MMI 716 – GAME PROGRAMMING PATTERNS
GAME PROJECT PHASE I REPORT

PALETTE OF MEMORIES:

THE ARTIST'S PATH TO REMEMBRANCE

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This report is for my game project in the MMI 716 - Game Programming Patterns course. It starts with a deep look into research and other games in my chosen genre, first-person exploration game, identifying what's currently out there. Based on this research, I introduce my game idea with a catchy title and a brief description, focusing on its main features. The report then dives into the details of the game, including its genre, platform, how players will interact, and the world I'm creating. It talks about how characters are developed to make the story and gameplay better. There's also a storyboard section that shows the main events and emotions of the game.

Additionally, the report covers the technical parts of the game, like physics, sound, and AI, to explain how the game will work. I also discuss how using design patterns will help us overcome challenges and make the game better. Overall, this report gives a complete overview of how I'm planning and building my game, mixing research, creative ideas, and technical skills.

1. INTRODUCTION

1.1. RELATED GAMES

In the realm of first-person exploration games focusing on storytelling, a variety of titles have been recognized for their unique narrative approaches and immersive gameplay experiences. These games prioritize atmospheric storytelling, environmental exploration, and character-driven plots, often eschewing traditional combat mechanics to offer players a deeper narrative engagement (15 Atmospheric Narrative Games Like Firewatch, 2023), & (What are the best PC games that focus on narrative, atmosphere, exploration and avoid combat?, 2022).

- **The Vanishing of Ethan Carter** exemplifies a focus on environmental storytelling, with players putting together a story through exploration, puzzle solving, and clue gathering in a visually stunning open world.

- **Everybody's Gone to the Rapture** is set in an abandoned English village in the 1980s, and players can use exploration to discover the story of the residents and the mysterious circumstances that led to their disappearance. The game features incredible graphics and a haunting soundtrack.

- **Tacoma** provides a narrative-driven experience within an abandoned space station, involving players discovering the stories of former inhabitants via interactive AR recordings, showing the game's focus on storytelling and discovery.

- **Oxenfree** portrays a group of friends as they discover the dark secrets of an abandoned island, with a branching conversation system and innovative gaming mechanics that add to the immersive story experience.

- **Dear Esther** invites gamers to discover an isolated island to find a tragic tale, using the atmosphere and contextual storytelling to keep them engaged.

- **Life is Strange** and **What Remains of Edith Finch** are known for their storytelling, character development, and creative gaming mechanisms. Life is Strange has a time-rewinding mechanic that allows players to experiment with alternative options, while What Remains of Edith Finch tells a series of stories, each with a unique gameplay mechanic that adds to the overall narrative.

These games demonstrate the various ways in which first-person exploration can be used to create engaging, story-driven experiences. They aim to put players in complex worlds where storytelling and environmental interaction are central, demonstrating video games' potential as a medium for narrative exploration and emotional connection.

1.2. PAPERS

For knowledge of labyrinthine exploration games with a focus on storytelling, the following publications bring key insights into game design and narrative connection:

1. The paper (Hendrikx, Meijer, Van Der Velden, & Iosup, 2013) discusses the usage of procedural generation in games, including world design and game scenario generation, which are essential for constructing dynamic labyrinths and narratives.

2. The book section (Koenitz, 2018) analyses the intricate relationship between story and gameplay mechanics, drawing attention to the ongoing debate in the field of gaming between storytelling and game studies.

3. The thesis (Brandt, 2021) provides an in-depth investigation of combining real-life experiences into video game storylines, as well as insights into biographical storytelling in games.

These resources offer a mix of academic concepts and practical examples of narrative integration in games. They examine the challenges and benefits of combining storyline and game mechanics, particularly in the context of exploration-based games such as labyrinths. Furthermore, studying procedural content generation can provide insights into developing dynamic and compelling gaming environments that improve the storytelling experience.

1.3. CAPABILITIES

The current state of exploration games and related research shows a shift towards combining complex tales, procedural content production, and interactive storytelling. Studies investigate how games could dynamically build worlds and stories, increasing replayability and engagement. Another study investigates the balance between gaming mechanics and storytelling, focusing on how narratives can be weaved into the foundation of game design to create virtual worlds.

1.4. LIMITATIONS

The limitations of current labyrinth exploration games with detailed stories frequently rely on balancing storytelling depth with player freedom, ensuring procedural content generation does not undermine story consistency, and maintaining player engagement despite complex interactive story elements. Challenges include ensuring that story and gameplay are seamlessly integrated to avoid story confusion, as well as improving game design to support a large range of player choices without weakening story effect.

2. IDEA, TITLE AND DESCRIPTION

"Palette of Memories: The Artist's Path to Remembrance" is a first-person exploration game about a female painter who loses her memory. Players navigate through rooms, capturing unique aspects of her artwork and memories. The goal is to find items that activate her memories, combining puzzle-solving and storytelling for an emotional exploration.

3. GAME SUMMARY

"Palette of Memories: The Artist's Path to Remembrance" is a first-person exploration game about a female painter who awakens with no memory of her past. Set in a strange ever-changing location, the game takes players on a quite emotional journey through the protagonist's mindset and artwork. Players will move through a sequence of rooms, each capturing a unique aspect

of the artist's lost memory and including the colours and themes from her earlier artworks. The goal is to find specific items within these artistic locations that activate pieces of her memories, helping her piece together her identity and background. The game combines puzzle-solving and storytelling, inviting players to solve puzzles about the painter's life and the importance of her art. This game is a one-of-a-kind examination of memory, identity, and creation that features deep gameplay and emotional depth.

5. GAME OVERVIEW

- **Genre:** First-Person Exploration / Puzzle / Narrative-Adventure

- **Target Platform:** PC

- **Number of Players:** Single-player

- **Game World Description:** The game world is a complex mansion full of rooms and passageways that challenge physics and reality. Every location that the player explores is carefully crafted to reflect the themes, feelings, and colours of the protagonist's artwork. The surroundings, varying from colourful, chaotic abstracts to peaceful scenery, serve not simply as an environment for the gameplay but also as a storytelling device, showing the protagonist's psychology and past. The mansion serves as both a jail and a refuge, with the keys to unlocking the painter's memories and revealing her true nature. The game world changes as the player progresses, with new places becoming available and the environment changing in reaction to their discoveries. There will be ghosts to chase the players.

6. CHARACTERS

The Protagonist (The Painter): A talented but troubled artist who has lost her memory. As the central character, the player will embody her, experiencing her confusion, fear, and eventual enlightenment first-hand. Her personality and history are revealed through the items the player finds and the memories these items unlock.

Ghosts of the Past: These are the silhouettes that follow the player and appear from time to time during the exploration of the stories. They aim to follow and disturb the player. The player needs to escape from them.

7. STORYBOARD

Figure 1: Storyboard of the game. (images created by Gemini Advanced)

Figure 1 shows the overall game flow as a storyboard. The game begins in a huge mansion, with the protagonist waking up in an empty room. The game's tutorial is in this room. The interaction between items will be taught. The player can then exit the room to discover a hallway leading to more rooms. Each room reflects a theme found in one of the main character's artworks. Each room will be explored by the player one at a time; not every room is accessible Once inside a room, the player needs to locate the objects that correspond with the piece of art that the room represents. The stories appear as text on the screen when the player locates these items. The player continually explores every chamber and learns every tale to gather memories. After visiting all the rooms, the protagonist wakes up in a peaceful world.

8. GAME COMPONENTS

To bring "Palette of Memories: The Artist's Path to Remembrance" to life, multiple significant game components will be carefully integrated into its design and development. These elements are critical in producing an immersive, engaging, and emotionally meaningful experience for players.

8.1. PHYSICS

The game will use a physics engine (using Unity) to make items move and interact more realistically in the gaming world. However, given the surreal nature of the surroundings, the physics engine will also allow for the implementation of dream-like or impossible physics in some locations (e.g., floating objects, gravity-defying rooms) to increase the sensation of exploration and discovery. This combination of realistic and surreal physics will be critical in designing puzzles and challenges that reflect the themes of memory, perception, and art.

8.2. AUDIO

Audio plays a critical role in "Palette of Memories," serving multiple purposes:

- **Ambient Sounds:** To enhance the atmosphere of each room, creating an emotional environment that reflects the theme of the artwork it represents.

- **Sound Effects:** For interactions with objects and the environment, adding depth and realism to the player's actions.

8.3. LLMS

While "Palette of Memories" is primarily a story-driven exploration game, LLMs (i.e. ChatGPT) will be used to enhance the dynamics of the game world and interactions:

- **Adaptive Storytelling:** AI could be employed to adjust the game's narrative flow based on the player's discoveries, making the storytelling experience more personal and dynamic. This could involve memories being revealed first, or even modifying the game environment in subtle ways to reflect the player's emotional journey.

- **Puzzle and Challenge Variation:** AI might also be used to slightly alter puzzles or challenges on subsequent playthroughs, offering a fresh experience and encouraging exploration of different paths or solutions.

Putting these elements into the game's design will be essential to creating a rich, interactive world in which players may lose themselves, transforming "Palette of Memories" into an experience that addresses fundamental issues such as memory, identity, and the power of art.

9. DESIGN PATTERNS

To create a solid, flexible, and efficient game architecture for "Palette of Memories: The Artist's Path to Remembrance," well-established game programming design patterns must be used. Here are two essential design patterns that might be useful for different areas of the game:

9.1. STATE PATTERN

Use Cases: Character State Management and Game Progression

- **Character State Management:** Implementing the state pattern can handle the protagonist's various emotional and cognitive states, affecting gameplay mechanics (e.g., vision clarity, memory flashbacks) and interactions with the environment.

- **Game Progression:** The pattern can also manage the game's progression, transitioning between different phases or chapters of the story as the player uncovers more about the painter's past. This includes unlocking new areas, changing environmental aesthetics, or altering puzzle mechanics based on the story's development.

9.2. OBSERVER PATTERN

Use Case: Event Notification System for Interactions and Environmental Changes

- **Item Interactions:** When the player interacts with items that are crucial for unlocking memories, the observer pattern can notify relevant parts of the game to update accordingly. This might trigger a memory flashback, change the environment, or play a specific sound effect.

- **Environmental Changes:** As the game world evolves in response to the player's discoveries (e.g., changing light conditions, unlocking new areas, altering artwork themes), using the observer pattern ensures that all parts of the game that need to respond to these changes are notified and updated in real-time.

9.3. COMMAND PATTERN

Use Case: Input Handling and Undoable Actions

- **Input Handling:** It enables the game to abstract the actions taken by the player into commands that can be executed, undone, or even replayed. This is especially useful for

complex interactions within the game world or for implementing customizable control schemes.

- **Undoable Actions:** When the player wishes to revert an action to explore a different outcome, the command pattern allows these actions to be easily reversed, enhancing the gameplay experience by providing flexibility in exploration and decision-making.

Integrating these patterns into the game's development will further enhance its architecture, making it more robust, flexible, and scalable. Together, these patterns create a powerful toolkit for developing a deeply engaging and memorable game experience.

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