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Department of Multimedia and Graphic Arts

Bachelor Thesis

Day of Tribulation: Japanese VR Horror Game

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by

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ABSTRACT

This thesis researches the game design elements used in psychological horror games and how they can be implemented in a Virtual Reality environment. The goal is to develop an immersive Japanese horror VR game experience, that focuses on game design elements of psychological horror, and the use of puzzle mechanic system for story progression. The plot of the game, named “Day of Tribulation”, is heavily inspired and influenced by Japanese mythology and folklore, giving emphasis on the style of gameplay of Asian Horror. Accompanied, with the use of auditory hallucinations and environmental storytelling, the player will have to figure out the truth behind the curse mark and its origins. This thesis went through various phases of implementation. Firstly, an extensive literature review was done on the game and level design process of developing VR games, the game design elements of psychological horror games and the use of auditory hallucinations and environmental storytelling to create an effective horror game atmosphere. The pre-production phase focused on the research of game assets to be able to aid the next phase of design, that includes the process of creating the worldbuilding and the story. Following, the production phase took place, which was the design of the game’s playthrough and levels, the creation of some assets and the development of the game. Finally, a user testing was done that concluded with successfully implementing the psychological horror elements and creating the horror atmosphere in the VR game.

Keywords: VR Experience, Psychological Horror, Japanese Mythology, Environmental Storytelling, VR Horror Game

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ABBREVIATIONS

VR :	Virtual Reality
PC:	Personal Computer
UI:	User Interface
3D:	Three-Dimensional
URP:	Universal Standard Pipeline
XR:	Extended Reality

1 Introduction

“Day of Tribulation” is a Japanese VR horror game that follows the story of an orphan child with a curse mark that finds themselves in a mysterious palace mansion in the yokai realm at the start of fall. They will have to solve puzzles and uncover the truth behind the curse mark and its origins, while exploring this mysterious mansion. A game inspired by creepy fictional Japanese folklore and psychological horror games.

The aim of the thesis is to research the game design elements and methodologies used in psychological horror games and how they can be implemented in a Virtual Reality environment. The goal is to develop an immersive Japanese horror VR game experience, that focuses on the game design elements of psychological horror, and the use of puzzle mechanic system to help drive the story. In addition, the game gives emphasis on the style of gameplay of Asian Horror than the Western one. Thus, it relies on its eerie atmosphere, and suspense scenes, and not in gore elements such as blood and guts. This thesis concentrated on two major tasks of game development, game design and programming.

Psychological horror is a subgenre of horror, and it differs a great deal from the other genres, such as action horror and survival horror. It targets human vulnerabilities and anxieties that we have and digs into the darkest parts of the human mind, unraveling horrific concepts that keep us awake at night (McCoy, 2023). Moreover, psychological horror games tend to be slow paced, without any strong jump scares in your face as they focus on creating the fear in your mind opposed to what you see in the game. In addition, psychological horror games often excel in telling a story by making players concentrate on reading, listening, and assembling things together, thus it can, also, be called narrative-driven horror games (De, 2021).

Japanese horror, or also known as J-Horror, is alike psychological horror and tends to follow the same game design elements. Japanese horror compared to Western horror are completely different in the way that they execute the horror scenes. Western horror grants scares into the form of a shock value, such as blood, gore, and action. Also, most of the time we know exactly what is going to happen next. In comparison, Japanese horror it is its own separate entity, and it’s built on a foundation of rich mythology and ancient belief systems from a different world. It is more subtle and has a very extensive

mythology of monsters, creatures and yokai[1]. Moreover, it is about deep-seated dread and prolonging the feeling of discomfort, trying to mess with your psyche. A good example would be "What's creepier: a voice recording giving you cryptic instructions on how to survive a grisly trap or hearing unknown sounds while being alone in a room?" (Bluelavasix, 2017). It is believable that the latter one is creepier and resonates with a famous quote of H.P. Lovecraft that says "The oldest and strongest emotion of mankind is fear, and the oldest and strongest kind of fear is the fear of the unknown" (Lovecraft, 1927).

1.1 Literature Review

Nowadays, there is a large number of modern games that use mental discomfort and distress as a key mechanism, with the result of it being a pleasant experience for players. One of the aims of the thesis is to research these game design elements and methodologies of psychological horror games and how they are implemented in a virtual reality setting. Thus, 12 articles were analysed to get a better understanding of how virtual reality games are build and discover the different game design elements in the psychological horror game genre.

First and foremost, focusing on game design principles and design pillars of virtual reality games. Çatak, Masalci, and Şenyer studied to create a guideline for designing virtual reality games based on the main virtual reality design pillars, which are perception, interaction, and navigation. Thus, five virtual reality games were selected in accordance with diverse perceptual characteristics, navigation methods and interactions. This resulted in indicating that they had common principles, namely interactive, rule-based, and quantifiable outcome ones, but also that each game has its own unique features. Moreover, during the game design phase the game medium should be studied (Çatak et al., 2020).

Following, Saaristo studied both traditional and virtual reality level design to specifically determine the level design methodology and the best practices that are

[1] Japanese ghosts, monsters, and spirits

applicable for them. The aim of this thesis was to provide a foundation with level design practices, regarding virtual reality and document how these virtual reality levels are designed and created, giving emphasis on how they can be also used on other engines as well. Based on the findings, a custom map extension was created for Half-Life: Alyx using the Valve's own Hammer Editor. This enabled the design and building of the level for the game based on the original design. Moreover, the process of using this editor for the development of the map extension has been addressed and described. In conclusion, it was defined that one of the important things to maintain when building a level map for a game is the design pillars, which are the core elements and emotions that you are trying to evoke in players in your game. Also, level flow plays a crucial role in keeping the players engaged and immersed in the game, by changing the difficulty and providing them with safe spots. Finally, the Hammer Editor for building the level map has proved to be one of the best tools for level designers (Saaristo, 2020).

Moving forward, regarding the psychological horror game genre, Tran Duy, studied the creation of a game design blueprint, which incorporated elements of psychological gameplay and virtual reality. The aim of his thesis was to construct an appropriate game design blueprint that focuses on virtual reality mechanics and psychological game design. Also, in this project an appropriate combination between both virtual reality and psychological game was enumerated. Furthermore, this included the development of a game that used both direct and non-direct gameplay mechanics that simulated a mental illness. The game was tested by people with backgrounds related to psychology and video games, specifically two groups, investors and former addicts who had some forms of mental illness. Overall, it was received well with a positive reception and resulted in the successful creation of the game design blueprint which included some mechanisms and design decisions for the development of the game. It can also be used as a starting point for the design and development of psychological virtual reality games (Duy, 2017). Similarly, Horvath explores the historic progress of virtual reality and the ways this technology can help increase immersive experience in psychological horror adventure games. The goal of this thesis is to develop an ideal psychological horror game that relies on its eerie atmosphere and suspense, and not in gore elements like blood and guts. The game "Project Labyrinth" draws inspiration from Greek Mythology and experimental music to immerse the player in a virtual reality dream or nightmare,

using a combination of a variety of elements such as procedural generation and “Roll the Dice” mechanics. In the game, the player wakes up in a library of an old mansion where he must explore and navigate through rooms to find clues and answers to why he is here and how to get out of this nightmare (Horvath, 2020). In a similar manner, Brown, Gerling, Dickinson and Kirman designed and did a preliminary assessment of a game that would make players feel discomfort in order to research uncomfortable game experiences. Their aim was to explore the role of physical and psychological discomfort in games and to get insight of the effects that they have on player experience. The game that they developed, involves two players where one player is asked to get inside in an actual coffin and lie down, which serves as a physical play environment. And the second player is tasked with finding the burying ground of the first player, who is entombed, in the VR game environment. An exploratory user study was conducted at an international gaming exhibition to people with gaming interests. This resulted in the identification of a variety of psychological and cultural elements and that the confined space of the coffin with the disturbing events of the game, led to a pleasant discomfort and engaging experience for the players (Brown et al., 2015).

The use of the human fear module and ancestral fear scenarios as parts of game mechanics in horror games is studied by several authors. Christiansen and Clasen, investigated the evolutionary perspective of horror games, specifically on the human cognitive psychology of fear. The goal of this study is to determine that horror games target human fears and phobias that have been evolved with the human psychology of fear and represent evolutionarily rooted scares from virtual repositories. Thus, answering the question why anybody would want to play games designed to frighten them. The thesis does an analysis on two substantial claims, the first one claims that horror games in order to fulfil their role of creating fear in humans, rely on ancestral threats. And the second one claims that they challenge players to cope with such threats. Also, an analysis on a puzzle-horror game named Limbo was done. Based on the findings, this concluded that horror games do provoke fear in players by making them experience ancestral fear scenarios but also challenge them to overcome those fears and dangers (Kjeldgaard-Christiansen & Clasen, 2019). Correspondingly, Clasen and Christiansen study the effectiveness of the ways survival mechanisms are used in horror games to inflict predictable psychological responses and provide immersion in humans.

The purpose is to discuss the pros and cons on the response of scholars that humanists should build on cognitive and evolutionary psychology, proposing a consilient approach. Moreover, an analysis of a survival horror game called Amnesia: The Dark Descent was done to illustrate the consilient approach. As a result, the game Amnesia prompts psychological responses and similar behaviours, by targeting the evolved human fear module. Moreover, it was found that indirect experiences with threatening scenarios make humans evolve to find pleasure in them. Also, it was shown that consilience specifies promising, integrative perspectives on the cultural subject matter of the humanities (Clasen & Kjeldgaard-Christiansen, 2016).

The relationship between sound and the emotion of fear is also studied as one of many mechanisms used in psychological horror games. Demarque and Lima researched the importance of auditory hallucinations in horror games and how effective is this auditory stimulus for players during gameplay. The goal of the thesis is to verify the effects of auditory hallucinations to provoke an increase to emotional reactions such as fear in players. The development of a horror game was created, where a player had to only find a way out of the dark maze with a flashlight, giving emphasis on the auditory hallucinations during the gameplay. A user evaluation of the game was conducted with two groups of high school students, where one group played the game with the auditory hallucinations and the other one without. The conclusion was that auditory hallucinations play an important element in increasing the emotional responses and provoking fear behaviour in players (Demarque & Soares de Lima, 2013).

In addition, except for the auditory hallucinations, the creation of the right horror atmosphere also plays an important role in the immersion of the game and inflicting fear in the player. Allen researched the requirements needed to create an immersive horror game atmosphere that will provoke the feelings of fear and suspense for players. The aim of the study was to understand the game design principles of horror and offer useful knowledge for the development of horror atmosphere in games. Some of the main technical aspects of horror atmosphere are the lighting and mood of the game environment, sound design and the overall visual design with indirect storytelling. A user testing was done with 2 different game scenes, an underwater exploration and an underwater research centre, where players preferred the latter because it had a darker lighting and more extra-terrestrial looking assets that created the right horror atmosphere.

Last but not least, it was evident that one the main key components of designing the horror atmosphere was the lighting and the adaption of sensory stimulation to feed the player's imagination (Allén, 2021).

Another important element of designing a game is the environmental storytelling with the combination of audio to increase immersion in VR. Popp and Murphy constructed a design guidelines paper, to be used in room-scale VR, for narrative audio in environmental storytelling games. The study used action research methods that involved the literature review of similar articles and topics and analyzing relevant VR and PC games. The design guidelines were formed based on research in different categories such as audio duration, diegetic or non-diegetic narration, audio triggers and audio-based environmental storytelling. Furthermore, the design guidelines were implemented and tested for an environmental storytelling game in room-scale VR. Overall, they demonstrated to be a good supportive guide in the development stages of a game and that the utilization of binaural 3D audio in environmental storytelling games could increase player immersion (Popp & Murphy, 2022).

As we all know, Western and Asian horror take on completely two different approaches, with one being more direct and the other subtler. Focusing on this study with the Asian horror the thesis of developing a Chinese Horror VR game called "The palace of the Monarch" by Zhu, was selected for analyzing. The goal of the study was to design a unique game by bringing Chinese culture and history with horror and mystery through the experience of the game's environment. Also, there was a focus on providing the game with captivating and immersive VR experience through analyzing human computer interaction, researching environmental storytelling, and implementing game puzzle design. The game's story is about the return of the first son of House Lin to an ancient palace where the player has to solve puzzles in order to uncover a mystery. The game was tested with 9 tests, through the use of questionnaires and discussion, which can be classified into paper and digital prototype test, tutorial test and alpha test. In conclusion, the game received a positive remark with uniqueness of the story that involved Chinese culture, the art style and the difficulty and learning curve of the puzzles. However, there was a lack of horror experience for the players due to that the audio and characters weren't spooky enough (Zhu, 2018).

Regarding the emotional reactions of fear and coping mechanisms of players in a virtual reality horror game. Lin identified the reasons that caused fear in the VR horror game environment, the variety of coping mechanisms that the players used and if there were any lingering effects the following day. The study focused on two theoretical mechanisms of fear elements which are the place illusion and the plausibility illusion. A user evaluation of one hundred and forty-five students from a university was done, by playing a game named The Brookhaven Experiment (2016). In conclusion, it was indicated that the fear of plausibility illusion elements was higher than toward place illusion elements. Furthermore, three coping mechanisms were recognized, like the self-empowerment strategy by talking to themselves, approach, and avoidance dimensions. Also, a very small percentage of students experienced next day fright (Lin, 2017).

2 Methodology

The researcher followed the methodology of the action research to get a better understanding of the game design elements of psychological horror in a VR environment. In the beginning, in-depth research was done on Japanese mythology and on existing VR horror games inspired by Asian culture. Also, a detailed literature review was done to study the game and level design methodology in VR games and the game design elements of psychological horror games. Afterwards, the process of designing the game took place with the worldbuilding and creating the game's story. The pre-production phase concentrated on the search of game design assets that fit the plot and the creation of some assets using Maya and Illustrator. Following, the level design and game development was done in Unity that is targeted towards Oculus headsets. In the end, a user testing transpired accompanied with 2 questionnaires, one prior through the playthrough and the other one after. Also, during the playthrough a user observation was done in order to collect more qualitative data. The data that was collected was used to determine if the game design elements of psychological horror were successfully implemented and identify any issues to make improvements in the VR game.

3 Research

Apart from the literature review, extended detailed research occurred to help form the story of the game as well as to set the game design elements. Also, as mentioned previously, this study focused only on the game design and programming of the game and not in the creation and modelling of the assets, thus the phase of the research was particularly important to gather all the 3D assets that could be used in the game, in a way that they would be suited with the game world of the story.

3.1 Japanese Mythology

As the author wanted to create a game inspired by Japanese mythology and folklore, an exploration had to be done to get accustomed with it and then get inspired to write a story for the game. A lot of Japanese mythology was gathered and read, but the ones that stood out for the author were the Urashima Taro and the stories of the three most evil yokai in Japan, which are Shuten doji (oni[2]), Tamamo no Mae (kitsune[3]) and Emperor Sutoku (tengu[4]). In the end, it was decided to follow the story of Tamamo no Mae, who is a mischievous nine-tailed fox with the ability to shapeshift, to influence the game's story.

[2] Japanese demonic creature that resembles an ogre or a troll

[3] Japanese fox spirit

[4] Japanese supernatural being, mostly portrayed with a red face, long-nose, and large wings.

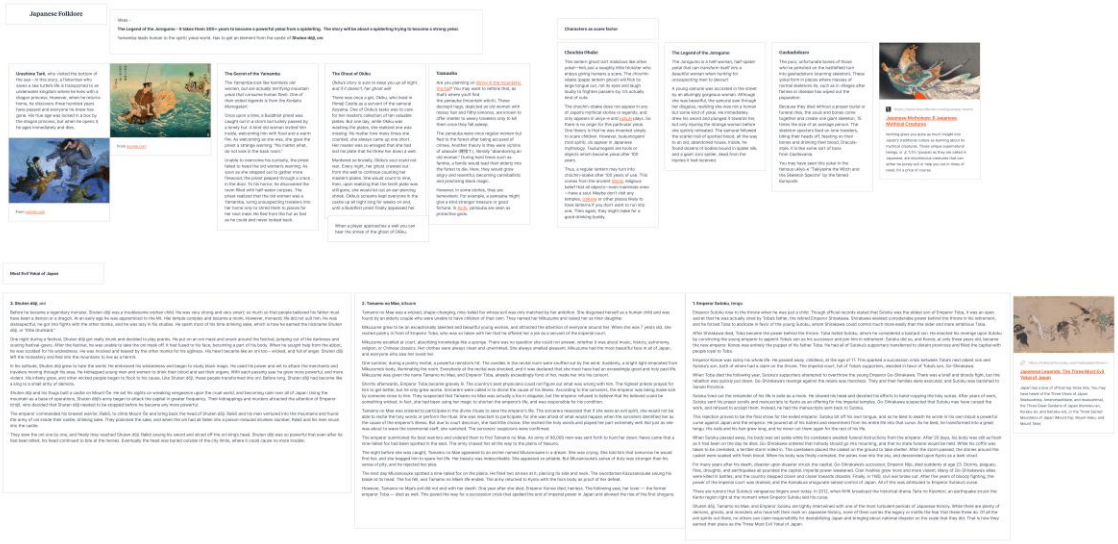

Figure 1: Research of Japanese Mythology

3.2 VR Games

Research was conducted by analyzing a wide range of PC and VR horror games and VR story driven games to get a better understanding of the game design practices they used.

A quick analysis of games that are based on Japanese folklore was done to get an idea of the games that are currently in the market and the story plots that they use. In addition, the same skeptic applied to a quick analysis of story driven games that are on the VR marketplace.

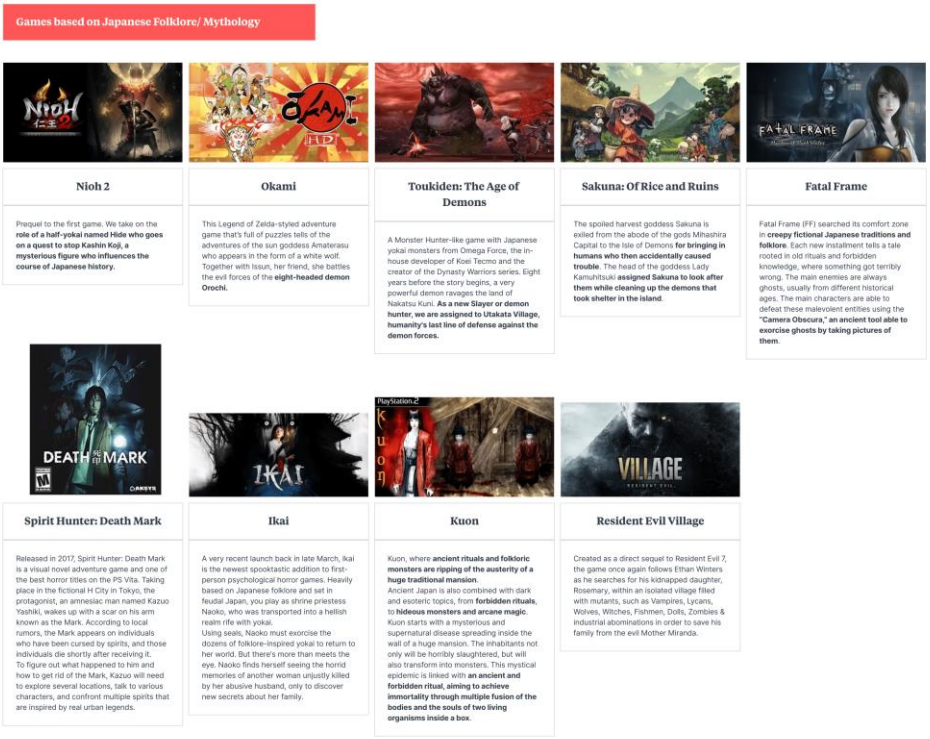

Figure 2: Research on Games based on Japanese Folklore

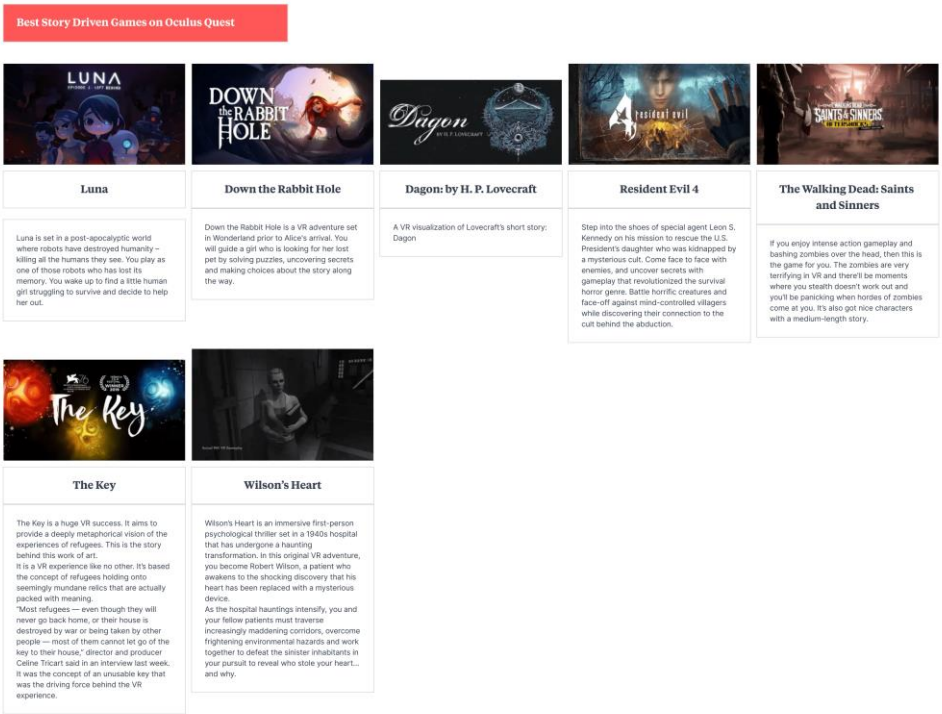

Figure 3: Research on Story Driven Games

The author played three VR horror games to get a better idea of the different game design elements and mechanisms they use in this medium. One of the games was “Hehu and the Taniwha”, which is an interactive narrative driven experience where your decisions form the storyline. It is a sitting experience with a mix of using touch controllers and gaze to look operation. The key elements that stood out during the gameplay were the use of the dark lighting and the use of the flashlight mechanism that set the creepy and menacing atmosphere. Additionally, the game environment of the game is mostly based in a cave, as a result this helps create the feeling of claustrophobia and helplessness as you venture deep within the narrow walls of the cave. The game’s flow keeps the player guessing what’s going to happen next and the feeling of suspense keeps lingering throughout the gameplay.

The second game was “Nightmare VR”, where you play as a haunted man inside his twisted nightmare that revolves around a distorted figure of a little girl. In this game you must solve puzzles that are within the room to get out of it. One of the game elements that stood out was that the room’s environment kept changing as you moved around the room or progressed through the game. This resulted in forming a hallucinating atmosphere resembling a nightmare.

And finally, the third game was “Mirror”, which is a sitting or standing experience VR game heavily influenced by Japanese horror and movies, such as “The Ring” and “Dark Water”. In the game, you are standing in front of a mirror while creepy things are happening around you. The main horror game elements that are apparent in this game is human vulnerabilities and phobias, like the fear of something appearing behind you on the mirror and seeing shadows accompanied by sounds of unknown creatures while alone in a room.

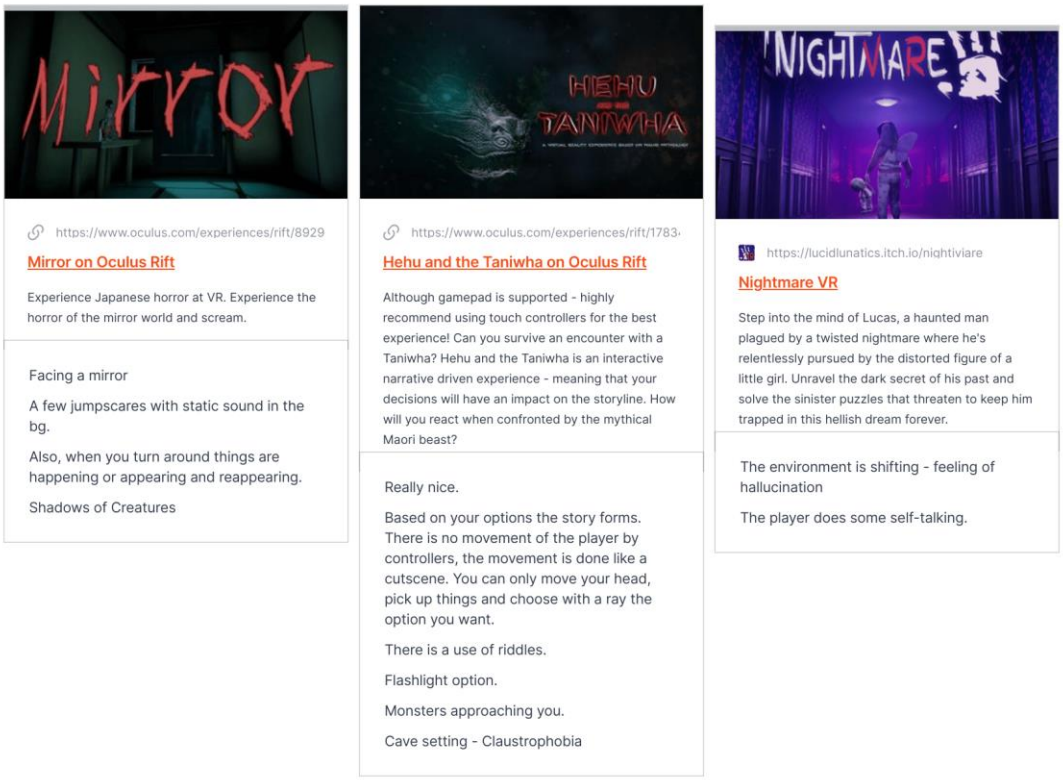

Figure 4: VR Horror Games Played

3.3 Assets

Research for the game assets had to be done prior to the creation of the story to get a better idea of what could be found in the marketplace. The assets that have been found were limited due to the reason of the specifications that they had to have, which were ancient Japanese themes and environments such as a mansion with an old spooky interior. Moreover, the assets had to support the universal render pipeline (URP), that the game was going to be built on. Also, a quick investigation was done to find Japanese mythological characters or creatures that could be included in the game. In the end, the asset pack that was mainly used for the game's environment was the "HQ Modular Japanese Castle Low-poly 3D model" by "chillasart"[5].

[5] https://www.cgtrader.com/3d-models/interior/other/hq-modular-japanese-castle

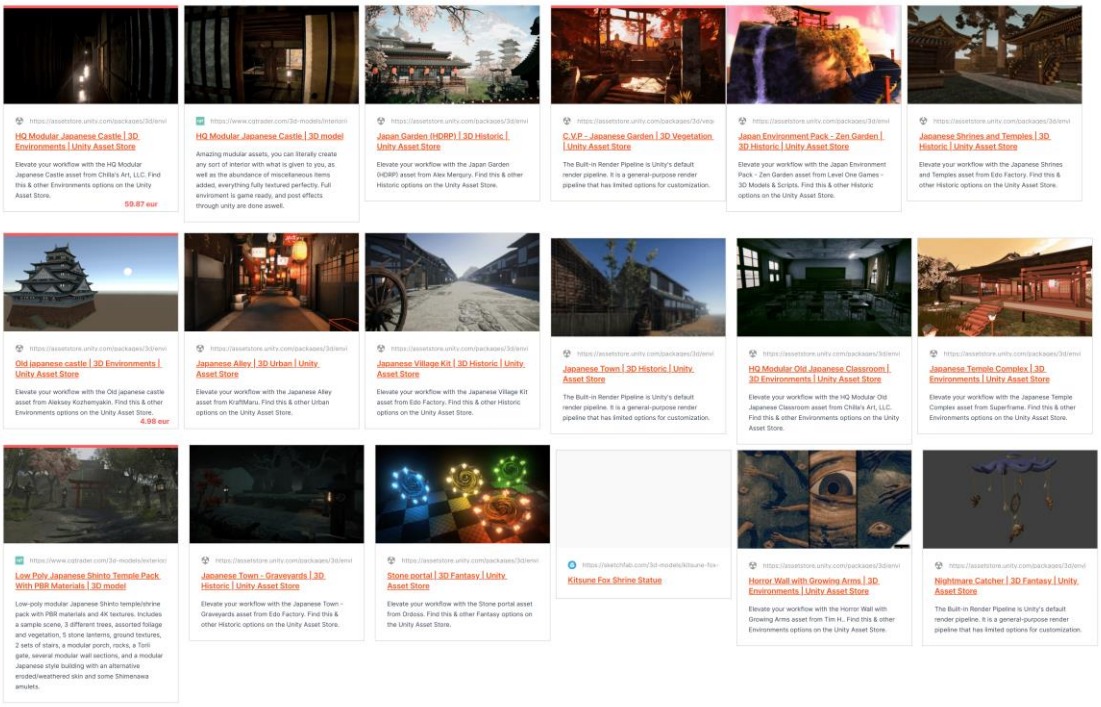

Figure 5: Research on Japanese Mansio Horror Environment Assets Pack

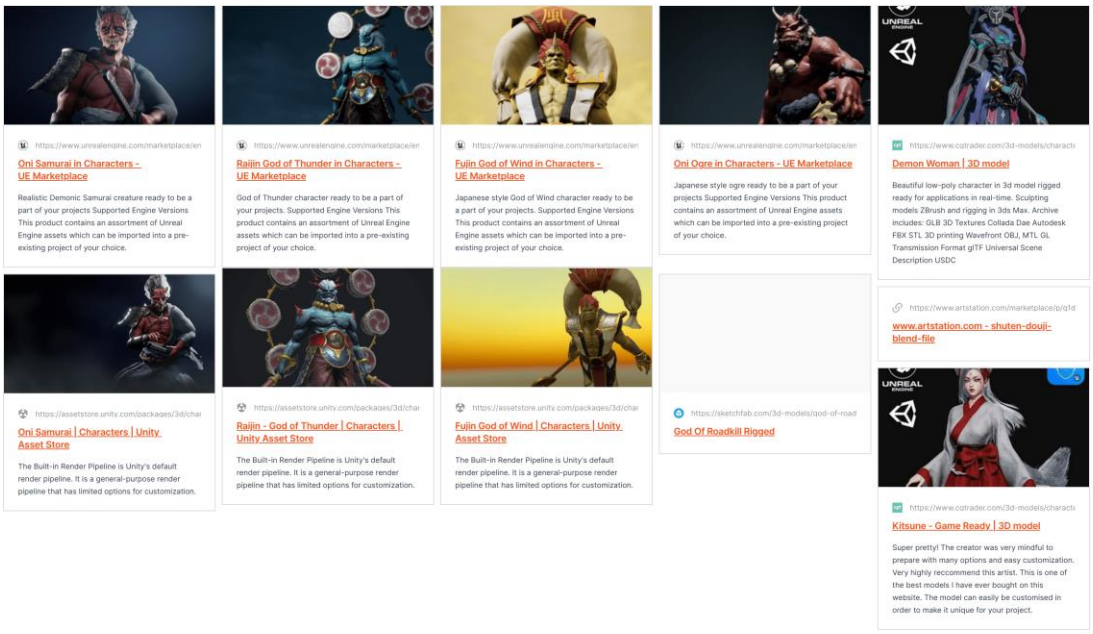

Figure 6: Research on Japanese Character Assets

4 Worldbuilding

Worldbuilding is the part of the writing process where authors start creating a fictional world from scratch by focusing on its different aspects like geography, people, civilization, technology, magic, weapons, economy, politics and many more. The worldbuilding process consists of two types, the primary world and the secondary world, and it can be directed by any of them. The direction of the primary worlds represents a similar reflection of the real world we live in with a few adjustments, in contrast with secondary worlds which are totally imaginative and set on a whole different planet or dimension.

In addition, worldbuilding can be categorized into two categories, soft worldbuilding and hard worldbuilding and authors may choose to go with any of them based on their needs. Hard worldbuilding consists of a detailed explanation for every aspect of the world and follows concrete rules of what's allowed and what is not. Moreover, every object in the world must have an explanation of how they work and why they exist. In comparison with soft worldbuilding, there are fewer requirements to rationalize choices which means that authors have more creative freedom and there is no need to justify anything. Immersion comes from the unknown, flexible rules, imaginative involvement, and otherworldliness, as a result, the world may feel that it's endless with new mysteries to uncover. A good example of movies that use soft worldbuilding include works from Studio Ghibli by Hayao Miyazaki such as "Spirited Away", "The Cat Returns" and "Howl's Moving Castle". To conclude, hard worldbuilding makes a story for the world and soft worldbuilding makes a world for the story (Hickson, 2020).

4.1 Soft Worldbuilding

Following the mentioned above, the author decided to go with soft worldbuilding and the creation of a primary world type. The researcher followed an online worldbuilding template from the reedsyblog (Reedsy Team, 2018). The soft worldbuilding was done in 5 categories, basics, geography, people, civilization, and magic.

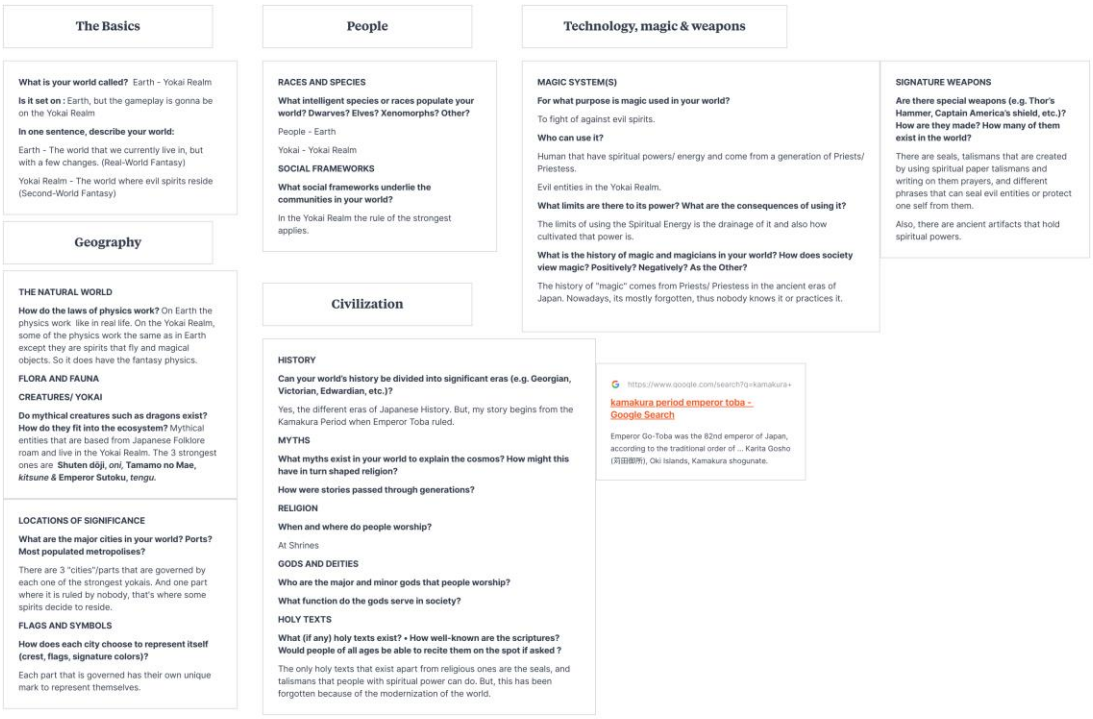

Figure 7: Soft Worldbuilding for the Thesis' Game

4.2 Story

The game's story was heavily inspired by the Japanese mythology of Tamamo no Mae, the nine tailed fox (Meyer, 2017).

A long time ago, specifically during the Kamakura Period in Japan, a little girl named Mikuzume lived there, and she was exceptionally talented and beautiful, that she would attract the attention of every person around her. When she was around 7 years old, she met Emperor Toba, that ruled during that time with his first wife (Main Consort), and she recited poetry in front of him, which resulted in him being captivated by her and offering her a job in the imperial court as a servant. Mikuzume, grew to be outstandingly knowledgeable, absorbing knowledge like a sponge and her beauty didn't stay far behind either, she was known to have the most beautiful face in all Japan and everyone who saw her loved her. Unfortunately, the only one that didn't see her beauty like others was Emperor Toba, as he only had eyes for his beloved wife. This angered Mikuzume, as her unrequited love for him grew stronger each day, along with her jealousy and hatred towards his wife.

One summer, during a poetry recital, a sudden powerful rainstorm hit, that put out the candles in the room. Suddenly, a bright light illuminated the room that was coming from Mikuzume's body. Everybody in the room was speechless and shocked from this incident alongside Emperor Toba, that they believed that she must have had a tremendously good and holy past life. This resulted in Emperor Toba, making her one of his many consorts and giving her the name Tamamo no Mae. Tamamo no Mae was pleased with this change as she believed she could finally capture the love of the emperor, but this has proven to be wrong.

Months had passed, and the emperor wouldn't even pay attention to her loving gestures and didn't even step one foot into her chambers, but in contrary he would visit the main consort ones every night.

Shortly afterwards, the emperor’s pregnant wife became gravely ill. The emperor called the country's best physicians, but they couldn't figure out what was wrong with her. He even called over sorcerers, that suspected that it was caused by a jealous evil spirit, within the Imperial Court. In fact, Tamamo no Mae was the one that was responsible for his wife's condition as she was using her magic to drain her life energy.

The sorcerers decided to involve everyone in the Imperial Court to participate in the divine rituals, which was to recite holy words, as evil spirits couldn't. Tamamo no Mae had little choice of refusing to participate as this would blow her cover, but she had no choice to recite the holy words. She recited the holy words well but couldn't hold her form of a nine-tail fox from appearing in front of everyone. Everyone was shocked to see that she was actually an evil spirit and even more shocked and angered felt emperor Toba, that she was the cause of his wife's suffering.

In that exact moment he ordered his guards to execute her. Tamamo no mae felt extremely sad and hurt by his words that he didn't even care one bit about her or his love for him. This made her fill up with anger and hatred for him, and started performing a powerful curse that would last for generations to come. The curse was that the birth of an offspring would result in both parents’ deaths. When she finished her curse, a curse mark appeared on the emperor and then she vanished.

The Imperial Court was in an uproar to find ways to lift the curse before it was too late. A powerful clan of Priests and Priestess offered to put their life on the line for saving

the emperor. They gathered all their spiritual energy to try to undo the curse, but it was to no avail, they only managed to ease the curse by finding a solution, which was the creation of the Day of Tribulation (01/09/xxxx). When the child would turn 18, he would be transferred into the Yokai Realm, where he would need to try to undo the curse by combining the 3 artifacts of the strongest Yokais living there, which are Shuten dōji (oni), Tamamo no Mae (kitsune) and Emperor Sutoku (tengu).

Centuries have passed, and nobody so far has been able to lift the curse. Now, it is the 21st Century and the Day of Tribulation is coming near for the orphan boy named Masashi.

5 Game Design

In this section, it is discussed the phases of game design the author went through. Firstly, we need to clarify what game design is due to the fact that the word “design” is a term that is a bit overused and has multiple meanings, as a consequence it can be misinterpreted. Game design involves the creation of the logic, content, and rules of a game. It is responsible for a wide range of tasks such as level design, UI design, system design and worldbuilding. To be noted, it does not involve art, animation, programming, marketing, or any other countless tasks required to make a game. These tasks mentioned above can all be called collectively “game development” and game design in one part of it. (LeBlanc, 2009)

The game design of the game was heavily influenced by East Asian horror, specifically Japan.

5.1 Game Design Elements

The game follows game design elements of Japanese horror, which tends to focus on psychological horror. Psychological horror targets human vulnerabilities and subconscious fears that we often repress. This game focuses on psychological horror elements, which are amnesia, the feeling of powerlessness, the fear of the unknown and human phobias such as darkness, long dark narrow halls, and claustrophobia. Moreover, an emphasis is given to the creation of the atmosphere with the use of lighting and auditory hallucinations with triggers to create the proper mood. Furthermore, the use of

narration and puzzles is implemented to aid with environmental storytelling and story progression.

5.2 Playthrough

The game's playthrough is quite simple, the player must solve puzzles to open doors and progress through the story. The full version of the game was thought out to be consisted of 3 mansions of the strongest Yokais, where the player would have had to complete them by acquiring all the 3 artifacts to lift the curse. However, due to time limitations, the game design of the playthrough focused on the mansion of one of the Yokais, which is Tamamo no Mae's palace. It was planned out to be with 7 rooms and 3 puzzles, but again due to time limitations it had to be reduced. Currently, the game is still in its alpha stage and consists of 6 rooms and 2 puzzles where the player has to explore and uncover a part of the truth about the cause of the curse mark.

In the beginning the player finds himself in the starting room where the first puzzle is and he will have to explore the room that he is in and the other two rooms, to find the three puzzle pieces and put them in the correct order to advance onto the second area where the second puzzle is. To assist the player with solving the puzzle, in the 2 rooms there is a lantern ghost which talks when the player enters the room and gives him small hints. Also, for the player to collect all the puzzle pieces and have them with him through his exploration, a body inventory was designed so that he will be able to attach up to two pieces onto two sockets on his body. Moreover, throughout his exploration of the first area, there are sound triggers where he will hear creepy audio sounds as if he is not alone in this place.

Following the completion of the first puzzle, the player finds himself in front of a long dark narrow hallway, where suddenly he sees and hears a spirit passing at the end of the hallway. In the middle of the hallway, there is a door with hallways that leads to the 2nd puzzle and at the end of the hallway there are stairs that lead to the basement. When the player reaches the stairs, he can hear footsteps of somebody going up or down of them. In the basement there are 3 rooms, where one of them is completely dark and has one of the puzzle pieces of the second puzzle.

At first, it was planned out and implemented that the player had to solve a riddle, that was talking about the unrequited love of Tamamo no Mae towards the emperor, to

acquire a flashlight and then use it to be able to see in the dark room. However, after a discussion with the author's supervisor, it concluded that a flashlight didn't fit the Kamakura period (1185-1333) that the player was in, as a result a different method had to be found.

The solution was that the player would have to find in the other rooms a torch that he will have to light up using the fire furnace on the first floor. This will be evident throughout the environment as there will be some torches that are already lit up and some are not and also by the uniqueness of the fire. When the player figures out that he will have to light a torch to enter the dark room and collect one of the three puzzle pieces, in the dark room he will hear a female voice singing which is of Tamamo no Mae's. In addition, the other 2 rooms will have clues and hints throughout the environment about the game's story and how to solve the puzzle.

In the end, when the second puzzle has been solved, the door opens for the next room where an ending message is displayed that marks the end of the alpha stage of the game. It was thought out that after the second puzzle was solved the player would have entered the room which was going to be Tamamo no Mae's room, where a third puzzle was going to be there that when it was solved the player would acquire the artifact. After acquiring the artifact, a timer would have started, where the player had to run back to the starting point, where a deactivated portal was now activated and pass through it that will transport the player on to one of the other yokai palaces.

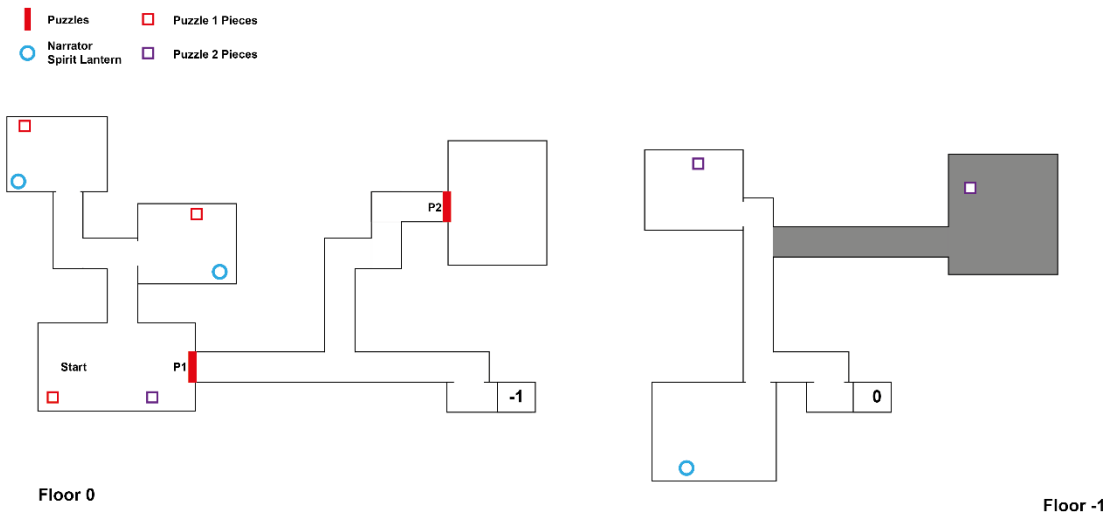

Figure 8: Thesis Game Map – Top View

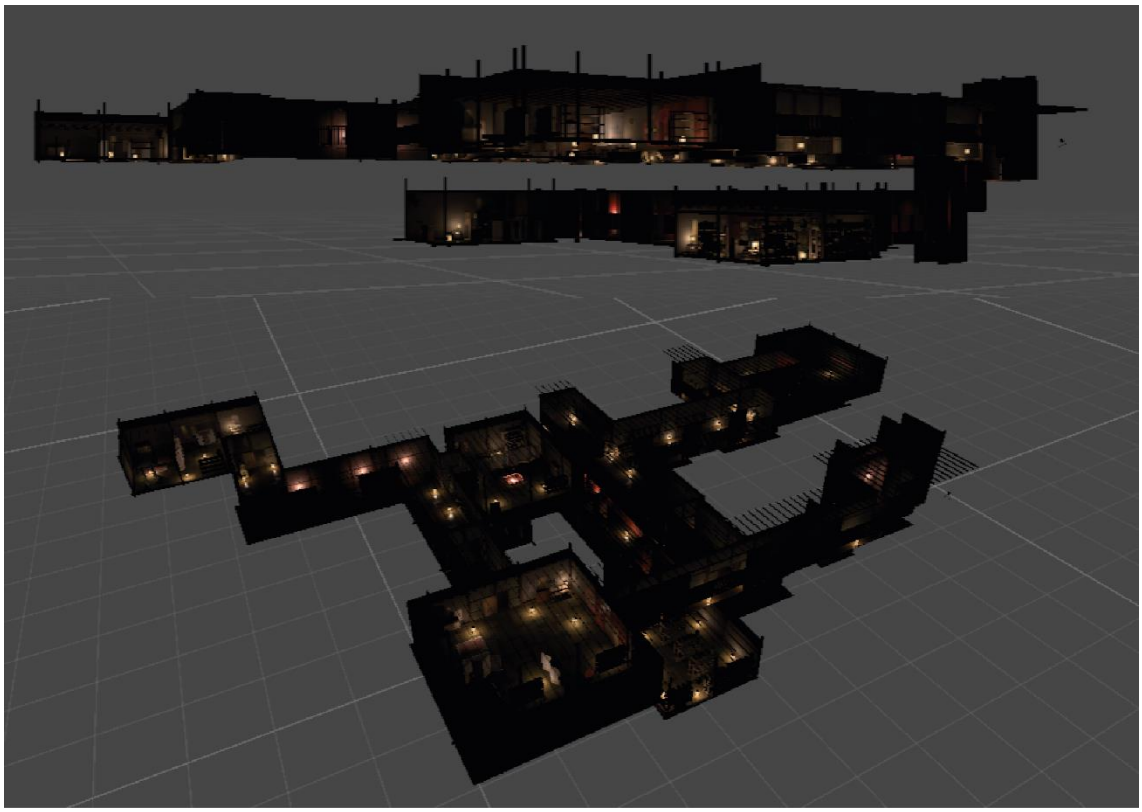

Figure 9: Thesis Game Map – Unity

5.3 Puzzles

The game was designed to have a total of 3 puzzles, but in the end only 2 were developed. The puzzle mechanic system was used in order to drive the game's story and provide the player with information as to what may have happened in the game. Each puzzle represents different clues about the game's story.

The first puzzle is about the "Day of Tribulation", which is the 1st of September 2023, where the player must find the 3 puzzle pieces, that each one of them has written on a number of the date and put them in the correct order. The number for the month wasn't selected randomly but with research regarding Japanese superstitions on unlucky numbers, which are mainly numbers 4 and 9, because 4 sounds like "shi", which is the word for death and 9 sounds like "ku", which is the word for suffering or torture

(Lingualift, n.d.). As a result, number 9 was used to represent the month of September in the game, and number 1 implies that is the start of Fall.

The second puzzle reveals the culprit of the curse mark, who is Tamamo no Mae. However, this puzzle has an increase in difficulty as the player must find 3 puzzle pieces that have Japanese words on them and arrange them in the correct order to form the phrase “Nine Tailed Fox (九尾の狐)”, which is the true identity of Tamamo no Mae. To help the player decode the Japanese words to English, clues were provided throughout the game. For the Japanese word “九(Nine)” a note was designed where it explains how the numbering works in a Japanese abacus. The second clue was for the word “尾の(Tail)” with a note representing that every 100 years a kitsune gets one new tail. And finally, the third note for the “狐(Fox)” where the Japanese word is used on top of a drawing with a fox and on some fox statues.

The third puzzle was going to be a combination lock that would convey the offspring number or the cycle number of the curse, in other words how many times this curse has been unsuccessfully repeated. The player would have to form the correct number which is “782”.

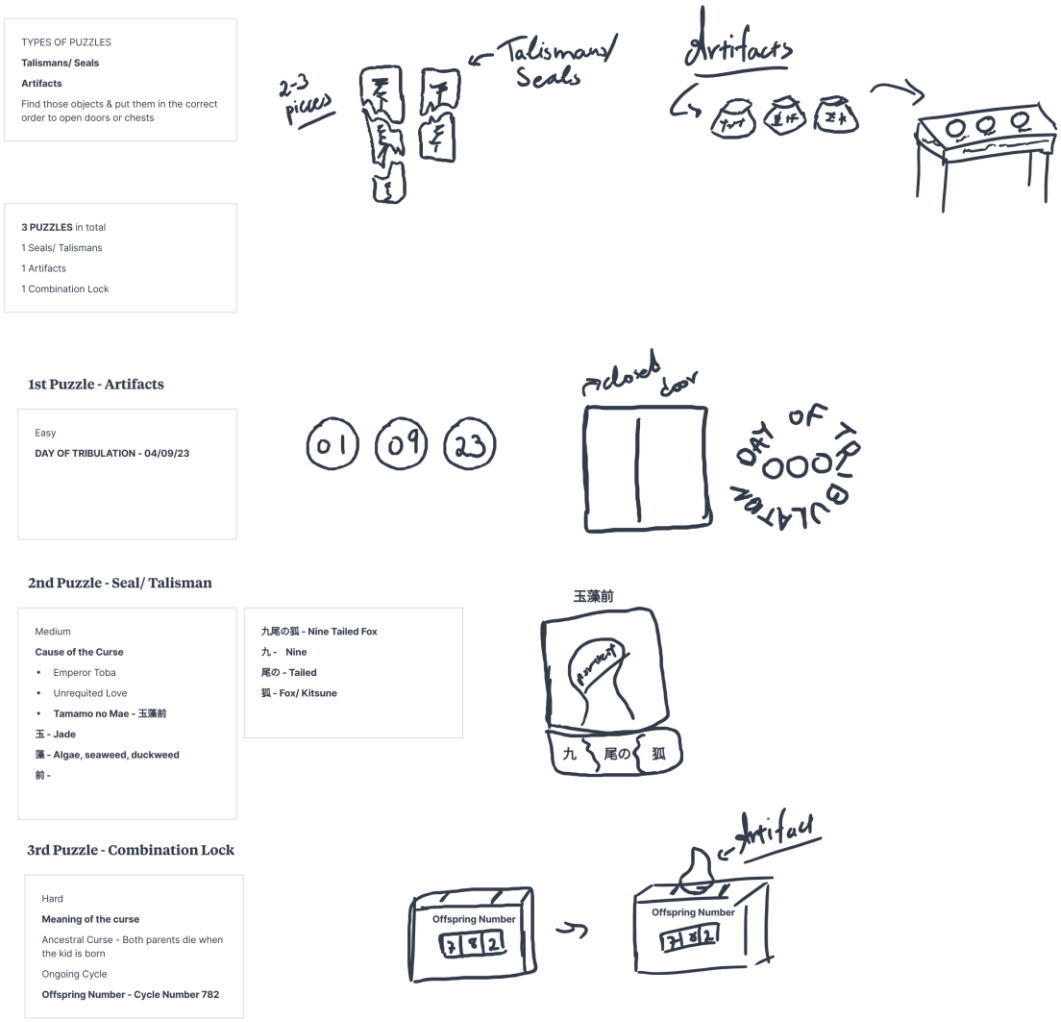

Figure 10: Sketches of Puzzles

5.4 VR Controls

Towards the end of the game design phase, it was necessary to determine the game's VR controls that would be quick to comprehend and to comfortably use. To be noted, the VR headset that was chosen was based on the availability of the supervisor's lab, that was the Oculus Quest 2, as well as the previous experience and preference of the author. The joystick on the right controller is for head rotation and the joystick on the left controller is for teleportation. The player can pick up objects with both controllers by pressing the grip button.

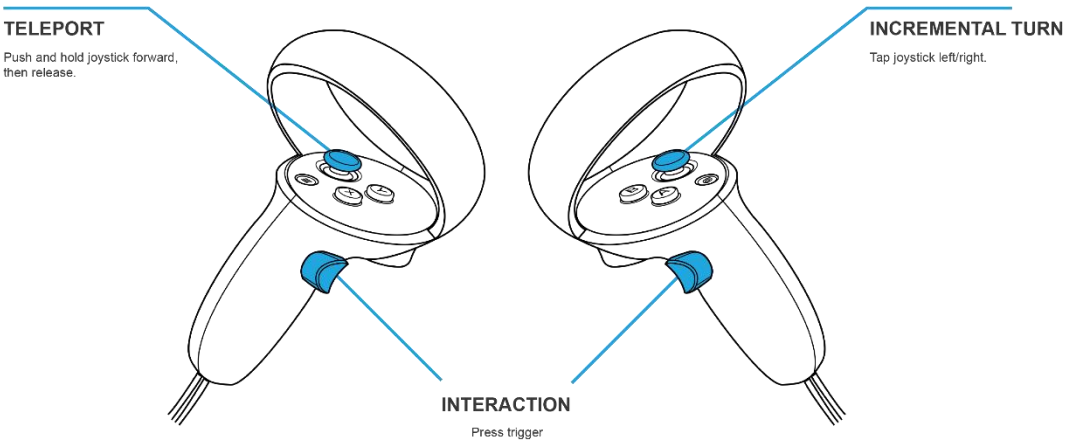

Figure 11: Thesis Game Controls on Oculus Quest2 Controllers

6 Audio Design

Audio design plays a crucial role in delivering the scare factor and aiding in the formation of the game's atmosphere. In the game, the use of audio was implemented in three ways, one was for the background music where it changes when the player enters the dark area of the game. The 2 background music used were found on YouTube which are under the license of Creative Commons. The one that plays in the mostly light areas is by the YouTube channel "Jon Rob", named "Dark ambient / horror japanese music: Onryo"[6] and the second one used in the dark area is by the channel "Kraosando", called "Krao - Hannya (Japanese Horror Background Music)"[7]. The second way the audio is implemented is via sounds triggers placed in different parts of the game's map, and they are activated when the player passes by them. Finally, it was decided to use narration audio in some rooms of the game.

[6] https://www.youtube.com/watch?v=tnKQFZUIoIY

[7] https://www.youtube.com/watch?v=BZD9ZBQxusw

6.1 Narration

The implementation of narrative audio is important as it helps with immersion and will make the player feel as if he is part of the story. In addition, narration in the game provides hints to the player about solving the puzzles, as well as clues to the game's story. A total of 5 narration lines were formed and they are voiced by the creator of the YouTube channel "Rayuka Gaming", which he created for free to use in the game. In the game, the narrator takes the form of a paper lantern ghost, known as Chochin-obake, which isn't like any other yokai, as he is considered more like a trickster that enjoys scaring humans.

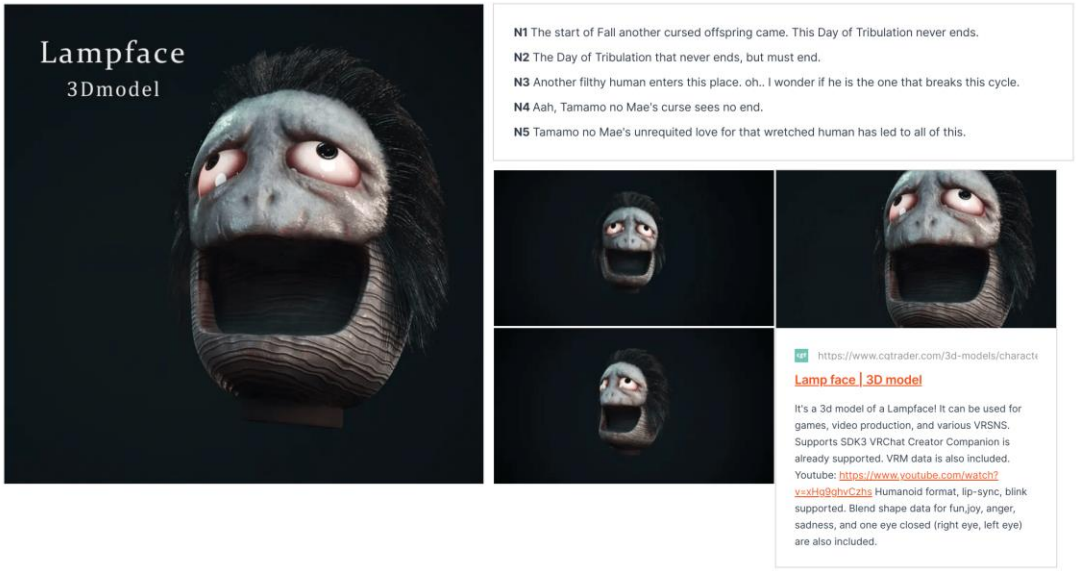

Figure 12: Narration Lines and Lantern Ghost Asset

6.2 Sounds

The sounds used in the game were taken from the website freesound.org, mixkit.co and voicebot.su, which are under the license of Creative Commons. A total of 8 different audio triggers are used, excluding the narration ones, where the sounds used in them include sounds of footsteps, a variety of spirit sounds and growls, object falling and a Japanese singing female voice about Tamamo no Mae's unrequited love.

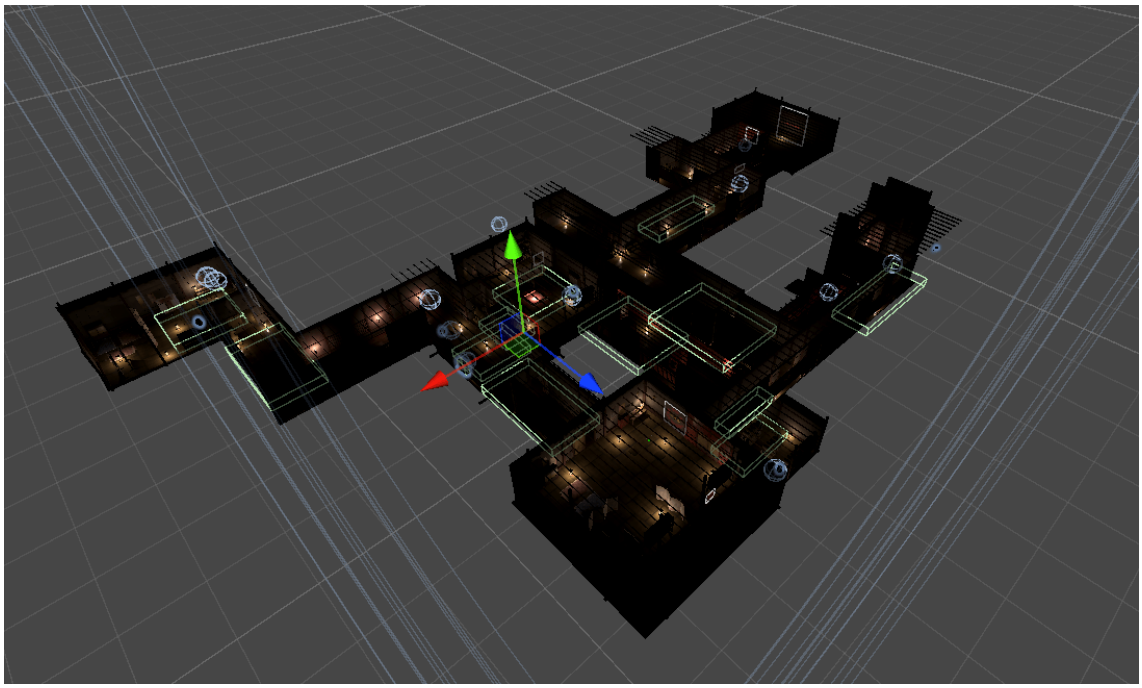

Figure 13: Audio Triggers – Unity Game Map

7 Asset Design

As mentioned previously in the asset research, the assets had to follow certain criteria and, in the end, had to match with each other as a whole to fit the environment of the game world. In addition, a part of the game was focusing on environmental storytelling which meant that some assets had to be designed and modelled by the author to convey some parts of the game's story.

7.1 Curse Mark

The most important asset to be designed was the curse mark, as it is the one that the story revolves around on and was also going to be part of the game's poster so special consideration had to be given to it. The idea was to design an eye-catching curse mark that would represent the nine tailed fox. In the beginning of the design process, research was conducted to gather as much material as possible that would be used for inspiration. Following, quick rough sketches were made on paper to get a visualization of how it may look and then transferred to Illustrator. In the end, the curse mark that was

designed included in the middle the face of the fox surrounded by its nine tails, which had sharp edges to emphasize the danger and to convey the horror.

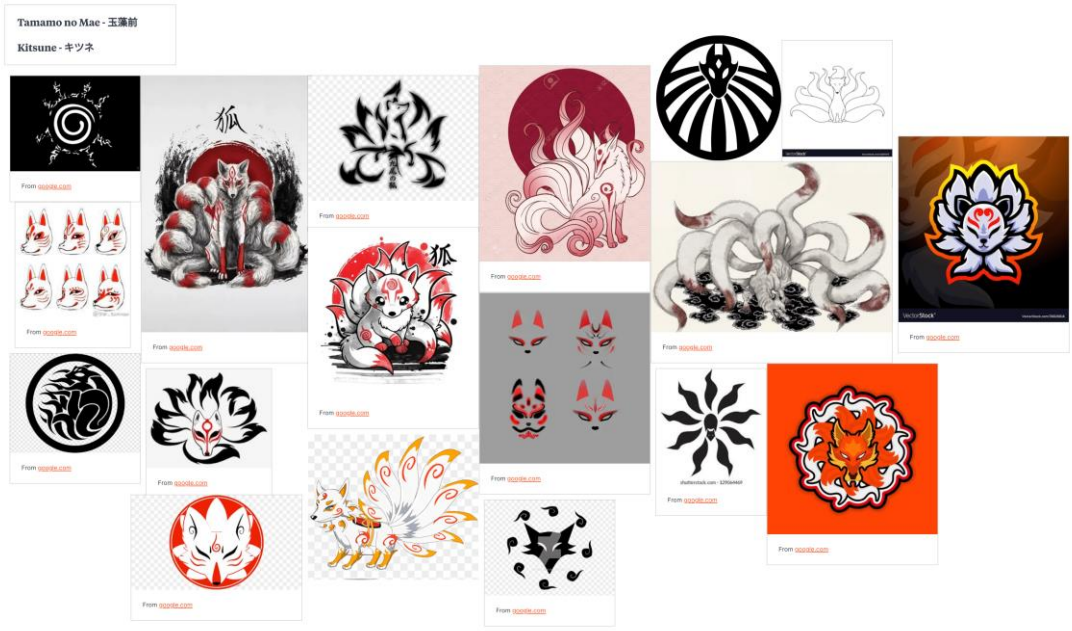

Figure 14: Research and Inspiration for the Design of the Curse Mark

Figure 15: Design of the Curse Mark

7.2 Puzzles

The modelling of the 2 puzzles and their pieces gained inspiration from Japanese seals and talismans. The first puzzle has three octagon shaped talismans and the second one has three paper seals. The modelling of the puzzles was done in Maya, and then their UVs were exported to Illustrator to design their appearance. Finally, they were imported to the Unity project where they were placed.

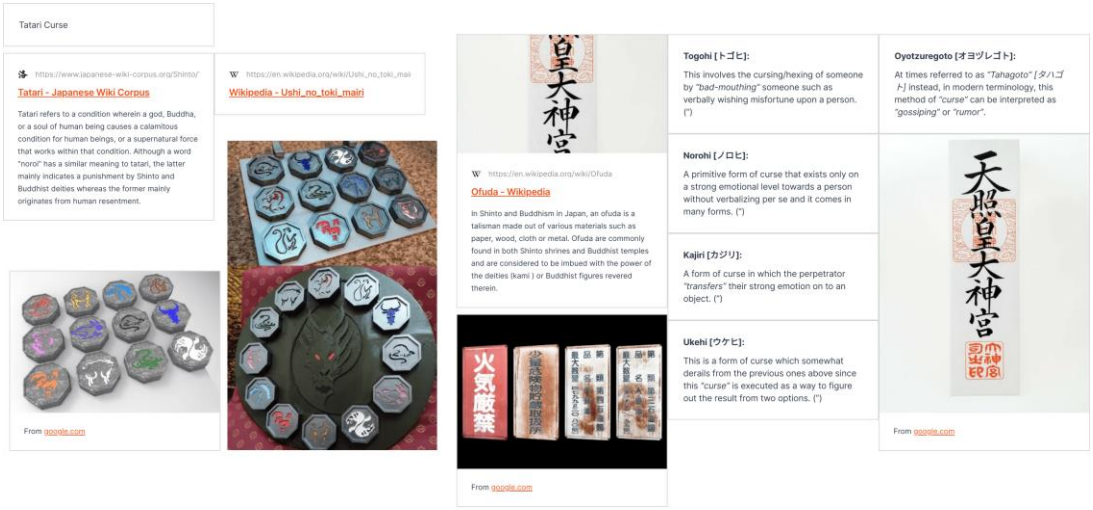

Figure 16: Research and Inspiration on the design of the Puzzle and its Puzzle Pieces

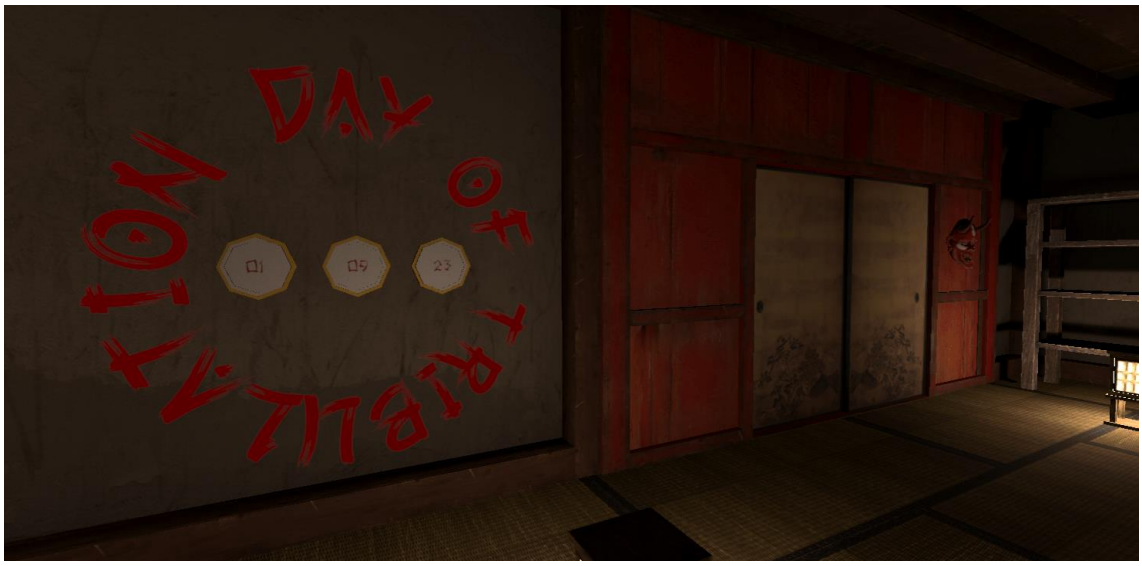

Figure 17: Game Puzzle 1 – Day of Tribulation

Figure 18: Game Puzzle 2 – Nine Tailed Fox (Tamamo no Mae)

7.3 Notes

Asset notes include parts of the environmental storytelling where they portray different photos on scrolls and notes on books that represent clues about the game's story and the hints of solving the second puzzle. To save time, 3d models were took from the Japanese castle pack, imported into Maya to modify their UVs, and then design their appearance on Illustrator and in the end export them as new assets to be used in the project. The photos used in the wall scrolls were found on Wikipedia that has a public copyright license on them, that include an image of Emperor Toba, the fox and Tamamo no Mae with the archer that was ordered to kill her.

Figure 19: Game Notes – Tail Note & Kitsune Note

Figure 20: Game Notes – Abacus Note for Number 9 (九)

Figure 21: Game Notes – Kitsune Note on Wall

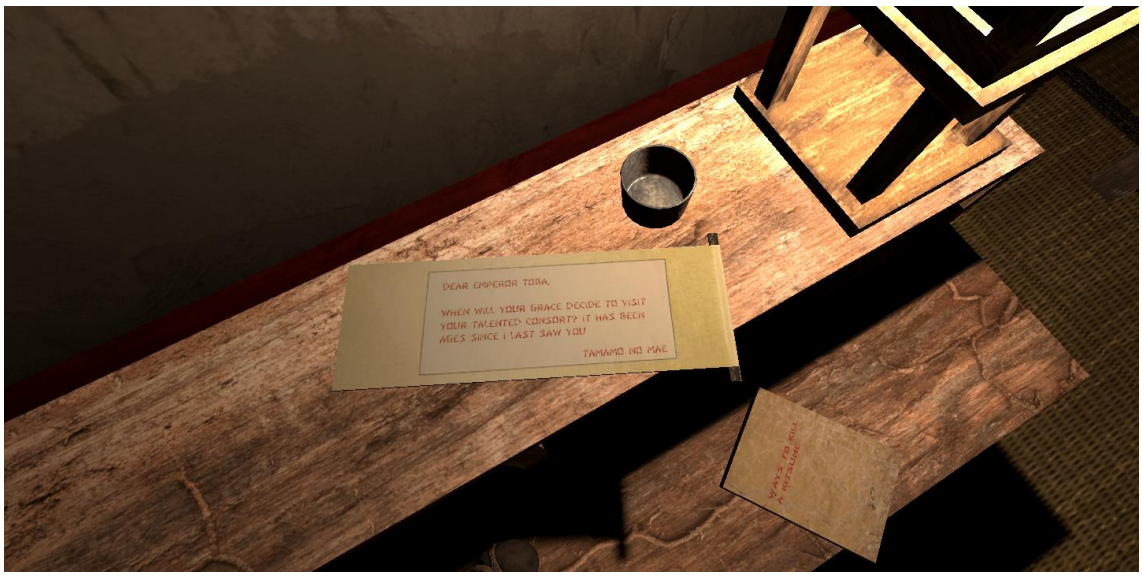

Figure 22: Game Notes – Love Letter of Tamamo no Mae to Emperor Toba

Figure 23: Wall Scrolls with Photo of Kitsune (Left), Emperor Toba (Centre) and Tamamo no Mae (Right)

Figure 24: Game Notes – Book Notes

8 Programming Development

The development of the game was done in Unity and is designed to be played on Oculus headsets. Firstly, the setting up of the Unity project took place alongside the XR (Extended reality) rig where YouTube tutorials were followed by the YouTube channel "Daniel Stringer" and "Valem". In addition, there was an experimentation with the player's movement of the XR rig either via teleportation or walking, but it was decided that the teleportation would work better to minimize dizziness. Following, the XR rig includes 2 hands, left and right hand, where the material was modified by the author to fit the aesthetics of the game better. Moreover, a script was included for the teleportation to toggle between the direct interactor and the ray interactor, where a ray and reticle would appear when the player wanted to teleport.

After finishing setting up the XR rig and the player could teleport in the game environment, it was time to figure out how to make the player interact with objects by picking them up. A tutorial was followed by "Valem", where it explained that for the player to interact with the objects in the scene, you just needed the object to have a collider, and a script called "XR Grab Interactable" that was accompanied with a rigid body (Valem, 2020a). Additionally, if you wanted to specify the direction of the game object would have when it's grabbed, you just created an empty child object on the parent object and changed its transform parameters and then dragged that child object on the "Attach Transform" of the "XR Grab Interactable" in the inspector. The x, y, z axis of the attach point of the game object matter, as they showcase the object's direction. The x axis should be pointed towards the palm of the hand, the y axis the direction which the object is going to be pointing upwards and the z axis should be facing the direction we want the object to face. At one point, a problem occurred when the player was picking up objects as the collider of the objects interacted with the XR rig's player collider and would push the player flying backwards. The problem was solved by assigning the player and the interactable objects on different layers and deactivating their "Layer Collision Matrix" in physics.

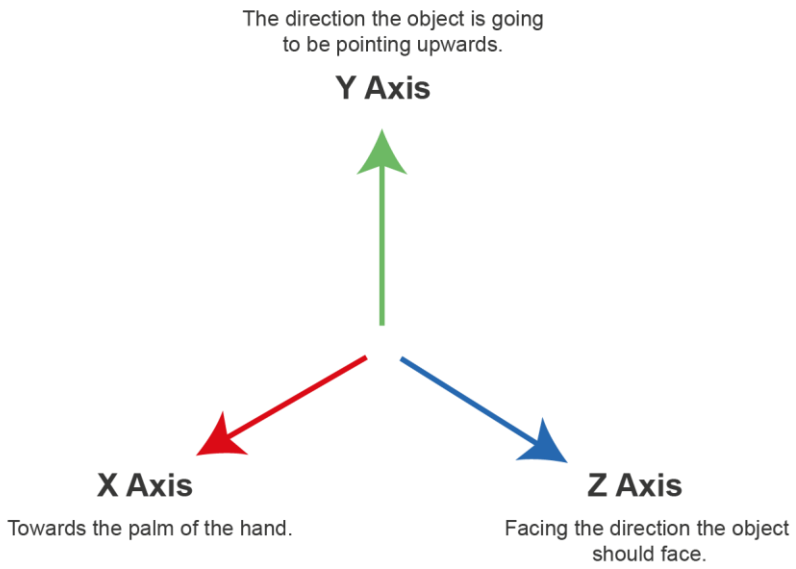

Figure 25: X, Y, Z Unity Coordinates for Attach Point for Interactable Objects

The next step was the development of the puzzle mechanic system where it would be the same for both puzzles. The puzzle mechanic system was developed by following a tutorial by “Daniel Stringer”, which is quite an easy puzzle involving 2 scripts (Daniel Stringer, 2022a). The way that the puzzle works is that every puzzle piece socket has assigned an “XR Socket Interactor” that interacts with the puzzle pieces and a “PuzzlePiece” script on it. The “PuzzlePiece” script requires you to assign which puzzle piece is correct for the socket and then checks when the player places a puzzle piece on it if it is the correct one or not and sends it to the “PuzzleManager” script. The “PuzzleManager” script receives if the puzzle pieces are put in the correct sockets and if all of them are correct then the door animation starts, where the door opens, alongside with the sound of the door opening.

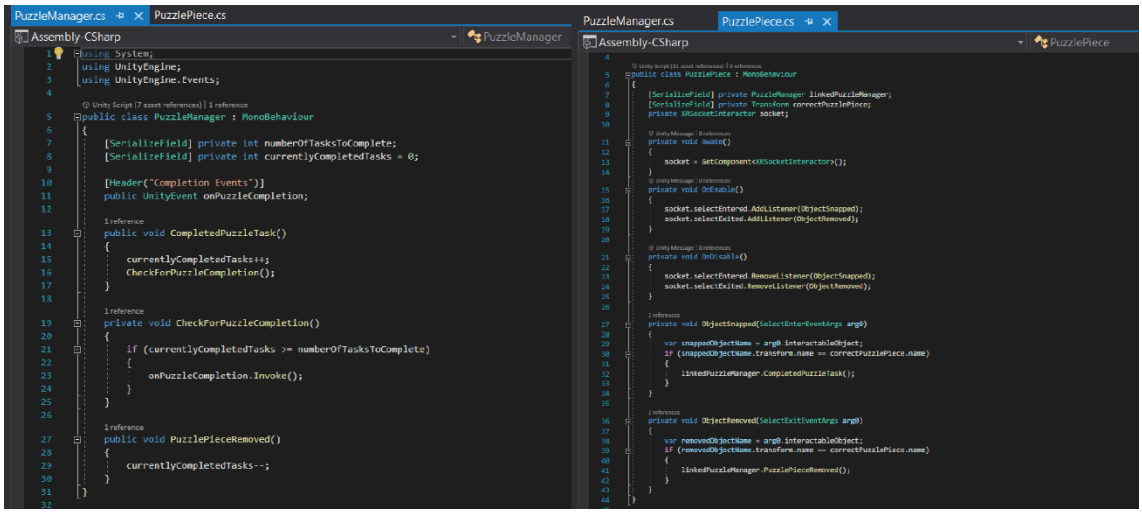

Figure 26: Game Puzzles Scripts

Following, there was also a try to implement a UI puzzle, that included the user trying to solve a riddle by selecting the correct word from a UI interface with a ray that would come out of his hand. The idea was inspired by the YouTube channel “Daniel Stringer”, which the author followed as a base and wanted to modify it to accommodate her idea (Daniel Stringer, 2022b). However, after a discussion with the supervisor it was decided that a UI interface wouldn’t be fitting for the game as we didn’t want the game to take a direction into a fantasy theme.

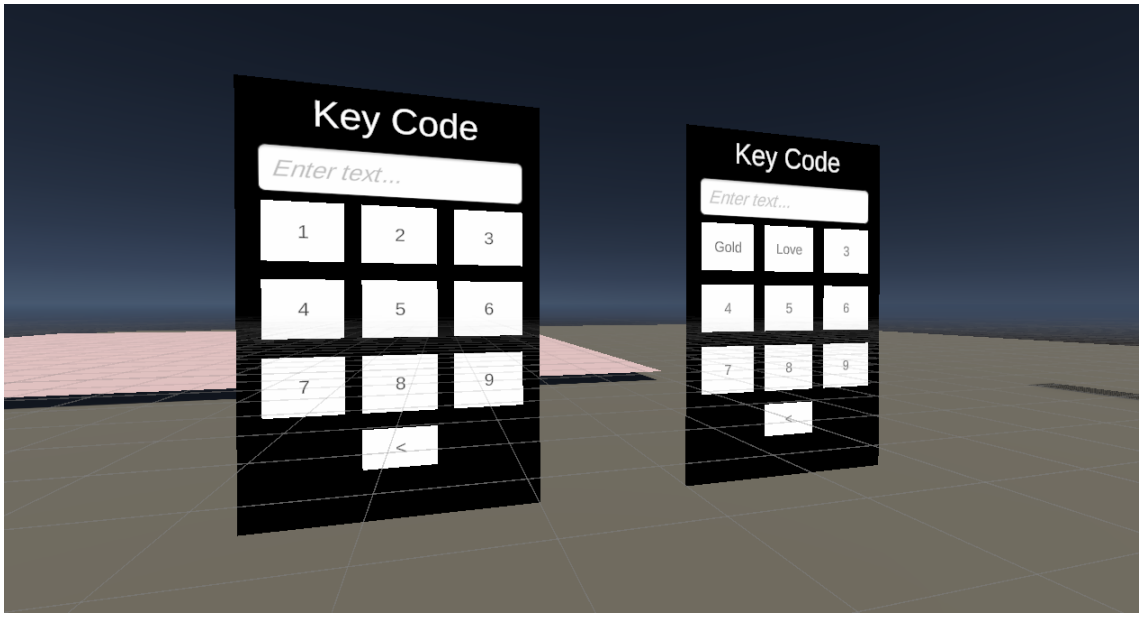

Figure 27: UI Interaction Puzzle

As mentioned in the playthrough content, the use of a flashlight was changed to lighting up a torch on fire, that required a simple script. The script was attached to the torch that had deactivated the game object of the fire and was checking if the torch collider would collide with a collider named “Fire” that was attached on the fire of the furnace. If those two objects collided, then the fire game object would activate. Moreover, to intensify the light used in the scene by the Japanese lamps and fire, the ambient light of the game world had to be lowered down (Mission Bit, 2021).

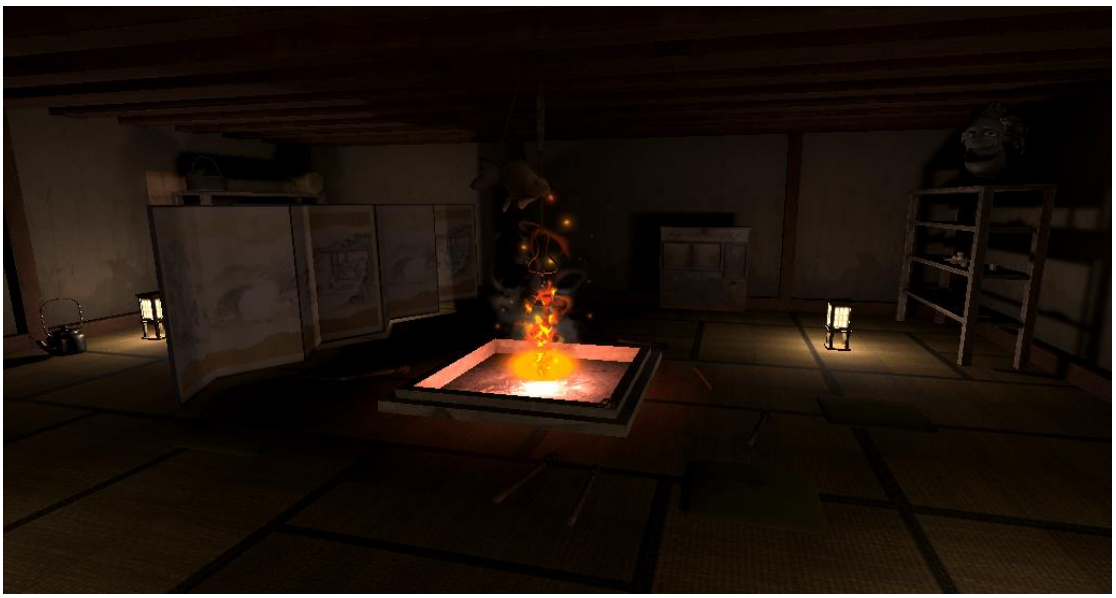

Figure 28: Furnace with torches around it

Torch.cs

Assembly-CSharp

Torch

```
1   using System.Collections;
2   using System.Collections.Generic;
3   using UnityEngine;
4
    Unity Script (1 asset reference) | 0 references
5   public class Torch : MonoBehaviour
6   {
7       public GameObject Fire;
8
        Unity Message | 0 references
9       void Start()
10      {
11          Fire.SetActive(false);
12      }
13
        Unity Message | 0 references
14      private void OnTriggerEnter(Collider other)
15      {
16          if(other.gameObject.tag == "Fire") // checking if the collider tag of the other object is "Fire"
17          {
18              Fire.SetActive(true);
19          }
20          /* if (other.gameObject.tag == "Floor") // checking if the collider tag of the other object is "Floor"
21          {
22              Fire.SetActive(false);
23          } */
24      }
25  }
```

Figure 29: Torch Script

In addition, 4 trigger scripts were created that were interacting with the player's collider and would activate an animation act immediately or after a few seconds, a sound or both. Moreover, one of those trigger scripts was used on the lamp face ghost after it was animated, to trigger its animations and narrative audio.

Moreover, a "Music Change" script had to be created that is responsible for changing the music when the player would enter the dark area of the game. This is done by using a collider as a trigger point and deactivating and activating the game object of the corresponding audio source to be played. After a gameplay with the supervisor, it was observed that the audio changes too abruptly and it had to be programmed to have a smoother transition between the 2 background music. In the end, the script was revised and programmed to have a transition between the 2 audios (Leonard, 2019).

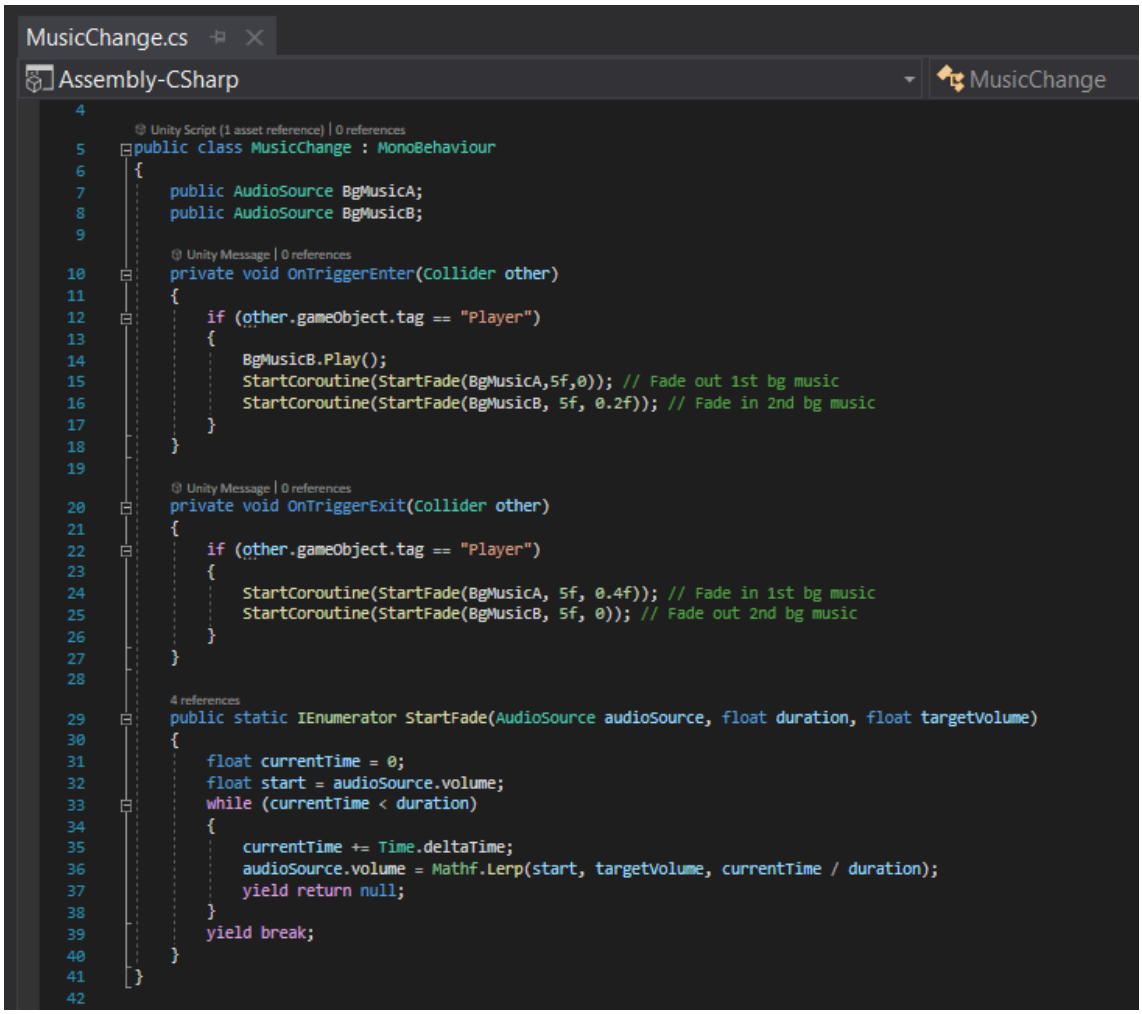

Figure 30: Music Change Script

A VR body inventory was created by following a YouTube tutorial by “Fist Full of Shrimp” (Fist Full of Shrimp, 2022). Also, another tutorial was followed to open drawers in the game scene by “Valem”, but after giving it a try it didn’t quite work out because of the way the drawers were modelled (Valem, 2020b).

During gameplay, it was noticed that the hands of the player would pass through objects alongside his head, where he could peek through walls and see the whole game map of the world. For the hands, there was a try with implementing physic hands by following the tutorials by “Valem Tutorials” where the hands would interact accordingly to world physics with the objects (Valem Tutorials, 2022). However, after the implementation there were present more problems specifically when the player picked up objects and then let them go, the objects would be sent flying out of the player’s hands. There was a try to fix the problem by activating and deactivating the collider of the player’s hands for a few seconds after the player let go of the object, but if the hand remained in the area of the collider of the object after the collider of the hands was activated back again, the object would still end up being pushed away. In the end it was decided to skip this step as it had proven to be more problematic than before. Regarding, the face of the player peeking through the walls of the game, a tutorial was found by “Daniel Stringer”, where a collider would be attached on the camera that would act as the head of the player and a script was written that checked if it collided with other objects that were assigned to the “VRNoPeekingLayer”, a black overlay would appear in front of the player making them see nothing (Daniel Stringer, 2022c).

Another problem that was noticed was the jittering of the gameplay due to many mesh colliders in the scene, so most of them had to be changed to box or capsule colliders to minimize the rendering power of the game so it would run more smoothly.

9 Testing

A user testing was conducted with 4 users, that included pre-test and post-test questionnaires alongside an observation during gameplay. To be noted, before the gameplay a small introduction was given to all users that said:

“The game follows the story of an orphan child with a curse mark that finds himself in a mysterious palace mansion in the Yokai Realm at the start of Fall. He will have to solve

puzzles and uncover the truth behind the curse mark and its origins, while being mindful of the mysterious master of the mansion. A game inspired by creepy fictional Japanese folklore and psychological horror games. Also, as the game is psychological horror game with an emphasis on environmental storytelling and you will have to solve 2 puzzles in total, please pay attention to the environment and the narration audio at some points.".

Also, a quick tutorial was given introducing the VR controls and the body inventory to the users while they were in the starting room of the game.

9.1 Pre-Test Questionnaire

The pre-test questionnaire was used as a starting reference to get an idea of how accustomed users were with the VR headsets and puzzle and horror games. In addition, to find out how familiar they were with the Japanese language and culture and compare it with the difficulty they found the game to be. Also, all the users had a coded pseudonym number to help with the comparison.

The results of the pre-test questionnaire show that all the users played puzzle games before and were mostly experienced with them. Additionally, three quarters of the players mentioned that they have played horror games before, however most of them weren't that experienced with them. Also, it was shown that most of the players were quite familiar with the VR headsets. Finally, regarding the familiarity of the users with Japanese language and culture the answers were ranging from none to moderate.

9.2 Observation

Following the pre-test questionnaire, an observation was done to collect qualitative data from the users. In the start of the game, it was commented by a lot of users that the scene felt extremely realistic, and it was noticed that they all found first the first piece of the first puzzle that was in the starting room. Moreover, all the users managed to identify the puzzle pieces of the first puzzle and complete it without much difficulty. Regarding the 2nd puzzle, half the players struggled with recognizing the puzzle pieces and all of them needed some extra clues with putting the puzzle pieces together and

figuring out what they meant. This was discussed a bit with the users, as half of them commented that they didn't focus that much on the story or notes but more on the gameplay.

Additionally, it was observed that most players tried to light the torch with the lighten up torches on the walls and were a bit stuck how else they could light it up. A small note had to be given by the researcher that a big fire is needed to light this torch up and immediately the users remembered the furnace on the 1st floor. Furthermore, when the players saw the lantern ghost, half of them felt uneasy and didn't want to approach him while the others didn't really mind it.

In addition, regarding the background music, it was observed that most of the players felt uneasy, terrified or that something was going to happen when the background music changed due to its intervals or when there were a few minutes of silence due to its looping.

Concerning the game's triggers, an excel sheet was created to mark which triggers made the users feel scared, uneasy, or even jolt. The trigger that made all players feel perturbed was the "Area2_AudioTrigger_Spirits", followed by the "Area2_AudioTrigger_Footsteps" and then "Area1_AudioTrigger_Growl2". Regarding the "Area2_AudioTrigger_Footsteps", that included hearing footsteps when the players got near the staircase, it was observed that half of the players turned around and backed away as they felt that somebody was coming towards them.

Another thing that was noticed, was that the black overlay on the player's view when their rig head went inside the game's wall worked as the first instinct of the users was to back away to be able to see.

9.3 Post-Test Questionnaire

The post-test questionnaires were completed after the users finished playing the game, and it included Likert scale questions and open-ended questions to get a first overall feedback on the game's scare factor and the horror atmosphere. Also, to get an idea of what users thought the game's story was about and if the environmental storytelling was successful.

It was shown that the game was successful in making the players feel frightened or uneasy as the answers ranged from 6 to 10. Moreover, a similar result was revealed on the audio used in the game, as users felt more frightened than uneasy.

Following there were open ended questions to describe the atmosphere of the game where most users commented that the atmosphere was creepy and mysterious. Also, they felt that they were truly in an abandoned mansion and weren't alone. In addition, there were questions to describe how they felt in the dark area in the basement and in the long narrow corridor. Most users said that the dark area was the scariest part of the game and that the narrow corridor made them feel uneasy and claustrophobic. Additionally, there were questions that asked which parts of the game users felt more scared or uneasy. The majority of the players commented that the dark area, narrow corridor, and sounds made them feel scared, while one player wrote that the lantern ghost made them feel uneasy.

There were also open-ended questions that were referring to the game's story in order to find out if the player's understood to some extent what the game was about. Regarding the game's story everybody understood that it was revolving around the curse and most players got correct that it had something to do with love and wanting to lift the curse. Moreover, most of the players understood that the "Day of Tribulation" is the 01/09/23 based on the first puzzle. Finally, most of the users were right that the one that caused the curse was the master of the mansion and even one person answered specifically that it was Tamamo no Mae, the nine tailed fox.

Most of the players found the narration of the lantern ghost helpful, alongside the relevance of the puzzles to the narrative of the game. The player that felt that the lantern ghost and puzzles didn't help was observed to be the player "P-1" that quit playing the game midway due to that they felt extremely scared and couldn't really focus on the game's story because of that.

Furthermore, it was shown that the users found the puzzles difficult and there was a question asking which was the part that challenged them. All the users wrote that was the language that matches with the observations, which concludes that the 2nd puzzle was the most difficult and not the 1st one. Finally, most users believe that the objectives of the game were always highly clear.

10 Conclusion

This thesis successfully developed an alpha stage Japanese horror VR game that focused on game design elements of psychological horror. The game implemented a variety of psychological game design elements that targeted human phobias and vulnerabilities such as the fear of the unknown, long narrow corridors and dark basements.

Moreover, the creation of the overall horror atmosphere and environment was achieved with success based on the user evaluation as users truly felt frightened and perturbed. In addition, the use of sound and animation triggers increased the feeling of fear as users felt that they weren't alone and that somebody was lurking in the background.

The puzzle system in the game that was used for story progression, alongside with the narrative audio was found by users to be quite helpful as most of them got the main points of the story. However, all users found it difficult to complete the second puzzle as they couldn't decrypt the Japanese letters to English with the notes that were provided in the game. As a result, regarding the environmental storytelling part of the game, further research needs to be done on that area and more visible clues to be implemented in the game.

Overall, the aim of the research to develop an immersive Japanese horror VR game with psychological horror elements was a success, alongside with the creation of the game environment and atmosphere.

Here you can find the Google Drive Link of the Thesis Game Project.

10.1 Limitations

The thesis faced some limitations that had to do with skill limitations of the author and time constraints of the project. The development of the game was entirely done by the author that has a beginner knowledge of programming as a result there were some small bugs in the game that couldn't be fixed on time. The time constraints of the project limited the author to do a more detailed research on environmental storytelling and designing more assets that needed to be implemented in the game to support it.

Additionally, this affected the sample size of the user evaluation as each user needed around 1 hour to complete the questionnaires alongside the gameplay that included observation.

10.2 Future Plans

The future plans of the game would be to fix some bugs that are present and improve the function of the VR body inventory of the player so more objects can be collected and stored that would help with solving the puzzles. Also, further develop the game with additional levels and puzzles. Specifically, finish the current level by implementing the final puzzle that will give the player the artifact to move on to the other levels and acquire the 2 remaining artifacts. Also, design the other levels of the mansions of the yokais and think of a way that the artifacts can be combined in a symbolic way. Moreover, study and improve the environmental storytelling part of the game and design more hints and clues. As it was observed by the user testing, an additional note to light the torch would be required to be added so players can understand better how they can light the torch. In addition, make the clues and second puzzle pieces more recognizable so players can more easily identify the important elements of the game that they need to pay attention to. Finally, conduct a user evaluation with more people that are preferably experienced and enjoy playing horror games.

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APPENDIX I

Pre-Test Questionnaire

1. Have you played puzzle games before?

2. What's your experience of puzzle games in scale of 0-10?

3. Have you played horror games before?

4. What's your experience of horror games in scale of 0-10?

5. What types of horror games do you enjoy playing the most?

- Survival Horror
- Action Horror
- Psychological Horror
- Jump scare Horror
- Reverse Horror
- I haven't played any

6. On what platforms have you played horror games?

- PC
- VR Headsets
- AR Headsets
- Gaming Consoles (eg. PS4, Xbox One, Nintendo Switch etc.)
- Smartphones/ Tablets
- Mac

7. How familiar are you with using VR headsets?

8. What is your familiarity with Japanese language in scale of 0-10?

9. What is your familiarity with Japanese culture in scale of 0-10?

Post-Test Questionnaire

1. How frightening did you find the game? Rate from 0-10.

2. How uneasy did the game make you feel? Rate from 0-10.

3. Did the sounds in the game frighten you at all? Rate from 0-10.

4. Did the sounds in the game made you feel uneasy? Rate from 0-10.

5. How would you describe the atmosphere of the game?

6. Describe how you felt while exploring the dark area in the basement with the torch?

7. Describe how you felt while passing through the narrow corridor after completing the first puzzle?

8. What parts of the game, made you feel more scared?

9. What parts of the game made you feel uneasy?

10. What do you think the game's story is about?

11. What is this "Day of Tribulation" about?

12. Who caused the curse?

13. What is this curse?

14. Did you find the narration of the lantern face ghost helpful? Rate from 0-10.

15. How difficult were the puzzles to solve? Rate from 0-10.

16. If you found the puzzles difficult, which part challenged you?

17. How relevant did you find the puzzles to the narrative of the game? Rate from 0-10.

18. Was the objectives clear at all times? Rate from 0-10.