved.

About the Game

- Release Date: January 2023
- Genre: Puzzle, Adventure
- Size: Indie Game
- Seasonality: Summer
- Platforms: PC (porting later)
- Prices: $9,00
- Public: 17+ fans of puzzles
- Sales Numbers: ??

OVERVIEW
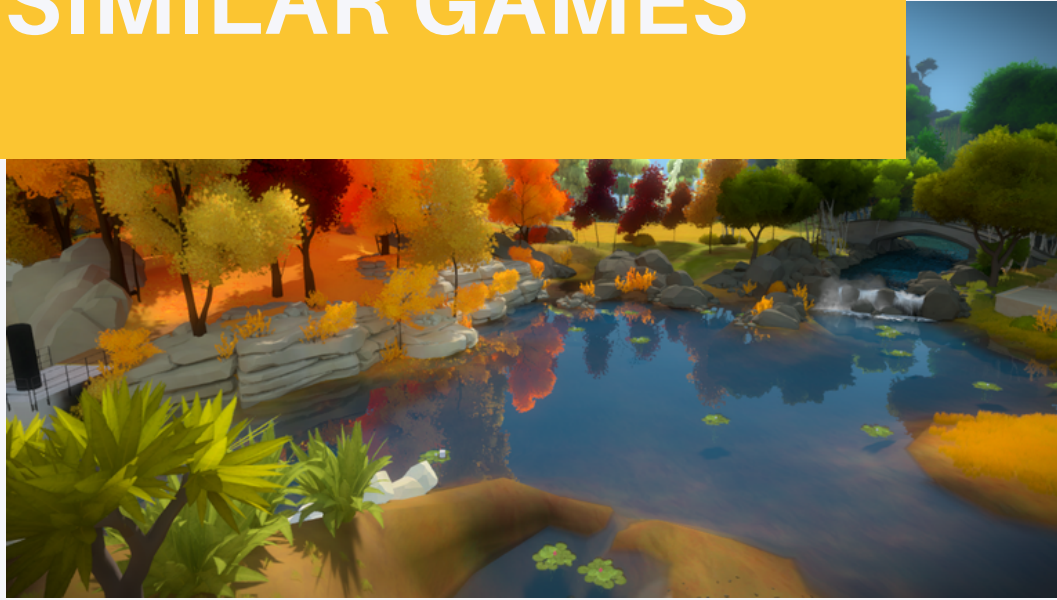
The Witness

The major inspiration to the project is in terms of systems, mechanics, level design, and art style. Here's what I'll use from the game:

- The puzzle style, using panels scattered across the island that gets harder as the level evolves.
- The level layout, meaning that each area has a different twist added to the main puzzle mechanic.
- The art style, that uses low-poly, very colorful 3D models.

Myst

This game is the inspiration to every 3D puzzle game ever made, so of course, I'm basing some features on it as well. Here's what I'll use from the game:

- The way the narrative is transmitted to the player, via audio, texts, and environmental storytelling.
- The no-tutorial approach, meaning that the tutorial is embedded into the game without hand-holding.

What Remains of Edith Finch

This game is very narrative-focused, which of course is an inspiration to me, especially the sentimental aspects. However, the main connection here is the scope:

- A 1 to 2 hour-long game with a strong focus on narrative and smart puzzle design.
- The atmosphere over anything else, with clever use of innovative gameplay mechanics to communicate the story.

Aesthetic

The game will be 3D, with simple models in a low-poly aesthetic. I want to show vibrant colors in a mix of nature and buildings that show the islands' previous history. Every interior area will have objects scattered around, showing what once happened there.

I've acquired a couple of assets at the Unity Store that I plan to use, so it is safe to say that these are the visuals I'm aiming for. It is important to note that the game will be first-person and there won't be any human models whatsoever.
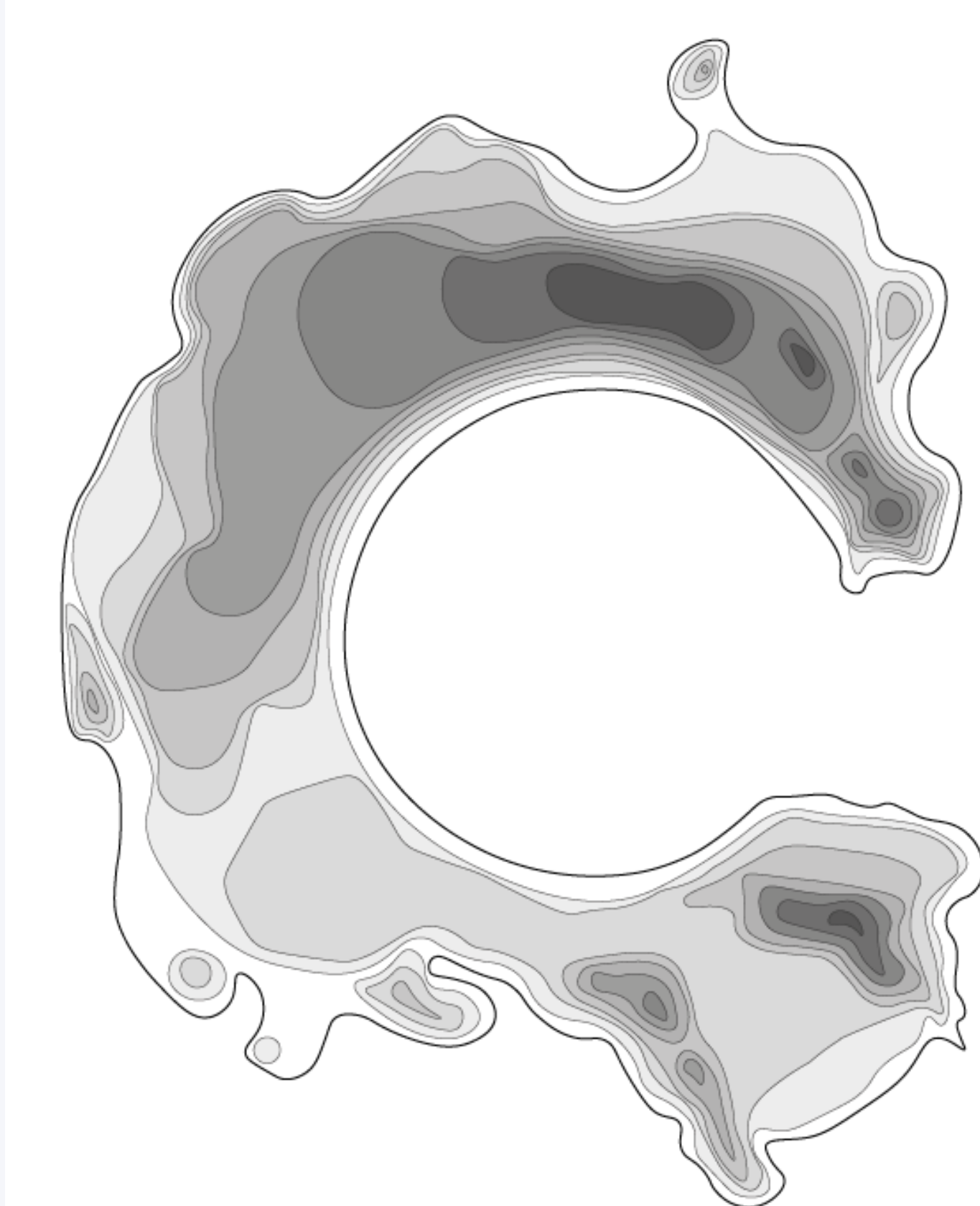
Narrative

The game's narrative will be transmitted to the player via audio logs, text (maybe), and environmental storytelling. Here's the base of what the game's story is going to be:

You (the player) are visiting your private island formerly owned by your aunt, a distant member of your family with whom you had a nice connection. She used to live on this island with her deceased partner, and after their passing, she transformed the island into a form of "shrine" to their love. Now, to understand more about your aunt, you need to solve the puzzles and listen to the audio logs.
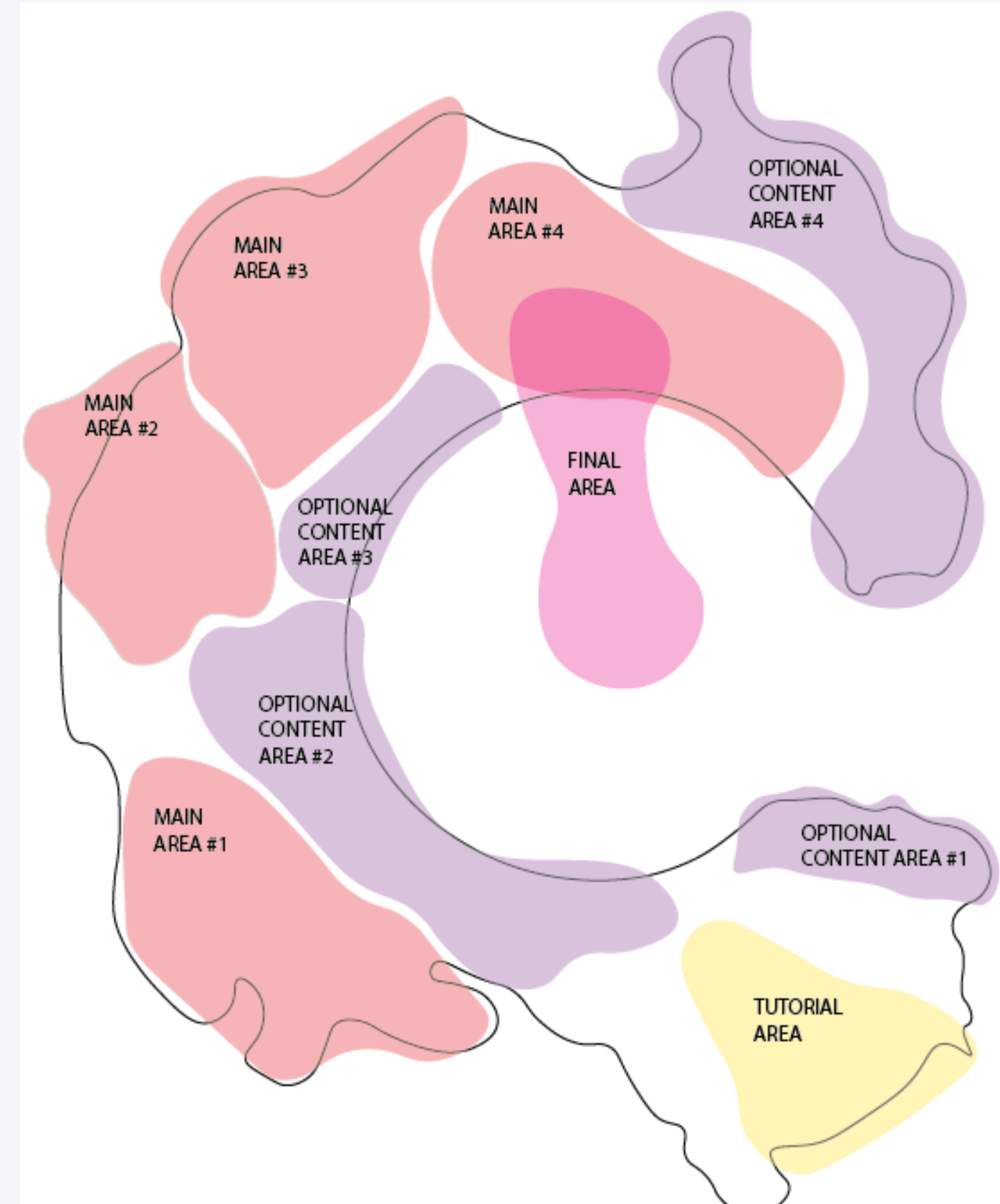

AESTHETIC & NARRATIVE
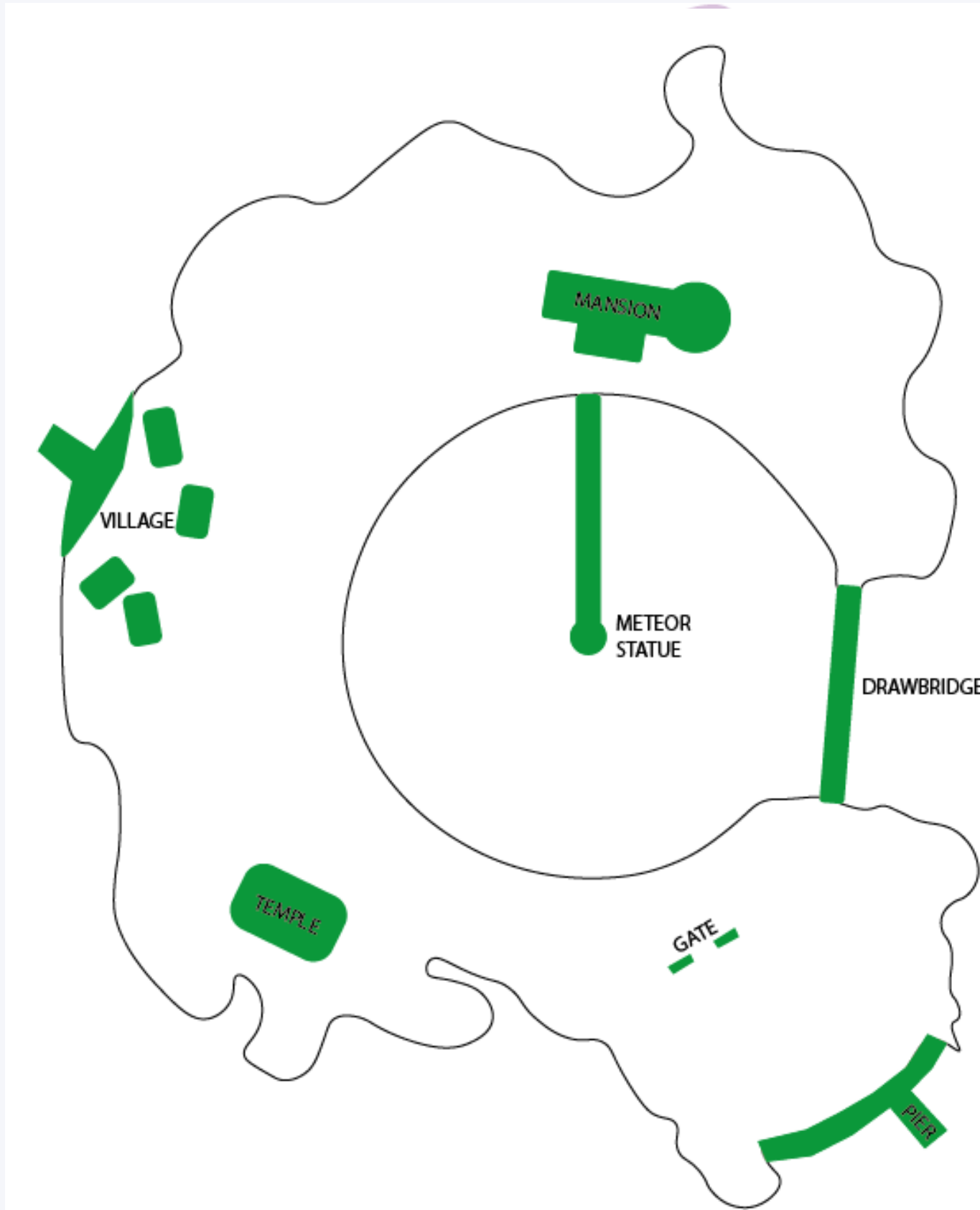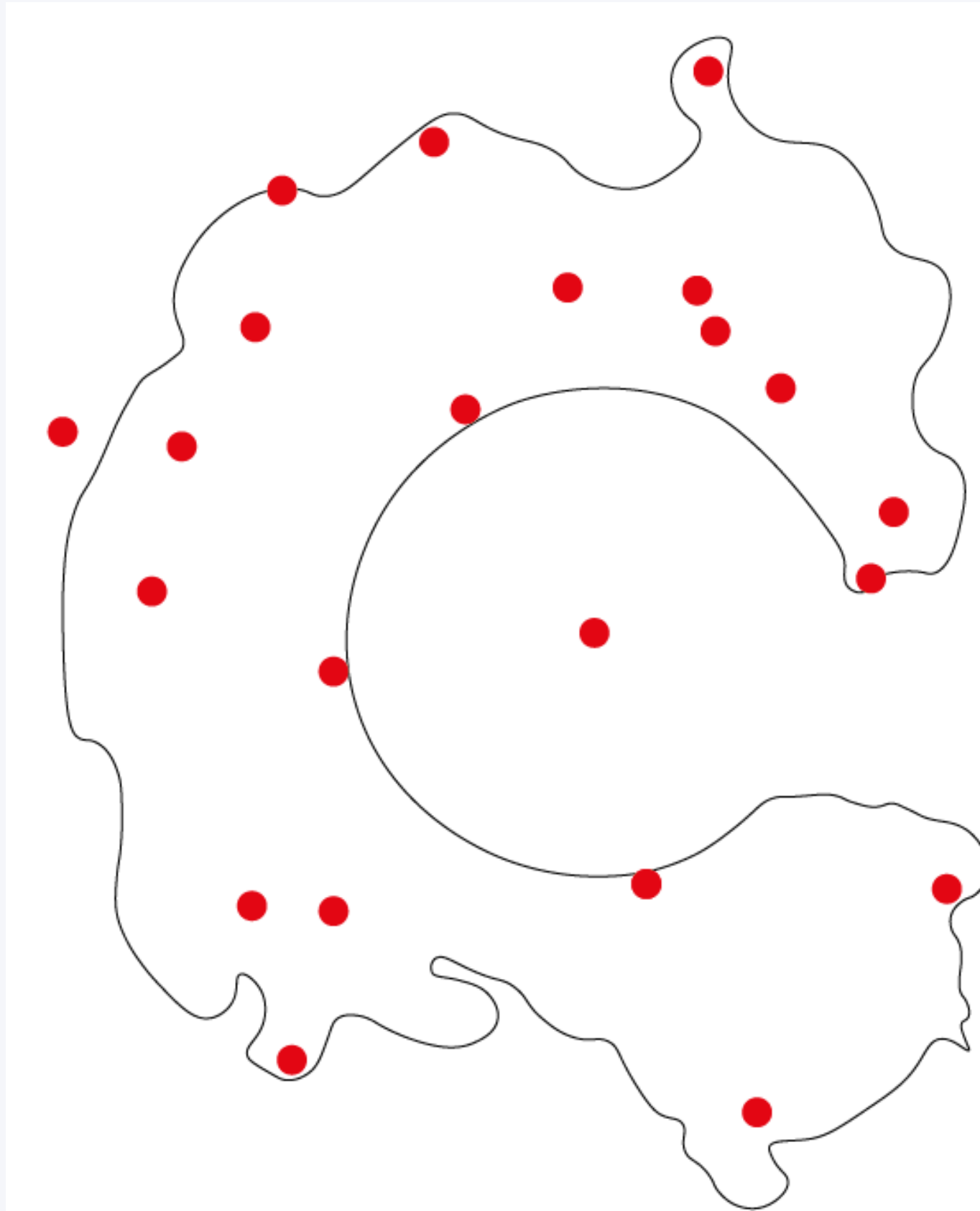
LEVEL DESIGN - ISLAND BLUEPRINT

Island Topography

MAIN AREA #3

MAIN AREA #4

OPTIONAL CONTENT AREA #4

MAIN AREA #2

OPTIONAL CONTENT AREA #3

FINAL AREA

OPTIONAL CONTENT AREA #2

MAIN AREA #1

OPTIONAL CONTENT AREA #1

TUTORIAL AREA

Puzzle Areas

LEVEL DESIGN - ISLAND BLUEPRINT

Structure Mapping

Audio Puzzles

Control system

This system dictates how the player will interact with the game's world.

Puzzle System

This system is the most important one, as it controls how the puzzles work.

Progression System

This system keeps track of player progression, unlocking new features.

Day Change System

This system controls the day changes throughout the game.

Save System

Keeps track of all game data, saving it and loading it when needed.

Achievement System

Controls the achievements available in the game.

SYSTEMS AND MECHANICS

Control System

This system dictates how the player will interact with the game's world.
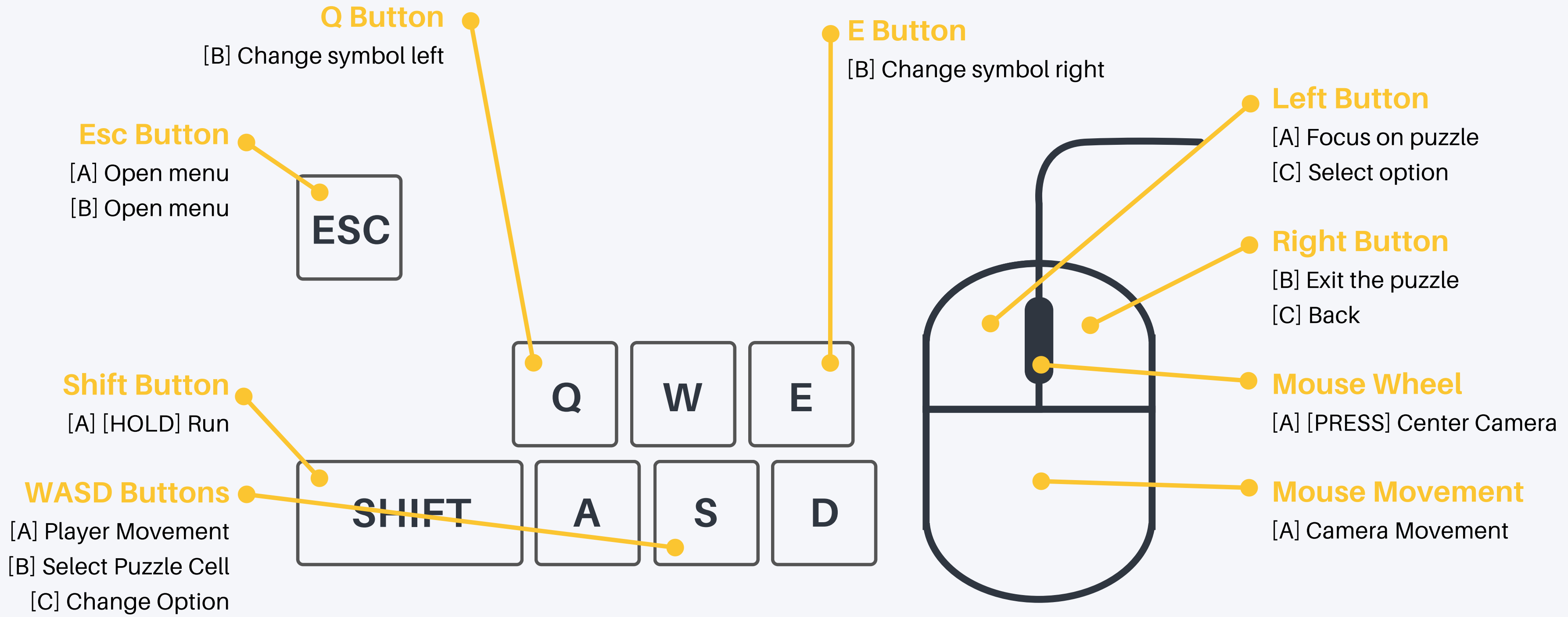
ESSENTIAL SYSTEM

CONTROL SCHEME
CONSOLES AND CONTROLLER

Left Bumper

[B] Change symbol left

Right Bumper

[A] [HOLD] Run

[B] Change symbol right

Start Button

[A] Open menu

[B] Open menu

Left Stick

[A] Player Movement

[B] Select Puzzle Cell

[C] Change Option

B Button

[B] Exit the puzzle

[C] Back

A Button

[A] Focus on puzzle

[B] Activate Puzzle

[C] Select option

Directional Pad

[B] Select Puzzle Cell

[C] Change Option

Right Stick

[A] Camera Movement

[A] [PRESS] Center Camera

[A] During Exploration   [B] During Puzzle   [C] Menu

CONTROL SCHEME
PC

Q Button
[B] Change symbol left

E Button
[B] Change symbol right

Esc Button
[A] Open menu
[B] Open menu

Left Button
[A] Focus on puzzle
[C] Select option

Right Button
[B] Exit the puzzle
[C] Back

ESC

Q W E

Shift Button
[A] [HOLD] Run

Mouse Wheel
[A] [PRESS] Center Camera

WASD Buttons
[A] Player Movement
[B] Select Puzzle Cell
[C] Change Option

SHIFT A S D

Mouse Movement
[A] Camera Movement

[A] During Exploration   [B] During Puzzle   [C] Menu

MENU NAVEGATION

Use the controller or the arrows to navigate the options on a menu. The cursor can also be used when on PC.

The selected option always has a slightly dimmed color and bigger size, indicating the selection.

There's a sound queue with every change in selection and a more unique one upon confirmation.

The options loop, meaning that if the player inputs up while on the first option, the last option will be selected.

There's always going to be a small guide of the controls on the bottom right of the screen.

sudoku island

New Game

Load Game

Options

Credits

Quit Game

Press A to Confirm
Press B to Exit

* Not final layout

WORLD NAVEGATION

The game is in first-person, meaning that the player can walk in any direction that they want by using the WASD keys or the left stick.

The camera will be at the center of the character, being controlled by the mouse or the right stick. The player character won't be visible.

PLAYER TOP DOWN VIEW

Positive X-Axis

Negative Z-Axis   Positive Z-Axis

Negative X-Axis

PLAYER SIDEWWAYS VIEW

Maximum Camera Angle

Minimum Camera Angle
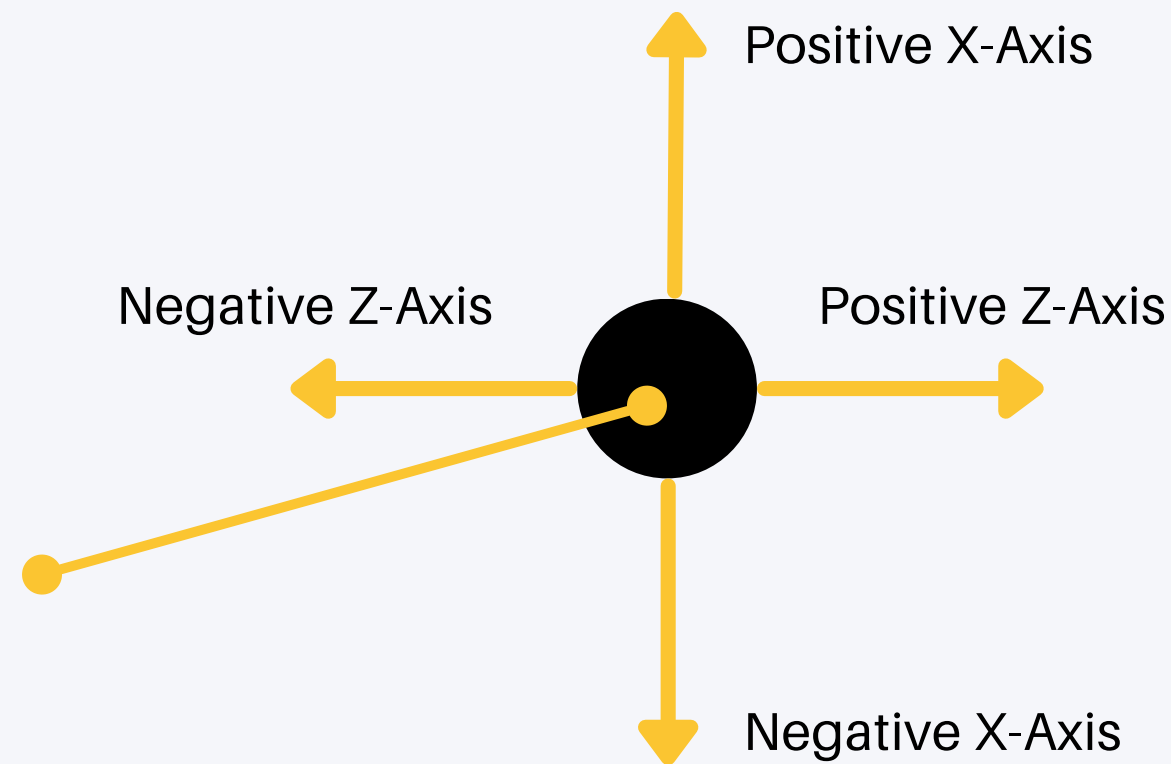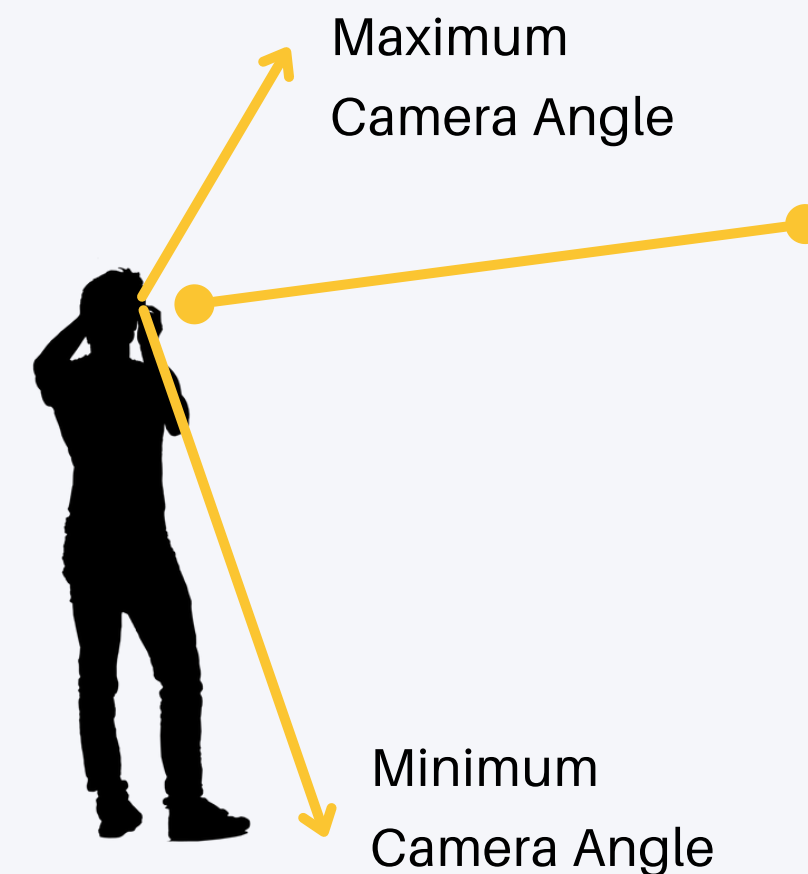
By moving the mouse or the right stick vertically, the camera's angle will be changed, allowing the player to look higher or lower than the default.

Also, by rotating the camera sideways the X-Axis rotated as well, thus rotating the camera and turning the character facing forward.

Lastly, there's going to be a hitmaker at the center of the screen (that can be turned off) that is used to select which puzzle to engage. If that hitmaker is aimed at a puzzle and the raycast distance is under what's established, the player will access the puzzle.

HUD

There are two elements that are present on the HUD of the game, but both of them will not be on screen during all moments of gameplay, instead they'll appear only on certain occasions.

HUD Element 1 - Puzzle Completion Indicators

When accessing a puzzle in an attempt to solve it, the camera will fix itself to it. At this moment a thin white outline will appear on the border of the screen, denoting that the player is in "puzzle mode." If the player exits the mode, this outline will disappear.

The objective of this outline is to indicate visually the state of the puzzle answer, meaning that if the answer is correct and the player presses the activate button, this outline will blink green, when wrong it will blink red, all accompanied by sound queues.

HUD Element 2 - Tutorials

This overlay element will appear the first time the player has to take an action. For instance, at the very start of the game, indicators will appear showing the player how to move the camera and walk around. All of these will be visual, with no text, and will be customizable in regards to the control scheme being used.

This overlay will also appear if the player accesses a puzzle, even if in late game, and does not make any input for a while. The elements will appear as a quick reminder of the controls, in case the player has forgotten them.

PUZZLE NAVEGATION

After focusing on a puzzle, the screen will lock into the selected canvas and the puzzle will be shown like this. For more in-depth explanations on the puzzle system, refer to the next section of this document.

The player controls the yellow marker, which is always on top of a space, selecting it. It can move in four directions, as illustrated, by using the directional pad or the WASD keys. The mouse can also be used on PC.
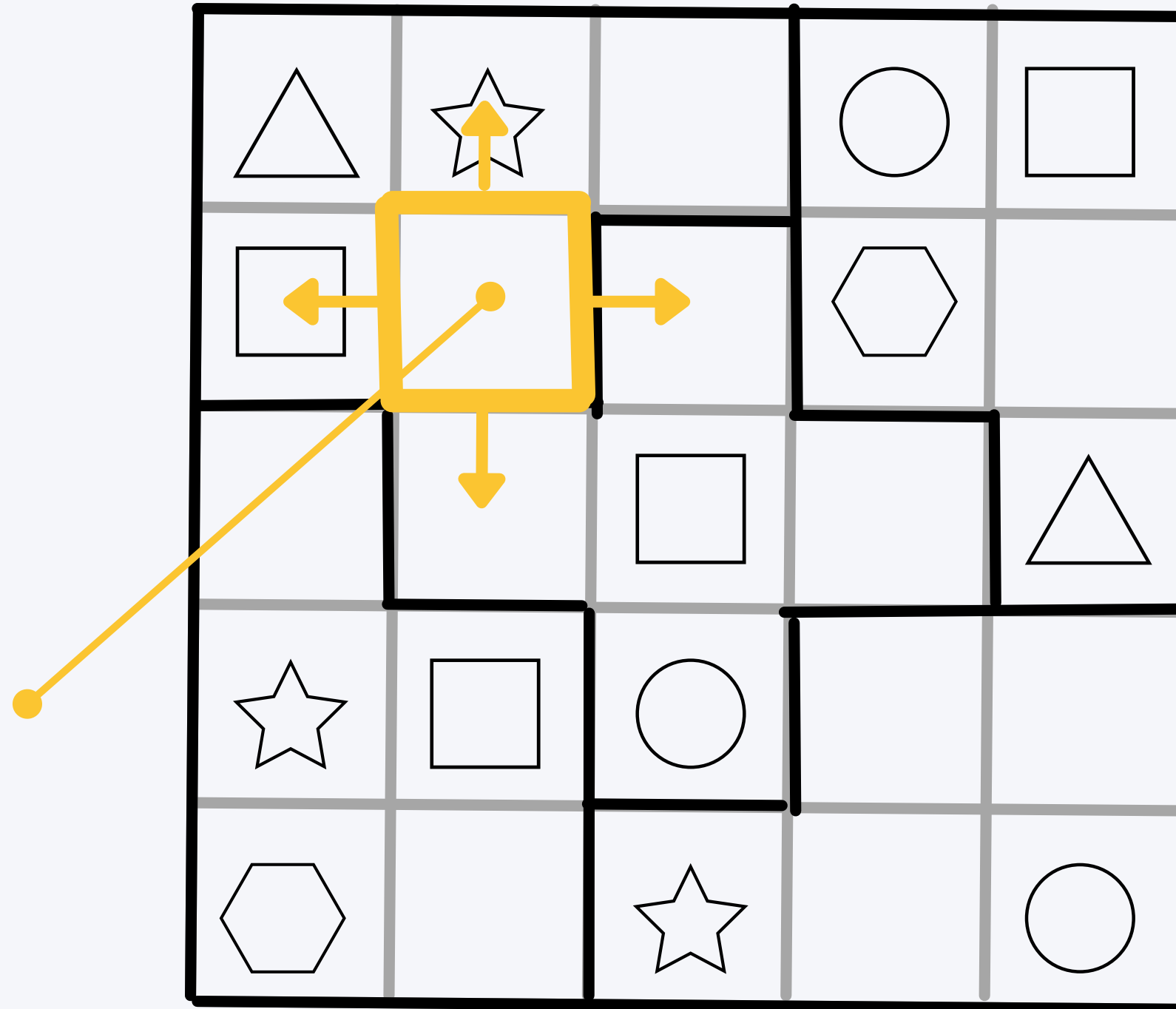
When over a free space (the forms with no filling are static), the player can press Q/E or RT/LT to cicle through the available options.

When done, the puzzle will automatically eject the player and the action link to its solving will be executed.

The player can exit the puzzle at any time by pressing Esc or the B Button.

CHANGE IN CONTROLLER

This game has the luxury of not needing to actually pause the timescale when on a menu or changing controllers.

On PC, if the game starts and there's a controller already being detected, the game will load with that controller's layout and input. Otherwise, the keyboard and mouse will be default.

If a controller is plugged in while playing, a screen will appear urging the player to select which controller scheme he would like to use.

Start Application → Check for controllers → Sets controller → Starts game

During game → Notices new controller → Asks the player which to use → Sets controller → Continues game
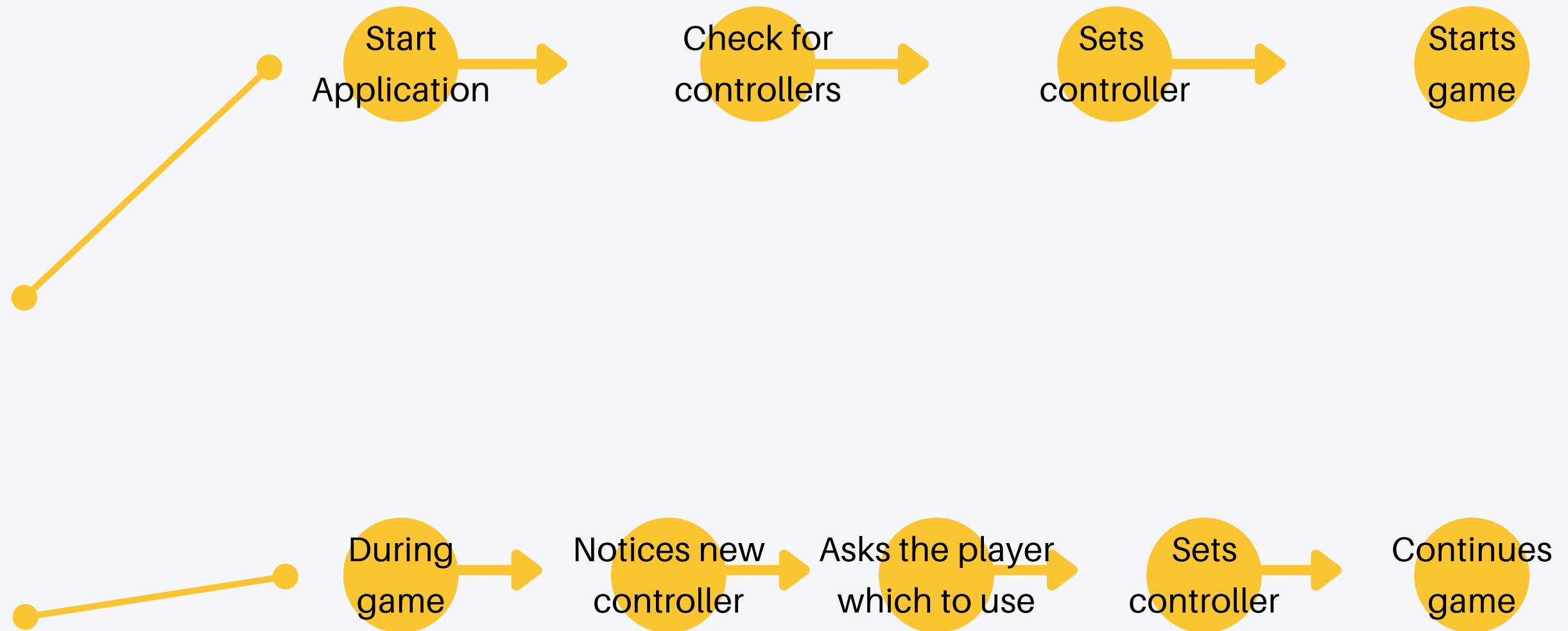
Puzzle System

This system is the most important one, as it controls how the puzzles work.

ESSENTIAL SYSTEM

PUZZLE STRUCTURE

The 3D model contains the following:

- A frame for the panel. It has a color and a light emitter, which lights up when the puzzle is complete.
- A canvas object in which the puzzle is displayed.
- A entry and exit cable might be present depending on the order the puzzles are being completed. The cables light up as well.
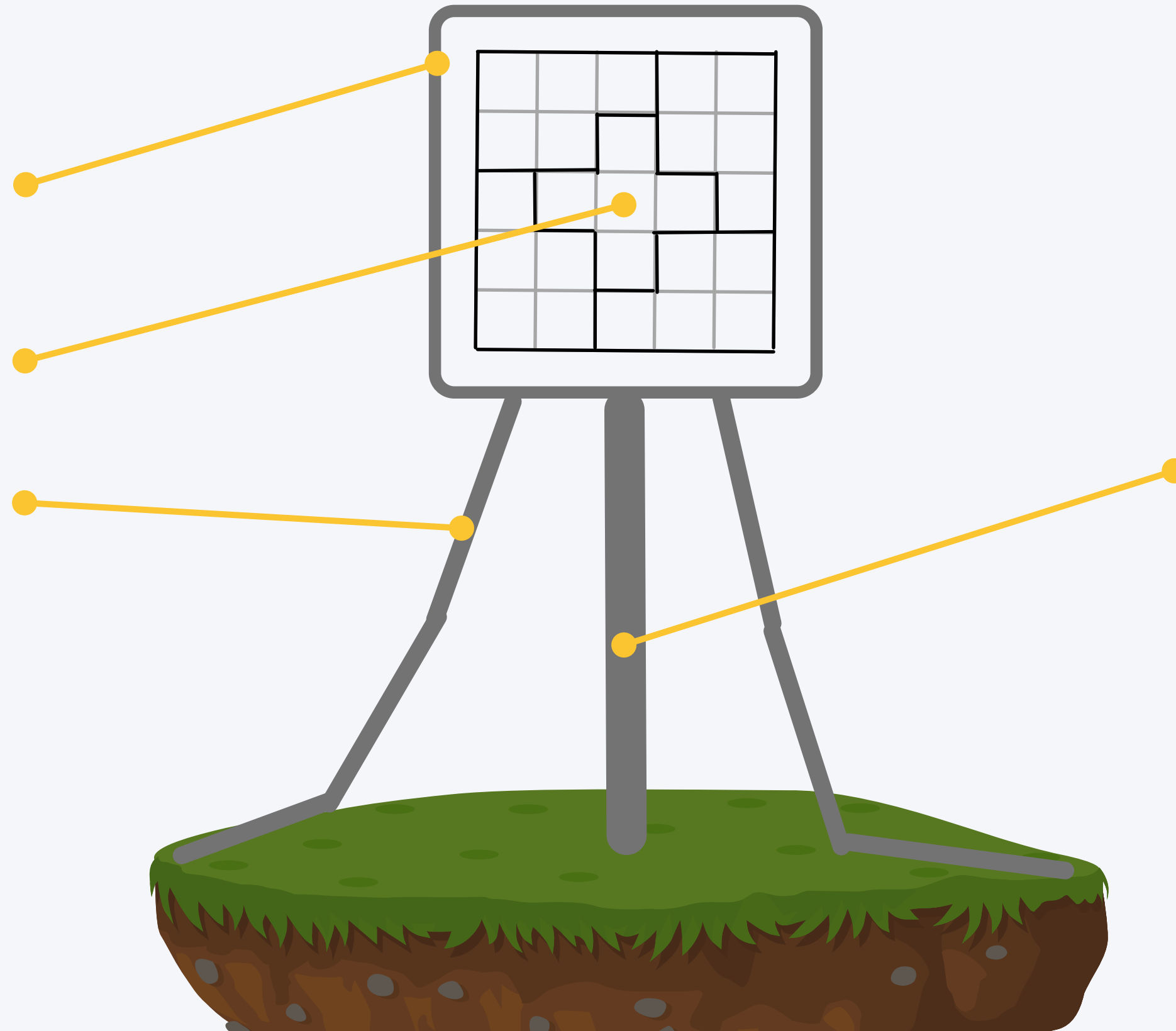
The puzzles can have an opaque background, but some puzzles require a clear background as they use environmental references in order to be completed.

Also, not all puzzles will be standing like this. Some will be on walls, some will be on the ground, etc. Depending on context.

INTERACTION

The player will interact with the puzzles with an specific control scheme. In order to interact with a puzzle, the player must:

1. Walk to a puzzle, aim the small hit-marker, or the center of the screen, at it, and click A or Left Click.
   a. If the player is within an specific distance from the puzzle and the raycast hits, the puzzle will be entered.
2. The camera will have an specific position for each puzzle. The camera won't be able to be moved during this time.
   a. A white frame will appear on the edge of the screen during puzzle time.
      i. If solved, the frame will turn to a light green.

Also, the puzzle won't appear unless the player gets close to it. So the 3D object will show a blank canvas. at a certain distance.
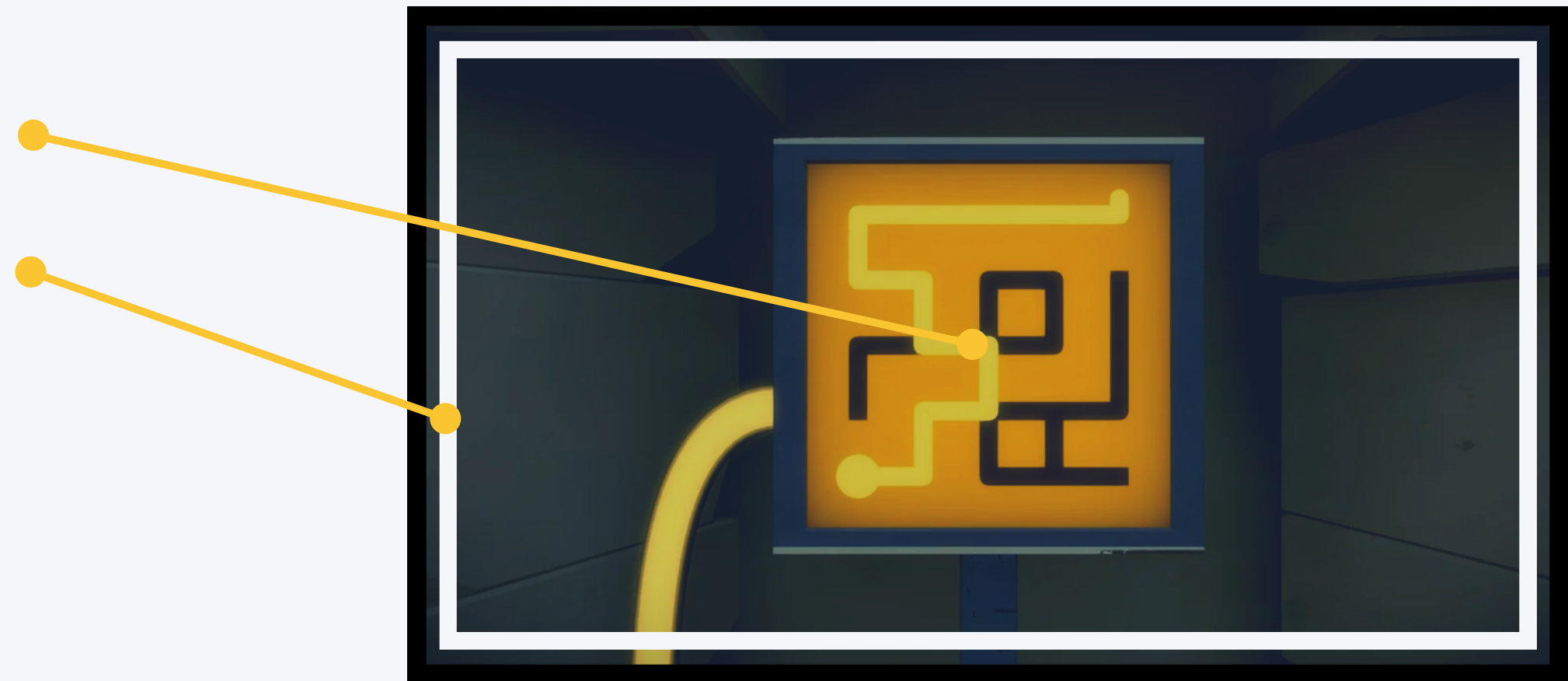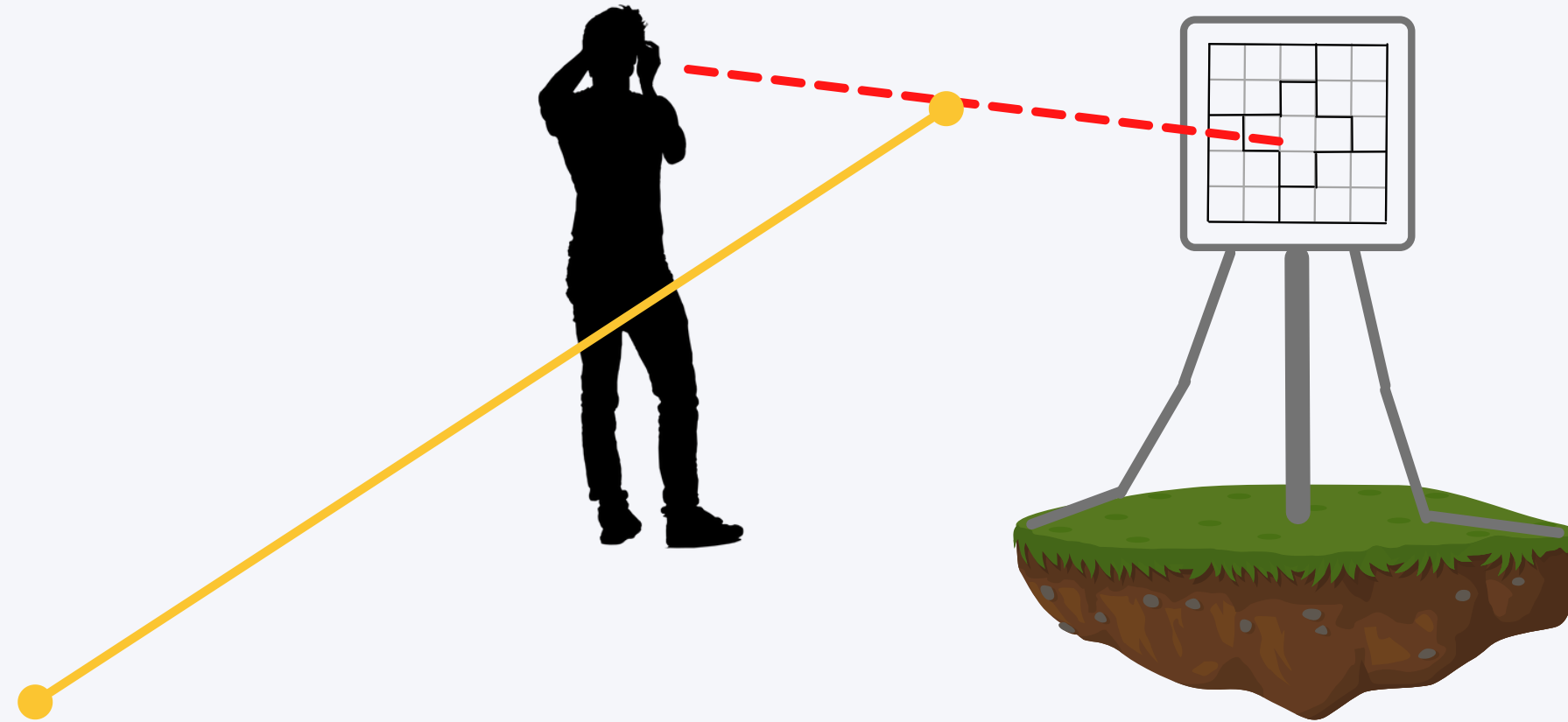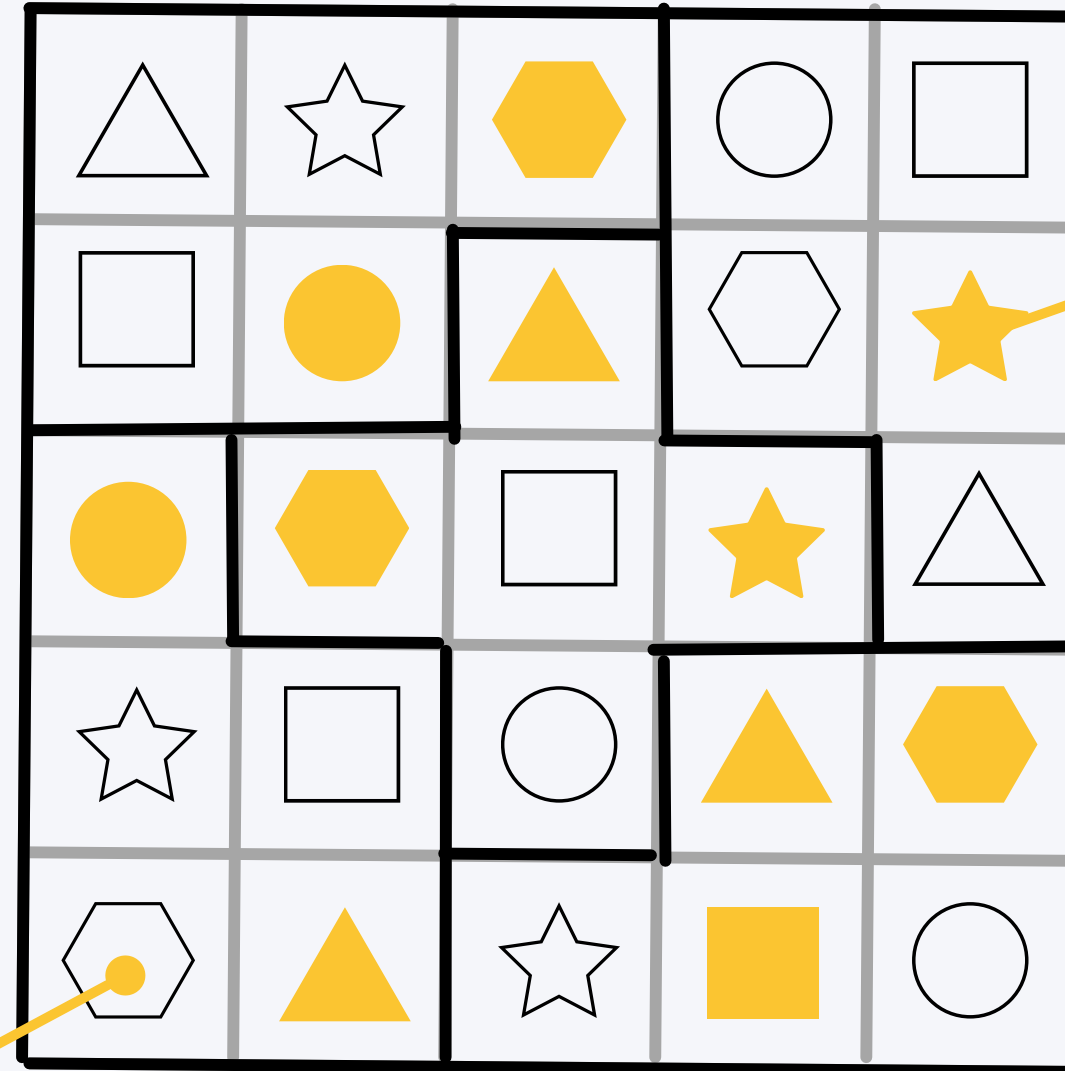
FUNCTIONALITY

Just like regular Sodoku, the objective of the puzzles is to fill them up with symbols while respecting that:

- Each area will contain only one of each symbol but must contain all.
- Each line and column must also not repeat any symbols, but contain all.

Those are the only two rules, with it we can build a number of variations of this puzzle.

The Sudoku board comes with a couple of shapes already filled in, to get the player started. In the game, these will be outlined only and cannot be changed by the player.

The spaces in which the player can interact will begin blank, but as the player circles through them, new shapes will appear. These shapes will ave filling, as to differentiate from the static ones.
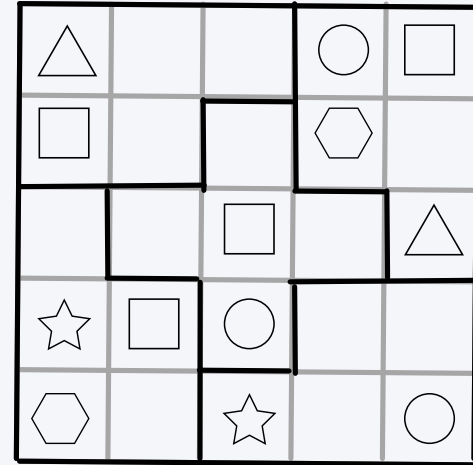
This is all for the puzzle functionality. You can review how the player interacts with the puzzles on the puzzle navigation slide.
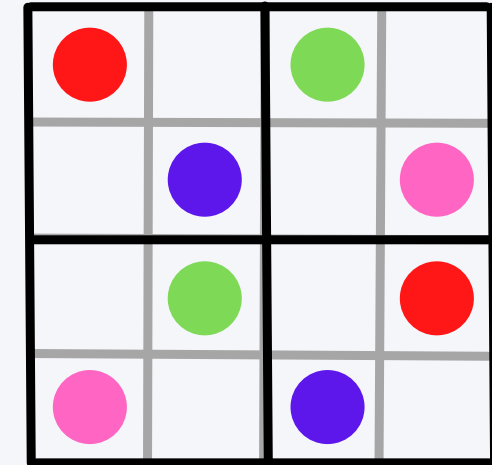
VARIATIONS OF PUZZLES
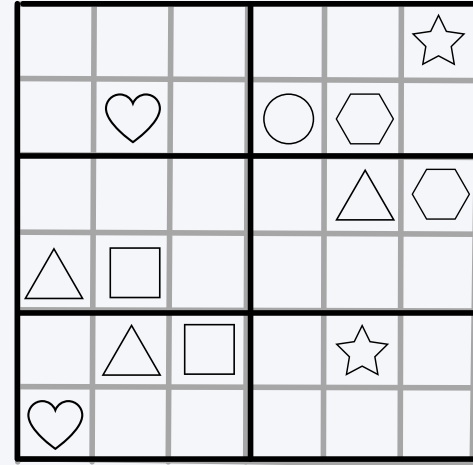
Normal Sudoku

The first variation is the normal Sudoku. Straight spaces with an even number of lines and columns.
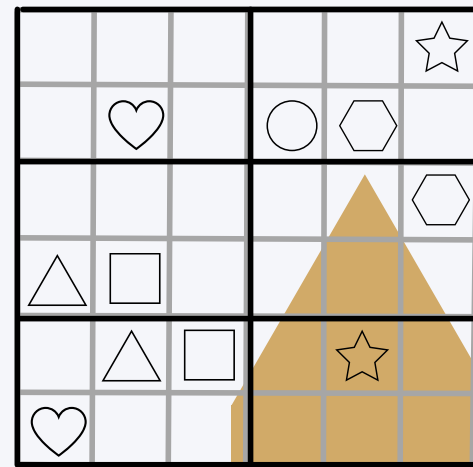
Uneven Sudoku

This variation adds non-square spaces to the Sudoku board. These can be in any shape, as long as they have the same number of spaces as the others.
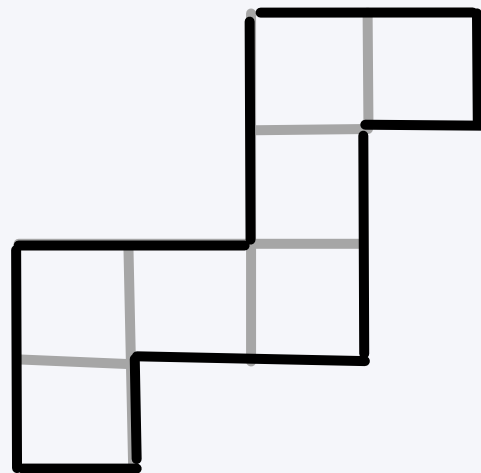
Color Sudoku

This confuses the player by using the same shape, but different colors to differentiate between the shapes.

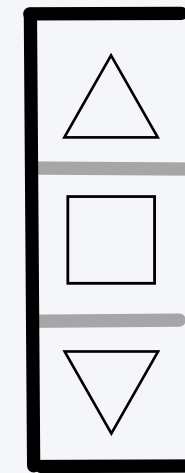## Environment Sudoku

This variation's board has a clear background, and the player must use the environment for clues that are missing to complete it.

Path Sudoku

Similar to the environment Sudoku, in this version the player will have to identify an nierby environment element and emulate it on the board.

Level Design Sudoku

These serve as switches to change something on the level, like a bridge. They usually have multiple answers and each one does something.

PUZZLE EDITOR TOOL

HOW DOES THE PUZZLE EDITOR TOOL WORKS?

The puzzle editor tools has a clean interface that allows for the quick creation of puzzle pannels, exporting a scriptable object with a string code, which then the puzzle constructor script interprets and builds it in the panel.

- The puzzle ID, for identification only;
- The total number of rows;
- The total number of columns;
- The total number of areas;
- The total number of solutions;
- If colors matter in this puzzle;
- List with all puzzle cells;
  - Each of the elements on this list is a cell. This list is populated after clicking the Create Cells button.
  - The puzzle will not be exported until all Completed checkbox in all cells have been ticked.

The right side of the editor shows the information on each cell. Fill up which cell you want to edit and which solution on that cell and click on Load Cell Info.

- Which is the cell area;
- The symbol on this cell;
- If the player can interact with it or not;
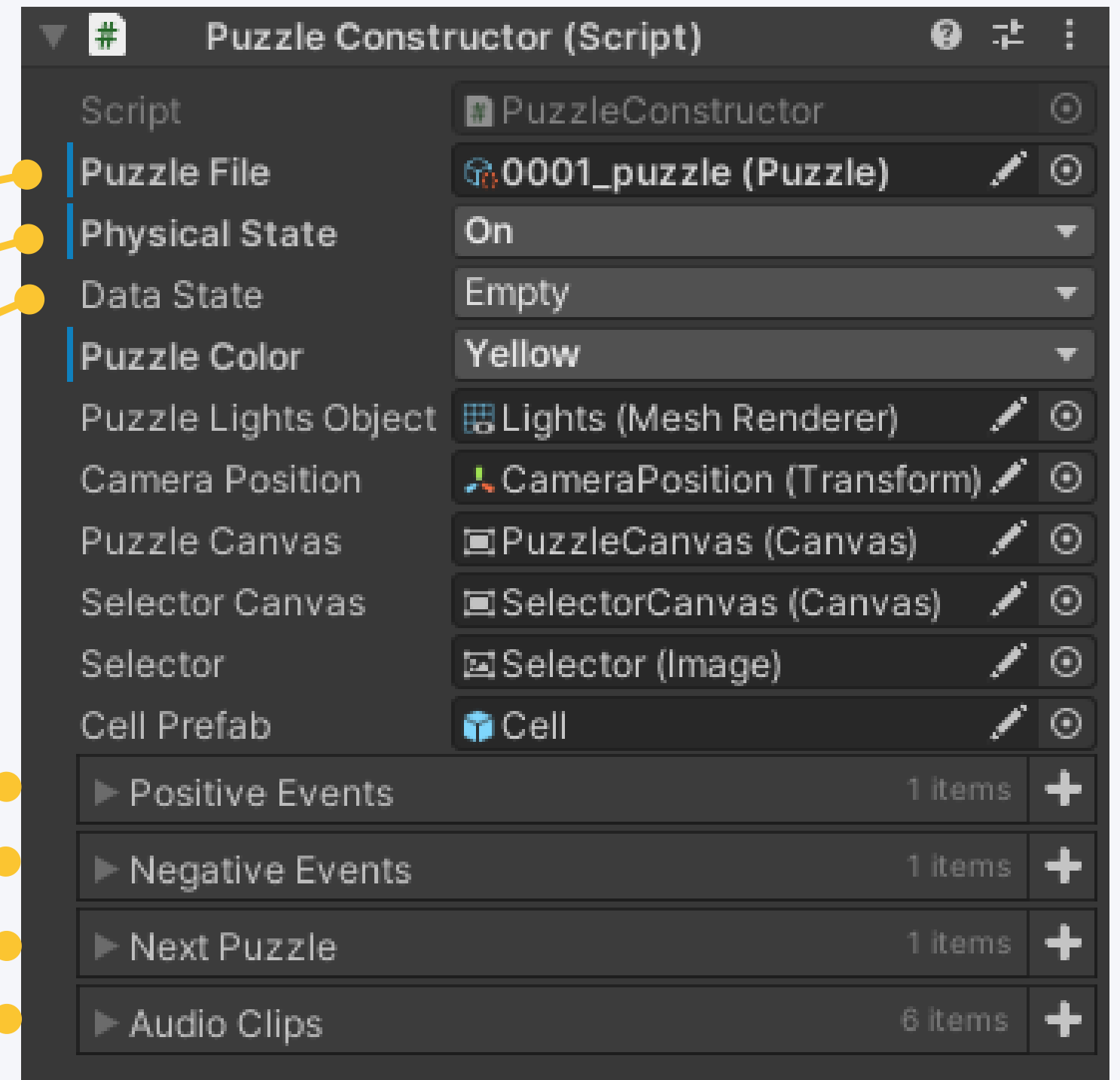- If the cell is invisible;
- The color of the cell.

After filling the information in all cells and all solutions, press the Export Puzzle button and check the project directory. Insert the scriptable object in the puzzle gameObject and it should be working.

PUZZLE INSPECTOR ANATOMY

HOW DOES THE PUZZLE CONSTRUCTOR
WORK?

The puzzle constructor on the puzzle gameObject has the current fields:

- The puzzle file, exported by the editor;
- The physical state, dictating if the puzzle is on, off, or lit;
- The data state, indicating if the save system needs to load player info into it;
- The light color;
- References that should be set on the prefab;
- List of events if the answer is correct;
- List of events if the answer is wrong;
- Which puzzle is activated after this one;
- The audioclips to play on interaction.

Puzzle Constructor (Script)

Script	PuzzleConstructor
Puzzle File	0001_puzzle (Puzzle)
Physical State	On
Data State	Empty
Puzzle Color	Yellow
Puzzle Lights Object	Lights (Mesh Renderer)
Camera Position	CameraPosition (Transform)
Puzzle Canvas	PuzzleCanvas (Canvas)
Selector Canvas	SelectorCanvas (Canvas)
Selector	Selector (Image)
Cell Prefab	Cell
▶ Positive Events	1 items
▶ Negative Events	1 items
▶ Next Puzzle	1 items
▶ Audio Clips	6 items

Progression System

This system keeps track of player progression, unlocking new features.

ESSENTIAL SYSTEM

WHAT KIND OF PROGRESSION SYSTEM DOES THIS GAME HAVE?

Sudoku Island does not contain any kind of ability unlocking or skill tree. Everything system and gameplay-wise that the player needs to solve every puzzle on the island are available to them from the very start, as an example of directed gameplay.

The only thing that controls progression is the environment and time passage. The island is subdivided into nine areas, with a couple of gates blocking the player's progression. The areas in the game are:

1. **Fort** - **Tutorial Area** (**Main**)- Responsible for teaching the player the basics of the game, like how to interact with the panels and how the panels link to one another. There's a gate in this area that only unlocks when the player figures out the solutions to the puzzles in the area. No time passes when the area is completed. Solving this area opens up Temple, Village, Forest, Mountainside, and Cliffs.

2. **Temple** - **Environment Puzzle** (**Main**) - Responsible for teaching the player how to interact with puzzles that change the environment in some way. For instance, the majority of this puzzle takes place inside a temple whose layout changes upon some puzzle solving. After completing this area, time advances 4 hours and one lock on the Mansion area unlocks.

3. **Village** - **Color Puzzle** (**Main**) - Responsible for teaching the player how to interact with same-symbol, different color puzzles. This is a new mechanic that will appear for the first time in this area. After competing in this area, time advances 4 hours and one lock on the Mansion area unlocks.

4. **Forest** - **Environment Copying Puzzle** (**Main**) - Responsible for teaching the player how to interact with environment copying puzzles. This is a new mechanic that will appear for the first time in this area. After completing this area, time advances 4 hours and one lock on the Mansion area unlocks.

5. **Mansion** - **Combined Puzzles** (**Main**) - The mansion is the final stage of the game and it only unlocks after completing Temple, Village, and Forest. The puzzles in this area combine all previous mechanics present in the game for a final challenge. After completing this area, time advances 4 hours and the Meteor Site area is unlocked.

6. **Meteor Site** - **No Puzzles** (**Main**) - This area is just a stretch where the player will hear recordings and get closure on the narrative. No puzzles (hard ones) are going to be present. After completing this area, the credits roll, and time rolls back to early morning. The player can then choose to continue playing to get the achievements or restart the game.

7. **Mountainside** - **Hollowed Puzzles** (**Optional**) - This area is optional, as the player can just walk up the mountain without solving any of the puzzles. Nothing unlocks upon solving except for narrative elements.

8. **Cliffs** - **Hollowed Puzzles** (**Optional**)- This area is optional, as the player can just choose not to go down the cliffs. After completing this area, the bridge to the Bay area opens.

9. **Bay** - **Timed Puzzles** (**Optional**) - This area is a challenge, as the player will have to solve all the puzzles within a timeframe. After completing this area, the gate to the tutorial area opens, looping a path across the island.
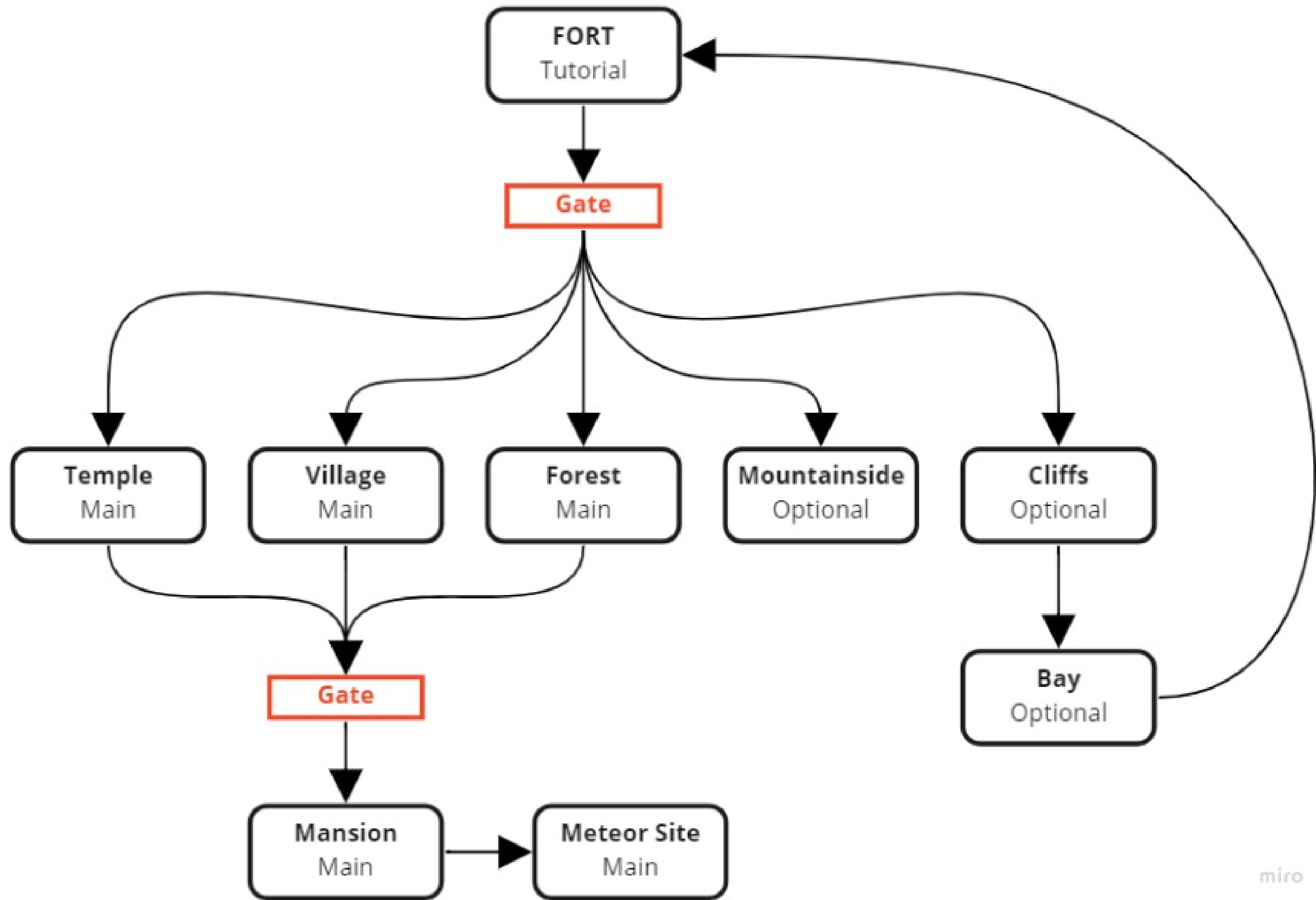
Day Change System

This system controls the day changes throughout the game.
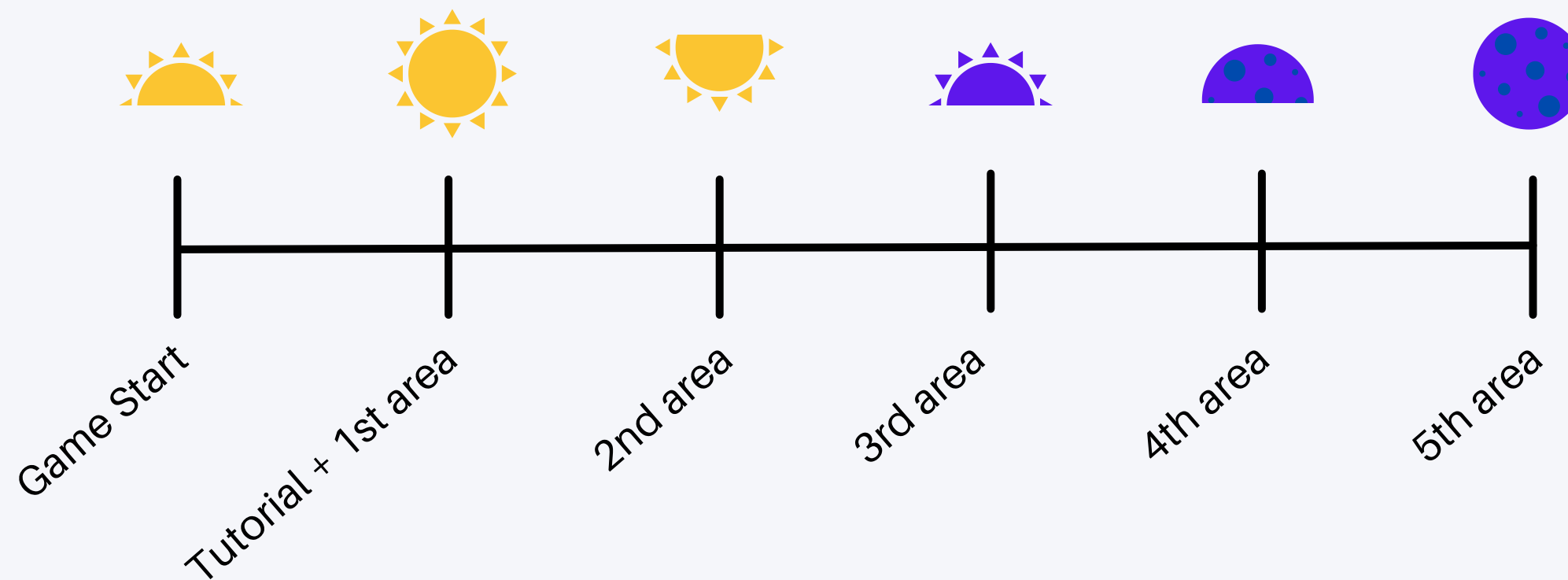
NON-ESSENTIAL SYSTEM

HOW DOES THE DAY CHANGE WORK?

The game is divided into seven different sections. The protagonist will arrive at the island in the morning, but as the day goes by the island day will pass and the sun will set. This will be achieved in accordance with the progression system, as each one of the main gameplay areas will advance the time.

The elements of the game should be highlighted in bright lights as the day comes to an end so that the player is not left in the dark and can easily identify the puzzles in the dark.

Also, after the game ends, the day comes back to the first state and stays like that for the rest of the gameplay.

Game Start

Tutorial + 1st area

2nd area

3rd area

4th area

5th area

Save System

Keeps track of all game data, saving it and loading it when needed.

**ESSENTIAL SYSTEM**

SAVE SYSTEM

The game will only have one save slot available since it is supposed to be a quick (2-4 hour) experience. There's not going to be the main menu screen where the player must click on "load game" or "continue". Instead, when initialized, the application will search for a save file and load it automatically.

The first time the player opens the game, the system will check for the save file which won't be there, and automatically start the game with the default save settings. Meaning, that the game will start with the initial IGC giving narrative context to the game.

In the case of puzzles, there is a list that contains all the puzzles in the game as a reference to the save system. But more importantly, there's a list of starter puzzles, meaning that every puzzle in this list will be on and interactable in an empty game file so that the player can have something to interact with on a first playthrough.
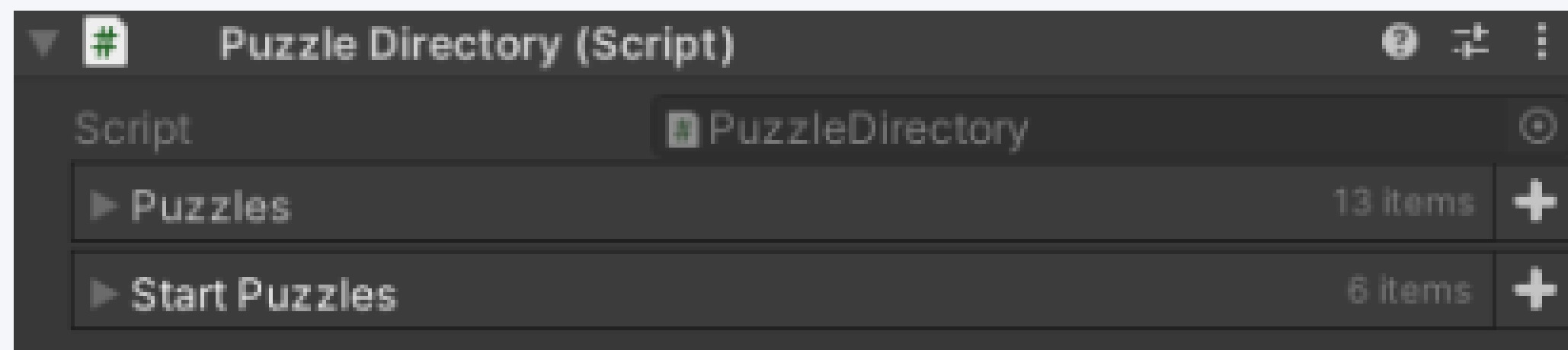
SAVE SYSTEM

The only way to interact with the save files is through the main menu. There's an option to "start a new game," which will delete the current file permanently from the system and initiate the game from scratch as if were being initiated the very first time.

If the player chooses to start a new game, the only information that will be transferred between saves are the player settings.

WHEN THE GAME IS GOING TO SAVE?

The information will be serialized through a binary formatter and stored in a binary file in a constant path in the user's system. This serialization + save will happen every time the player exits the game correctly through the pause menu and every time they solve a puzzle. Since the serialization is a fast and code-based system, it won't be a problem to save often, and it will ensure that the player has always a recent save available.

WHAT INFORMATION IS GOING TO BE SAVED?

A lot of information needs to be saved and to make it easier to organize, I separated them into five categories:

- **Player Data**
  - World Position
    - Player Position
    - Player Rotation
- **Puzzle Data**
  - For each puzzle in the game
    - The physical state of the puzzle (Off, On, Lit)

SAVE SYSTEM

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- **Player Data**
  - World Position
    - Player Position
    - Player Rotation
- **Puzzle Data**
  - For each puzzle in the game
    - The physical state of the puzzle (Off, On, Lit)
    - The data state of the puzzle (solved or not solved)
      - If solved, the answer string created after player interaction
- **Interaction Data**
  - For every object in the world that can be interacted with, if it has been or not. Examples:
    - Bridges
    - Doors
    - Documents
    - Audio logs
    - One time VFX
- **Settings Data**
  - Player Character
    - Camera Sensitivity
    - Always Run On/Off
  - Text & UI
    - Text Language
    - Subtitles On/Off
    - Text Size
    - Text Background
    - Stylized Font On/Off
    - Tutorial Overlay On/Off/Timed
    - Time Between Sentences
  - Control Scheme
    - Controller Type
  - Resolution and Graphics
    - Full Screen On/Off
    - Aspect Ratio
    - Resolution
  - Audio and SFX
    - Music Volume
    - SFX Volume
    - Ambiance Volume
    - Voice Volume
    - Stereo/Mono
  - Rendering
    - Field of View
- **Achievement Data**
  - For every achievement (to be detailed next week), the current progress towards completing it needs to be saved.
  - Also, if the achievement has already been completed or not.

Achievement System

ESSENTIAL SYSTEM

The achievements that are available in the game.

ACHIEVEMENT SYSTEM

The game will have an Achievement System that will check if an achievement has been achieved every time an action takes place in the game (a puzzle is solved, a note is picked up, a gate is open, etc). It would be best to have a C# script that calls for a check on each of the actions I want the system to check.

The achievements won't appear inside the game, only on the platform of choice. For instance, the game will be released first on Steam, so I'll use the Steam Achievement System.

This means, however, that the achievement information needs to be serialized and saved, as well as the integration with Steam should work correctly.

Achievement Name	Platform	Visibility	Achievement Description	Value	How to get it
Temple	PC, Xbox, PS	Hidden	Activate the final puzzle at the Temple.	75G, Silver	Reach and solve the last puzzle in the temple area.
Village	PC, Xbox, PS	Hidden	Activate the final puzzle at the Village.	75G, Silver	Reach and solve the last puzzle in the village area.
Forest	PC, Xbox, PS	Hidden	Activate the final puzzle at the Forest.	75G, Silver	Reach and solve the last puzzle in the forest area.
Mansion	PC, Xbox, PS	Hidden	Activate the final puzzle at the Mansion.	75G, Silver	Reach and solve the last puzzle in the mansion area.
Crater	PC, Xbox, PS	Hidden	Activate the final puzzle at the crater area and complete the game.	100G, Gold	Reach and solve the last puzzle in the crater area.
Come full circle	PC, Xbox, PS	Hidden	Open the shortcut to the start of the game.	75G, Silver	Reach and solve the last puzzle in the beachside area.
Hints on the landscape	PC, Xbox, PS	Hidden	Activate the final puzzle at the mountainside area.	75G, Silver	Reach and solve the last puzzle in the mountainside area.
Drawing bridges	PC, Xbox, PS	Hidden	Draw the bridge at the end of the rockslide area.	75G, Silver	Reach and solve the last puzzle in the rockslide area.
Listener	PC, Xbox, PS	Hidden	Find and listen to every audio log on the island.	100G, Gold	Find all 22 audio logs and listen to them to the end.
Puzzle aficionado	PC, Xbox, PS	Hidden	Find and solve every puzzle tablet on the island.	100G, Gold	Find all puzzle tablets and solve them each at least once.
Reliquary	PS	Public	Get every trophy.	Platinum	Get every other trophy on this list.

Narrative

What is the story that is going to be told in the game.

NARRATIVE OVERVIEW

Sudoku Island will have a linear story with no player agency, with audio logs, ephemera, and environmental storytelling laid down for the player to figure out happenings from the past. There will be no narration and the player character will not speak at any moment, she is only an empty vessel for the player to explore the world, although they will have a connection to the main character. The synopsis is:

You (the player) are visiting your private island formerly owned by your aunt, a distant member of your family with whom you had a nice connection. She used to live on this island with her deceased partner, and after their passing, she transformed the island into a form of "shrine" to their love. Now, to understand more about your aunt, you need to solve the puzzles and listen to the audio logs.

Backstory Device #1 - Audio logs - Scattered around the island will be puzzles that contain a megaphone on top. These are not connected to another puzzle, and upon solving will play a recording of the Aunt, telling a bit more about her past.

Backstory Device #2 - Ephemera - Notes, pictures, and other writings will also be scattered around the island. The player will be able to read these, but the controlled character will not react to this, similar to *Gone Home*.

Backstory Device #3 - Environmental Storytelling - The island is owned by the recently deceased Aunt, so her whole life took place in this area. Thus, paintings, room arrangements, garden locations, and puzzle locations. All of this will help paint a picture of how this character used to think and behave.