**QUARANTINE LIFE – A VISUAL NOVEL GAME**

A Capstone Project Presented to the Faculty of

Institute of Computing Studies

Mabalacat City College

Mabalacat City, Pampanga

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science in Information Technology

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May 2021

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**CHAPTER 1**

**THE PROBLEM AND ITS BACKGROUND**

**1.1 INTRODUCTION**

The coronavirus disease-2019 (COVID-19) pandemic, caused by the new coronavirus SARS-CoV-2, has spread around the world, wreaking havoc on the health of millions of people. Although the pandemic is still ongoing, and new events are recorded every day, the global society's resilience is constantly being tested [1]. WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of ‘viral pneumonia’ in Wuhan, People’s Republic of China [2]. Among those who develop symptoms, most (about 80%) recover from the disease without needing hospital treatment. About 15% become seriously ill and require oxygen and 5% become critically ill and need intensive care. Complications leading to death may include respiratory failure, acute respiratory distress syndrome (ARDS), sepsis and septic shock, thromboembolism, and/or multiorgan failure, including injury of the heart, liver or kidneys [2]. On March 11, 2020, the World Health Organization identified COVID-19 as a pandemic [3]. Due to the COVID-19 pandemic, multiple quarantines around the world had occurred and had changed people’s accustomed lives. Many schools have adopted online methods of teaching while most employees were asked to work from home and participate in more virtual meetings.

When it comes to the COVID-19 pandemic, most people use the expressions quarantine, lockdown, and social distancing interchangeably, but these phrases signify various things [4]. Quarantine is a method of isolating and limiting individuals who have been exposed to a disease, such as COVID-19, in order to see if they, too, have been infected and become sick. Many people use the phrases lockdown or shutdown to denote more general and extensive limitations on movement, employment, and travel imposed on all residents in a city, region, or nation. On the other hand, social distancing is intended to assist people avoid contracting and spreading COVID-19. It simply means avoiding as many face-to-face interactions as possible. Someone may leave their house for vital tasks, but they must keep at least 2 meters away from others.

When COVID-19 emerged in early 2020, Filipinos’ lives have changed significantly [5]. In the event of a pandemic, public places are cleared of automobiles and people. The amount of time children and adults spend on educational activities varied substantially in the month preceding the start of courses too. Almost all homes got food aid from their local government. Food was reported to be received by 96% of households from their local government, making it by far the most popular type of help. When asked how they were dealing with the financial consequences of the crisis, the majority of respondents said they had eliminated all non-essentials. Borrowing was highlighted by many households, particularly from sari-sari businesses (by acquiring products on credit) and loan sharks. Several households claimed that they lowered the amount of food they ate or modified the kind of meals they ate (for example, by eating less meat or eating more cheap vegetables). Many households reported making and selling products on the street, such as masks or food, as well as selling online.

With the rest of the world contained behind walls, many people have tried finding recreational activities to do during lockdown. According to an Audley Villages study [6], the most popular activity is playing video games, followed by learning skills, then films & television. It might be predictable that playing video games is the most popular activity during the COVID-19 pandemic and the quarantines it has facilitated. After all, they are mostly played for entertainment, but video games can promote an individual’s growth too. Video games are a great method to learn, grow, and practice your problem-solving abilities [7]. Especially during a pandemic where stimulating interactions are limited, video games can greatly help in informing and making their players understand certain concepts that would be otherwise disregarded.

The purpose of this study is to raise awareness regarding the circumstances the pandemic has fostered. By simulating the COVID-19 pandemic as a visual novel game, players will be able to apply their knowledge about the situation and turn it into real time actions. Simulations facilitate fast learning by providing immediate feedback on the outcomes of their decisions. The visual novel game will assist in equipping players with realistic knowledge so that they can better respond to real-life situations during the COVID-19 pandemic.

**1.2 BACKGROUND OF THE STUDY**

The COVID-19 pandemic measures, including social distancing and isolation, are having a negative impact on the general population's mental health [8]. Frustration, loneliness, and anxieties about the future, in particular, are typical emotions and are well-known factors. Adding in the need for the citizens to follow COVID-19 guidelines, regulations may not be met properly. Filipinos, preoccupied with everyday survival rather than monitoring the news, struggled to keep up with the changing lockdown tiers and restrictions. The researchers had noticed the impact of video games in our general awareness and how it can help in facilitating simulations. To provide people with information about the COVID-19 guidelines in the local area, particularly, the IATF (Inter Agency Task Force) guidelines in the Philippines [9], the researchers tried to implement a game that aims to entertain and inform.

The study was conducted to help raise awareness regarding the real-life problems the COVID-19 pandemic has facilitated in the Philippines and guide the community with the local guidelines. This was implemented through narrative simulations from a visual novel named Quarantine Life. A visual novel is an interactive fiction video game genre that features a text-based story with a narrative style like literature and interactivity aided by static or sprite-based visuals, or video game footage. The gameplay in visual novels differs from that of other game genres in that it is generally minimal. Most of the player interaction is usually limited to clicking to keep the graphics and narrative going, as well as making narrative choices along the way.

Novel, a visual novel on COVID-19 [10], is a similar visual novel that informs about the COVID-19 pandemic. The game teaches children about COVID-19 and how to avoid it. To tell the story and engage young children, it relies on the "choose your own adventure" gameplay mechanism. Educators in Singapore used it, as did parents who shared it with their children.

Another similar study is the game, “COVID-19–Did You Know?”. The study met the proposed objectives of developing a serious game and making it available to young people, as well as providing reliable information on COVID-19 prevention topics [11]. This game's learning content was divided into six topics that presented specific WHO recommendations for the population, with an emphasis on issues related to teenagers' daily lives.

**1.3 OBJECTIVES OF THE STUDY**

The aim of this study was to develop a visual novel with interactive and dynamic stories that focuses on realistic themes from a person’s daily life during quarantine, consisting of branching paths with multiple endings. The intention was to create a realistic, relatable casts of characters and themes drawn from daily life teaching facts about COVID-19 and personal responsibilities. The purpose of this project is to increase awareness on the circumstances that the pandemic has created, and on how people can better respond to the real-life issues during the pandemic. By simulating the COVID-19 pandemic through a visual novel game, players will be able to apply their knowledge about the situation and turn it into real-time actions.

The study was aimed to achieve this through the following objectives:

* To develop a visual novel game that will be accessible for android devices.
* To inform and remind players to follow the IATF guidelines and the potential consequences for not following it in the visual novel’s narrative.
* To build a story where the player guides themselves into different scenarios and situations possible in the game through dialogue choices.
* To develop various characters that reflects different kinds of people in the real world and the type of personality they possess.
* To create backgrounds and sceneries that immerse the player into the game’s world.
* To integrate music and sound effects that fits in the current game scenario to make the game more compelling for the player.
* To implement small puzzle elements that add challenge and playability.
* To create a variety of endings which either lead to a positive (good) or a negative (bad) outcome depending on the player’s choice of actions and dialogue during the game.

**1.4 SCOPE AND LIMITATION OF THE STUDY**

The scope of this study was to primarily focus on the design, development, testing, and evaluation of Quarantine Life – A Visual Novel Game. A visual novel game is a form of interactive fiction video game that consists of a text-based plot with a narrative style similar to literature and interactivity assisted by static or sprite-based graphics or video game footage. The visual novel game is created using Ren’Py, a visual novel engine that uses words, images, and sounds to tell interactive stories [12]. The game will only support Android 5.0+. It was intended to be a single player game and allows for offline usage.

The protagonist of Quarantine Life portrays the player as an adult living in the state of the COVID- 19 pandemic. The player’s job is to read and understand the game dialog and tapping the screen after reading the character’s line and repeat. At some points in the game, the player will be prompted and shown two or more dialogue choices. At this situation, the player must choose a dialogue that they think is the best way to respond to the scenario or they can also choose a dialogue that they are just curious about. Their choice may change the course of the story and the final outcome (ending) of the story.

At the Main menu (The first screen to appear to the player), the player is presented four buttons named [Start], [Load], [Preferences], and [About]. [Start] will ‘start’ the game from the starting point of the story. [Load] will allow the player to choose a save slot they have saved to in their previous playthrough and continue their progress in the story. [Preferences] gives the player various options to adjust certain aspects of the game such as audio volume and text speed. [About] are simply notes from the developer such as current version, licenses, and credits.

In the main game (The screen where the [Start] and [Load] buttons lead to), character sprites, background, and the dialogue boxes containing the characters’ names and lines are displayed. At the bottom part of the dialogue box, are four buttons named [Back], [Skip], [Auto], and [Menu]. [Back] returns the player to the previous line of dialogue, [Skip] quickly ‘skips’ the dialogue until it reaches a point in the game where the player chooses a decision, which is useful for skipping already read text and testing out other story routes. [Menu] when pressed shows the same buttons as the Main Menu screen: [Load], [Preferences], and [About] except that there are four new buttons present: [History] for reviewing previous dialogue, [Save] for reserving a point in the game and continuing it later with [Load], [Main Menu] to return to the main menu, and [Return] to simply close the menu.

**1.5 SIGNIFICANCE OF THE STUDY**

The significance of awareness during the COVID-19 is important in minimizing the spread of COVID-19. Public awareness must be improved to be prepared for epidemic and pandemic situations [13]. One of the most critical aspects of COVID-19 awareness is the various modes of virus’ transmission from an infected person. Demonstrating good understanding of preventive measures, particularly social distancing, and seeking medical help if symptoms persist will help Mabalacat City in its combat to the pandemic.

Beneficiary of the study are as follows:

**The Students**

The output of this study is beneficial to the students, especially to those who are having face-to-face classes. Through this study, students will understand the importance of the COVID-19 guidelines in school and in their houses.

**The Community**

The results will help the community combat the COVID-19 pandemic. This study serves as their reference which will give them background about the challenges and the preventive measures on the pandemic.

**Future Researchers**

The ideas presented may be used as reference data in conducting new research or related findings about the COVID-19 pandemic. It can also serve those that aims to develop a visual novel game as its focus of the study.

**1.6 DEFINITION OF TERMS**

The operational meaning of each terminology is italicized.

**COVID-19**

An infectious disease caused by a coronavirus discovered from Wuhan, People’s Republic of China. *The main theme and the motivation behind the development of Quarantine Life.*

**Quarantine Life**

The title of the app the researchers will develop. It is named as such because the game’s story revolves at the time where the characters are in the quarantine period of the virus.

**Ren’Py**

Ren'Py is a visual novel engine – used by thousands of creators from around the world – that helps you use words, images, and sounds to tell interactive stories that run on computers and mobile devices [12]. *The game engine which researchers have used to develop Quarantine Life.*

**Route**

In Visual Novels, decisions determine how the story plays out, typically with different major plot points differing. Those different major events and outcomes are each considered a "route". *In Quarantine Life, routes represent the choices the player has taken in the current playthrough and the final outcome it produced.*

**Visual Novel**

An interactive fiction video game genre that features a text-based story with a literary narrative style. *It is the game genre where Quarantine Life is based on.*

**CHAPTER 2**

**REVIEW OF RELATED LITERATURE AND STUDIES**

The visual novel named Quarantine Life, is inspired by many different factors. One of which is the COVID-19 pandemic in the Philippines, and another is the benefit of simulations in facilitating fast learning. As the number of COVID-19 cases rises in the Philippines, researchers noticed the value of video games in spreading information and used it in spreading awareness about the pandemic. The researchers had chosen visual novel as its game genre due to its abilities to tell narratives while also allowing user interactivity.

**2.1** **INTEGRATING NARRATIVES TO INCREASE ENGAGEMENT**

Since ancient times, telling stories has become a way for humans to make sense of their surroundings, coordinate their experiences and thoughts, and engage with their society in order to develop mutual understanding. Storytelling may be an effective medium for reaching out to a specific audience with scientific findings. The listener is given meaning by a story or a plot, making abstract scientific evidence easier to interpret and examine [14].

Storytelling, like marketing, is the practice of persuading people to hear for what you have to say and to want to listen to it. We are far more involved when we hear a story rather than simply statistics. Stories will make the audience feel a certain way about your organization's or services' functions, and they allow for shared interactions [15]. Using storytelling to describe complicated research was not previously thought to be a rigorous way of communicating science. However, a growing number of studies suggest that narratives can be effective for building confidence in an audience, increasing information acquisition, and increasing viewers' capacity and desire to understand and act. Since stories are quickly digested by the human brain, they help bridge the gap between our logos and pathos; as an audience becomes emotionally sensitive to information, the likelihood that they can adapt and act on the knowledge increases [16]. To express large, nuanced ideas, organizations often focus on abstract principles such as equality, creativity, and justice. These definitions, though, give space for people to make conclusions on what they say. Vague language can indicate a certain political position on an issue or solution, prompting people to ignore or reject the issue or solution if it challenges their interests. Instead of using abstract words, we can use visual language that draws an image in the minds of our viewers of what the challenges and answers associated with these concepts look like. When you use visual words, people are more likely to remember your message and are less likely to misunderstand it [17].

In human cultures, narrative is an important mode of information transmission and storage. A great deal of research has been conducted on narrative and learning/knowledge in an organizational context. If the stories are simply written out, they cannot make sense. They make sense if they are told at the same time, in a situation where the setting is similar to the context in which the story occurred. People in the community gradually learn which stories to use at what point in time to communicate a certain meaning [18].

**2.2 HISTORY OF VISUAL NOVELS**

Visual novels originated in and are particularly popular in Japan. Many people credit ‘The Portopia Serial Murder Case’ in inventing visual novel as a genre [19]. In an interview with Retro Gamer, he recalls adventure games as the dominant narrative genre in video games at the time. As a result, he developed Portopia in an effort to introduce American adventure games to Japanese audiences. Portopia, Famicom Tantei Club, and Mindseeker all used the “sprite on background” approach that visual novels are known for today. They did not, however, emphasize this approach as later visual novels would; the sprites would not shift across the backgrounds, nor would they move in a specific way to imply action. Visual novels, like manga and comic books, rely on a combination of text and visuals to convey narrative. Because text alone would not provide enough context for the plot, some of the storytelling had to take place within the visuals. While this does not always lead to manga-esque narrative strategies in early visual novels, the art in these games certainly does. Because their art was so rigid, it only made sense to compare them to manga panels. As a result, when we look at early visual novels, we see them using the same kinds of panel transitions that comics and manga had been using for years. Panel transitions are not the only strategy borrowed from manga by early visual novels. Dennou Tenshi features subjective motion lines, and both manga and visual novels depict movement in similar ways, albeit for different reasons. Panel transitions, however, have proven to be the most useful of all the techniques early visual novels borrowed from manga.

Though there are now a wide variety of VNs available, the genre has its origins in eroge (erotic games), especially bishōjo games, in which the presumed straight male player may have romantic and/or sexual experiences with different female characters [20]. Lolita: Yakyūken, developed by PSK and released in 1982, was the first graphic novel. Lolita was basically a strip rock-paper-scissors game in which the onscreen girl would remove an item of her clothing each time the player won a round. Fortunately, VNs weren't all for thinly disguised softcore pornography for long.

Chunsoft's Sound Novel series, which started in 1992 with the Super Famicom release of Otogirisou and achieved widespread success with 1994's Kamaitachi no Yoru, was the first to incorporate the new visual novel genre's gameplay framework [21]. While the word "visual novel" is Japanese in nature, it is used much more often in the western gaming world than in Japan, with the two regions having distinct interpretations of the genre. Many titles called visual novels in the West are known as "adventure games" in Japan. Jiro Ishii, the director of 428: Shibuya Scramble, previously stated that the Japanese adventure genre can be divided into two groups. Classic "command-based" and "novel style" adventure games fall into these two categories. Command-based games give the player direct control over their character through verb commands or other means, and they need some kind of problem solving in order to progress through the story. In terms of structure, these games are very similar to western point-and-click adventure games. "Novel style" games, on the other hand, uses the presentation of an adventure game to tell a story that does not require the player to solve gameplay difficulties and has limited player involvement. In essence, command-based games are about "solving a puzzle," while novel-type games are about reading a story.

**2.3 CREATION OF A VISUAL NOVEL**

Visual novels are a combination of novels, visuals, games, and audio experiences. There is one other really critical point that can go without saying. The author's own hidden motivations [22]. By assessing the hidden motivations behind the creation of the visual novel, it is far easier to come up with an idea. When you have an idea for a game, the first thing you can do is create an elevator pitch for it. A one-to-three-line summary of what the game is all about. Concentrate on the game's most intriguing aspects, such as the plots, environments, wars, and characters. The basic idea. This is the heart of the novel, and it is what distinguishes it [23].

Each line in a visual novel must be able to "stand on its own" to a far greater degree than a line in a prose novel. As a result, characters use less pronouns and often repeat or restate a portion of the question they are addressing [24]. The neutrality of the characters' responses must also be preserved in the plot structure. Players identify closely with the character by portraying 'themselves' through a sequence of decisions based on personality [25].

Another thing to consider is silence. Silence is said to be golden, and in certain films, this may be real. Not every scene in a game requires music; in reality, silence will enhance the emotion in certain scenes. Scenes in which big plot changes are discovered unexpectedly, or a character takes a tough choice - or simply scenes in which you want the player to take in the mood and ambience of a specific environment - are only a few examples of when silence can be more impactful than music [26].

**2.4 DESIGNING VISUAL NOVELS TO ILLUMINATE**

Every human being has a personal story to tell that stems from their attempts to make sense of their life experiences. They have distinct and sometimes powerful personal experiences about how they make sense of their life. Teachers can have a platform for students to articulate themselves in a constructive and healthy atmosphere where students can benefit from one another by expressing their personal stories [27].

The considerations that matter when planning for learning inside a game are the material (what should be learned), the learning experiences (how it should be learned), and the assessment processes (if it was learned). Learning paths (the order and relation between learning activities) must be established within the game in order to lead the student through her learning process. The story will provide sense and interpretation for what is to be understood as part of the learning path. A story, for example, may address a difficult challenge in a manner that assists the student/player in learning about the subject matter [28]. It is important to remember that in educational games, the player will receive both non-diegetic feedback about their success and complementary diegetic feedback about their player character's performance within the story-world. Receiving both diegetically and non-diegetically generated feedback provides the player with several points of reference for their success and development through the plot [29].

Visual novels entice reluctant readers. These visually engaging stories serve as a springboard to a more in-depth interpretation of a text. When they jump into the story without grappling with the format of a typical book, these readers will easily begin to learn literacy skills such as general reading comprehension, deduction, and building new vocabulary [30]. Although standard visual novels can be too text-heavy for newcomers to the genre, certain visual novels contain immersive gaming features that make them easier to absorb [31].

**2.5 DEVELOPING INFORMATIONAL GAMES IN RESPONSE TO THE**

**COVID-19 PANDEMIC**

Numerous games have tried to help raise awareness to the COVID-19 pandemic. Novel, a COVID-19 graphic novel [10], is a comparable visual novel that talks about the COVID-19 pandemic. The game instructs children on how to avoid COVID-19. It uses the "choose your own adventure" gaming mechanism to tell the story and entertain young children.

A picture containing text, road, sky, outdoor

Description automatically generated

Figure 1: Novel, a COVID-19 graphic novel

Graphical user interface, text, application, chat or text message

Description automatically generatedAnother is a game named “COVID-19 - Did You Know?”. On April 1, 2020, the game “COVID-19–Did You Know?” was made available for free on a public university website. As of September 2020, the game had been accessed 17,571 times. The research accomplished its specified goals of designing a serious game and making it available to young people, as well as providing detailed information on COVID-19 prevention topics. The learning material of this game was categorized into six topics, each of which provided unique WHO suggestions for the general public, with a focus on problems that affect adolescents' everyday lives [11].

Figure 2: COVID-19 - Did You Know?

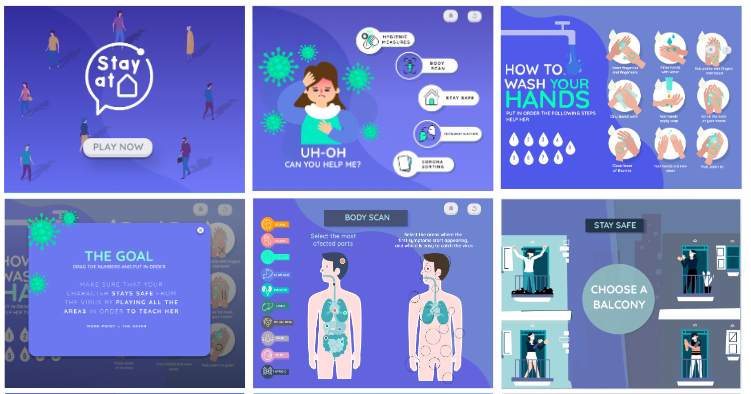
Using human-centered design and game design methods, another game called “Stay at Home” was developed. Hygienic Measures, Body Scan, Stay Safe, Personification and Corona Sorting were the five micro-games included in the game [32]. As users play the different elements, the avatar starts to feel better or ill based on the points and scores in the game. The “Hygiene Measures” were created by arranging the various steps involved in properly washing your hands. “Body Scan” featured a human body infographic in which researchers had to pick out the virus's most infected regions and areas where the first signs appeared. “Stay Safe” is divided into two parts, the first of which is a MythBusters quiz. The “Personification” saw players put themselves in the shoes of someone who deals with a high-risk individual. Finally, “Corona Sorting”, in which participants would equate the context of terms like "internal distancing" and "asymptomatic" with the appropriate image in order to comprehend what they say.

Figure 3: Stay at Home

During the coronavirus pandemic, a university professor created the video game "Can You Save the World?" to teach children the importance of social distancing [33]. He believes that games that foster good social behaviour will have an effect on people's behavior in the real world. Governments, classrooms, and health agencies could use the game to promote social distancing, which is a crucial step to hold the virus in place as countries recover from lockout, according to the developers.



Figure 4: Can You Save the World?

**Diagram

Description automatically generatedCONCEPTUAL FRAMEWORK**

Figure 5: Conceptual Framework

**CHAPTER 3**

**METHODOLOGY**

**GENERAL METHOD**

The proponents of this study follow Rapid Application Development (RAD) as their project’s methodology. RAD is an agile framework that focuses on rapid prototyping of software products, iterating periodically based on reviews, and releasing modified versions of said products to clients on a continuous basis. It enables the proponents of this study to divide the development of the visual novel game into smaller, separate, actionable tasks, and present it to clients in less time.

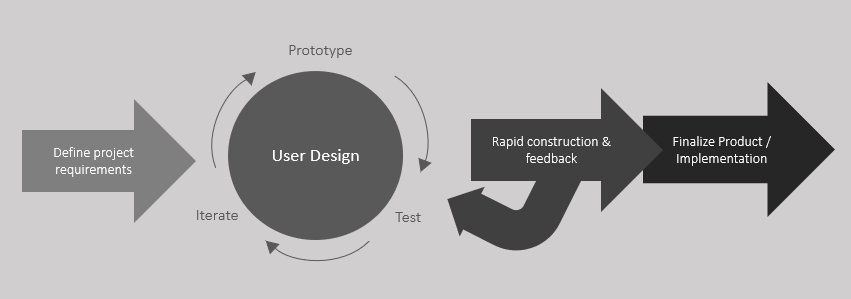


Figure 6: Rapid Application Development (RAD) Methodology

**DEFINE PROJECT REQUIREMENTS**

Proponents of rapid application development begin by identifying a broad range of project specifications. This planning stage is short, focusing on concept iterations as a higher priority. Goals, expectations, and schedules are examples of requirements. The clients (proponents' adviser and panel members) give a vision for the product, and testing is undertaken to modify specifications with the consent of each client. The freedom to adjust conditions at any stage during the production cycle is one of the main concepts of RAD.

**SOFTWARE & HARDWARE REQUIREMENTS**

|  |  |  |
| --- | --- | --- |
| Software used in Development | Minimum Hardware Requirements | Minimum Software Requirements |
| Adobe Illustrator CC 2014 (64-bit) | CPU: Intel Pentium 4 or AMD Athlon 64 processor  RAM: 2 GB (8 GB recommended) | Operating System: Windows 7/8/10 |
| Adobe Photoshop CC 2014 (64-bit) | CPU: Intel Pentium 4 or AMD Athlon 64 processor  RAM: 2 GB (8 GB recommended) | Operating System: Windows 7/8/10 |
| Blender 2.90 | CPU: 64-bit dual core 2Ghz with SSE2 support  RAM: 4 GB | Operating System: Windows 7/8/10 |
| Google Docs | - | Browser:   * Chrome * Firefox * Windows only: Microsoft Edge |
| Ren’Py 7.4.4.1439 | CPU: Pentium 4 1.7 GHz  RAM: 128 MB | Development:   * Windows 10 (Operating System) * Atom 1.34.0 (Code Editor)   Product: Android 5.0+ |
| Soundtrap | - | Browser: Chrome |
| VRoid Studio v0.13.1 | CPU: Intel Core i5 4th Gen  RAM: 8 GB | Operating System: Windows 8.1/10 |

Table 1: Software & Hardware Requirements

**PROTOTYPE**

When a proposal has been scoped, proponents begin developing the basic prototype. The aim is to quickly create a functional concept that can be shown to the client (adviser). This step is frequently repeated as the project progresses. During the early stages of prototyping, it is common for proponents to cut corners in order to produce a working product that is acceptable to the client (adviser). This stage is when proponents work on the visual novel’s narrative, background scenes, characters, sound effects, and the game itself. After a 2-week period, the proponents present their progress and current prototype to the client (adviser), and revise subjects of concern accordingly.

**RAPID CONSTRUCTION & FEEDBACK**

Rapid development is the process of transforming a prototype into a functional one. This process can be replicated as needed to accommodate new components and changes. During this process, software and implementations are carefully reviewed to ensure that the final product meets the client's needs and goals. Throughout this point, clients (panel members) provide detailed feedback, recommending alterations, improvements, or new strategies to address issues as they arise. Clients will discover that certain ideas do not fit in practice. With this information, proponents may either restart prototyping or, if the feedback is entirely favorable, proceed to the final stage.

**FINALIZE PRODUCT/IMPLEMENTATION**

The final stage of rapid application development is where proponents overcome the technological debt accumulated during early prototyping, optimizing execution to increase reliability and maintainability as they prepare the software (visual novel game) for launch. Components are transferred to a live production environment for full-scale monitoring to detect component flaws. Before comfortably giving the clients a final product, proponents finalize documentation and complete all required activities.

# **REFERENCES**

|  |  |
| --- | --- |
| [1] | V. Zoumpourlis, M. Goulielmaki, E. Rizos, S. Baliou and D. A. Spandidos, "The COVID-19 pandemic as a scientific and social challenge in the 21st century," *Mol Med Rep,* vol. 22, no. 4, pp. 3035-3048, 2020. |
| [2] | "Coronavirus disease (COVID-19)," World Health Organization, 12 October 2020. [Online]. Available: https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19. [Accessed 31 March 2021]. |
| [3] | "WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020," World Health Organization, 11 March 2020. [Online]. Available: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. [Accessed 31 March 2021]. |
| [4] | "Coronavirus: Key terms explained - ​Coronavirus and Covid-19 | The Economic Times," The Economic Times, 01 April 2020. [Online]. Available: https://economictimes.indiatimes.com/news/international/world-news/coronavirus-key-terms-explained/coronavirus-and-covid-19/slideshow/74930234.cms. [Accessed 18 May 2021]. |
| [5] | UNICEF, "The Impact of the COVID-19 Crisis on Households in the National Capital Region of the Philippines," UNICEF, Manila, 2020. |
| [6] | A. Villages, "Most popular quarantine activities | Audley," Audley Villages, 3 May 2020. [Online]. Available: https://www.audleyvillages.co.uk/most-popular-quarantine-activities. [Accessed 18 May 2021]. |
| [7] | "5 Reasons Why Gaming Is Actually an Excellent Hobby - Nerdynaut," NerdyNaut, 2 May 2019. [Online]. Available: https://www.nerdynaut.com/5-reasons-why-gaming-is-actually-an-excellent-hobby. [Accessed 18 May 2021]. |
| [8] | V. Giallonardo and G. Sampogna, "Frontiers | The Impact of Quarantine and Physical Distancing Following COVID-19 on Mental Health: Study Protocol of a Multicentric Italian Population Trial | Psychiatry," Psychiatry, 05 June 2020. [Online]. Available: https://www.frontiersin.org/articles/10.3389/fpsyt.2020.00533/full. [Accessed 19 May 2021]. |
| [9] | DOH, "COVID-19 Inter-Agency Task Force for the Management of Emerging Infectious Diseases Resolutions | Department of Health website," DOH, 18 April 2020. [Online]. Available: https://doh.gov.ph/COVID-19/IATF-Resolutions. [Accessed 19 May 2021]. |
| [10] | S. Z. Shah, "Novel: A Visual Novel on Covid-19," BuildForCovid19, [Online]. Available: https://buildforcovid19.io/novel-a-visual-novel-on-covid-19/. [Accessed 31 March 2021]. |
| [11] | J. Gaspar, E. Lage, F. Silva, É. Mineiro, I. Oliveira, I. Oliveira, R. De Souza, J. Gusmão, C. De Souza and Z. Reis, "A Mobile Serious Game About the Pandemic (COVID-19 - Did You Know?): Design and Evaluation Study," *JMIR Serious Games,* vol. 8, no. 4, 2020. |
| [12] | "The Ren'Py Visual Novel Game Engine," Ren'Py, [Online]. Available: https://www.renpy.org/. [Accessed 31 March 2021]. |
| [13] | H. Alahdal, F. Basingab and R. Alotaibi, "An analytical study on the awareness, attitude and practice during the COVID-19 pandemic in Riyadh, Saudi Arabia," *Journal of Infection and Public Health,* vol. 13, no. 10, pp. 1446-1452, 2020. |
| [14] | K. Andersson, A. Sundin and R. J. A. Watt, "Rethinking communication: integrating storytelling for increased stakeholder engagement in environmental evidence synthesis," *Environmental Evidence,* vol. 7, no. 6, 2018. |
| [15] | "3 Tips for Creating Better Engagement With Storytelling - Redstart Creative," Redstart Creative, 9 May 2017. [Online]. Available: https://www.redstartcreative.com/3-tips-for-creating-better-engagement-with-storytelling/. [Accessed 29 April 2021]. |
| [16] | A. Sundin, R. Watt and K. Andersson, "Rethinking communication: integrating storytelling for increased stakeholder engagement in environmental evidence synthesis," *Environmental Evidence,* vol. 7, no. 6, 2018. |
| [17] | A. Neimand, "How to Tell Stories About Complex Issues," Stanford University, 7 May 2018. [Online]. Available: https://ssir.org/articles/entry/how\_to\_tell\_stories\_about\_complex\_issues. [Accessed 29 April 2021]. |
| [18] | M. Jenal, "Five reasons why using narrative is important for understanding social change | Marcus Jenal," Jenal, 7 November 2017. [Online]. Available: https://www.jenal.org/five-reasons-why-using-narrative-is-important-for-understanding-social-change/. [Accessed 29 April 2021]. |
| [19] | B. Crimmins, "A Brief History of Visual Novels," Medium, 8 January 2016. [Online]. Available: https://medium.com/mammon-machine-zeal/a-brief-history-of-visual-novels-641a2e6b1acb#.djykk39ju. [Accessed 31 March 2021]. |
| [20] | C. Choi, "Bigger on the Inside: A History of Visual Novels," Medium, 22 February 2019. [Online]. Available: https://medium.com/@cecilchoi/bigger-on-the-inside-a-history-of-visual-novels-981e42f43608. [Accessed 31 March 2021]. |
| [21] | "Visual Novel (Concept)," Giant Bomb, 10 March 2021. [Online]. Available: https://www.giantbomb.com/visual-novel/3015-2029/. [Accessed 31 March 2021]. |
| [22] | S. Fung, "Guide to Making Awesome Visual Novels – The Checklist – CloudNovel," CloudNovel, 24 May 2018. [Online]. Available: https://blog.cloudnovel.net/2018/05/24/guide-to-making-visual-novels/. [Accessed 29 April 2021]. |
| [23] | Two and a Half Studios, "The Beginner’s Guide to Visual Novel Development – TWO AND A HALF STUDIOS," Two and a Half Studios, 27 February 2020. [Online]. Available: https://www.twoandahalfstudios.com/2020/02/the-beginners-guide-to-visual-novel-development. [Accessed 29 April 2021]. |
| [24] | J. Kuiper, "How visual novel writing is different – Route 59 Games," Route 59 Games, 1 February 2017. [Online]. Available: http://www.route59games.com/how-visual-novel-writing-is-different/. [Accessed 29 April 2021]. |
| [25] | S. Fung, "How to Plan Structure of Your Visual Novel – CloudNovel," CloudNovel, 24 May 2018. [Online]. Available: https://blog.cloudnovel.net/2018/05/24/how-to-plan-structure-of-your-visual-novel/. [Accessed 29 April 2021]. |
| [26] | D. Reconose, "Gamasutra: Darrell Reconose's Blog - 5 Tips For More Engaging Visual Novel Soundtracks," Gamasutra, 27 January 2020. [Online]. Available: https://www.gamasutra.com/blogs/DarrellReconose/20200127/357173/5\_Tips\_For\_More\_Engaging\_Visual\_Novel\_Soundtracks.php. [Accessed 29 April 2021]. |
| [27] | R. J. Rhodes, "Personal Story Sharing as an Engagement Strategy to Promote Student Learning," *The University of Pennsylvania Graduate School of Education's Online Urban Education Journal,* vol. 16, no. 1, 2019. |
| [28] | K. Oygardslia, C. Weitze and J. Shin, "The Educational Potential of Visual Novel Games: Principles for Design. Replaying Japan, Vol. 2.," vol. 2, 2020. |
| [29] | J. Camingue, E. Melcer and E. Carstensdottir, "A (Visual) Novel Route to Learning: A Taxonomy of Teaching Strategies in Visual Novels," in *International Conference on the Foundations of Digital Games*, Bugibba, Malta, 2020. |
| [30] | S. Knutson, "The Graphic Novel: A Visual Literacy Tool for Educating Students | Resilient Educator," Resilient Educator, 24 October 2018. [Online]. Available: https://resilienteducator.com/classroom-resources/graphic-novels-visual-literacy/. [Accessed 29 April 2021]. |
| [31] | L. Ambalina, "A Beginner's Guide to Visual Novel Video Games | Hacker Noon," Hacker Noon, 23 November 2020. [Online]. Available: https://hackernoon.com/a-beginners-guide-to-visual-novel-video-games-2f463w27. [Accessed 29 April 2021]. |
| [32] | M. L. Hernández, "Healthcare gamification Serious game about COVID-19; Stay at home," 2020. [Online]. Available: http://www.diva-portal.org/smash/get/diva2:1481046/FULLTEXT01.pdf. [Accessed 29 April 2021]. |
| [33] | E. Batha, "COVID-19 computer game teaches children importance of social distancing," World Economic Forum, 19 May 2020. [Online]. Available: https://www.weforum.org/agenda/2020/05/coronavirus-computer-game-teaches-children-social-distancing/. [Accessed 31 March 2021]. |
| [34] | P. Duddu, "Coronavirus in Philippines: The COVID-19 risk, impact and measures," Pharmaceutical Technology, 31 March 2020. [Online]. Available: https://www.pharmaceutical-technology.com/features/coronavirus-affected-countries-philippines-measures-impact-tourism-economy/. [Accessed 31 March 2021]. |

**APPENDICES**

**Appendix A: Character Modeling Samples**

Carla

Barangay Tanod

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Kyle

Jillian

Jason

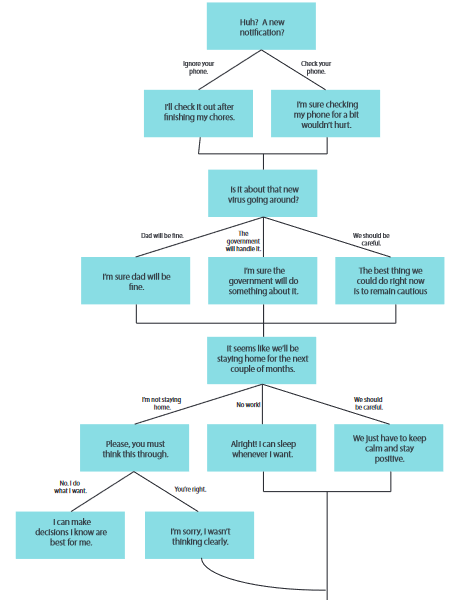
Ian

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Mark

Prince

**Appendix B: Decision Tree**

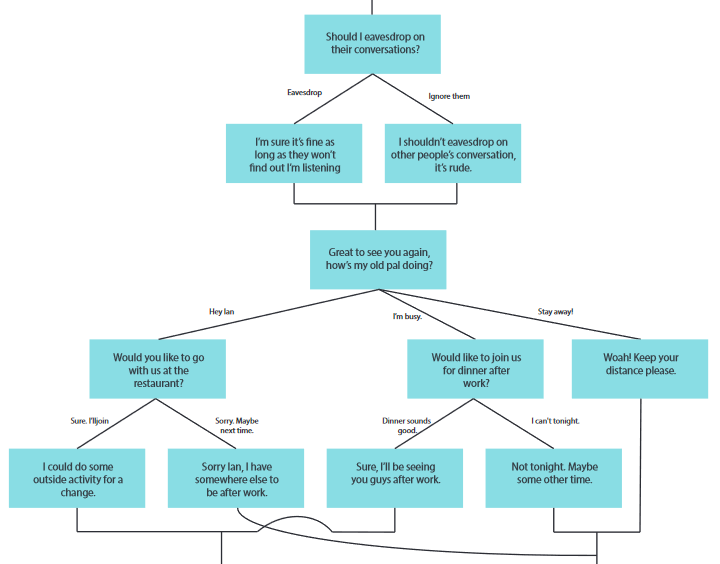
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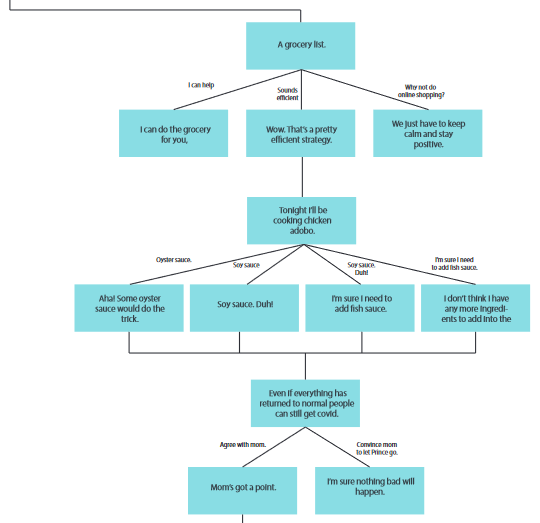
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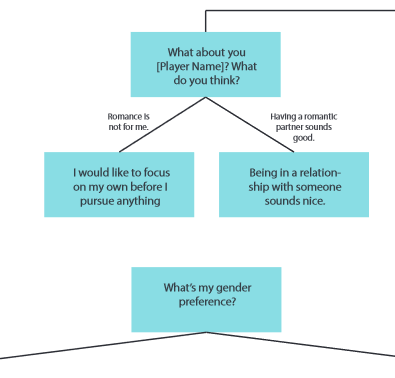
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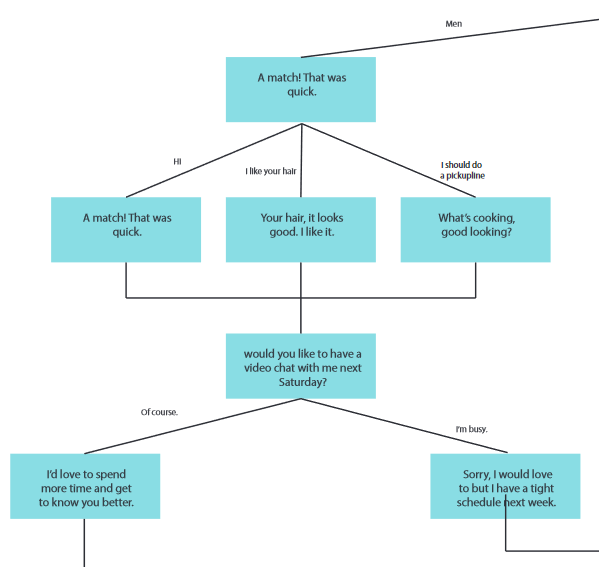
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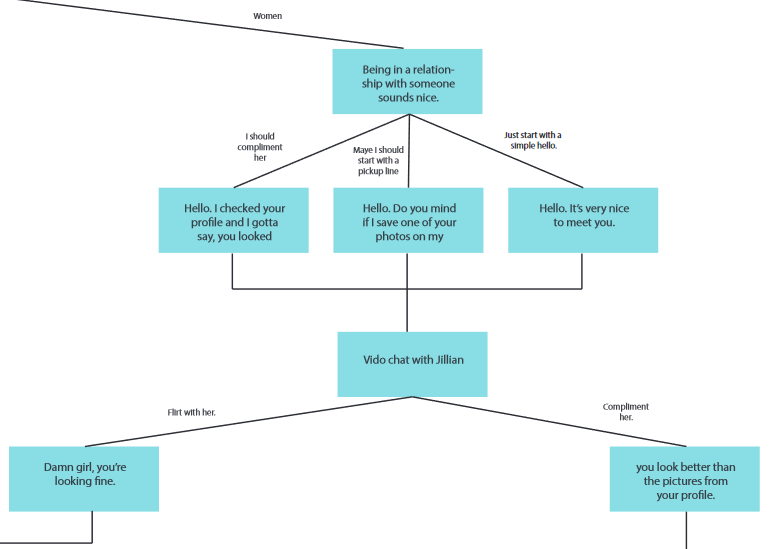
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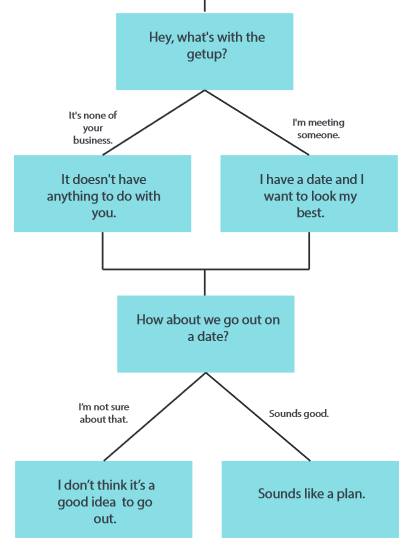
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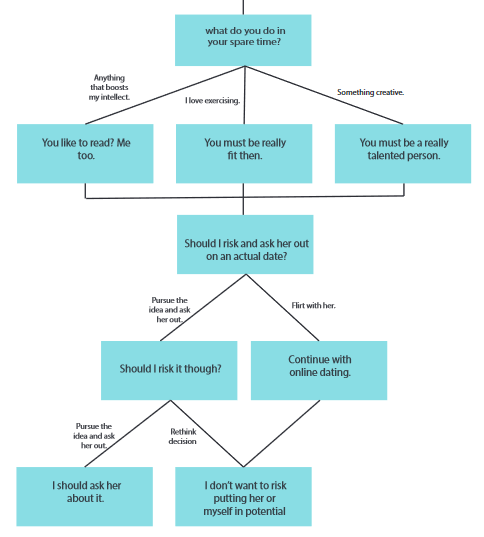
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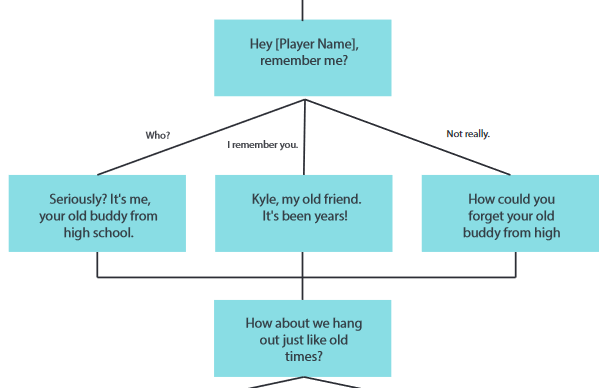
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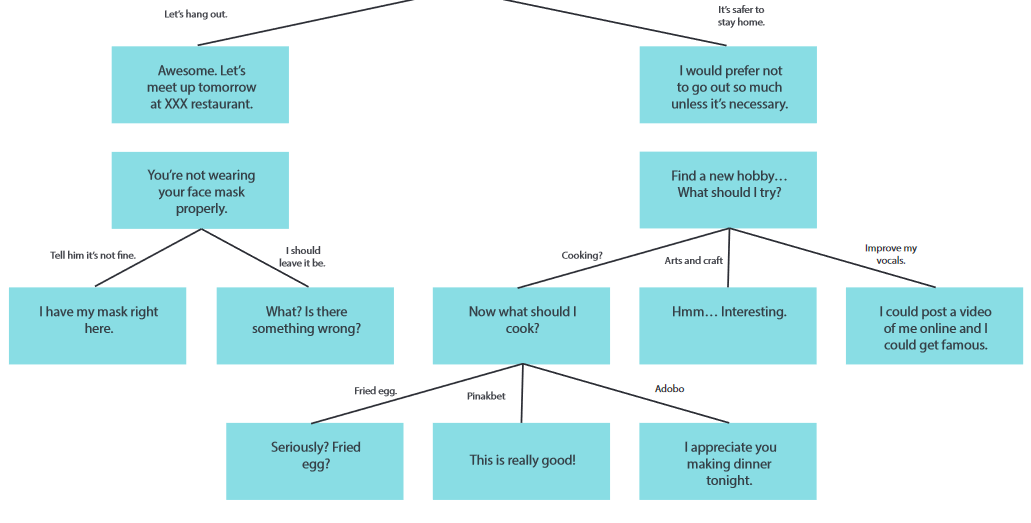
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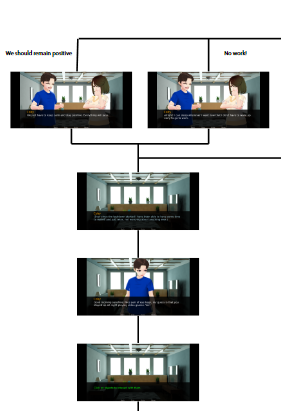
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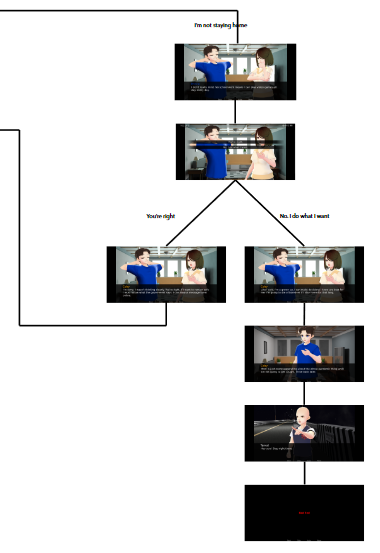
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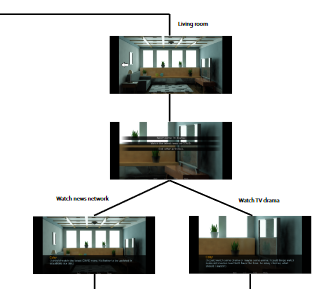
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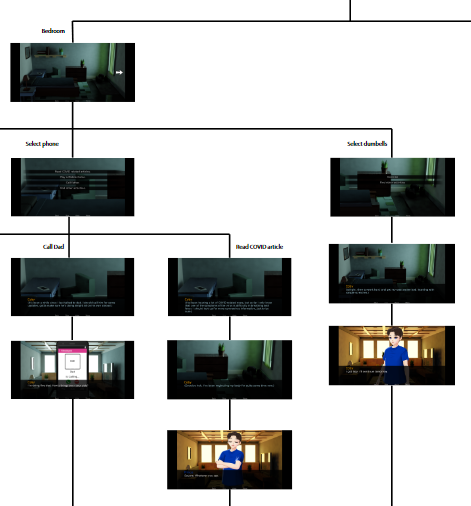
**Appendix C: Storyboard**

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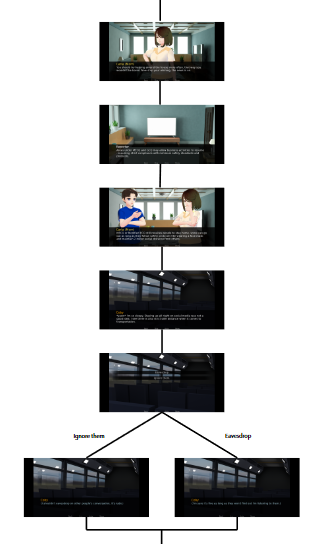
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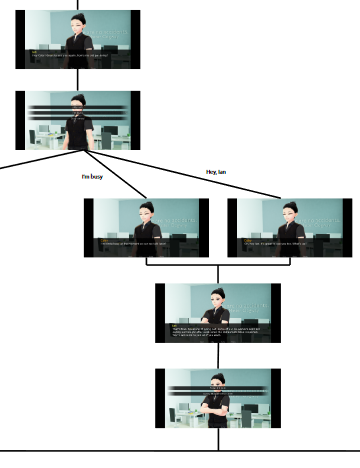
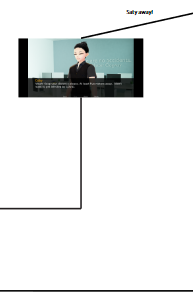
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V

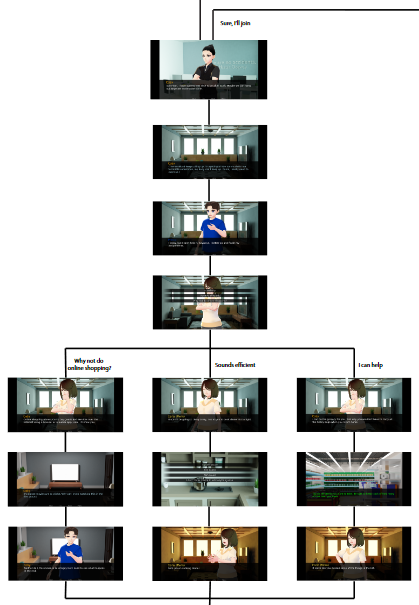
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V

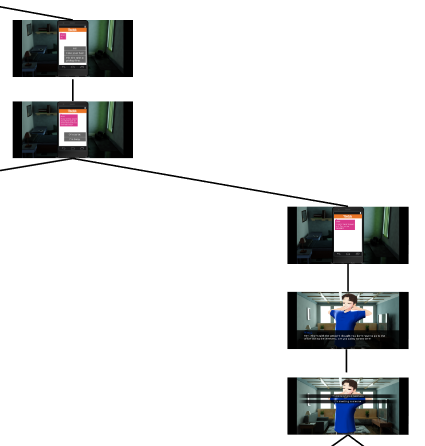
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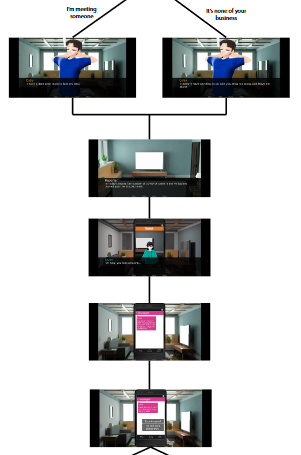
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V

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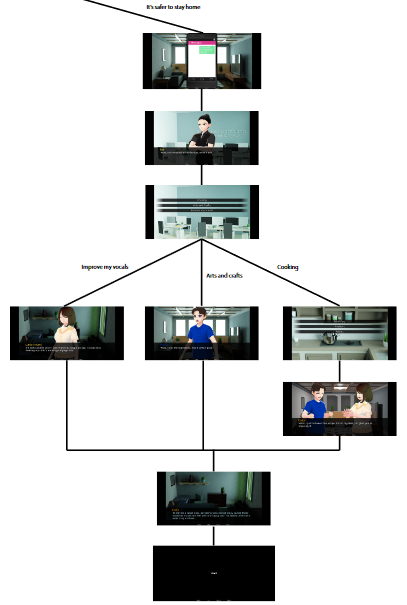
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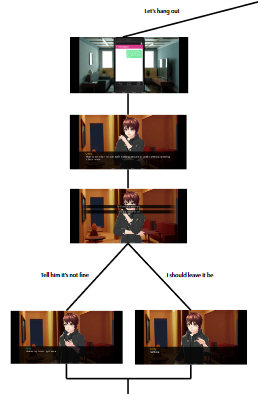
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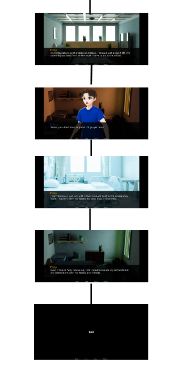
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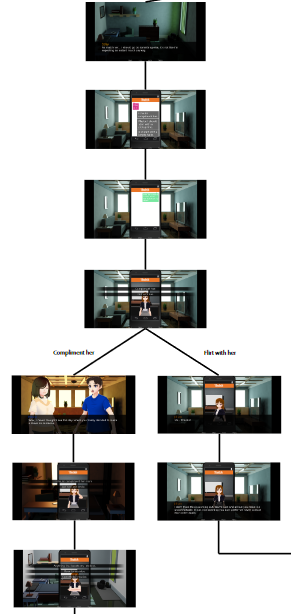
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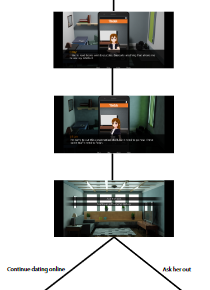
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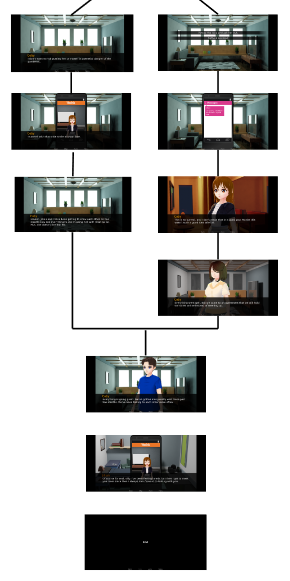
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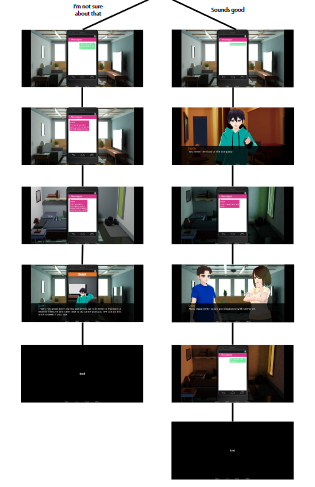
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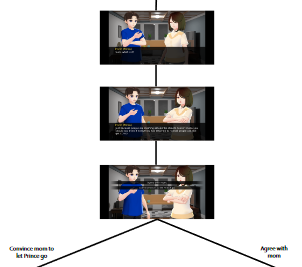
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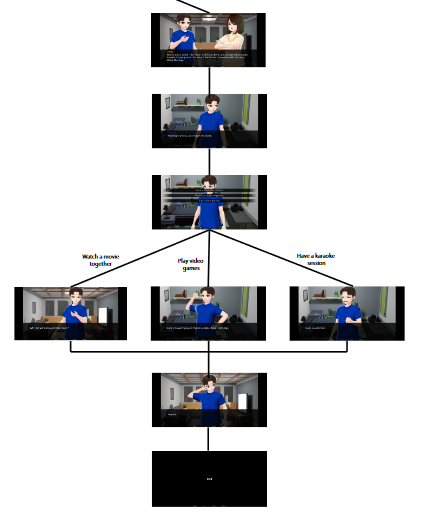
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