Project Report
Game Engine Basic

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- Index -

1. Game Information

1-0. Background

- A lightweight game needed to be developed within a limited time by a solo developer.
- To achieve this, the game was designed in a board game format with short playtime and simple rules.
- The concept was devised where players visit various locations, gather evidence, and listen to suspects' statements, allowing the user to deduce the culprit independently. Hence, this game was created.

1-1. Information

Explore locations, gather evidence, and identify the murderer of a murder case before anyone else!	
Game Title	Hollow Truths
Game Overview	Genre : Detective
	Target Audience : Ages 10–30, familiar with deduction-based board games and fond of logical reasoning.
	Platform : Window
	Game Engine : Unity
Controls	Mouse Click : Interact with objects
	Arrow Keys : Move (Up/Down/Left/Right)
	E Key : Interact
Brief Story	
A wealthy man is strangled during a dinner party he hosted. The police, unable to identify the culprit among the 15 suspects, call in private detectives, including the user. As a detective, you must outshine your competitors by gathering evidence quickly and uncovering the culprit, motive, and murder weapon.	

1-2. Story

[Opening Story]

The atmosphere in the police station was thick with tension as Detective Marcus Greene stood by the window, staring out at the city below. The place was crowded with detectives, all eager to claim the spotlight. They had heard the rumors, seen the headlines, and now they were all here—ready to solve the case of the mysterious murder at the Porterfield estate. Everyone wanted their piece of fame, but Greene knew only one detective could claim the truth first.

"Look at this mess, Greene," Chief Inspector Taylor muttered as he entered the room. "The whole city's buzzing with detectives. But none of them seem to understand the magnitude of what we're dealing with here."

Greene turned, giving the chief a sharp look. "You don't have to tell me. But someone needs to end this madness quickly."

Taylor shook his head. "It's a disaster, Greene. The victim, Roderick Porterfield, was killed during his own dinner party. A party that featured an impromptu piano performance by Viktor Suévitch. The rain started pouring before the evening's events, and the air was heavy with tension. But by the end of the night, the weather cleared up and the house became a zoo. People were walking in and out, tipsy and careless. At the end of the concert, no one even noticed that Porterfield had disappeared. By the time they realized it, the house was nearly empty, save for a handful of guests. The discovery of the body came after a search of the estate, and it wasn't pretty. Found in an old barn, half-hidden in the shadows. Too late for us to do anything but confirm his death."

Greene let out a slow breath, taking in the details. "Did anyone see anything unusual, Chief? Any clues left behind?"

Taylor grunted, pacing. "It's a mess, Marcus. Some say the pianist, Suévitch, was drunk, but no one can confirm it. His performance didn't impress anyone, apparently. The guests say he was off, not himself. But what does that have to do with murder? There was also a revolver found with the victim, along with a ticket for a ship leaving for Amsterdam. And neither had been used. The whole thing stinks. But the biggest problem is that we have no witnesses who saw anything suspicious. Everyone's just pointing fingers at each other."

Greene nodded thoughtfully. "So, it's up to us, then. If we don't solve this before the others, they'll take credit, and we'll be left with nothing."

Taylor nodded. "Exactly. And don't forget—everyone's a suspect. From the wife to the brother, to the guests. No one's above suspicion, not even Suévitch."

Greene's eyes sharpened with resolve. He knew the stakes were higher than just solving a case. This was about reputation, and the clock was ticking.

"Let's get to work, Chief," he said, moving toward the door.

Taylor followed him. "Be careful, Greene. This case might be more complicated than we think."

As they left the station, Greene couldn't help but feel the weight of the competition pressing down on him. The other detectives were just as eager to claim the solution, and he knew the race was on. It was time to outsmart them all.

1-3. Fun Elements

The Thrill of Deduction	1. Provides the satisfaction of solving a mystery through deductive reasoning based on evidence.
	2. Emphasizes the fun of thinking, as there's only one chance to submit the correct answer, which affects the ending.
Strategy for Competition	1. Players must strategically choose locations to investigate, aiming to solve the case faster than the AI.
	2. Players can block important locations from AI competitors and secure evidence first, adding strategic enjoyment.

1-4. Gameplay

Step	Description
1	The player selects a location on the world map and assigns coins to bid for it.
2	The player presses the turn progress button.
3	AI opponents choose their locations.
4	If two or more players choose the same location, the one with fewer coins bid must select a different location.
5	Players proceed to their chosen location and investigate.
6	After completing the investigation, players interact with the exit door to return to the world map.
7	This process repeats.
8	When the player believes they have all the correct answers, they click the answer submission area to input their answers. Depending on who submits first and how many answers are correct, the game displays the ending.

2. Game Scene

2-0. Info

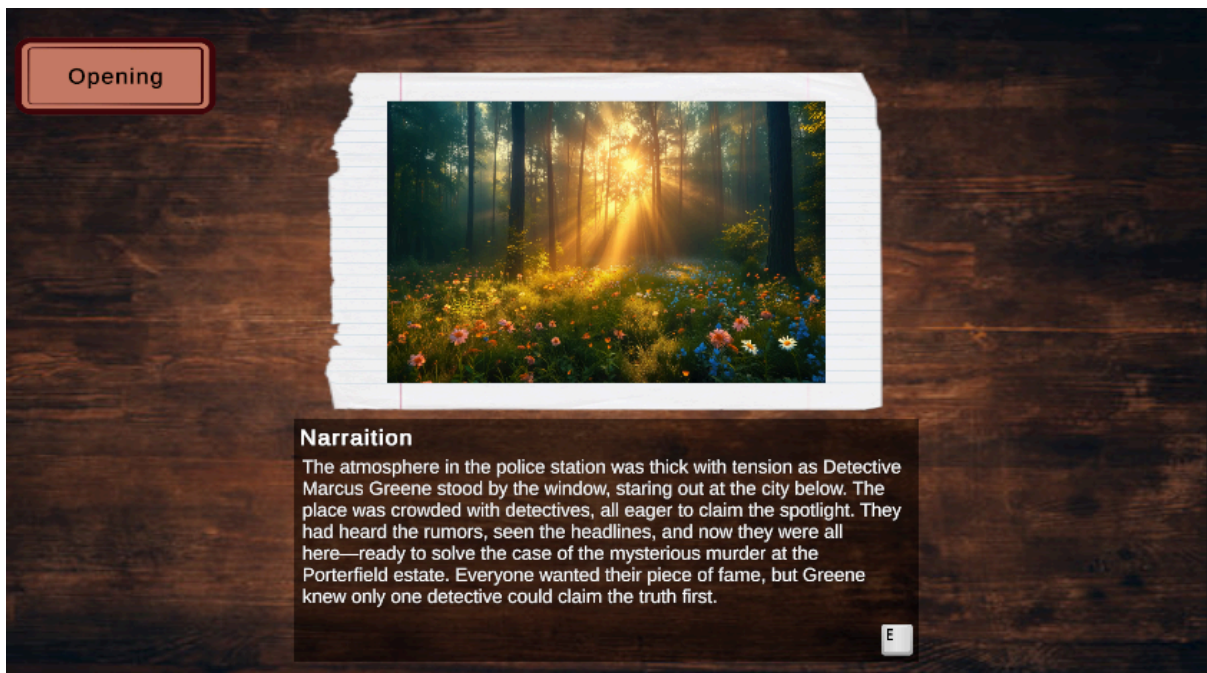| Scene Name	Description
Title Scene	Manages game start/exit.
Story Scene	Manages the game story.
WorldMap Scene	Manages the entire game map.
Location Scene	Manages the interior structure of selected buildings.

2-1. Title Scene

2-1-1. Feature List
- Clicking the "Game Start" button navigates to the Story Scene.
- Clicking the "Exit" button closes the game.

2-2. Story Scene

2-2-1. Feature List
- Text Parsing and Display
    - Opening Display
        - Parses and displays content from **Opening.csv** in Unity.
    - Ending Display
        - Based on ending conditions, navigates from **WorldMap Scene** back to **Story Scene** and parses content from **Ending.csv**.
- Text Output Details
    - Speaker : Displays the text information of the speaker
    - Dialog : Displays dialogue text.
    - Event Name : Displays the text information corresponding to the event name.
    - Background Image : Displays the background image matching the dialogue.
- Press the "E" key to move to the next row of the parsed data.
    - If all rows of data for the corresponding event in the opening scene have been displayed, transition to the WorldMapScene.
    - If all rows of data for the corresponding event in the ending scene have been displayed, end the game.
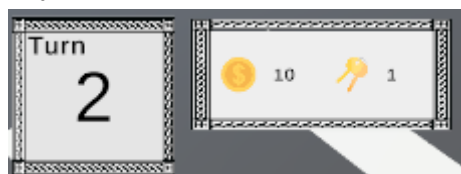
2-3. World Map Scene

2-3-1. Feature List
- Building State Management

    - Changes the material of a building object when the mouse hovers over it to indicate interaction.
    - Stores the following information for each building:
        - Building Number
        - Building Name
        - Building Description
        - Lock State
        - Scene Name and coordinates required to enter the building
- Player Resource Display

    - Turn : Tracks the current turn number of the user.
    - Coin : Used to decide how much currency to invest in entering a building.

- Key : Used to unlock buildings in a locked state.
- NPC Actions
    - Details regarding NPC actions are outlined in Section 4, "NPC."
- Selecting and Interacting with Locations
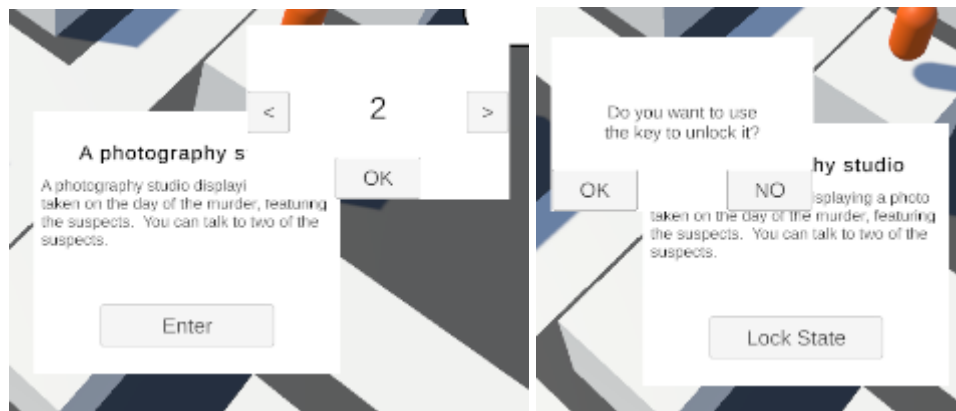
- Clicking on a location displays an information UI about that location.
    - Location Information : Includes the name and description of the location.
- Clicking the Enter button initiates the following process:
    - If the building is unlocked :
        - If the player has a Key, the building's lock state is changed to unlocked, and the information UI is refreshed.
        - If the player does not have a Key, a popup is displayed indicating insufficient resources, and interaction with the building is disabled.
    - If the building is locked
        - Displays a UI where the player can determine how many Coins to invest.
- Once the investment is decided, the UI shows the updated amount of invested Coins.
    - To change the target location, click on another location and repeat the above steps to update the investment and location information.
- Question Button :
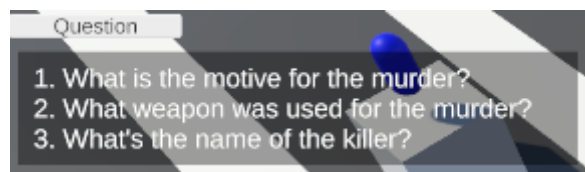
- Clicking the button shows the list of questions the player needs to answer.
- Each click toggles the visibility of an image containing question information with animations.
- Answer Management
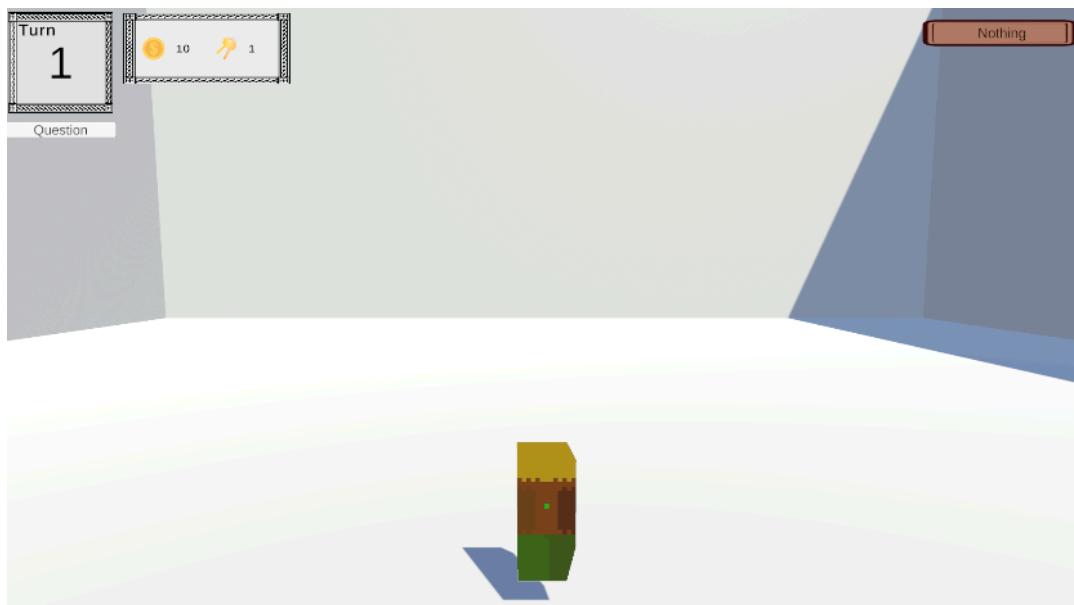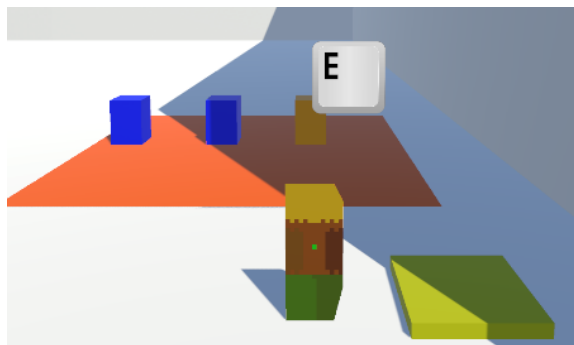
- Clicking the "Submit Answer" button displays a UI where the player can input answers to three questions.
    - At this point, you can press "Tab" to move to the text field below.
- Click the *Exit* button to deactivate the UI.
- Refer to **Section 5. "Ending"** for conditions for correct answer management.

2-4. Location Scene

2-4-1. Feature List
- Player Movement

    - The player object can only move using directional keys.
- Follow Camera
    - The camera follows the player, with its position and angle adjustable in the Inspector.
- Object Interaction

    - When the player character approaches an interactable object, an "E" mark is displayed above the player character, indicating the need to press the E key to interact.
        - The system checks whether the object is an **Item** or an **NPC**, and parses the corresponding data (from *Item.csv* or *NPC.csv*).

- An Inspector-manageable variable, `Object Name`, is added to the object's script to determine which data to parse based on its input value.
- Text Display
    - Parsed data is displayed via a UI based on the object type:
        - Object Type: Ite
            - Dialogue
            - Tool Image
        - Object Type: NPC
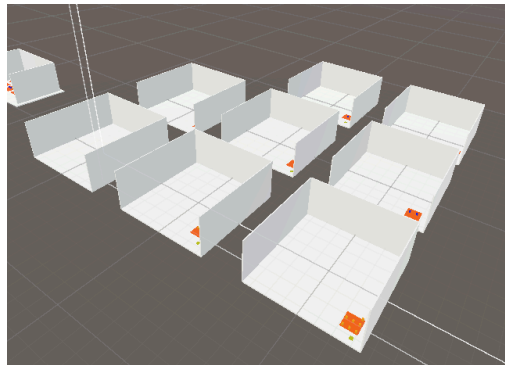   - Speaker
            - Dialogue
            - NPC Image
- Exiting the Location
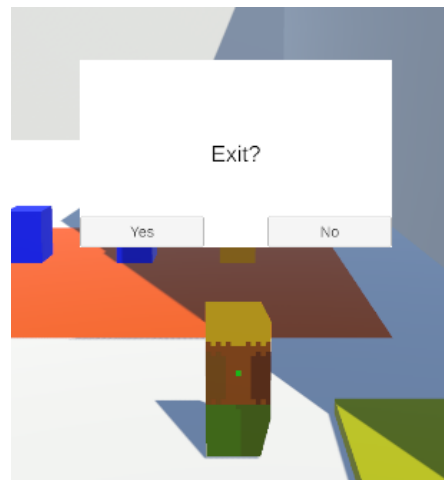
- When the player approaches an object tagged as "Door," an "E" mark is displayed above the player character.
- Pressing the E key displays the Exit UI.
    - The Exit UI includes the following options:
        - Yes Button : Returns to the WorldMap Scene.
        - No Button : Disables the Exit UI and cancels exiting.

3. Descriptions of Locations

3-1. Porterfield House

- The mansion of the murder victim where the incident took place.
- You can find information about the victim.

3-1-1. Interactive Objects

Object Name	Interaction Text
compulsively organized furniture	"Everything is in its place. Not a single item out of order. It's almost unnerving how meticulous the arrangement is."
a painting on the wall	"The paintings on the wall are flawless in their symmetry. But I wonder if they are hiding something behind their perfection."
a drawer in Mr. Porterfield's office	"The drawer is slightly open. Inside, there are documents related to the sale of the company. Strange. Why would he leave such sensitive papers here?"
a portrait of Mrs. Porterfield	"The frame is shattered, and the portrait is upside down. What happened here? This can't be an accident."
an upright piano by a large window	"This piano looks expensive. It seems like it was a centerpiece of the party. I wonder if it played any role in what happened last night."

a collection of pottery on a shelf next to a window	"These ceramic pieces are neatly arranged by size. But there's one that seems out of place. Why is it not in the right order?"
traces of things dirty from the previous day's party	"The smell of food and cigarettes still lingers in the air. This place was clearly chaotic last night. But what does it all mean?"

3-2. An annex building

- A building annexed to the victim's mansion that served as the murder scene.
- You can gather information about the murder scene.

3-2-1. Interactive Objects

Object Name	Interaction Text
rain-soaked dirt roads with countless footprints	"The muddy path is littered with footprints, too many to distinguish any single one. It seems like countless people have passed through here. It's nearly impossible for the police to identify a specific trace."
a dead body	"The victim's body lies in the south room, half-hidden by scattered chairs. His face is bruised and swollen. The most disturbing part is the clear and sharp mark across his neck, stretching from his throat down to the nape of his neck. It's nearly severed."
a ladder against the wall	"A ladder rests against the wall, carelessly placed. It's unclear whether it was meant to be used in the crime or if it was simply abandoned here. Still, it's odd that it's positioned so close to the body."

3-3. A photography studio

- A photography studio displaying a photo taken on the day of the murder, featuring the suspects.
- You can talk to two of the suspects.

3-3-1. Interactive Objects

Object Name	Interaction Text
photo	"This photo captures a lively scene from the party. Fifteen people, all smiling and posing for the camera. Some seated, others standing, all dressed in vibrant colors. It's a cheerful moment frozen in time, but something feels off."
Talk : Mr. Ludwin	Player: "Mr. Ludwin, do you recognize all the people in this photo?" Ludwin: "Ah, yes. I took the picture myself. Let me see… That's me there, of course. The others? They were all part of the party—some close friends of Mr. Porterfield, others just acquaintances. Quite the lively group."
Talk : Mr. Galerias	Player: "Mr. Galerias, what do you remember from last night?" Galerias: "Look here. It was a hot night, and I wanted to step outside for some fresh air. Let me be honest with you. From the moment the first note played, I knew the performance was a disaster. When I stepped outside, I bumped into Mrs. Hunter. We had a brief chat before heading back inside. I can still picture poor Roderick watching us. May he rest in peace… After that, I never saw him again."

3-4. The Royal Academy of Music

- A building where two of the suspects are located.
- You can have a conversation with the suspects.

3-4-1. Interactive Objects

Object Name	Interaction Text
Talk : Mr. Suyevich	Player: "Mr. Suyevich, what can you tell me about the performance last night?" Suyevich: "Ah, the Steinway & Sons upright piano in Mrs. Porterfield's mansion was simply exquisite. I was fully prepared, of course. But let me tell you something—before every performance, I never touch a drop of alcohol. However, when the performance began, one of the keys didn't produce a sound. And the tone was slightly off. I had to improvise and adjust the sheet music on the spot. Believe me, it's not as easy as it

	sounds! I attended the party because Dr. Spencer invited me earlier that morning."
Talk : Mrs. Hunter	Player: "Mrs. Hunter, can you tell me about your evening last night?" Hunter: "I'm a friend of Gwendlolyn Porterfield. I taught her how to play that magnificent piano at the mansion. In fact, I gave her a lesson that very morning. After dinner, I felt like a little walk, so I strolled toward the annex to enjoy the stars. The building was dark, but the front door was open, so I sat down inside. I could hear the sound of piano music from a distance. Soon, I heard whispers from the next room. I thought someone was sharing a private moment, so I decided to return to the piano room. On my way back, I ran into Mr. Galerias, who kindly accompanied me back into the mansion. Mr. Suyevich is a well-respected musician, but I must admit, last night's performance wasn't extraordinary. I may sound arrogant, but perhaps my performance would have been better."

3-5. The Crown Hotel

- A building housing the victim's wife, who is also a suspect.
- You can have a conversation with the suspect.

3-5-1. Interactive Objects

Object Name	Interaction Text
Talk : Mrs.Poterfield	Player: "Mrs. Porterfield, could you tell me more about your husband's behavior before the incident?" Mrs. Porterfield: "He was always so composed. I didn't notice anything unusual in the days leading up to the incident. As for his plans regarding the company... I'm afraid I know nothing about them. After dinner, he did speak to various people at the party, but he wasn't interested in conversing with everyone. You see, my husband and my brother-in-law never truly treated each other like brothers, despite being related."

3-6. Porterfield Bros. Company

- The victim's office, where the victim's brother, who is a suspect, and a subordinate employee are located.

- You can talk to the suspect and the subordinate employee.

3-6-1. Interactive Objects

Object Name	Interaction Text
Talk : Accountant	Player: "I understand that your company has no debt and that the profits were split between Mr. Porterfield, his wife, and his brother. But I heard that Mr. Porterfield was preparing a report to sell the company. Can you elaborate on that?" Accountant: "Yes, that's correct. The company has always been in good standing financially. The profits have been distributed as you mentioned. But, regarding the sale, Mr. Porterfield was indeed preparing to sell the business to a Dutch company. He had already agreed to terms, and the official contract was scheduled to be signed tomorrow in Amsterdam. Mr. Porterfield was set to receive a substantial amount of money from the deal. However, his brother, Edward, gave instructions to halt the sale and keep the business running as it was."
Talk : Mr. Porterfield (Edward)	Player: "Mr. Porterfield, you mentioned that you arrived at the mansion first and spent time reading in the piano room. Can you tell me more about what happened after that?" Edward Porterfield: "Yes, that's right. I was the first to arrive at the mansion. My brother and Mrs. Porterfield weren't there yet. So, I spent some time in the piano room reading. The staff can confirm this. Around 6 PM, my brother and his wife arrived with their first guest." Player: "I've heard that your brother was planning to sell the company, but you stopped the process. What was your reasoning?" Edward Porterfield: "My brother started the business, and I supported him as his assistant. The profits were my only means of livelihood. Now, it seems I must take charge of the business. Regarding the sale, I was unaware of my brother's intentions to exclude Mrs. Porterfield from the inheritance, as was mentioned by Mr. Oldman. I don't know why he did that."

3-7. London Hospital

- A hospital where a suspect involved in the murder case works.
- You can have a conversation with the suspect.

3-7-1. Interactive Objects

| Object Name	Interaction Text
Talk : Dr.Spencer	Player: "Dr. Spencer, I understand that you saw Mr. Suévitch yesterday morning. Can you tell me about that?" Dr. Spencer: "Yes, Mr. Suévitch came in for a consultation regarding a minor digestive issue. It wasn't serious at all. Knowing that there was a party at the Porterfield estate that evening, and recalling the beautiful piano there, I invited him to come along. After my workday was over, I left my wife at home and headed to the mansion. As expected, Mr. Suévitch was warmly welcomed. He played some stunning pieces that night, and I spent the evening listening to his beautiful music. Of course, everything changed when Roderick's body was found…"

3-8. London Metropolitan Police Department

- The metropolitan police department investigating the murder case.
- You can gather additional information about the victim.

3-8-1. Interactive Objects

Object Name	Interaction Text
Talk : Inspector	Player: "Inspector, I've heard that you discovered something interesting during your investigation. Can you tell me about the gun Mr. Porterfield had?" Inspector: "Yes, it's quite curious. The firearm Mr. Porterfield possessed had only been sold two days before the incident. According to the gun dealer, Mr. Porterfield was very clumsy with firearms. The dealer even mentioned that Porterfield had expressed concern about using it, stating, 'I really hope I don't have to use this. It would be a matter of my honor.' The dealer felt that, as a gentleman, it was best not to inquire further." Player: "That's certainly odd… And what about the ticket found with Mr. Porterfield?" Inspector: "Ah, the ticket. It was for a ship bound for Amsterdam, scheduled to depart the morning after the murder. It's quite suspicious, especially considering the timing. It seems Mr. Porterfield had plans to leave right after the incident."

4. NPC
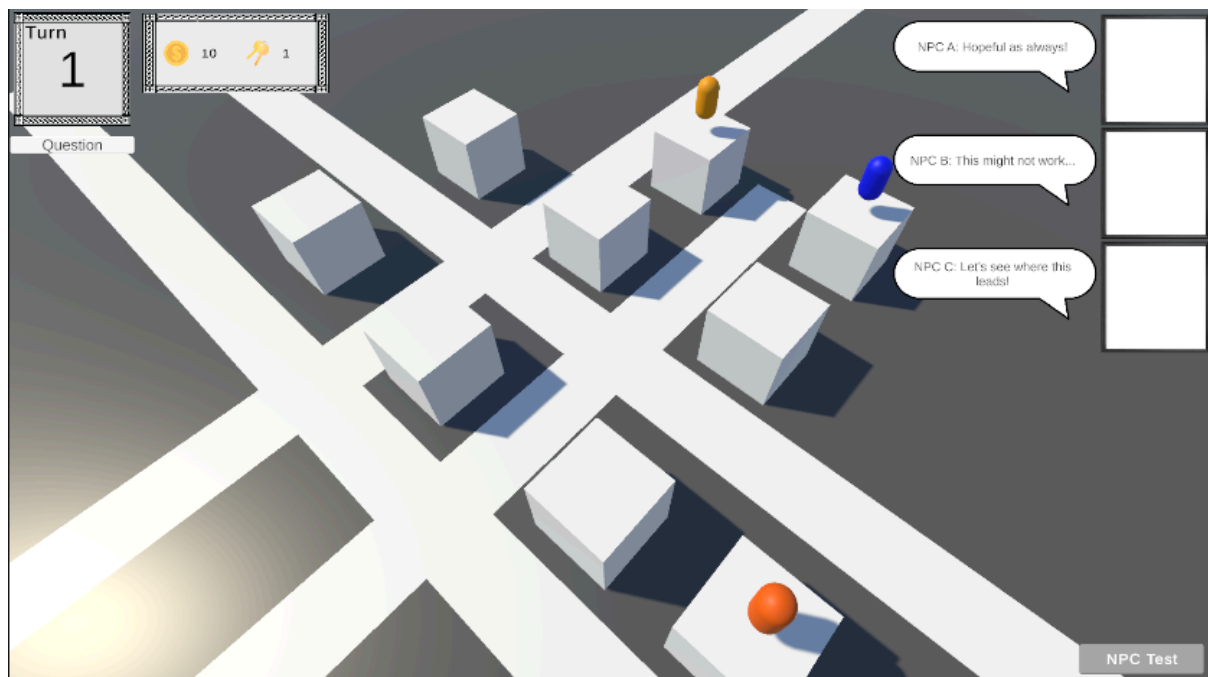
4-1. Concept of NPC

- In the story, NPCs are characters working alongside the player to identify the murderer. Outside the story, NPCs act as elements influencing the game's ending.
- NPCs have three distinct personalities.
    - These personalities affect the text displayed in the script, allowing different dialogues based on the NPC's personality.
    - By varying dialogue according to these three personalities, the game helps players assign individuality to NPCs and immerse themselves in the story.
    - Assign different colors to each NPC based on their personality and display them on the world map so that the player can easily identify the current location of each NPC.

4-2. NPC Behavior Rules: Movement / Betting / Solving Questions

- Each NPC moves to different locations, ensuring no overlap, and bets a portion of their coins on the desired location, similar to the player.
- If two NPCs choose the same location, the one who bet more coins claims the spot.
    - The NPC that loses the bet selects a new location from the remaining unchosen spots.
    - If the bet amounts are equal, the NPC with the earlier turn order wins.
        - Example: NPC A takes precedence over NPC B if A has an earlier turn.
    - If the player wants to visit a location occupied by an NPC, they can engage in a bidding process similar to the NPCs by selecting the location and betting coins.

- If the player wins or ties the bet, they enter the location, and the NPC moves elsewhere.
- If the player loses the bet, a popup informs them of their loss, prompting them to either choose a different location or challenge the NPC again by betting more coins.
- Each NPC has specific information about the locations required to solve particular questions.
    - When an NPC randomly moves and enters a location needed to answer a question, the game marks that question as solved for the NPC.
    - Each NPC has unique requirements for the locations needed to solve the three questions.
        - For example, NPC A might need to visit locations 2 and 3 to solve Question 1, while NPC B only needs to visit location 2.
    - Once an NPC solves all three questions, they are considered to have found all the answers.

4-3. Dialogue Balloons Based on the Number of Correct Answers

- NPCs display different dialogue texts in their speech balloons depending on how many of the three questions they have answered correctly.
- If all NPCs have answered all three questions correctly, the game transitions to the Story Scene and outputs Ending 4.

5. Ending
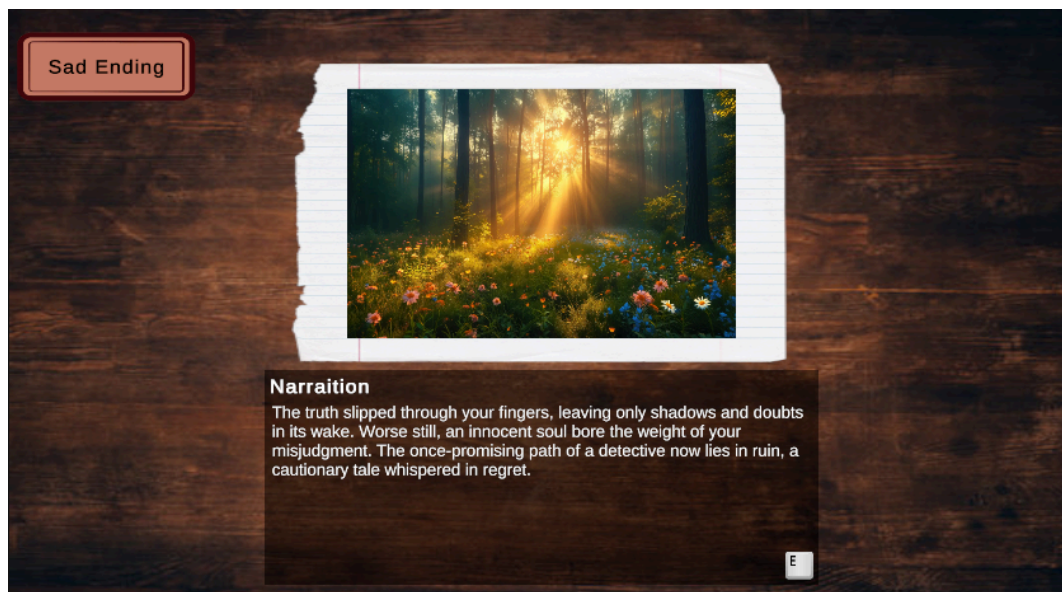
5-1. Ending Conditions

- The ending is influenced by the following conditions:
- Which of the three questions were answered correctly.
    - Question 1: What was the motive for the murder?
        - Correct Answer: To inherit wealth.
    - Question 2: What was the murder weapon?
        - Correct Answer: Piano wire.
    - Question 3: Who is the murderer?
        - Correct Answer: The victim's younger brother, Edward.
- Whether the NPCs found the correct answers or failed to do so.

5-2. Types of Endings

Ending Number	Condition	Ending Description
1	All answers are correct	The player earns great renown as a detective.
2	Only Question 3 is correct	The player identifies the murderer but fails to present sufficient evidence, earning less recognition than expected.
3	All answers are wrong	The player fails to identify the murderer and accuses an innocent person, leading to a complete failure as a detective.
4	NPC solves all questions first	Another detective solves the case before the player, earning the recognition instead.

5-3. Ending Execution

- The conditions for triggering an ending are as follows:
    - When the player enters text for all questions in the Answer UI and clicks the submit button.
    - When an NPC finds the correct answers to all questions.
- The ending is processed as follows:
    - The script transmits the corresponding ending number.
    - In the Story Scene, the game retrieves the corresponding ending details from **Ending.csv** based on the ending number and displays the content.

project code on github : https://github.com/Buzadagi/LastTest