

PATHS OF CHANGE

Project Documentation Submitted to the Faculty of the
Senior High School

Asia Pacific College

In Partial Fulfillment of the Requirements for
Senior High School Bootcamp

Submitted By

Franco, Gian Luis	Juan, Remie Antoniette
Godilon, Alfriezrysen	Muceros, Joshua Manuel

Submitted To

Mr. Carl Dominique Bueno
Dr. Manuel Calimlim Jr.
Mr. Manuel Sebastian Sanchez

Bootcamp Mentors

Table of Contents

List of Figures.....	iii
List of Tables.....	iv
Introduction.....	1
Project Context.....	1
Statement of the Problem.....	2
Objectives.....	2
Significance of the Project.....	2
Scope and Limitations.....	3
Review of Related Systems.....	4
Requirements of the Proposed Systems.....	6
List of Processes.....	6
Proposed Solutions.....	8
Technical Background.....	8
Requirements Analysis.....	8
Design Thinking Deliverables.....	8
Flowcharts.....	15
Prototype (Mock Flow/Wireframe).....	21
User Classes and Characteristics.....	23
Product Roadmap.....	24
Conclusion.....	26
References.....	27
Appendices.....	28
Appendix A. Roles and Responsibilities.....	28
Appendix B. Source Code.....	29
Appendix C. Project Schedule (Gantt Chart).....	30

List of Figures

Figure 1. Problem Presentation.....	9
Figure 2. Frederick Lawson Empathy Map.....	10
Figure 3. Kent A. Ford Empathy Map.....	10
Figure 4. Charles Empathy Map.....	11
Figure 5. Veronica Empathy Map.....	11
Figure 6. Charles As-Is Scenario.....	12
Figure 7. Kent As-Is Scenario.....	12
Figure 8. Veronica As-Is Scenario.....	13
Figure 9. Fred As-Is Scenario.....	13
Figure 10. User Need Statement.....	14
Figure 11. Storyboard.....	14
Figure 12. Prioritization Graph.....	15
Figure 13. Experience Based Roadmap.....	15
Figure 14. Flowchart of Main Story.....	16
Figure 15. Flowchart of Interactive Map.....	17
Figure 16. Flowchart of Fred Route.....	18
Figure 17. Flowchart of Vino Route.....	19
Figure 18. Flowchart of Kent Route.....	19
Figure 19. Flowchart of Lily Route.....	20
Figure 20. Flowchart of Aborting Routes.....	21
Figure 21. Main Menu Screen.....	22
Figure 22. In-Game Choice Making.....	23
Figure 23. Interactive Map.....	24

List of Tables

Table 1. List of Processes in the Proposed System.....	7
Table 2. User Classes and Characteristics.....	24
Table 2. Product Roadmap.....	26

Introduction

Considering the countless problems that are being faced on a global scale, a goal was created with the objective to address these issues and attain a more sustainable lifestyle and now, the United Nations have created a way to discern these problems, through the use of SDGs. [5]

Sustainable Development Goals (SDGs) are a set of global objectives with the purpose of addressing and improving the various challenges our world is facing. The purpose of identifying these SDGs is to find collective solutions as these have a huge impact on our day-to-day lives and with this in mind, a group of programmers have created an app to solve these various SDGs. [5]

To incorporate this, an app was created in a visual novel setting that consists of both storytelling and decision-making choices, functions that solely focus on entertainment and educational well-being when it comes to the different kinds of SDGs. The game provides various features, with each character from the four shown having their own story routes that include numerous solutions that are aligned with their assigned SDG.

This project aims to spread and raise awareness about the various occurring global issues in a way where players would enjoy it but, nevertheless, learn. With the goal of motivating people with the use of interactive gameplay.

Lastly, the app stands out as it combines both entertainment and educational interactive formats that include a decision-making playthrough by understanding the given information, with the objective to encourage and inform the users, enabling them to use these solutions in a real-world setting.

Project Context

The primary audience includes students, educators, and young adults interested in gaming and social issues. The project aligns with APC's corresponding use of integrating education through technology. Implementing this, an app was created to solve the lack of awareness when it comes to SDGs in an entertaining but learning aspect, improving the lack of impact in learning by using greater engagement methods with the users. [5]

The app aims to widen the range of information of users when it comes SDGs, by using storylines that represent their individual SDG and incorporating an interactive gameplay with the use of a decision-making system by providing SDG-driven character story lines, the app is able to offer solutions that could be used in a real life situation, empowering the users to understand and contribute to global sustainability acts.

Statement of the Problem

This app intends to solve the lack of awareness when it comes to SDGs through the use of an interactive gameplay.

Particularly, the app aims to answer the following:

1. Low awareness when it comes to SDG.
2. Lack of engagement when it comes to learning.
3. Lack of awareness when it comes to the consequences.

Objectives

Create an interactive game that lets people explore the different kinds of SDGs in a way that they can relate, enjoy, and learn.

1. Produce certain characters with their own storyline, with each representing an individual SDG with the use of programming and story writing before the initial coding.
2. Have an interactive storyline as well as a decision-making play through where each choice determines a different outcome.
3. Educate our users on the with the use of various storylines that would represent each SDG and its solution, with the objective of ensuring that our users will have a broader knowledge.

Significance of the Project

This project aims to influence students, educators, and gamers with the objective of enhancing their learning experience through an interactive visual novel game. The app ensures to spread awareness throughout these users and gain real world applicable knowledge when finished. The goal is for users to gain a greater understanding when it comes to SDGs, with the purpose of encouraging people to apply the shown solutions in the game to the real world using interactive gameplay.

The app focuses on resolving four SDGs, namely: Good Health and Well-being, Reduced Inequalities, Decent Work and Economic Growth, and Climate Action.

Scope and Limitations

This app focuses on implementing various SDGs into an interactive game novel. Our app consists of various characters that represent their own respective SDGs that our users will have to interact with; from this, we aim to spread awareness with the use of educational dialogues and choices to all our users.

The limitations of this project are the limited animations and visuals as well as the lack of audible interaction and online presence. This project was also limited with the 4 chosen SDGs, not fully catching the attention and engagement of those who want to focus on other SDGs, due to not having enough emphasis, and may create an unintentional importance of equality. The project focuses on the game itself and how they would apply the knowledge given to them. Furthermore, if the app's content were to be expanded, it may lead to a lack of consistency and quality.

Review of Related System

The Review of Related Systems talks about what visual novels are, as well as how existing similar applications and systems are similar to the programmer's application, Paths of Change. Advocating people about the importance of health and wellbeing, decent work, reducing inequalities, and climate action is the main purpose of the said application, whereas other similar applications have their own respective focus. By doing an analysis of existing applications and systems, the programmers were able to identify what difference they can make that is not similar towards similar applications and systems, pursuing different purpose in comparison to other applications and systems.

Visual novels are a widely popular and recognizable narrative-focused originated from Japan and their popularity has steadily increase outside of Japan. Furthermore, "... there is not a singular definition to help guide the design and analysis of such games—with academic definitions and implementations ranging from "interactive textbooks" to "adventure games with multi-ending stories". This implies that anything, be it creativity, purpose, focus, etc. can be made and done in a visual novel. However, the visual novel database has shown numbers in their tags about how little numbers are in the educational visual novels (156) tag in comparison to other tags such as Fantasy (10911), Drama (10326), and to list a few. This shows how making educational visual novels is not preferred in comparison to others.[1] [3]

Analyzing the existing visual novel applications, the researchers have identified that there are no visual novels that focuses on advocating the importance of health and wellbeing, decent work, reducing inequalities, and climate action, which is the focus of the programmer's application. Some existing visual novels within the educational tags have featured parts which are the researcher's focus; however, it was not their primary focus.

Doki-Doki Literature Club, also known as DDLC, is a visual novel that programmers took the most inspiration from. It is a visual that disguised itself as a dating simulator. Although it initially appears to be a light-hearted simulator, it is a psychological horror game that extensively breaks the fourth wall. As a main inspiration for this project due to its popularity, DDLC's concept as a visual novel and a dating simulator was redone into a different concept for Paths of Change, where instead of being a dating simulator with romance aspects, the programmers opted for a more "Friends helping Friends" route for the visual novel.

Similar visual novel such as “Acceptance” is an educational visual novel game about how a man experiences the five stages of grief due to a traumatic experience, and how it also delves into the social issue of suicide and explores relationships with people who are at risk of it. It offers awareness of how grief leads to unpleasant experiences, causing depression and mental breakdown.

Lastly, an educational visual novel “LGBTQIA” features how members of the LGBTQIA live their lives daily, problems they encounter, and how they deal with it. The application offers knowledge on how people as part of the LGBTQIA+ community should deal and defend themselves with things that are unpleasant for them.

This section discusses visual novels as a versatile medium with no strict definition, allowing for diverse creative applications. While existing visual novels cover various tags (e.g., fantasy, drama), educational visual novels are significantly underrepresented, with hundreds tagged as "educational" compared to others that have thousands. The researchers' application, Paths of Change, distinguishes itself by focusing on advocating health, decent work, discrimination, and climate action, a combination not found in existing educational visual novels as most focus only on one. Other educational visual novels have different primary objectives, reinforcing the gap that Paths of Change aims to fill.

Doki-Doki Literature Club as an example has good storytelling elements and user immersion. However, unlike Paths of Change which focuses more on educating, Doki-Doki Literature Clubs focus more on playthrough and the horror elements of the game rather than educating, which makes Paths of Changes distinct. Following is the visual novel “Acceptance” which features how people suffer from grief, leading to thoughts such as suicides. The application focuses on making people aware about how dangerous griefs are if not overcome. One of the Sustainable Development Goal’s Paths of Change features, health and well-being, however, focuses more on advocating about how unhealthy living focuses on physical wellbeing, rather than mental health. Lastly, the visual novel “LGBTQIA” explores the world of the members of the LGBTQIA community, be it their daily experience as part of the community, problems they experience being part of the community, etc. The application offers how one can defend themselves against the issues they are facing. Paths of Change, however, took a different approach from one of their routes that features one of the Sustainable Development Goal, Reduces Inequalities, by advocating others on how discrimination due to inequality affects others, and how Paths of Change focuses on reducing the root cause of the problem, rather than knowing how to defend oneself from the problem.

Requirements of the Proposed System

List of Processes

Table 1 List of Processes in the Proposed System

Process ID	Process Name	Process Details
P001	Booting the Main Menu	<ol style="list-style-type: none"> 1. The user boots up the game 2. The user is directed to the main menu and they press start
P002	Prologue	<ol style="list-style-type: none"> 1. Enter user's name 2. The user progresses through the story 3. The user is directed to the interactive map to meet the characters
P003	Choosing of route	<ol style="list-style-type: none"> 1. The user continues the story 2. The user then chooses a route
P004	Vino's route	<ol style="list-style-type: none"> 1. The user will be redirected to Vino's route 2. The user will continue Vino's route 3. The user will then be given a choice that will lead to the user aborting or continuing Fred's story 4. If they chose to abort the story will be aborted 5. If the user chooses to continue they will continue the story 6. The user will then be given choices that will lead to the best to worst ending
P005	Lily's route	<ol style="list-style-type: none"> 1. The user will be redirected to Lily's route 2. The user will continue Lily's route 3. The user will then be given a choice that will lead to the user aborting or continuing Lily's story 4. If they chose to abort the story will be aborted 5. If the user chooses to continue they will continue the story 6. The user will then be given choices that will lead to the best to worst ending
P006	Fred's route	<ol style="list-style-type: none"> 1. The user will be redirected 2. The user will continue Fred's route 3. The user will then be given a choice that will lead to the user aborting or continuing Fred's story 4. If they chose to abort the story will be aborted 5. If the user chooses to continue they will continue the story 6. The user is then given a quiz wherein if you get more than 3 wrongs you fail and if you get less than 3 you pass
P007	Kent route	<ol style="list-style-type: none"> 1. The user will be redirected 2. The user will continue Kent's route 3. The user will then be given a choice that will lead to the user aborting or continuing Kent's story 4. If they chose to abort the story will be aborted

		5. If the user chooses to continue they will continue the story which will lead to the ending
--	--	---

Proposed Solution
Technical Background

In this project, the programmers decided to use a visual novel engine called Ren'Py to write, compile, and code their program into an interactive visual novel. Ren'Py is an engine that simulates a Visual Novel by compiling code and use elements such as images, videos, audio, etc. to make the game. Ren'Py uses Python as a basis for its syntax which the programmers opted to use with the flexibility of Python in creating and constructing code for the game. [2]

Aside from Ren'Py, images in the game such as the UI/UX, main menu screen, and characters were drawn by one of the programmers of the project using a software called Krita. On the other hand, some of the background images used in the game were shot by the programmers themselves within areas around the campus. Elements such as sound effects and music were also used from sources that ensure these elements are non-copyright and free to use.

Requirements Analysis

Design Thinking Deliverables

Figure 1. Problem Presentation

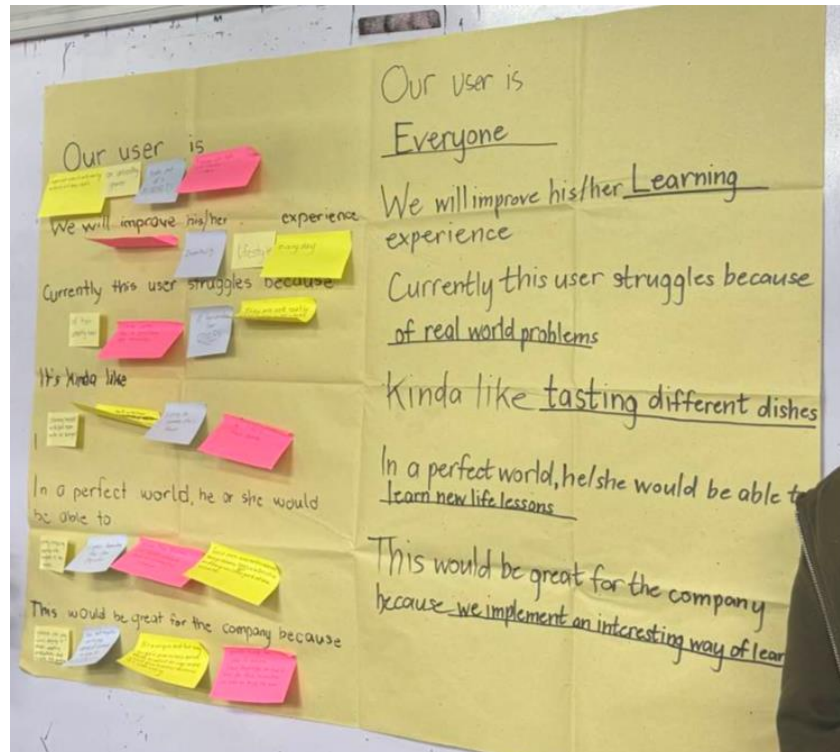


Figure 4. Charles Empathy Map

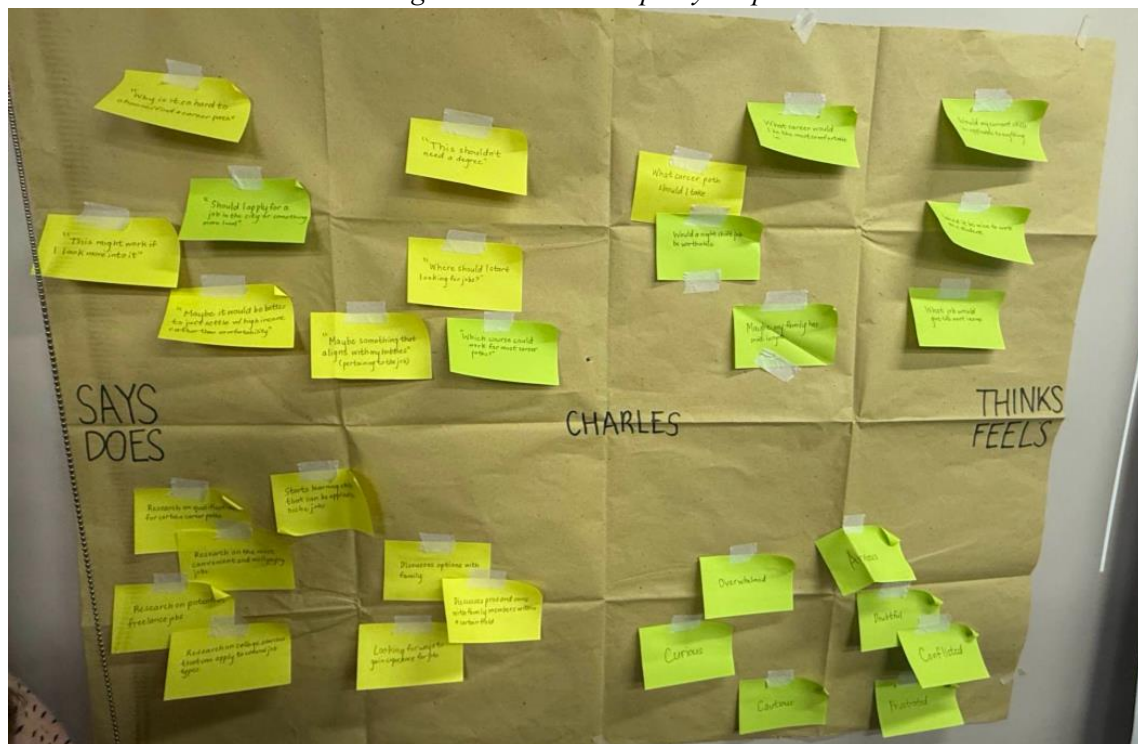


Figure 5. Veronica Empathy Map



Figure 6. Charles As-Is Scenario

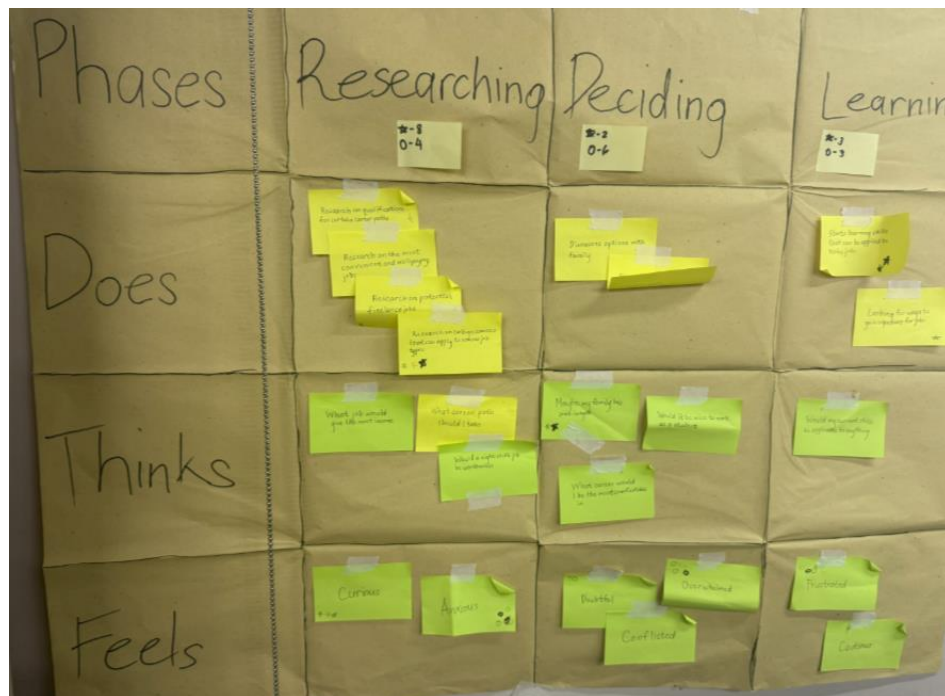


Figure 7. Kent As-Is Scenario

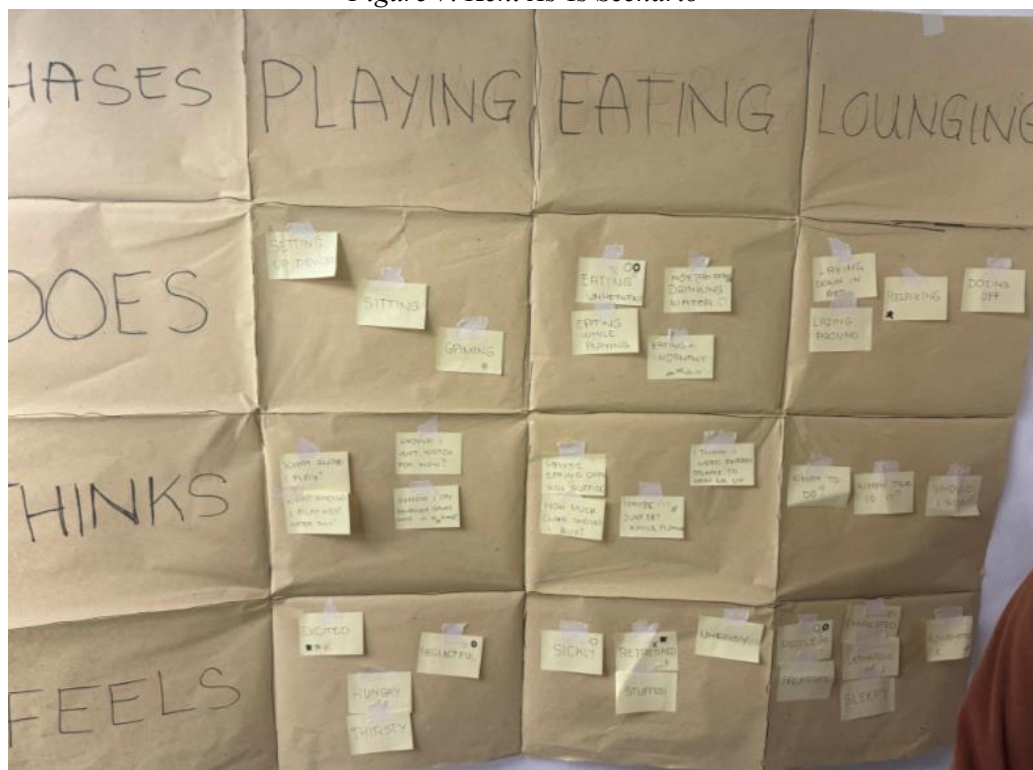


Figure 8. Veronica As-Is Scenario

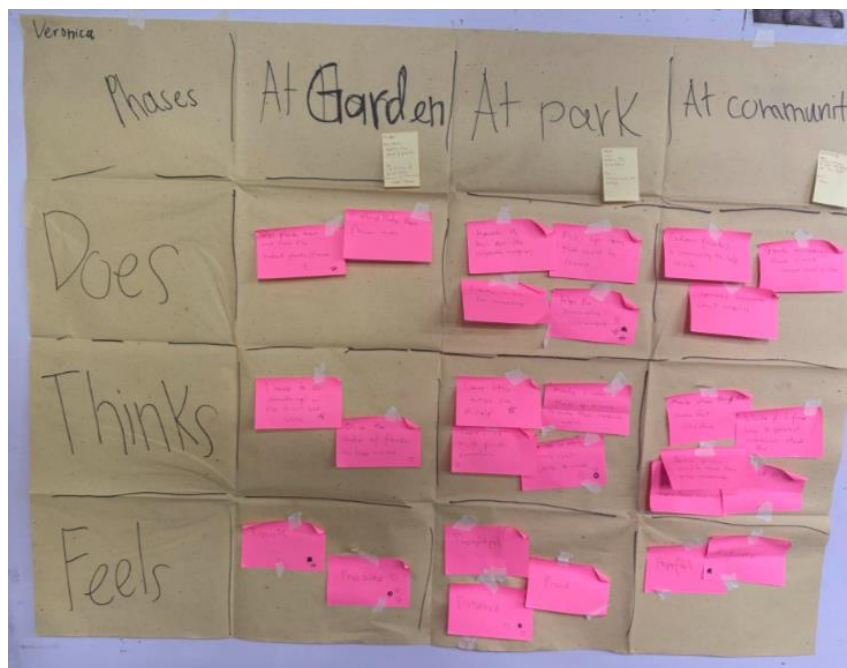


Figure 9. Fred As-Is Scenario

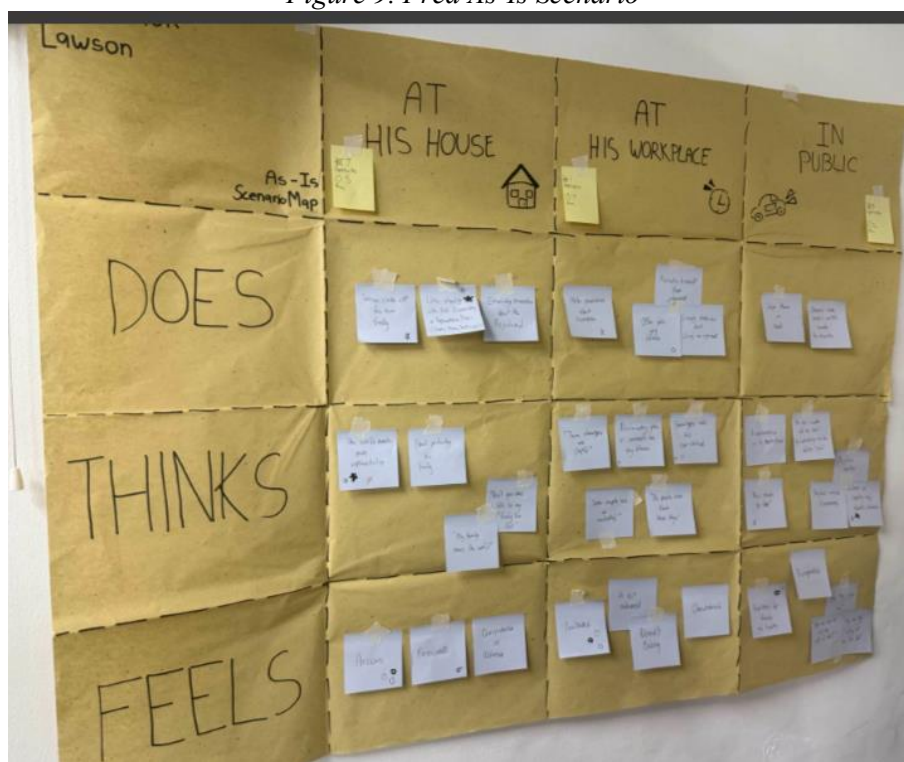


Figure 10. User Need Statement

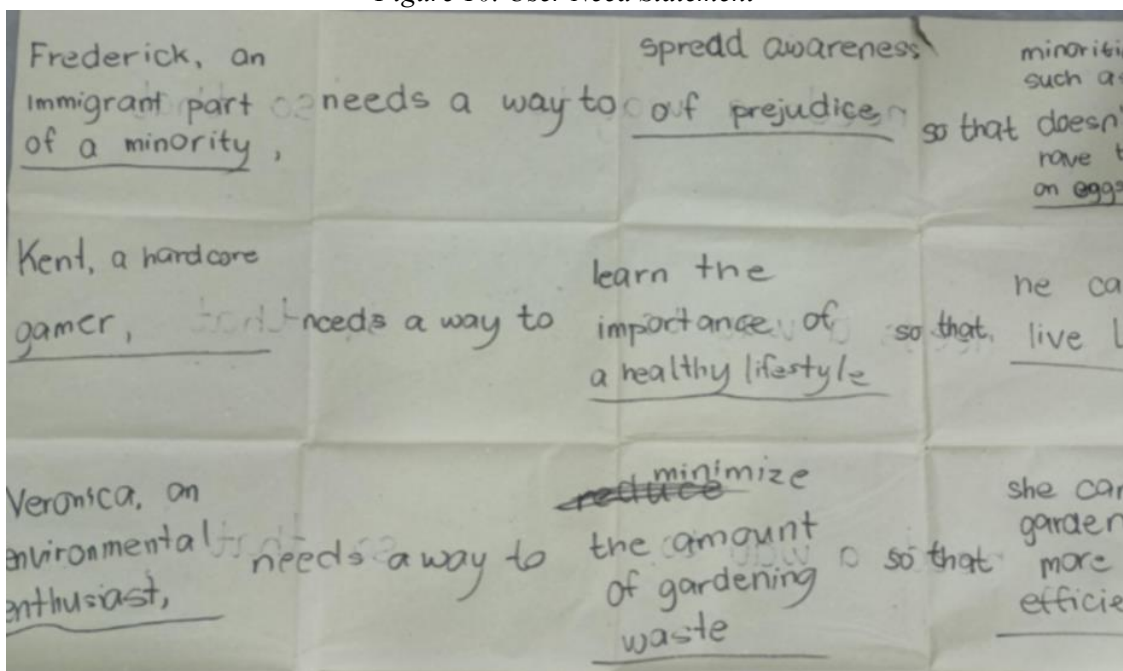


Figure 11. Storyboard



Figure 12. Prioritization Graph

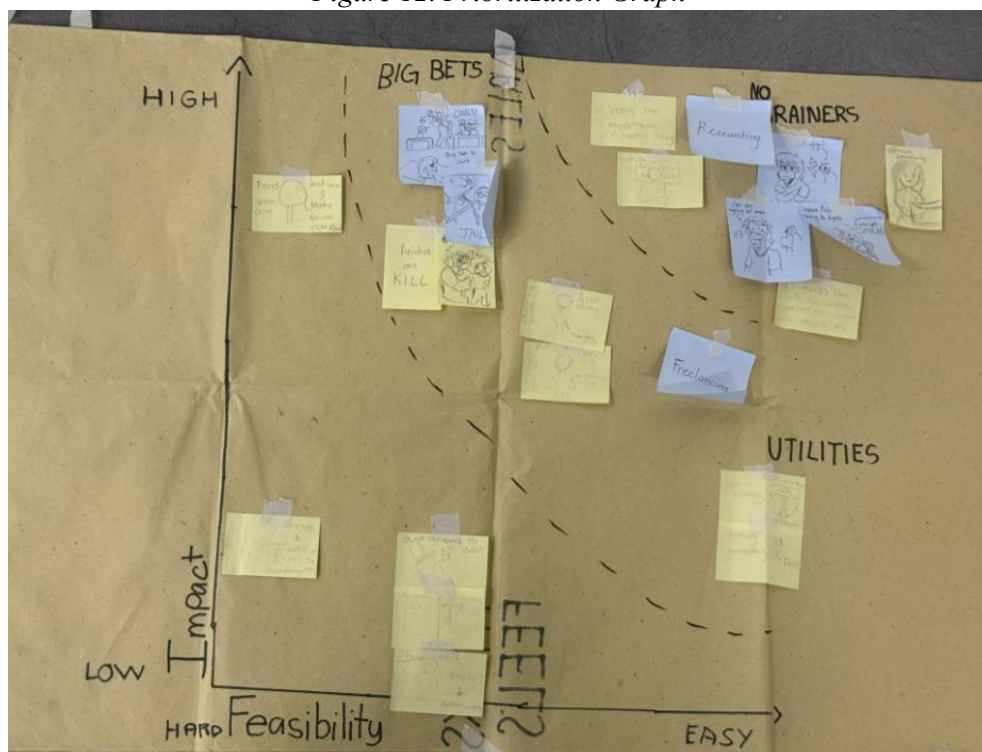
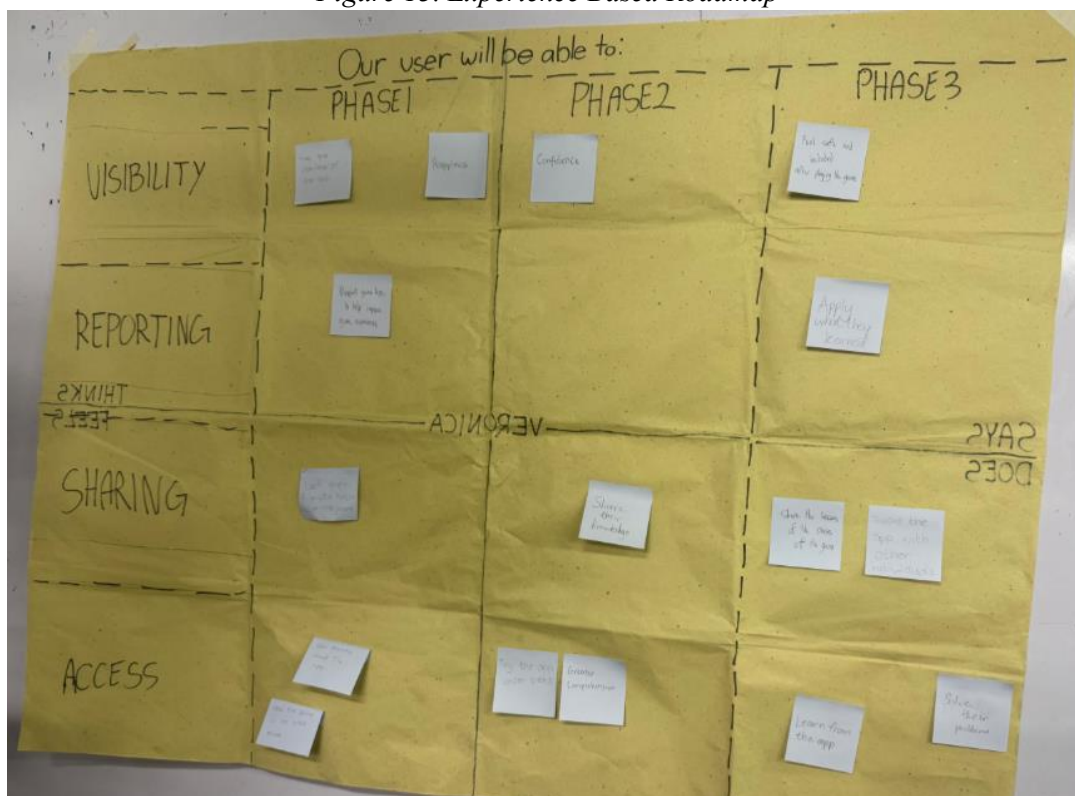


Figure 13. Experience Based Roadmap



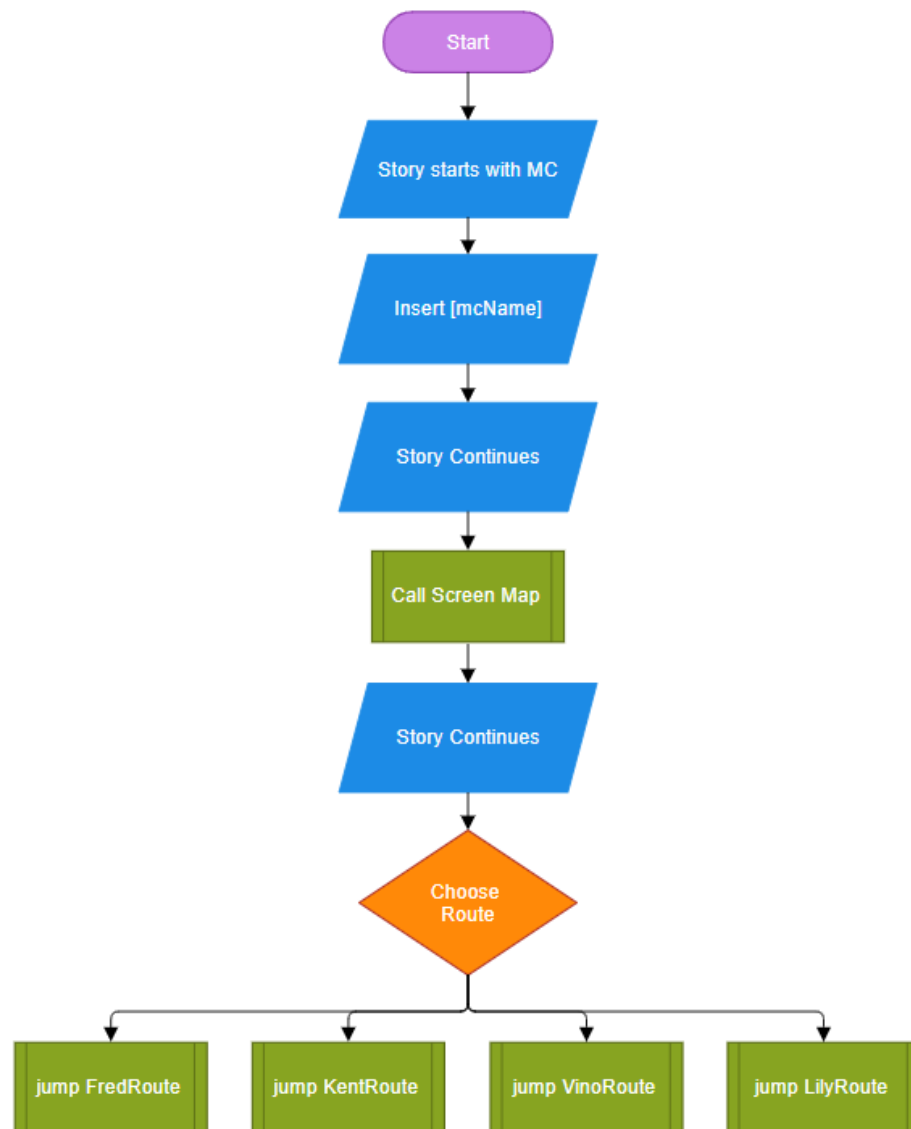
Flowcharts*Figure 14. Flowchart of Main Story*

Figure 15. Flowchart of Interactive Map

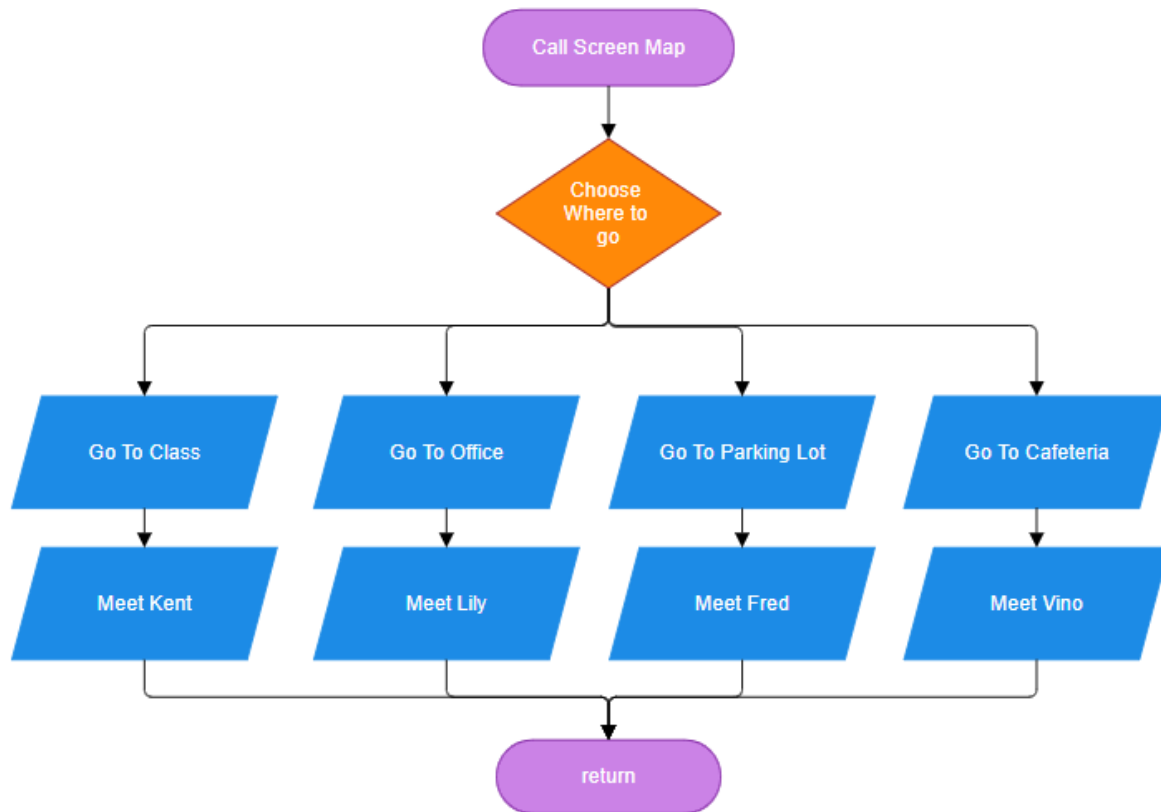


Figure 16. Flowchart of Fred's Route

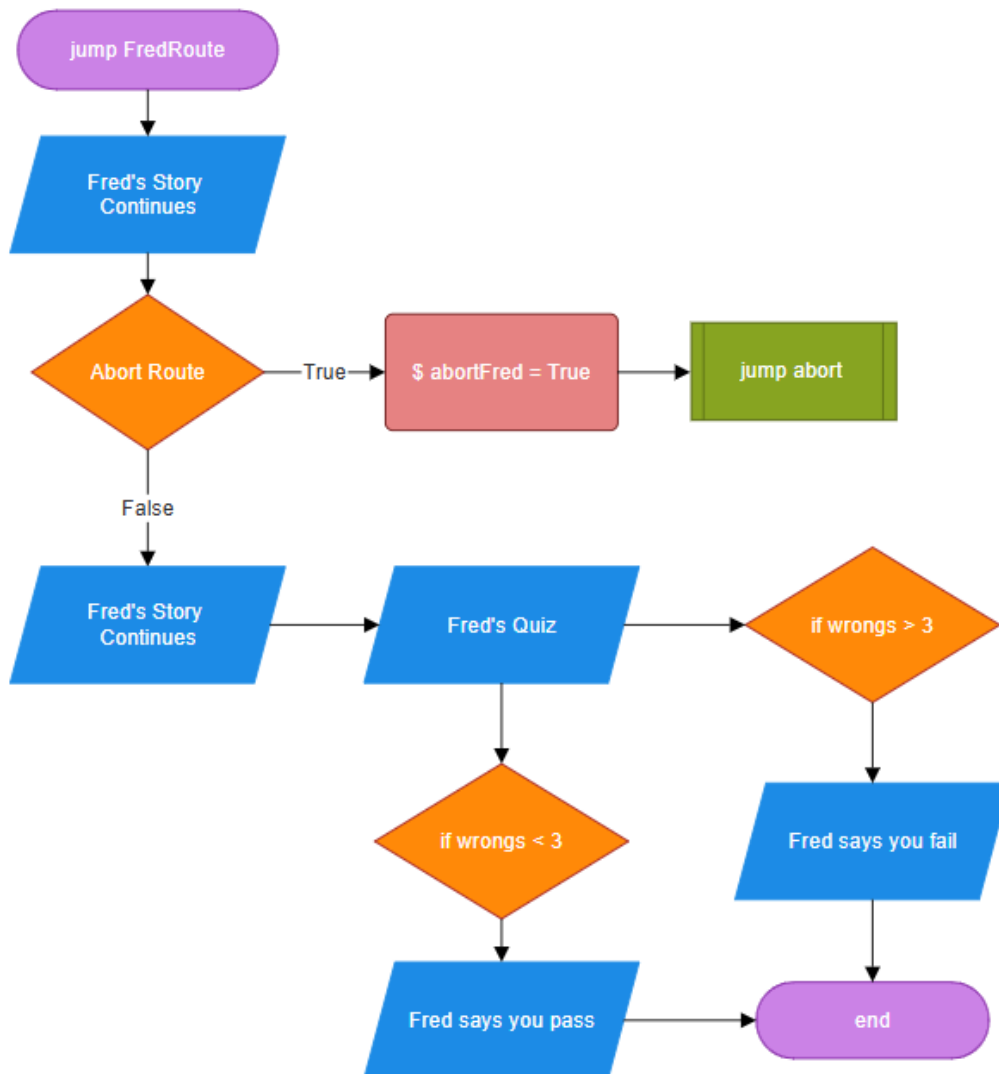


Figure 17. Flowchart of VIno's Route

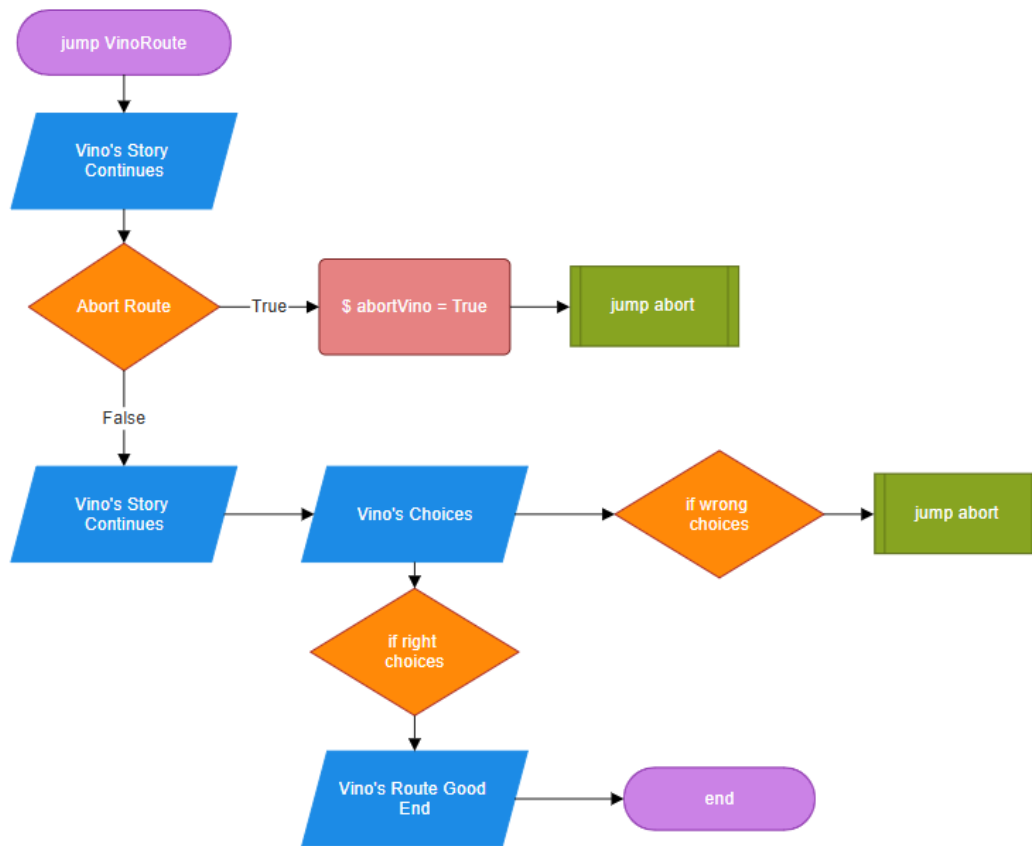


Figure 18. Flowchart of Kent's Route

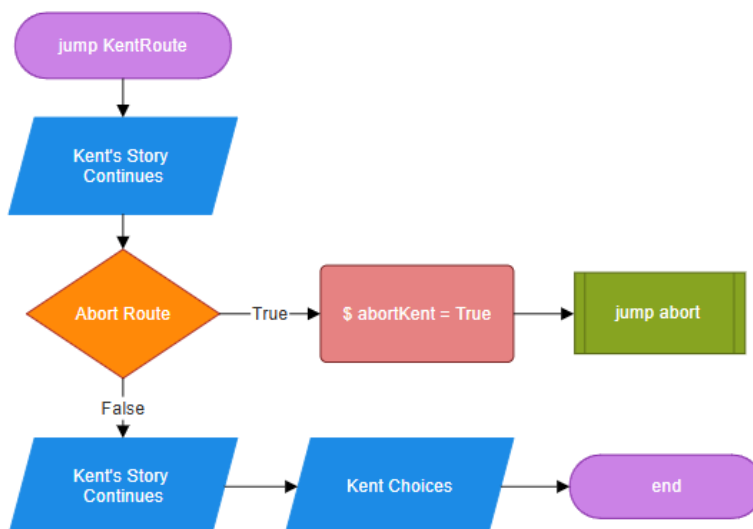


Figure 19. Flowchart of Lily's Route

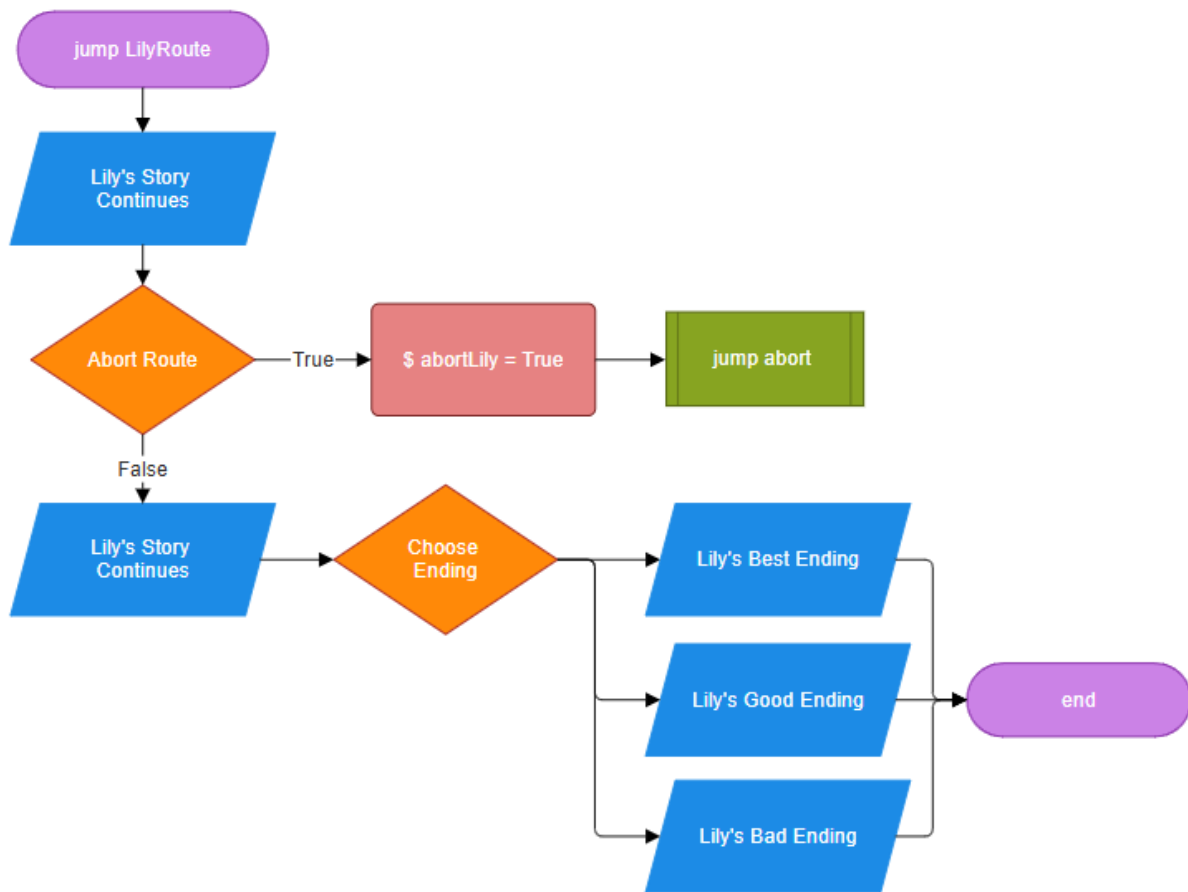
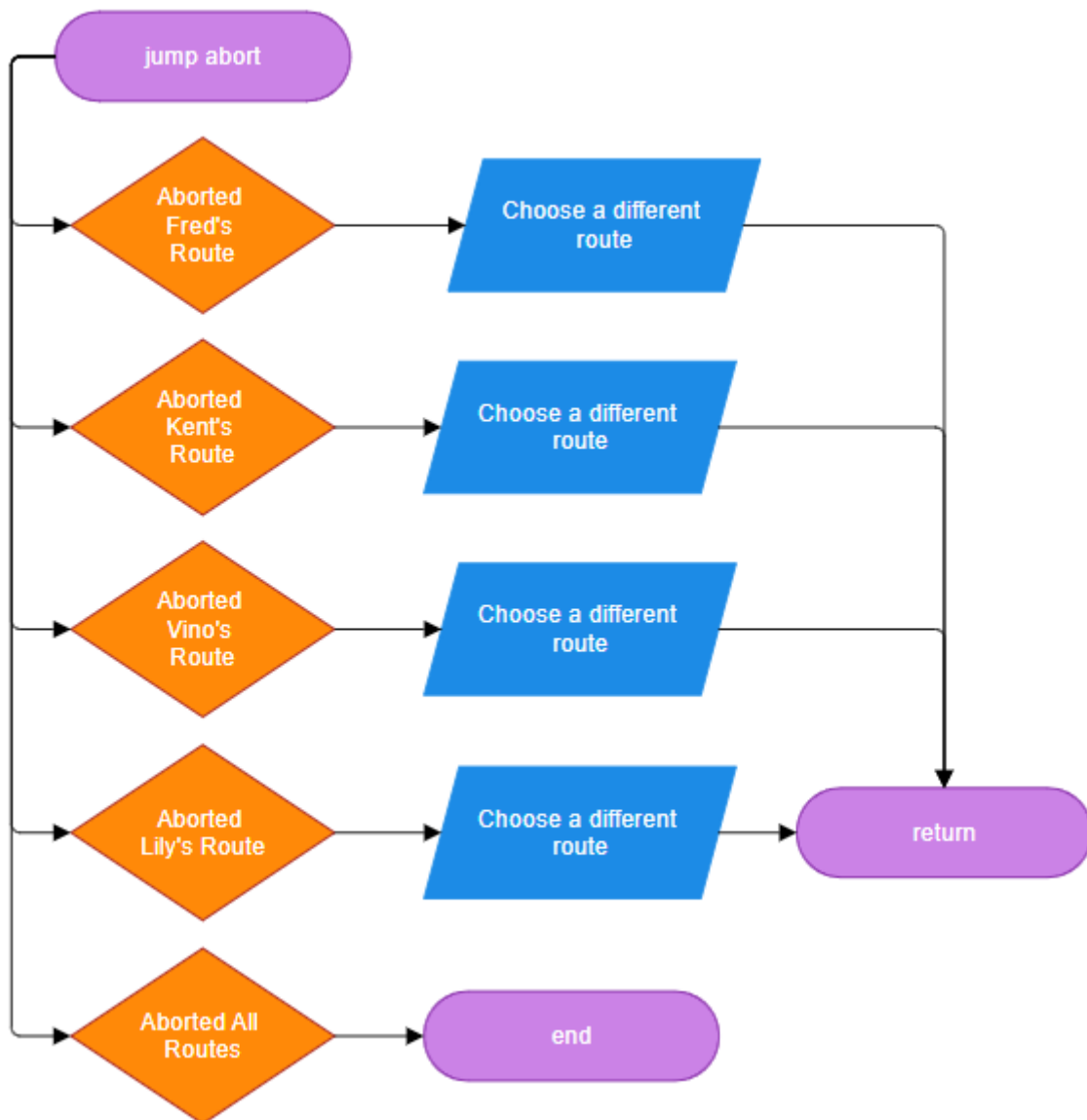


Figure 20. Flowchart of Aborting Routes



Prototype (Mock Flow / Wireframe)

Figure 21. Main Menu Screen



The photo above shows the latest main menu screen as of June 5, 2025. The Main Menu involves the logo being shown as well as the characters in the game. The UI for the buttons on the left was decided on by the default settings that Ren'Py generates upon creating a project.

Figure 22. In-Game Choice Making



Throughout the game, players will be given choices that will affect their gameplay. As shown on the image above, this is the character route selection that determines which storyline players would like to choose. Different choices also appear that affect the ending that players would get from the characters. Choices also affect which characters would be accessible after a route abortion, for example.

Figure 23. Interactive Map



The interactive map is a small section of the game that allows players to choose which character they would like to interact with first. Depending on the choice of the player, they will be opted to meet a different character with unique dialogue pertaining to their storyline. Once a player chooses a character, the programmers have coded it so that it calls the interactive map again. If players were to choose the same character, it would redirect them to a screen saying that the specific character has left the area to avoid them choosing the same choice over and over.

User Classes and Characteristics

Table 2. User Classes and Characteristics

Roles	Description
Casual Gamers	These users are your casual gamers; they are people who choose to play games because of boredom, for their leisure, or because of the game's content itself. They are those who are drawn to appealing visuals and gameplay mechanics.
Young Adults	These users are usually the main target audience for visual novels. Younger audiences are mainly drawn to the storytelling and graphics of the game, usually ages around 13-17. A plus side with the audience being young playing <i>Paths of Change</i> would be the benefit of being exposed to real world problems and how it affects characters in a negative way and how to overcome them. [4]
Writers	These users are drawn solely on the story writing and character building of the game. What makes them different from other users is that fellow writers can use the game as a way to understand how certain characters are built upon a certain trait (E.g. Fred as a discriminated queer, Kent as an unhealthy college student). These characters build not only let writers understand how a character interacts with the world

	<i>around them but also to denote the problem they face.</i>
<i>People who spread awareness</i>	<i>Many factors build up these users. Games such as Paths of Change build itself to be an informative game that points out certain real life problems and how they are approached. These users can be anyone from people sharing games to their friends, or to online influencers. The spread of the word for games such as these can create an impact in the gaming community, which not only creates a healthy way of understanding SDGs, but also a way of enjoying unity with being seen such as people who have similar problems and relate to the characters of the game.</i>

Product Roadmap

Table 3. Product Roadmap

Status	Version	Feature
Complete	1.0	<ul style="list-style-type: none"> • Main Menu • Story Line • Interactive Map • Visuals • Audio Background
To be Added/Developed	1.1	<ul style="list-style-type: none"> • Another Character with separate SDGs • Further Story Line • Improve Visuals • Improve Audio • Different Minigames

The current version of the visual novel consists of only a limited storyline for each character's routes. The first version consists of the routes of Lily, Vino, Kent, and Fred that ends abruptly as soon as the day ends in the game. Additionally, the game's features only restricts to the interactive map shown upon meeting the characters, but also the variable features coded for certain parts of the game to check if a certain variable activates a different response from the characters (e.g. Fred's Quiz, Vino's Choices, Lily's Endings). The game also consists of an "Abort All Ending" in which the main character chooses not to interact with any of the characters.

Further features to be added and developed to the game consists of writing a fully polished version of the character's story lines that goes a bit more in-depth to their overall character background and their respective SDG's. Other than that, minor adds will be planned such as

visual and audio improvements. Lastly, the programmers also plan to add different minigames and characters to be added for each of the routes.

Conclusion

The app aims to spread awareness and knowledge about some of the SDGs by means of turning it into a visual novel game in order to make learning a bit more fun for the user. The team managed to create a cohesive storyline that represents the SDGs each team member chose. The SDGs that the programmers chose are reduced inequalities, health and wellbeing, climate action, and decent work and economic growth, as it aims to spread awareness through fun storytelling. Furthermore, the programmers decided to make it a visual novel game so that other people would be more intrigued in learning and playing the game. For the next iteration, the team aims to flesh out the game more in terms of its content and also its visuals, as well as more features the team of developers can add to the game.

References

- [1] J. Camingue, E. Carstensdottir, and E. F. Melcer, “What is a Visual Novel?,” *Proceedings of the ACM on Human-Computer Interaction*, vol. 5, no. CHI PLAY, pp. 1–18, Oct. 2021, doi: 10.1145/3474712.
- [2] Ren'Py, “The Ren’Py Visual Novel Engine,” *www.renpy.org*. <https://www.renpy.org/>
- [3] “Tag index | vndb,” *Vndb.org*, 2025. <https://vndb.org/g>
- [4] “Trends and Cultural Impact in Graphic Books: Novels, Memoirs, Comics, and More | News for Authors.” <https://authornews.penguinrandomhouse.com/trends-and-cultural-impact-in-graphic-books-novels-memoirs-comics-and-more/>
- [5] WHO, “Sustainable Development Goals,” *World Health Organization*, 2022. <https://www.who.int/europe/about-us/our-work/sustainable-development-goals>

Appendices

(Add more appendices when necessary)

Appendix A: Roles and Responsibilities

Gian Luis A. Franco

- UI Designer
- Programmer
- Story Writer
- Debugger

Alfriezrysen E. Godilon

- Programmer
- Story Writer
- Debugger
- Code Compiler

Remie Antoniette L. Juan

- Team Leader
- UI Designer
- Programmer
- Story Writer

Joshua Manuel C. Muceros

- UI Designer
- Head Illustrator
- Programmer
- Story Writer
- Code Compiler

Appendix B: Source Code

APC_2024_2025_SHS_BOOTCAMP_PRO_GAMERS / Main File / Projects / Paths of Change / game /			↑ Top
📁 .vscode	oxfcffcbv		3 days ago
📁 cache	asdasd		52 minutes ago
📁 gui	a		1 hour ago
📁 images	asdasd		52 minutes ago
📁 intros	asdasd		52 minutes ago
📁 routes	Update kentroute.rpy		33 minutes ago
📁 saves	asdasd		52 minutes ago
📁 tl/None	Main game files		3 weeks ago
📄 abort.rpy	dasdasd		2 days ago
📄 abort.rpyc	hgf		yesterday
📄 characters.rpy	asdasd		52 minutes ago
📄 characters.rpyc	asdasd		52 minutes ago
📄 custom_screen.rpy	a		2 days ago
📄 custom_screen.rpyc	a		2 days ago
📄 gui.rpy	Main game files		3 weeks ago

https://github.com/APC-SoCIT/APC_2024_2025_SHS_BOOTCAMP_PRO_GAMERS/tree/main/Main%20File/Projects/Paths%20of%20Change/game

Appendix C: Project Schedule (Gantt Chart)

