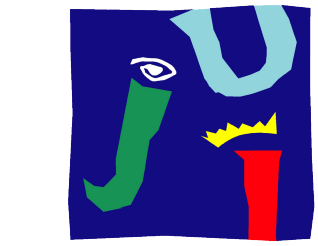

UNIVERSITAT JAUME·I

Development of a video game about suicide and its consequences on the family environment

Isabel Alonso Gómez

Final Degree Work

Bachelor's Degree in
Video Game Design and Development

Universitat Jaume I

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Supervised by: Cristina Rebollo Santamaría

To my family and friends

Acknowledgments

After much deliberation about what I wanted to study, and thanks to my mother's guidance, I chose a career that many might consider unconventional. My passion for technology, art, and video games made this degree the perfect fit for me. Additionally, I was fortunate that the degree program is offered at a nearby university.

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This work is dedicated to each and every one of you.

Abstract

Video games serve not only as sources of entertainment but also as platforms with the potential to offer multifaceted support to individuals. This report elucidates the technical framework of the Final Degree Project entitled "Creation of an Immersive 3D Video Game Exploring Suicide and its Impact on Close Relationships". The core objective of this project is to design a 3D video game using Unity that delves into themes of anxiety, depression, and trauma. The game aims to guide players through the process of confronting and overcoming personal traumas while uncovering hidden truths, placing emotions at the heart of its narrative.

The envisioned game design seeks to establish a unique ambiance characterized by contrast, curiosity, and friendliness. To achieve this, a comprehensive investigation into mental health issues, notably anxiety, depression, trauma, and suicide, will precede the development phase. Concurrently, the game's artistic direction will embrace a 3D 'cute/-cozy' modeling aesthetic. It can be described as a type of stylization that combines 'low poly' elements with a pleasant, friendly, and cozy aesthetic. This style is characterized by its simplicity, soft colors, simple geometric shapes, and an overall feeling of warmth and comfort. This deliberate choice aims to juxtapose the game's narrative content with its visual representation, captivating the player's attention and immersing them within the game's universe. The game will adopt an isometric perspective, enabling players to traverse diverse worlds that progressively unfold the game's storyline. Player objectives will encompass exploration of these virtual realms, interaction with the protagonist's circle of friends, puzzle-solving, item collection, and a deep introspective journey as the protagonist confronts their inner demons. Given that the protagonist may bear resemblances to the player, this design element is intended to foster greater player identification and empathy.

Keywords: 3D Video Game, Isometric Perspective, Mental Health Exploration, Depression, Suicide, Cartoon Aesthetic.

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CHAPTER 1

INTRODUCTION

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This chapter outlines the project's developmental strides, its objectives, and the driving force behind its inception. At its core, the endeavor aims to craft a video game narrative delving into the intricacies of depression, anxiety, and trauma. These themes will be subtly woven into the fabric of the experience, employing techniques such as emergent storytelling. Here, the narrative unfolds organically, either through environmental cues or implicit suggestions rather than explicit exposition. Through dialogues, players will encounter characters imbued with significant psychological depth as they explore the game's immersive landscapes. The game itself will take shape as an isometric-view adventure designed for Windows PC, bearing the title 'Shadows of the Past'.

The isometric perspective is a type of axonometric projection where we always see three sides, and their measurement scale remains consistent. Objects do not appear smaller or larger regardless of the position of the 'camera'. The sides form a 30° angle with the vertical axis. [21] The artistic style will be a 3D 'cute/cozy' modeling aesthetic.

1.1 Work Motivation

Currently, video games are widely recognized not only as forms of entertainment but also as valuable artistic expressions. Despite the different categories and objectives they may have, it is incorrect to underestimate the importance of any genre within this medium.

Over the years, the influence and evolution of other arts, such as film and literature, have significantly contributed to the diversity and richness of video games.

Games like "Journey" [40], "Firewatch" [33], and "Hollow Knight" [7] demonstrate the ability of video games to tell deep stories that could be compared to cinematic works, while offering unique interactive experiences. Each of these games presents distinct artistic styles and settings that capture the player's imagination.

In terms of emotional experience, video games have the power to influence people's moods and perspectives. Not all games focus on competition or intense action; some seek to create immersive worlds that allow players to explore, experiment, and construct their own narratives. A notable example is "Animal Crossing: New Horizons" [26], where players have the freedom to design and develop their own paradise island, thus offering a personalized and relaxing experience.

The main purpose of this work is to utilize the sense of immersion in video games, not only through technologies like virtual reality but also through world-building and storytelling, to raise awareness about the importance of suicide prevention and the need to pay more attention to our surroundings and the mental health of individuals. The aim is to highlight the profound impact that mental health issues can have on people in close circles and how understanding and empathy can play a crucial role in supporting and recovering those facing such challenges. Through the exploration of these themes within the context of video games, this work aspires to foster greater understanding and openness towards mental health issues in today's society.

From a personal perspective, this study aims to highlight the artistic value of video games and explore their ability to provide immersive experiences through narrative and world design, thus offering a potentially therapeutic tool for those facing mental health problems.

A significant inspiration for this work is "Gris" [36] (see figure 1.1), an independent game that follows the emotional journey of a young woman as she overcomes obstacles and discovers her own path to recovery. Additionally, "Omori" [28] (see figure 1.2,) is another standout game that addresses profound themes related to mental health through its narrative and unique visual design. Both games offer artistic and moving representations of the challenges and experiences associated with mental health.

1.2 Objectives

The primary aim of this project is to achieve a profound psychological engagement within the game. This will be accomplished by crafting a richly developed world environment intertwined with an intriguing narrative delivered through compelling characters. Players will be encouraged to explore, carve their own path, and experience a deep sense

of immersion throughout the game. It's crucial to emphasize that while the game isn't intended as therapy, it offers an experience open to all, fostering awareness.

The mental aspect will extend beyond mere dialogue, infusing the very essence of the game through its mechanics, environmental aesthetics, world construction, and musical compositions. All aspects will be informed by rigorous research and insights gleaned from scientific literature and articles as "The Effects of Casual Video Games in Improving Mood and Decreasing Stress" (Russoniello, O'Brien and Parks, 2009) [32], "Reality is Broken: Why Games Make Us Better and How They Can Change the World" (McGonigal, 2011) [22], "Playing for Real: Video Games and Stories for Health-Related Behavior Change" (Baranowski et al., 2008) [3], and "Not So Doomed: Computer Game Play and Positive Adolescent Development" (Durkin and Barber, 2002) [9].

- **Game Structure and Narrative Development:** The game will be designed with a linear narrative structure, eliminating the presence of missions or secondary tasks. This decision is made with the aim of providing a more focused and coherent gaming experience, allowing players to fully immerse themselves in the main story without distractions. The main narrative will unfold smoothly, guiding the player through different scenarios and key events of the story. Despite its linearity, interactions with NPCs will be incorporated to enrich the plot and provide depth to the game's lore. These interactions will serve to complement the main story, offering additional information about the game's world and characters. Although the game will not offer alternative paths or significant decisions that alter the course of the story, the inclusion of these secondary elements will allow players to explore and better understand the game's universe, without deviating from the main narrative path.
- **World Construction and Artistic Style:** The environments will be isometric and freely explorable, ideal for the game's purpose.The surroundings will be kept moderately sized to prevent overwhelming the user. An environment designed for effortless navigation, coupled with an artistic style featuring "cute/cozy 3D modeling," will enhance the game's appeal, offering a charming contrast to the narrative's complexity.
- **Dialogues and Narrative:** Non-player characters (NPCs) will be incorporated, each with a backstory intertwined with that of the protagonist. These characters will symbolize commonplace relationships and individual traumas. The game's emphasis will not be on the agony of a mental ailment, but rather on acknowledging its persistent existence and acquiring the skills to coexist with and address it.

1.3 Environment and Initial State

The relationship between video games and mental health has garnered increasing attention from researchers and healthcare professionals in recent years. Depression, trauma,

Figure 1.1: Gris (Nomada Studio, 2018).

Figure 1.2: Omori (OMOCAT, 2020).

and suicide represent significant mental health challenges that affect a large number of individuals globally. While video games have traditionally been viewed primarily as entertainment, they are increasingly recognized as potentially valuable tools for addressing and raising awareness about these sensitive and complex issues.

Depression: A Comprehensive Perspective

Depression is a mental disorder characterized by persistent feelings of sadness, lack of interest in pleasurable activities, and feelings of hopelessness (American Psychiatric Association, 2013) [1]. Video games can provide an authentic and comprehensive representation of the experience of living with depression. In "Omori", the game employs a complex and emotional narrative to depict the protagonist's internal struggle with depression.

Through its surreal world and multidimensional characters, "Omori" offers a unique insight into the emotional highs and lows, doubts, and insecurities that accompany depression. This authentic representation can help increase awareness and reduce the stigma associated with depression, enabling players to empathize and connect with the characters on a deeper level (Graner Ray, 2011) [13].

Trauma: Exploring Psychological Consequences

Trauma can arise as a result of traumatic experiences and may lead to the development of post-traumatic stress disorder (PTSD), affecting an individual's quality of life and emotional well-being (Van der Kolk, 2014) [42]. "Omori" addresses this issue in a profound and reflective manner, using narrative and gameplay to explore the psychological consequences of traumatic experiences on the protagonist and other characters.

Through flashbacks, dialogues, and game events, "Omori" allows players to gradually uncover the protagonist's past traumas and how these events have shaped his worldview and relationships with others. This detailed and careful representation of trauma provides players with a deeper understanding of the complexity and long-term conse-

quences of traumatic experiences, fostering empathy, compassion, and awareness (Terr, 1991) [39].

Suicide: A Sensitive Exploration

Suicide is a delicate and complex issue that requires careful and respectful representation. "Omori" approaches this topic sensitively, exploring the protagonist's emotions and thoughts related to suicide in an authentic and compassionate manner. Through the game's narrative, players can experience the protagonist's internal struggle with suicidal feelings, which can help raise awareness about the risk factors and warning signs associated with suicide (Van der Kolk, 2014) [42].

The Impact of Suicide on Close Relationships

The impact of suicide extends beyond the individual, profoundly affecting family members, friends, and loved ones. Survivors of suicide loss often experience a range of emotions, including guilt, anger, shame, and profound sadness (Cerel et al., 2018) [6]. They may also struggle with unanswered questions and feelings of isolation, making the grieving process particularly challenging (McMenamy et al., 2008) [23].

In "Omori", the game's exploration of suicide not only highlights the protagonist's internal struggle but also underscores the broader impact of suicide on close relationships. Through interactions with other characters and narrative events, the game illustrates the complex emotional landscape faced by those left behind after a suicide, fostering empathy and understanding among players (Andriessen et al., 2017) [2].

Conclusion

In conclusion, "Omori" is a standout example of how video games can address complex and sensitive issues such as depression, trauma, and suicide in a way that is authentic, understanding, and respectful. By offering a detailed and reflective representation of these topics, video games can play a crucial role in educating, raising awareness, and treating mental health problems.

Through its immersive storytelling, multidimensional characters, and sensitive approach to challenging topics, "Omori" demonstrates the potential of video games as powerful tools for promoting empathy, understanding, and mental health awareness. As the field of mental health continues to evolve, video games like "Omori" have the potential to make meaningful contributions to mental health education, advocacy, and support.

CHAPTER 2

Planning and resources evaluation

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This chapter delineates the planning phase of the project and identifies the resources essential for its execution

2.1 Planning

Due to the project's specific requirements, extensive research and careful planning were crucial for its accomplishment. The initial plan was crafted in early February, resulting in the creation of the Game Design Document (GDD). While adjustments were made along the way, the core principles remained unchanged.

The project was segmented into various tasks, with Trello [34] serving as the primary organizational tool (refer to Figure 2.2). The use of the Trello platform was introduced and taught during one of the courses taken in our undergraduate program. Subsequently, most of the applications or websites used were also introduced and taught throughout our degree program. The initial roadmap was outlined in a technical purpose table, which subsequently evolved into a Gantt chart (see Figure 2.1). The key stages of the project included:

1. **Research and Inquiry**

   As previously emphasized, the project was grounded in extensive research. Various academic papers exploring the relationship between video games and mental well-being were thoroughly examined and integrated. This stage played a crucial role in shaping essential game mechanics and ideas.

2. **Game Design Document (GDD)**

   This stage centered around crystallizing the game's central premise. Expanding on the foundational research, the primary narrative, character profiles, game objectives, and visual aesthetics were established. Conceptual artwork for characters and environmental elements was also crafted using Procreate [18].

3. **Narrative Development, Objectives, and Design**

   This segment delved further into the conceptualized ideas. The overarching storyline, dialogues, and intricate character designs were conceptualized. Diverse in-game environments were also envisioned.

4. **3D Modeling**

   Leveraging Blender [31] and the foundational concepts, a majority of the game's assets were sculpted. This phase consumed a substantial chunk of the project timeline. Both the primary and secondary game characters, along with various environmental components (such as fantastical landscapes, urban settings, and assorted objects), underwent modeling, texturing, and animation.

5. **Programming**

   Parallel to the modeling process, programming was another time-intensive component. Given the narrative depth, dialogues held significant importance. After evaluating several options, a complimentary Dialogue Editor was sourced from the Unity Asset Store [35]. This tool streamlines dialogue creation and integration within games, featuring an intuitive editing interface, a pre-designed user interface negating the need for bespoke UI development, and a flexible data structure for those opting for custom UIs. Noteworthy in the programming aspect was the implementation of a turn-based combat system. This style, reminiscent of tabletop and video game combats, allows players and their units to act sequentially. Combat sequences are segmented into turns, dictating the order of actions. As players strategize their moves, time is momentarily suspended for all battlefield participants. Combat is initiated upon player engagement with adversaries, ceasing once the foe is vanquished. Programming tasks further encompassed camera

Task	Expected amount of time
Investigation, researching and Game Document Design	20h
Designing characters, drawing concept arts, writing characters sheets, etc	15h
Game design, write the story, script and dialogues.	15h.
3D Modeling and 3D animations of the characters	65h.
3D Modeling of scenarios.	65h.
Programming (Character movement, Dialogues, scenes, battle system)	140h.
Music and sound effects	10h.
Testintg the memory and elaborate the exposition	20h.
Preparation of the video for the fair	5h.
Write the final report and the presentation	45h.

Table 2.1: Time schedule

angles, player locomotion, dialogue management, NPC behavior scripts, enemy mechanics, puzzles, interactions, and inventory systems. All coding endeavors were executed using Visual Studio Code 2020 within Unity's C# framework [24].

6. **Music and Sound Effects**

   Music serves as a cornerstone in shaping a game's ambiance and mood. Drawing inspiration from emotionally resonant titles like "Omori" and "Gris", extensive endeavors were undertaken to pinpoint suitable musical compositions and soundscapes. The quest centered on selecting melodies and sound effects capable of eliciting emotions akin to melancholy, introspection, and awe. Following in-depth exploration, an assortment of tracks and auditory effects were chosen to synergize with the game's narrative and amplify the player's emotive journey.

7. **Bug Rectification and Trials**

   Post-implementation, a round of error corrections was carried out, followed by comprehensive testing to validate the game's functionality.

8. **Final memory, exhibition and presentation**

   This phase encompassed the creation of this report, the formulation of the presentation, and preparations for the conclusive assessment.

2.2 Resource Evaluation

The project was conceived to prioritize maximum flexibility, consistently choosing open-source software. While the majority of models were crafted by the author, those sourced externally are also open-source and are listed at the conclusion of this document.

This endeavor was executed solely by one person, drawing inspiration from success stories like the creator of "Stardew Valley," [8] who developed a hit game single-handedly. While this project showcases the feasibility of an individual completing a full game, it's evident that more extensive projects would necessitate a more expansive team involvement.

Hardware: An HP OMEN 15-EK0004NS laptop was used, with a total cost of €1827.85. The specifications are as follows:

-CPU: Intel® Core™ i7-10750H processor (with a base frequency of 2.6 GHz, up to 5 GHz with Intel® Turbo Boost technology, 12 MB of L3 cache, and 6 cores).

-GPU: NVIDIA® GeForce RTX™ 2070 graphics card with Max-Q design (8 GB dedicated GDDR6 memory).

-RAM: 16GB (2x8GB) DDR4-2933 RAM.

-Memory: 1TB SSD M.2 NVMe PCIe storage.

-Accessories: Logitech G G705 wireless mouse (€89) and Corsair HS55 Wireless headphones (€139.99).

Software: Open-source software was chosen whenever possible:

-Windows 10 Pro operating system (€49.99).

-Unity a development engine available for personal use at no cost.

-Visual Studio Code 2020 code editor (free).

-Blender 3.0 3D modeling tool (open-source software).

-Procreate application for 2D illustration (€10), exclusively compatible with iPads. In this project, a 12.9-inch iPad Pro (4th generation) was used, costing €679.

-Mixamo, a free Adobe web tool for animations and characters.

-Github, used for version control and storing the game's stages.

-Trello, for managing the project workflow.

-Overleaf, an online platform for drafting reports using LaTeX.

-OfficeTimeLine, used for creating diagrams such as Gantt charts and use cases.

-Lucidchart, used for creating the flow chart diagram [15] .

Other resources:

Cost of Human Resources:

- **Average salary of a Junior programmer in Spain:** €22,996 per year, which equates to approximately €1,916.33 per month [17].
- **Project duration:** 3 months
- **Total cost of human resources:** 3 x €1,916.33 = €5,748.99

Cost of Co-working Space Rental:

- **Monthly rental of a co-working space in Castellón:** €200
- **Project duration:** 3 months
- **Total rental cost:** 3 x €200 = €600

Depreciation of Equipment:

- **Cost of hardware and software:** €1,070
- **Estimated equipment lifespan:** 5 years
- **Annual depreciation cost:** €1,070 ÷ 5 = €214 per year
- **Depreciation cost for the 3-month period:** €214 x (3/12) = €53.5

Contingency Expenses:

- **Contingency percentage on the total cost:** 10%
- **Contingency cost:** (€5,748.99 + €600 + €53.5) x 0.10 = €640.35

Now, let's sum all the costs to get the total project cost:

Total development cost = Cost of human resources + Rental cost + Depreciation cost + Contingency cost = €5,748.99 + €600 + €53.5 + €640.35 = €7,042.84

Therefore, based on this estimation using updated data, the total project cost would be approximately **€7,042.84**. I would recommend verifying these values with additional sources to confirm the accuracy of this estimate.

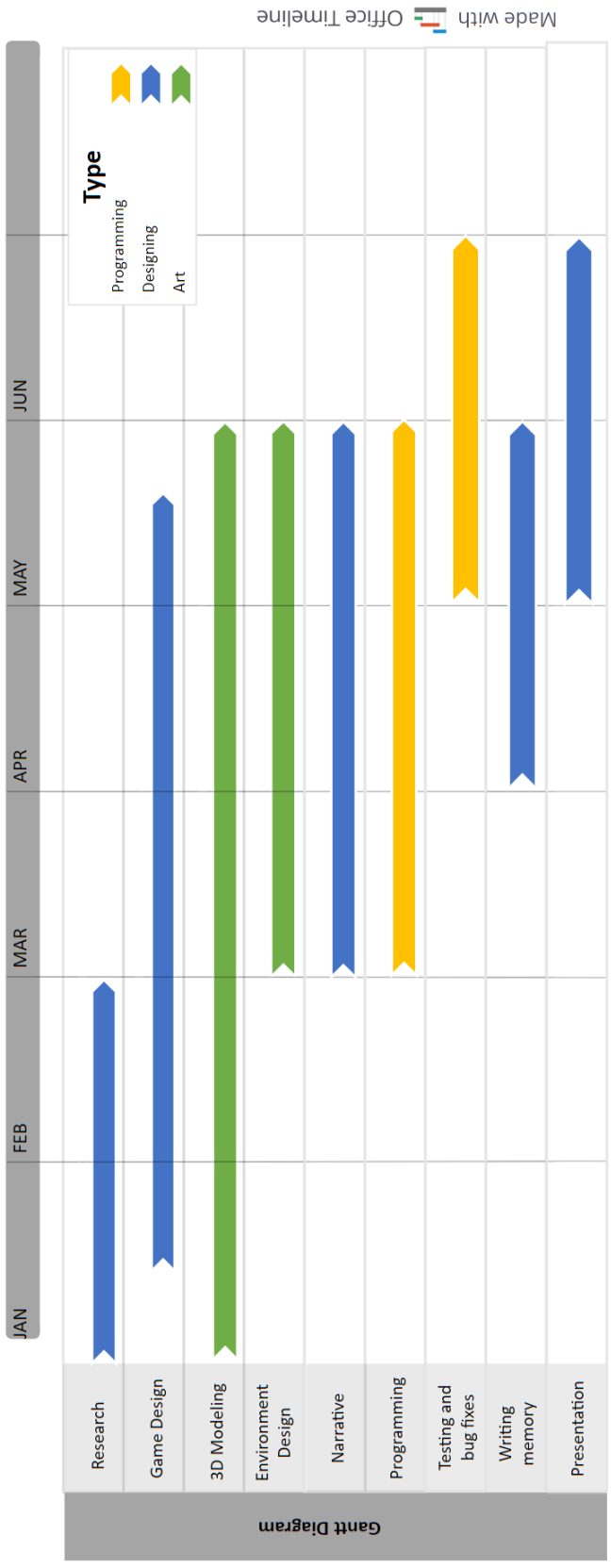

Figure 2.1: Gantt chart (made with OfficeTimeLine [27])

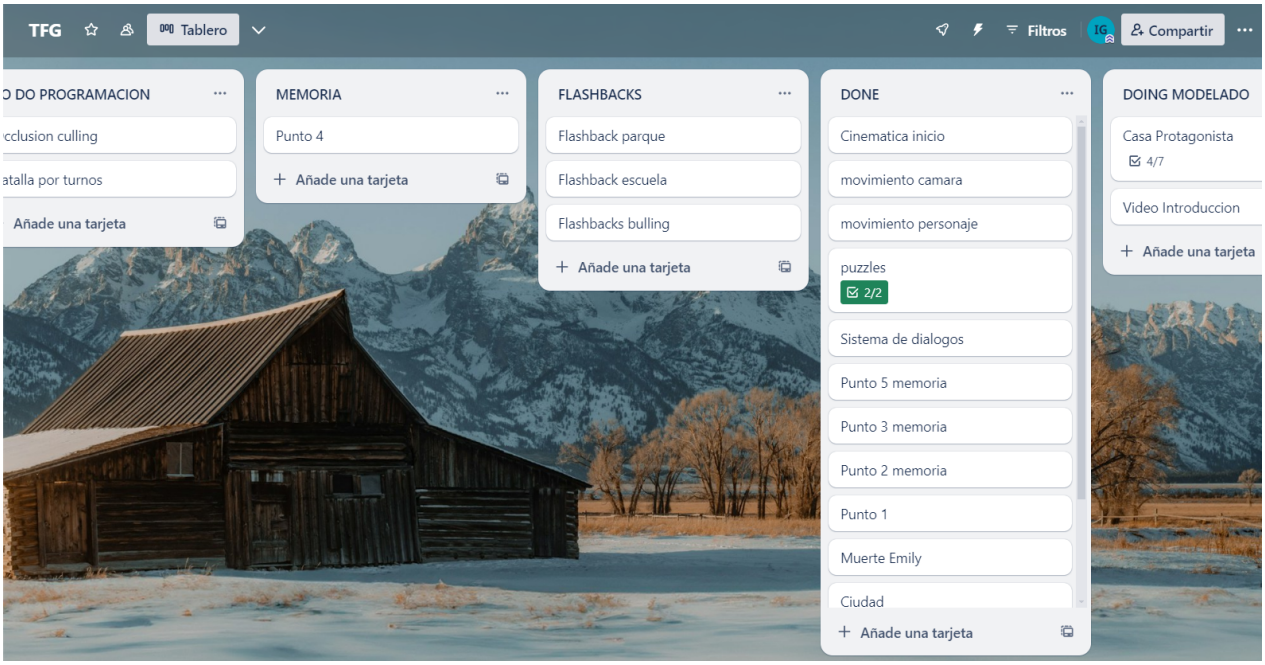

Figure 2.2: Trello space

CHAPTER 3

System Analysis and Design

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3.1 Requirement Analysis

In this section, the functional and non-functional requirements of the project will be outlined, along with some diagrams.

3.1.1 Functional Requirements

R1. Game initiation is facilitated through the "Comenzar" button.
R2. Termination of the game is possible via the "Salir" button.
R3. Familiarization with controls is achievable by selecting the "Controles" button.
R4. Access to options is granted through the "Opciones" button.
R5. Character movement is enabled using either the WASD or arrow keys.
R6. Interactions with characters and objects are initiated by pressing the "E" key.
R7. Dialogue reading and selection of options occur through screen clicks.
R8. Object collection is automated upon character contact.
R9. Inventory management is accessible by clicking the "I" button and selecting objects with the mouse.
R10. Object utilization is achieved by selecting and clicking on them with the inventory

open.
R11. Inventory organization permits object repositioning via selection and dragging.
R12. Object removal from the inventory is executed via the "Tirar" button.
R13. Object usage is initiated by clicking the "Usar" button.
R14. Object inspection is facilitated through the "Ver" button.
R15. Activation of the pause menu is achieved by pressing the "Escape" key.
R16. Resumption of gameplay is accomplished by selecting the "Continuar" button within the pause menu.
R17. Access to options from the pause menu is facilitated through the "Optiones" button.
R18. Combat initiation occurs upon character-enemy contact.
R19. Engagement in combat involves attacking the enemy by clicking on designated attack buttons.

3.1.2 Non-functional Requirements

R20. Exclusive compatibility is with the Windows PC platform.
R21. Utilizes a 3D isometric perspective with a charming cartoon style.
R22. A minimalist graphical interface ensures unobstructed gameplay.
R23. Features intuitive RPG mechanics and controls typical for PC gaming.
R24. Story progression is facilitated through dialogues and object interactions.
R25. The narrative explores themes of mental health and suicide.
R26. Immersive musical accompaniment complements scene ambiance.
R27. Maintains a consistent artistic style throughout the game.
R28. Artistic design aims to juxtapose the challenging theme with the audiovisual presentation.

3.2 System Design

This section should depict the logical or operational design of the system in question. The most effective approach is to utilize visual aids such as flowcharts to illustrate this aspect (see Figure 3.1).

3.3 System Architecture

The tool used for the development of this project is Unity. Taking into account the version used, 2022.3.12f1, and following Unity's documentation [41], the requirements are as follows:

- **Hardware:**
  - Processor of at least 3 GHz.

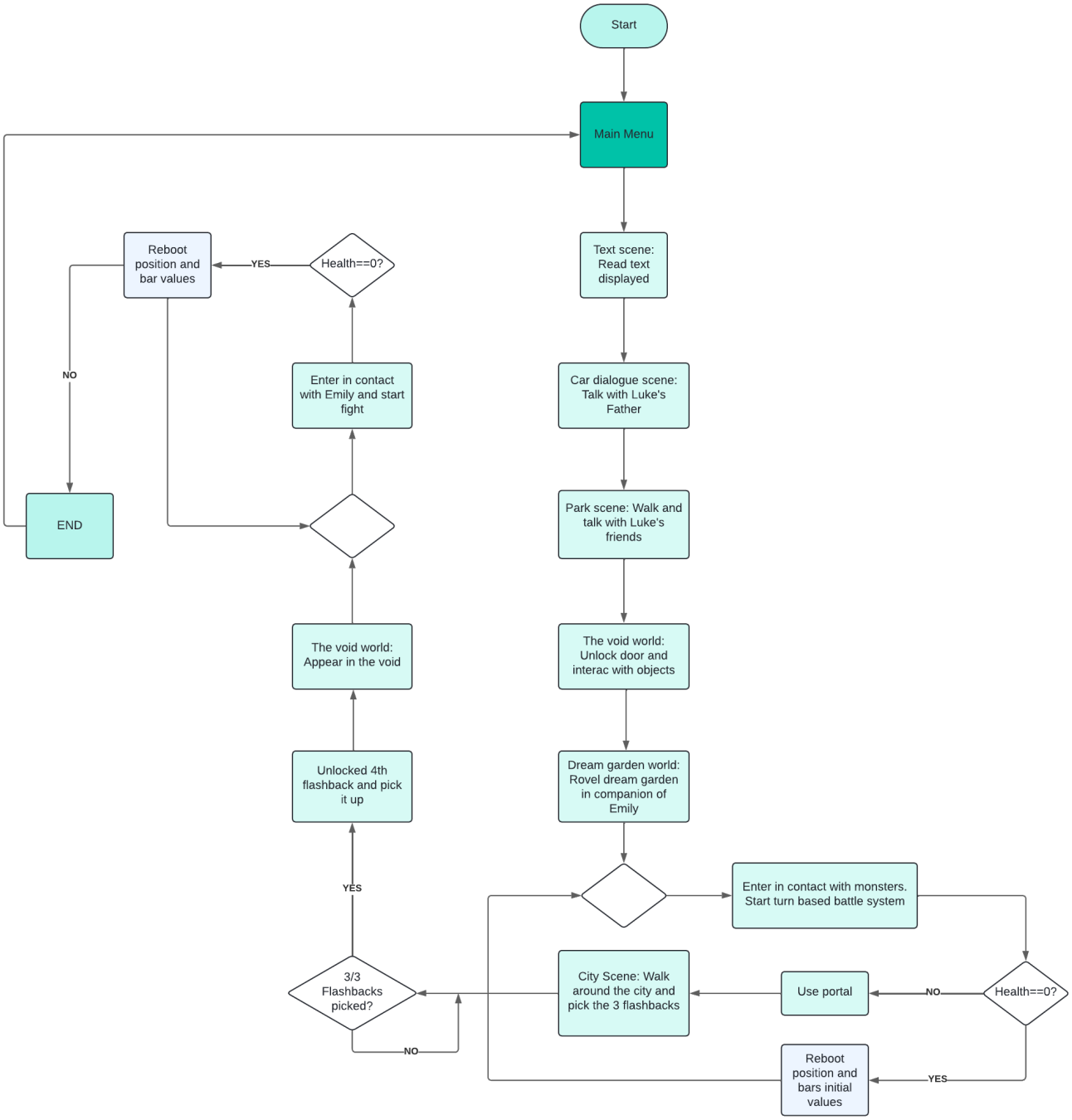

Figure 3.1: Flow chart Diagram (made with Lucidchart)

  - Memory RAM of at least 8 GB.
  - Graphics card compatible with DirectX 11 or equivalent.
  - Adequate storage space for installing Unity and your projects.

- **Operating System:**
  - Windows 7 SP1+, 8, 10.
  - macOS 10.14+.
  - Ubuntu 16.04+.

- **Software:**
  - Depending on your operating system, you may need to install additional software such as Visual Studio or Xcode for code development.

- **Web Browsers:**
  - For viewing documentation and other online resources, it's recommended to have an up-to-date web browser such as Chrome, Firefox, or Edge.

- **Internet Connection:**
  - An internet connection is recommended for the installation of Unity and downloading plugins and updates.

- **Specific Project Requirements:**
  - Depending on the complexity of your project, you may require additional hardware and software requirements such as specific device drivers or third-party tools.

3.4 Interface Design

The interface remains consistent throughout the game except during conversation segments. The player navigates through the environments with an isometric view. When the player approaches an interactable character or object with available dialogue, an icon will appear above their head. This icon will have an animation upon appearing, disappearing, and remaining to enhance its visual appeal.

When the player engages with a character or object to trigger dialogue, a panel will display at the bottom of the screen. This panel will feature the character's name, sprite, and dialogue text, along with options to select from or a "Continue" button if no choices are presented.

Similarly, when the player interacts with an object to add it to their inventory, subsequent interactions become possible. Certain objects can be stacked, each with unique

functionalities. Some items may can be seen, while others are utilized for specific interactions.

The component that may vary the most is the combat system. Here, the player must defeat an enemy by executing turn-based attacks. There will be several buttons for performing attacks.

Throughout the game, the player can access the pause menu.

CHAPTER 4

Work Development and Results

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4.1 Work Development

In this section, the complete process of game development will be detailed. After conducting the necessary research and planning, it is time to consolidate all the information. We will examine the progress, evolution, methods employed, and any modifications made.

4.2 Game Document Design (GDD)

At the outset of the project, it was necessary to create the **Game Design Document (GDD)**. This document served as the initial blueprint for the game's development. Within it, plans were outlined for characters, environments, gameplay, visual style, and more. While the initial GDD and the resulting one have evolved, they have maintained the fundamental concepts unchanged.

4.2.1 General Data

Name of the game: "Shadows of the Past".
Platforms: PC
Genre: Graphic adventure
Target audience: Teenagers and adults interested in emotional stories and deep narratives.
Development team: Isabel Alonso Gomez
Art style: 3D cartoon/cute modelling

4.2.2 Introduction

"Shadows of the Past" is an emotionally charged adventure game that sensitively and thoughtfully addresses the critical issue of suicide prevention, delving into the intricate causes and profound ramifications surrounding this tragic occurrence.

Set against the backdrop of the protagonist Luke's grief over the loss of his twin sister, Emily, players are immersed in a poignant journey through both the inner and outer realms of Luke's existence. As players uncover the truths behind the family's tragedy, they are confronted with challenging issues pertaining to mental health, bullying, and bereavement.

Throughout the game, there is a strong emphasis on the significance of empathy, emotional support, and understanding towards individuals grappling with mental and emotional health challenges. Players are provided insights into the complex dynamics of family relationships, the hardships of bullying, and the internal conflicts exacerbating the character's anguish.

Through meaningful encounters and emotionally charged moments, "Shadows of the Past" offers a profound contemplation on the vulnerability of the human psyche and underscores the imperative to enhance awareness of mental health issues. The game aims not merely to entertain but also to educate and enlighten players about the warning signs of suicide and the crucial importance of seeking assistance and support when facing such challenges.

By navigating dreamlike worlds, confronting emotional obstacles, and discovering redemption through forgiveness and acceptance, players are immersed in a compelling narrative that underscores the significance of hope and resilience even in the most challenging circumstances.

4.2.3 Conclusions

After formulating the initial concept of the project and analyzing similar games, articles, and documents, the following conclusions have been reached:

- The game will feature multiple isometrically viewed environments, which will generally be of a moderate size to avoid overwhelming the player.
- The environment should not be cluttered but rather easily navigable.
- The game's progression and storyline should unfold as players explore the environments.
- NPCs will also reflect their mental states in relation to the event involving Emily, illustrating the significant negative impact that suicide can have on the close circle of the deceased individual.
- The game will follow a linear narrative structure; the aim is to convey a story, and players will not have the option to choose alternate paths.
- The focus of the game should not be solely on the suffering associated with mental health issues but rather on acknowledging their persistent existence and learning to live with and manage them effectively.

4.2.4 Story

The story follows a boy named Luke, controlled by the player, and his friends (NPCs), as they venture into a dreamlike and surreal world while grappling with profound themes such as loss, loneliness, and mental health.

The plot centers on Luke, who finds himself trapped in three distinct realms: his subconscious, known as "The Void"; a dreamlike world called "Dream Garden"; and the real world. In the dream world, Luke and his sister confront strange creatures and challenges that reflect their own fears and personal traumas. As they explore these three worlds, they uncover dark secrets about their past and the traumatic event that has affected them all.

The game alternates between the three worlds. In the real world, players witness Luke revisiting his hometown after a few years away. Within this realm, players can interact with objects to uncover the story. In the world of "Dream Garden," where Luke embarks on adventures with his sister, they encounter creatures that they must defeat using a traditional turn-based combat system. Lastly, "The Void" represents the deepest recesses of Luke's subconscious. As the story progresses, more details about the tragedy that befell Luke and his friends are revealed, and players must solve puzzles and face emotional challenges to progress.

As the characters explore their own fears and traumas, the game addresses themes such as guilt, forgiveness, and acceptance. The narrative unfolds in a linear fashion.

4.2.5 Gameplay

At this juncture, we will delve into the various aspects of the game "Shadows of the Past," ranging from its turn-based combat system to the resolution of puzzles. Immersing ourselves in a world where exploration unveils not only captivating visual landscapes but also emotional and narrative depths that challenge the mind and the heart.

- **Turn-Based Combat System:** The combat system in "Shadows of the Past" employs a traditional turn-based approach. When the player makes physical contact with an enemy on the map, the screen transitions to the battle mode. Characters and enemies are displayed within the battle window. The life indicator denotes the characters' health. During a character's turn, their mana and vigor indicators are displayed.

  In battles, characters engage with enemies that possess various abilities and statistics.

  The mana and vigor indicator displays the amount of mana and vigor possessed by the characters. These energies are necessary to utilize special abilities that aid in battle. Players must exercise caution to avoid depleting their energies. If a character's health reaches zero, the player will have to restart from the beginning of the "Dream Garden."

- **Exploration:** Players navigate through three detailed environments and uncover clues about the story and characters.

  - **Real World:**
    Description: The real world is the setting for the protagonist Luke's everyday life. Here, players will explore Luke's hometown and discover areas where flashbacks related to the bullying suffered by Emily are triggered.
    Combat Mechanics: There is no combat in the real world.

  - **Fantasy World (Dream Garden):**
    Description: A colorful and fantastical world where Luke and his sister venture together. Here, they encounter creatures that they must overcome to progress.
    Combat Mechanics: Combat occurs when the player interacts with creatures representing the protagonist's traumas. Turn-based combat system.

  - **Protagonist's Mind (The Void):**
    Description: A distorted and surreal world that represents Luke's emotional and mental conflicts. Here, the player will confront the protagonist's internal demons and explore his deepest traumas.
    Combat Mechanics: In the protagonist's mind, battles take on a deeper emotional significance. Enemies symbolize Luke's inner challenges, and battles reflect his struggle to overcome them.

- **Puzzle Resolution:** Players solve emotional and logical puzzles that unlock new paths and reveal plot details. The puzzles range from needing to solve a riddle to open a door, to gathering flashbacks to obtain the necessary information to advance the story.

- **Interactions with Characters** Players interact with non-playable characters who provide relevant information.

4.2.6 Mechanics

At this juncture, we will meticulously delve into the various mechanics of the game "Shadows of the Past," encompassing Investigation Levels, Camera perspectives, and Controls. Immerse yourself in a realm where gameplay involves navigating environments, interacting with objects and characters, and uncovering mysteries pivotal to the plot's progression.

- **Investigation Levels:** The investigation levels will involve navigating the environment and interacting with objects and individuals to collect clues and solve key plot mysteries. Players will be able to closely examine their surroundings, search for clues, and converse with non-playable characters to obtain relevant information.

- **Camera:** The game will employ a third-person perspective that allows players a broad view of the environment and characters as they explore and tackle challenges, also utilizing an isometric perspective.

- **Controls:** The controls will be based on:

  - Using arrow keys or ASDW to navigate the environment.
  - Pressing the E key to interact with objects and characters.
  - Automatically picking up items when passing over them.
  - Opening the inventory by pressing the I key.
  - Accessing the pause menu with the Esc key.
  - During engaging levels, players will use the mouse to select or navigate through dialogue options.
  - In combat systems, players will use the mouse to select moves, items, etc.

4.2.7 Characters

In this section, we will delve into the rich tapestry of characters that bring the world of "Shadows of the Past" to life. From the tormented protagonist Luke to the supporting characters orbiting around him, each plays a vital role in the narrative, adding layers of emotional depth and complexity to the story.

- **Luke:** Luke is the protagonist of the story, a young man haunted by the tragic death of his sister, Emily. Luke is introverted and reserved, carrying the weight of guilt and the pain of loss. Throughout the game, Luke struggles to confront his past and accept the truth about Emily's death. His journey leads him to explore the intricacies of his mind and confront his inner demons.

- **Emily:** Emily is Luke's sister, whose tragic death by suicide is the central event that drives the story. Although Emily is not physically very present in the game, her memory and legacy profoundly impact Luke, his friends, and the events that unfold throughout the narrative. Her suicide serves as the catalyst that triggers the exploration of themes of guilt, loss, and redemption.

- **Alex:** Alex is Luke's best friend, a constant source of support amidst his pain and confusion. Alex serves as a beacon of stability and friendship for Luke, offering him comfort and support during challenging times. His presence is a source of strength and emotional connection for the protagonist.

- **Ian:** Ian is Emily's best friend, who is also profoundly affected by her tragic death. Ian shares a deep connection with Emily, and her grief over the loss is equally palpable. Throughout the game, the complex dynamics of their friendship and how both cope with the trauma and pain are explored.

4.2.8 Graphics and style

The characters will adhere to a stylized/cartoon/cute/kawaii/cozy aesthetic. The environments will be designed to feature an isometric view. The game aims to present a unique visual style that combines realistic and stylized elements, reflecting the duality between reality and fantasy.

The models will employ a vibrant color palette for dreamlike worlds and a darker, more melancholic palette for fantasy worlds. The real-world setting will utilize a more realistic color scheme. Some of the images I have used as reference for the artistic style can be seen in the following Figure 4.4.

The models will be developed in Blender, and the game will be built in Unity [38]. The user interface and UX/UI design will follow the same style. Some of the games that will serve as references include "Animal Crossing: New Horizons" (Nintendo, 2020), "Ori and the Blind Forest" (Moon Studios, 2015) [37], "Untitled Goose Game" (Panic,

Figure 4.1: Scketches (made with Procreate)

Figure 4.2: Animal Crossing: New Horizons (Nintendo, 2020).

Figure 4.3: Batman (Batman, 1986).

2019) [14], and "Batman" (Ocean Software, 1986) [30] (see Figure 4.2 and 4.3).

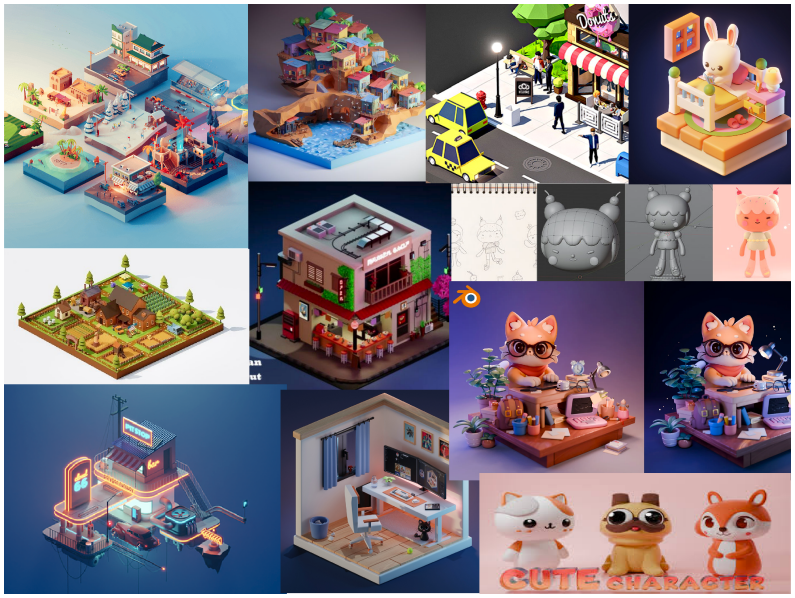

Figure 4.4: Images that have inspired for the artwork of the video game.

4.2.9 Music and sound effects

Music plays a pivotal role in establishing the emotional and evocative ambiance of "Shadows of the Past." Music will accompany every facet of the game, ranging from moments of tranquil exploration to instances of heightened tension and emotion.

Each area within the game will feature a unique soundtrack tailored to reflect its atmosphere and theme. From the dreamlike and vibrant spaces to the more solemn and melancholic environments, the music will be designed to complement and enrich the player's experience.

During periods of exploration, the music will be subdued, immersive, and atmospheric, evoking a sense of mystery and discovery.

During sequences of action and tension, the music will escalate to mirror the peril and urgency of the situation, thereby maintaining player engagement and immersion in the narrative.

4.3 Art

In this section, we will take a look at the visual representation of "Shadows of the Past". The decision regarding the game's art leaned towards adopting a "cute/cozy" style, designed to be visually pleasing and attractive. Additionally, the aim was to establish a

significant contrast between the narrative and the chosen artistic style.

4.3.1 Cute cartoon 3D Modelling style

Although the graphic style used does not have a defined name, modelers who employ it describe it as a "cute/cozy cartoon" style. The characteristics of this style are as follows:

- **Appearance:** These characters possess a sweet and charming look, with proportions and shapes that evoke tenderness and sympathy.
- **Details:** While maintaining the simplicity and exaggeration typical of comic or stylized character forms, these characters often incorporate additional details that make them more appealing and pleasant. These include large and expressive eyes, soft and rounded facial features, and small, fluffy limbs.
- **Color Palette:** The color scheme is typically bright and cheerful, featuring soft and pastel tones that add to the overall feeling of sweetness and charm.
- **Expressiveness:** Expressiveness is key in this style. Characters often have highly emotive animations that highlight their friendly and charismatic personalities, making it easier for players or viewers to connect with them.

This style is very popular in games and animations aimed at audiences of all ages. Its adorable and welcoming design often elicits a positive emotional response from viewers, making the characters easily recognizable and memorable (see Figure 4.5).

The aim is for the game to be relaxing and immersive, enveloping the player in the story and atmosphere, and minimizing external stimuli. Additionally, a contrast between the narrative and the visual aspects is sought.

Regarding the environments, these will be modeled using an isometric view (see Figure 4.6).

4.3.2 Modelling and animation

Using the concept art as a guide, we started by modeling the main character, Luke (see Figure 4.7 and 4.8), using Blender for all the game's objects.

Sticking to our artistic style, the models have a stylized and cute cartoon look, making the whole setting feel cozy. Here are some techniques we used for the characters and environments:

- **Subdivision Surface Modifier:** Also known as "Subdiv," this tool helps smooth out the mesh by breaking it into smaller faces. It lets us create detailed surfaces

Figure 4.5: Cute Cartoon 3D Modeling artistic style for characters and objects.

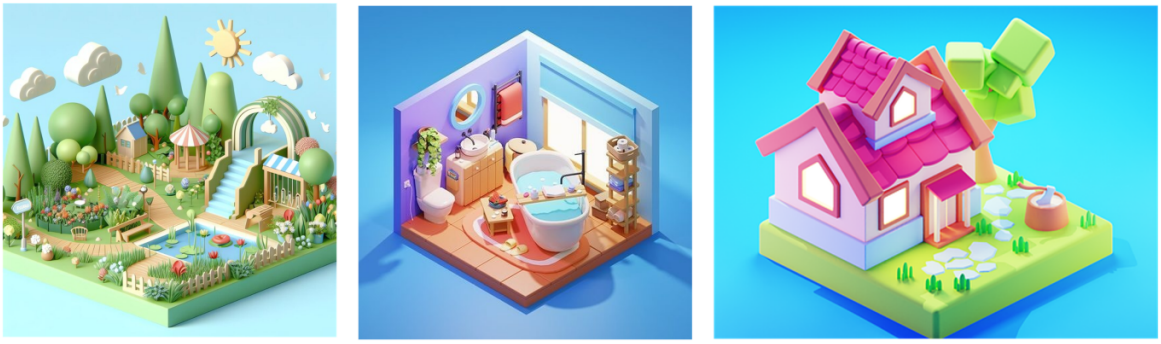

Figure 4.6: Cute Cartoon 3D Modeling artistic style for scenarios with isometric view.

Figure 4.7: Luke model (made in Blender)

Figure 4.8: Luke at The Void(left), Dream Garden(middle) and real-world(right)

Figure 4.9: Subdivion Surface Modifier.

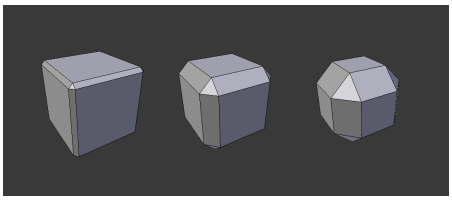

Figure 4.10: Gris (Bevel Modifier).

without needing to handle a lot of data, giving objects an organic look. [5]. An example of how the modifier performs the task (see Figure 4.9).

- **Bevel Modifier:** his tool rounds off the edges of the mesh, letting us control where and how much rounding happens (see Figure 4.10) [4].

All the non-player characters (NPCs) start with the same basic shape (see Figure 4.11), but they differ in their clothes and hair.

All the animations are made in Mixamo [16], an Adobe website where you can find and customize models and animations for free. We download the animations from there and then tweak them in Blender for better results.

Most of the in-game objects are made specifically for this project, using the same techniques.

4.3.3 Isometric environments

In the vast world of video games, environments play a crucial role in the player's experience. They serve as the canvas upon which the story unfolds, the backdrop that envelops the player in an imaginative and thrilling universe. From the dark alleys of a futuristic city to the idyllic landscapes of a fantasy world, environments have the power to transport us to places beyond our imagination.

In the context of our game, we have opted for a charming and attractive artistic style that seeks to create a striking contrast with the harsh storyline it presents. This style, characterized by its cheerful, welcoming, and stylized tone, aims not only to visually delight players but also to establish an emotional shock with the story unfolding in the game, keeping users engaged.

Welcome to the charming and cozy isometric environments created in "Shadows of the Past" (see Figure 4.12, 4.13, 4.14 and 4.15). Immerse yourself in a picturesque and vibrant world where every corner is imbued with charm and character. Isometric

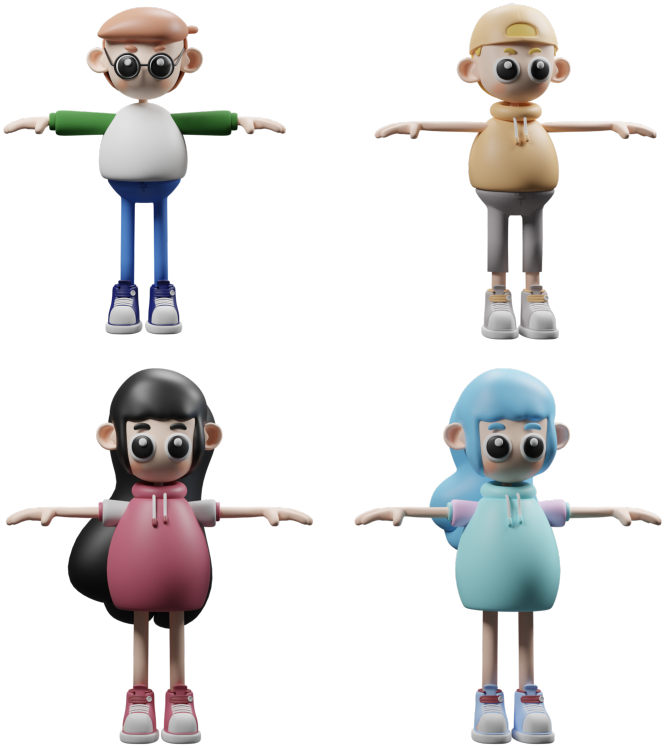

Figure 4.11: Alex (top left), Ian (top right), Emily in real world (below left) and Emily in Dream Garden (below right). All made in Blender.

environments are a wonderful way to represent our game in a visually appealing and captivating format. Instead of the traditional top-down perspective, the isometric view allows us to enjoy a diagonal perspective that adds depth and dimension to our world.

Every detail of our environments has been carefully designed to evoke a sense of warmth and comfort. From the picturesque buildings to the fantastical worlds, each element has been created with a charming and stylized style that captures the essence of our game.

The characters and objects that populate our environments are modeled in a cute/-cartoon style that adds a touch of sweetness and fun to our world. Each character has their own unique personality, and you can interact with them as you explore the environments and discover everything our game has to offer.

In addition to being visually appealing, our isometric environments are also designed to be functional and offer a smooth and immersive gaming experience. The paths and passages are designed to gently guide the player through the world, while points of inter-

Figure 4.12: City buildings.

Figure 4.13: City view in isometric perspective.

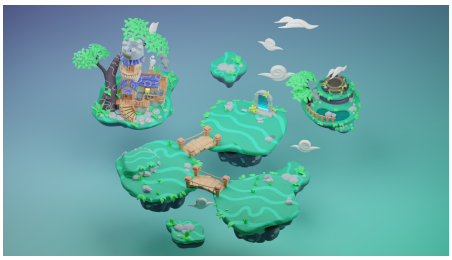

Figure 4.14: Dream Garden scenario.

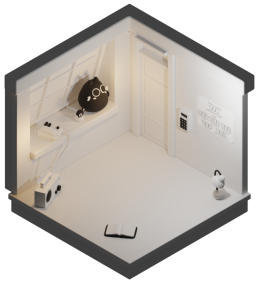

Figure 4.15: The void scenario (representation of Luke's mind).

est are strategically placed to encourage exploration and immersion in the environment.

In summary, our isometric environments are the perfect backdrop for our adventure, offering a cozy and charming atmosphere that invites players to immerse themselves in our world and explore everything it has to offer.

One of the main challenges in designing isometric environments with this artistic style lies in managing the large number of polygons that make up the objects and structures within the environment. Due to the isometric perspective, which allows multiple sides of objects to be visible simultaneously, a greater number of polygons is required to represent details and maintain visual quality.

However, this increase in the number of polygons can negatively impact game performance, especially on devices with limited resources such as mobile devices or older computers. Rendering a large number of polygons can cause a significant load on the

GPU and reduce the frame rate, thus affecting the player's experience.

To address this issue, a commonly used technique is occlusion culling. This technique involves identifying which objects are not visible to the camera at any given time and omitting their rendering to reduce the load on the GPU.

Occlusion culling works by using algorithms to determine which objects are obstructed by others in the scene and, therefore, not visible to the player. These hidden objects are marked as "culled" and excluded from the rendering process, allowing the GPU to focus on rendering only the objects that are visible on the screen at that moment.

Implementing occlusion culling in isometric environments can be a complex but necessary process to optimize game performance. It requires careful analysis of the structure and arrangement of objects in the scene, as well as the implementation of efficient algorithms to determine which objects are hidden at any given moment.

By effectively utilizing occlusion culling, we can significantly improve game performance without compromising the visual quality of the isometric environments, thus ensuring a smooth and immersive gaming experience for players.

4.3.4 UI and 2D art

Given that the game adopts a cute/cozy/cartoon style, the 2D artistic style follows suit. The decision was made to embrace a hand-drawn style, with all artwork created using the Procreate tool.

During character dialogues, corresponding sprites will appear in the interface to visually identify each character more clearly (see Figure 4.21). Similarly, in the combat system, sprites of characters/enemies involved will be displayed (see Figure 4.23).

The aim of the game is for the 2D interface to mirror the style of the 3D elements. Therefore, dialogues are presented in a cartoon style (see Figure 4.19 and 4.20). Different types of buttons are used for menu options and controls. The game's logo is also created using the same program (see Figure 4.16, 4.17 and 4.18). Consistency is maintained in the design of the inventory, album (see Figure 4.22), combat system, and character sprites for dialogues. Buttons and icons for inventory and combat elements are also hand-drawn.

In addition, flashback sequences are utilized to unveil the tragic events surrounding Emily's death within the game. These poignant glimpses into the past are integral to the narrative, shedding light on the circumstances leading up to her demise. Players will uncover these flashbacks by conducting thorough investigations throughout the city, piecing together the fragments of the past hidden within its depths. Once discovered, these flashbacks will be cataloged within the inventory system, providing players with a

tangible record of the unfolding tragedy.

Within the inventory interface (see Figure 4.24), players will have the ability to revisit and view these flashbacks at their leisure, offering a deeper insight into the events that shaped Emily's fate. Through this interactive storytelling device, players will be drawn further into the emotional depth of the narrative, experiencing the profound impact of Emily's story firsthand.

Figure 4.16: Main Menu.

Figure 4.17: Controls (left) and Options (right.)

4.4 Narrative design

The central purpose of our game is to offer an emotionally profound and artistic experience that allows players to immerse themselves in an introspective journey through mental health themes. Inspired by games like "Omori" and "Gris", our design focuses on combining narrative and visual elements to address these topics in a sensitive and

Figure 4.18: Menu Pausa.

Figure 4.19: Dialogue UI.

Figure 4.20: Dialogue UI with options.

moving manner, as illustrated in Figure 4.25 and 4.26.

The game is presented as a graphic adventure, where players will explore meticulously designed environments and interact with objects and non-playable characters (NPCs) to uncover and unravel a storyline that addresses awareness about anxiety, depression, and suicide.

By interacting with NPCs, players will have the opportunity to understand and empathize with their personal struggles. These characters reflect universal human emotions and challenges, such as loneliness, fear, and the search for identity.

Players will also need to confront and overcome the internal conflicts and challenges that afflict the protagonist, thereby delving deeper into the game's themes and narrative.

A well-crafted narrative is essential for creating an immersive experience. If the story is touching, the artistic design is evocative, the music contributes to setting the appropriate atmosphere, and the gameplay is engaging, players will feel psychologically

Figure 4.21: Sprites used for dialogues.

Figure 4.22: Photo album and enlarged photo.

Figure 4.23: Combat System UI.

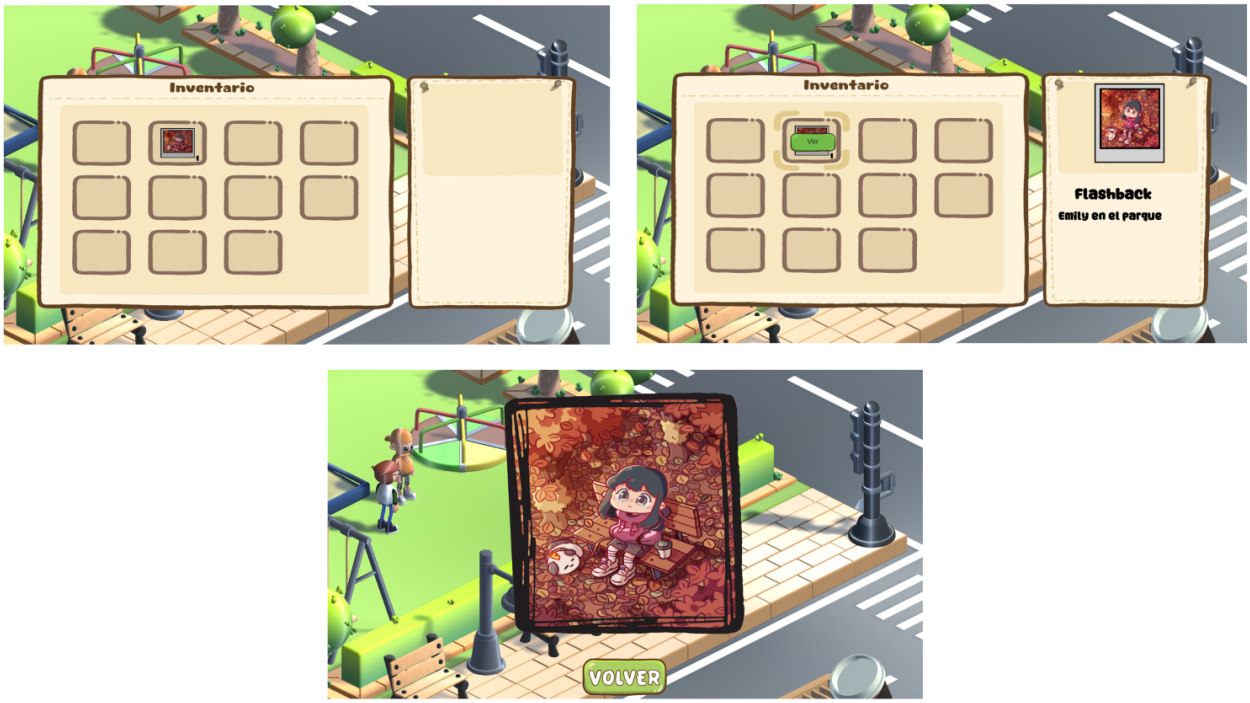

Figure 4.24: Inventory UI.

Figure 4.25: Omori (OMOCAT, 2020).

Figure 4.26: Gris (Nomada Studio, 2018).

transported to the game's world, more than just visually or audibly. The intention is for players to feel fully absorbed by the game experience, providing them with a safe space to explore these delicate themes while having fun.

The first step is to develop the characters. Originally, the idea was to have one main character and several secondary characters. Some of them were intended to be part of the initial plot, while others would simply make appearances throughout the game environments. However, due to time constraints, the game ultimately features one main character and three secondary characters.

Luke is an introverted and reserved individual. He has a calm and reflective nature, preferring to spend time alone or in the company of a select circle of close friends. He often immerses himself in his own thoughts and fantasies, which can make it difficult for others to fully understand him.

Luke struggles with his own internal and emotional battles. He may be prone to experiencing moments of anxiety and depression, and he struggles to confront and overcome his own fears and past traumas. Although he tries to maintain an appearance of calm and composure on the surface, his close friends may notice his mood swings and internal struggles.

Luke has a special relationship with nature and tranquility, finding peace and comfort in natural spaces and silent contemplation. He often retreats into his inner world, where he finds escape and solace from the difficulties of everyday life.

As Luke's story unfolds, he faces challenges that force him to confront his fears and accept his past. Through friendship and the support of his loved ones, he finds the strength to overcome his internal obstacles and move towards healing and personal growth.

Emily is characterized as a sensitive and reserved individual. She struggles internally with self-esteem issues and social anxiety due to the bullying she has experienced. Despite her efforts to fit in and be accepted, she feels alienated and misunderstood. Her sensitivity makes her deeply affected by emotional pain and criticism from others, eventually leading her to a state of despair. Her suicide is the tragic result of her internal struggle and her inability to find comfort and support in her environment.

Ian is known for being kind, compassionate, and considerate towards others. He is a charismatic and reliable individual, admired for his ability to lead and make wise decisions in difficult situations. Although he faces personal and family challenges, his positive outlook and determination to protect those he loves guide him through adversity. Ian is a pillar of strength and support for his friends, always willing to provide them with help and guidance when needed.With Emily's death, the person he was in love with and his best friend, he feels deeply affected by her death, mourning her loss and grappling with feelings of guilt and grief.

Alex shares traits with Basil, being a quiet, creative, and reflective person. He has a passion for art and photography, finding solace in artistic expression as a way to escape reality. Although he generally appears reserved, Alex is deeply affectionate towards his loved ones and finds beauty in life's small pleasures. However, he can be vulnerable to emotional distress when faced with difficult or traumatic situations. His art serves as both a source of healing and a way to process his internal emotions.

Everyone faces situations like Luke's. They may not be exactly the same (like being a victim of bullying or the loss of a loved one), but they can be very similar. It's very common that at some point in our lives we face depression, anxiety, emotional traumas, and suicidal thoughts. Bullying can be a significant cause of these issues, as it can have a devastating impact on individuals' mental and emotional health. In those moments of darkness, it may feel necessary to leave our home, family, and friends behind in search of a new life and a chance for healing. Combatting bullying is essential to protect individuals' mental health and promote a safe and supportive environment for everyone. Stepping out of the comfort zone can be extremely challenging in these circumstances, but with solid emotional support, proper treatment, and the awareness that they are not alone in their struggle, it's possible to overcome it and find hope and recovery.

4.5 The coding

The degree in game design and development comprises 75% of subjects related to programming, emphasizing the significance of this aspect in the development of both this project and all video games in general.

Specifically, the programming aspect of this game encompasses several fundamental components contributing to its functionality and gameplay. It is divided into various

systems and elements, including:

- The dialogue and management system, facilitating interaction between characters and the progression of the storyline through conversations and events.
- The inventory system, providing players with the ability to manage and utilize items and resources within the game.
- The player controller, interpreting user actions and translating them into movements and actions within the game.
- The camera, controlling the player's perspective and visual focus within the game environment.
- The combat system, defining mechanics and rules for player-enemy engagements.
- The door lock, managing player interaction with locked doors and accesses within the game.
- Enemies, representing threats and challenges that the player must confront during gameplay progression.

Although the codes will not be displayed in this document, it is pertinent to mention that the complete source code can be accessed through the GitHub repository for a more comprehensive and detailed understanding of the game's programming system. To access the respective scripts, they can be found in the **Assets/Scripts/**[12].

4.6 Optimization

The game utilizes models with a high number of polygons, making this aspect an essential part of its development. Unity already incorporates optimization features such as detail distance and Occlusion Culling. The latter, in particular, is of paramount importance. Occlusion Culling is a technique that hides all objects that are not within the camera's field of view, especially relevant for static objects. Its primary function is to reduce computational costs by minimizing the rendering load of elements that are not perceptible to the player at any given moment. This strategy stands as a fundamental pillar in ensuring the efficiency of the game's performance, guaranteeing a smooth and optimized experience for the user.

4.7 Final outcome of the Shadows of the Past project

Following the development of "Shadows of the Past," the video game manages to fulfill most of the initial requirements with a clearly defined beginning and ending. It incorporates interesting mechanics, such as a sophisticated combat system and challenging enemies. The game environment is welcoming, and its aesthetic is cohesive and harmonious. The storyline is intriguing, addressing sensitive themes like mental health,

including depression, trauma, and suicide. Most importantly, the game is fully playable, offering an engaging and satisfying experience. Although the original idea was ambitious, adjustments were made to meet the established deadlines, demonstrating the potential to evolve into a more comprehensive game in the future. The addition of more characters, additional stories, and a greater variety of combats could make it even more captivating. Furthermore, it could serve as a valuable tool to help people with mental disorders feel represented and understood. The results are available in the project repository on GitHub [12].

CHAPTER 5

Conclusions and Future Work

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In this chapter, the conclusions of the work, as well as its future extensions are shown.

5.1 Conclusions

Upon completing this project, I reflect that my original idea might have been overly ambitious and unrealistic for a single person to execute in a short timeframe. Nonetheless, this experience has provided me with valuable insights, particularly in the field of programming. Despite the countless hours of work and frustrating moments when everything seemed to go awry and deadlines were looming, I am content with the final game produced.

I've managed to apply knowledge from modeling, art, design, and programming, thus solidifying what I learned during my academic studies.

While developing a complete game solo is a significant challenge, it is achievable. Although I would have liked to incorporate more features or refine certain aspects, I am still pleased with the end result.

In summary, this project has its ups and downs, but it is a true representation of my personal effort and academic journey. I believe this work allows me to conclude my degree in Game Design and Development with a sense of pride.

I would like to extend my sincere gratitude to all the professors who have taught the subjects in the Degree in Video Game Design and Development. Their dedication and expertise have been instrumental in my academic formation and in the completion of this work. I would particularly like to highlight the role of those subjects that have significantly contributed to my learning. Among them, I emphasize VJ1227 - Motores de juegos, where knowledge about the Unity development engine is taught; VJ1212 - Expresión gráfica, which provides skills in using Blender for graphics creation; and VJ1222 - Diseño conceptual de videojuegos, which delves into the elaboration of a robust Game Design Document (GDD) and game narrative. I deeply appreciate the invaluable contribution of these courses to my education and professional development.

5.2 Future work

Despite having completed the project, I do not regard it as its definitive conclusion. I aim for this work to serve as a starting point for a more extensive development in the future. My intention is to review and expand it, incorporating a greater number of characters and expanding the storyline.

One of the ideas I originally had in mind, and which I could not implement due to time constraints, was to expand the fantasy world called "Dream Garden". If I decide to continue with the game's development, this expansion would be a priority addition. I aim for the exploratory space to be more extensive and for the variety of enemies to increase, each representing a specific fear or trauma. With the introduction of more enemies, I would also consider implementing a leveling and experience system for the characters, allowing them to improve their combat skills and unlock new techniques.

Another initial idea I contemplated was the incorporation of emotions in the characters during turn-based battles, which would influence the development of the fights. I am convinced that there are multiple possibilities to enrich and expand the game, making it more complete and engaging. If I ever manage to finish the game according to my expectations, I would like to distribute it for free on a platform so that the public can enjoy it.

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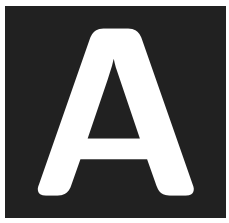

Other considerations

A.1 Bibliography for external elements

This section will include citations for all significant links and external resources downloaded and utilized in the project.

A.1.1 Cited links

Github repository for "Shadow of the past" [12].

A.1.2 3D Assets

Pizza [43].
Enemy [25].
Pegion [19].

A.1.3 Audio Files

Honey jam - massobeats [20].
Prelude No 21 - Chris Zabriskie [44].
Easy Lemon - Kevin MacLeod [11].
Long Ago I was holdin' onto that flower to give me Lo-Fi vibes - OutDoors [29].
Somewhere Else - Kai Engel [10].