FACULTY OF COMPUTING & INFORMATICS (FCI)

CIT 4173
MOBILE APPLICATION DEVELOPMENT

PROJECT

Trimester 2, Session 2023 / 2024

Duckling Wordventure

No.	Student ID	Student Name
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Submitted to: Puan Suraya
Submission Date : 3rd July 2024

Checklist Items	Tick	Remarks	Marks
A) Application: [15%]			
1. **Visible Components**	☑	Created more than 5 visible that are appropriate and functional	
2. **Non-Visible Components**	☑	Created more than 2 non- visible components that are appropriate and functional	
3. **Screens**	☑	Total of 9 functional screens, including the main page, level selection, and game levels.	
4. **Layout**	☑	Total of 9 applicable layouts, including the sign in page, final stage, ducks' collection page	
5. **Storage**	☑	Apply 2 functional storage: user profile and screenshots are to save in built-in databases.	
6. **Application**	☑	The application runs without error, and extra features like voice recognition are applied	
7. **UI/UX**	☑	Uniqueness, practicality, and excellent design.	
Total Marks:			**/28**
			/15%
B) Report: [20%]			
1. **Report Organization**	☑	Our report is structured logically, with clear sections presented	
2. **Aesthetics**	☑	Consistent use of colours, and fonts for formality	
3. **Wireframe**	☑	9 wireframes illustrating the app's layout and design with clear purpose provided	
4. **Application output**	☑	9 outputs demonstrating the functionality of the app with detailed explanation	
5. **Submission**	☑	Strictly follow to submission guidelines and deadlines.	
Total Marks:			**/20**
			/20%

C) Presentation: [10%]				
Student Name:	Chin Zi Qi	Lee Sii Ca	Tan Kai Yieng	Wong Mei Jing
1. **Confidence**				
2. **Engagement**				
3. **Expression**				
4. **Slides**				
Total Marks:	**/16**	**/16**	**/16**	**/16**
	/10%	**/10%**	**/10%**	**/10%**
D) Peer Evaluation: [5%]				
Total Marks (40M):	/20	/20	/20	/20
Percentage (5%):				

Student Name:	Chin Zi Qi	Lee Sii Ca	Tan Kai Yieng	Wong Mei Jing	*Evaluated by:*
Project (A+D) (20%):					
Presentation (B+C) (30%):					.... (Lecturer Name & Stamp) Date:

Acknowledgement

First, praises and thanks to every group member who were working their best for editing, late-night feedback sessions, and moral support. Everyone's team spirits are the key process to complete this research work in a timely manner.

Words cannot express our deep and sincere gratitude to our professor, Puan Suraya for her invaluable patience and feedback. It is our biggest luck to have the opportunity to do research and get Puan Suraya's invaluable guidance throughout this research. The completion of this study could not have been possible without the expertise of Puan Suraya, who deeply inspired us with her dynamism, sincerity, and motivation. She has taught us unusual ways to conduct and present the research works as clearly as possible. It was a great privilege and honour to work and study under her guidance. We would be remiss not to appreciate her honest feedback during the discussion we had with her on research work and preparation.

Finally, we would like to express our sincere gratitude to our parents for their sacrifices, love, and care as they educated and prepared us for the future. Throughout this process, their confidence in us has kept our spirits and motivation strong. Also, we express our thanks to our classmates for the keen interest shown to complete this thesis successfully.

Table of Contents

Introduction

Duckling Wordventure is an innovative educational mobile application designed to make vocabulary learning an engaging and interactive experience for young users. By incorporating playful elements such as placing ducklings in nests and interactive sessions with the ducklings and their mothers, the game aims to reinforce vocabulary acquisition in a fun and memorable way. This report provides a comprehensive overview of the game, detailing its goals, target audience, scope, and limitations.

Problem Statement & Project Objective

Problem Statement

Traditional methods of vocabulary learning often fail to capture the interest and engagement of young learners. These methods can be monotonous, lacking the interactive and dynamic elements that modern mobile devices can offer. Additionally, young learners today are increasingly exposed to digital environments and expect educational tools to be interactive, visually appealing, and engaging. The lack of interactive and dynamic elements in traditional learning methods can lead to disinterest and ineffective vocabulary acquisition. There is a pressing need for a more immersive and entertaining approach to vocabulary learning that can keep children engaged while effectively teaching new words.

Project Objective

The primary objective of Duckling Wordventure is to create an engaging educational platform that enhances vocabulary learning for children. By integrating game-like elements and interactive activities, the app aims to make the process of learning new words fun and memorable. The application seeks to achieve the following objectives:

- Increase Vocabulary Retention: Utilize interactive gameplay to enhance vocabulary retention among young learners.
- User-Friendly Interface: Provide a user-friendly and child-centric interface that is easy to navigate for young users.
- Variety of Levels: Offer various levels of difficulty to cater to different learning paces and abilities.
- Customization and Personalization: Include features that allow customization and personalization to enhance the user experience.

Target User

Duckling Wordventure is designed primarily for children aged 4 to 10 years. The target users are young learners who are in the preliminary stages of their education and are beginning to build their vocabulary. This age range is critical for language development, and engaging educational tools can significantly impact their learning outcomes. The application is also suitable for parents and educators looking for effective tools to support vocabulary development in children. For example, parents can use the app to supplement their child's learning at home, while educators can incorporate it into classroom activities. The game's intuitive interface and engaging content make it accessible and enjoyable for this age group, fostering a positive learning environment both at home and in educational settings.

Project Scopes & Limitations

Project Scope

The scope of Duckling Wordventure includes the following key features:

1. Visible & Invisible Components:
   The application includes more than ten visible and invisible components that are appropriate and functional, ensuring a rich interactive experience. Visible components include buttons, images, text fields, and interactive objects like ducklings and nests. The non-visible components such as databases, timers, and sound functions have also greatly contributed to the app's functionality.

2. Screens and Layouts:
   The application applies more than nine functional screens and nine layouts. Each screen is designed with appropriate and applicable layouts to enhance user navigation and interaction.
   - Sign-In Screen: Allows users to take a picture or select one from the gallery and enter their name and password.
   - Level Selection Screen: Users can choose from levels 1 to 3 and a final stage, each offering a progressively challenging vocabulary learning experience.
   - Level 1-3 Game Screen: Interactive gameplay where users drag the ducklings to their relative mother to earn scores.
   - Duck Collection Page & Final Page: Users can revisit previous levels to reinforce vocabulary and customize their visual experience with a dark mode option.
   - Screenshot & Share Page: Users can screenshot and share the cute icons of ducklings with friends via the in-app share button, adding a social element to the game.

3. User Authentication:
   - Users can sign in by taking a picture or selecting one from the gallery. This feature ensures a personalized experience from the start.
   - Input fields for entering a name and password add a layer of security and personalization.

4. Level Selection:
   Users can choose from levels 1 to 3, each offering a progressively challenging vocabulary learning experience. Background music begins at this stage with adjustable volume via a pause button. Each level is designed to progressively increase in difficulty, catering to the varying learning paces of young users.

5. Game Mechanics:
   - Rules are provided at the beginning of each level, ensuring that users understand what is expected of them.
   - The process of placing ducklings in nests is a key feature that reinforces the vocabulary being taught. This hands-on approach helps in better retention of words.

- A 30-second timer adds a sense of urgency and excitement, motivating users to complete tasks within the given period.
- Users can choose to exit or restart the level if they lose the game, providing flexibility and ensuring that they can try again without frustration.

6. Storage:
   The application utilizes two functional storage solutions to save user pictures and progress, ensuring a seamless user experience. This feature ensures that users can upload their own profile picture and screenshot the game progress and share it with friends via in-app sharing options, adding a social element to the learning experience.

7. Progression:
   - Upon completing a session, users return to the level selection page to continue their journey. This allows for a smooth transition between levels and continuous learning.
   - Users can choose to revisit previous levels and reinforce vocabulary through a dedicated "Duck Collection" feature.
   - The final stage provides an opportunity for users to practice all previously learned words, reinforcing their learning and ensuring retention.

8. Customization:
   Users can enable a dark mode for a different visual experience, catering to user preferences and providing a comfortable viewing experience in low-light conditions.

9. Integration of Voice Recognition:
   The application integrates voice recognition technology, allowing users to verbally interact with the game. This functionality enables children to speak out vocabulary words they have learned, practicing pronunciation in a supportive and encouraging environment.

10. UI/UX Design:
    The application boasts an intuitive and user-friendly design, ensuring a pleasant user experience. The layout and interactive elements are crafted to cater to the target age group, making learning enjoyable and engaging. The design is colourful, vibrant, and appealing to young users, with easy-to-navigate menus and clear instructions.

Limitations

Despite its comprehensive design, Duckling Wordventure has certain limitations:

1. **Narrow Age Range Suitability:**
   The application is specifically tailored for children aged 4 to 10, which may limit its appeal to older users who might find the content too simplistic. Older children or teenagers may require more complex vocabulary and challenging activities.

2. **Device Compatibility:**
   The app's performance and user experience might vary across different devices, potentially affecting accessibility and usability. Ensuring compatibility across a wide range of devices can be challenging but is essential for broad user adoption.

3. **Limited Content Scope:**
   The vocabulary covered in the game might be limited, requiring regular updates to keep the content fresh and challenging for users. Regular updates and expansions will be necessary to ensure that the app remains engaging and relevant.

4. **Parental Guidance:**
   Younger users might need parental assistance for initial setup and navigation, which could limit independent use. Parental involvement is crucial, especially for young users who may need help understanding instructions or navigating the app.

5. **Lack of Language Support:**
   Currently, the application may only support a single language, reducing its usability for non-native speakers or users looking to learn a second language. Expanding language support can make the app accessible to a broader audience and useful for bilingual education.

Application wireframe (Tools: Justinmind)

Main Page - clean and colorful, designed to be intuitive for children with app logo.

Sign In Page - a friendly graphic makes the sign-in process inviting rather than daunting.

Level Selection – Each level is designed with bright ,engaging icons for easy navigation

Level 1 Game - The design ensures that children can easily understand how to play.
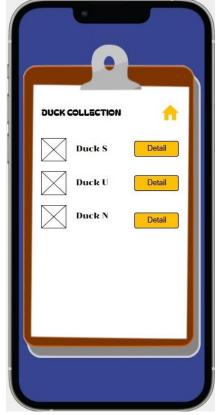

Level 2 Game - The design ensures that children can easily learn from the games.

Level 3 Game – The gameplay screen is interactive and provides immediate feedback.

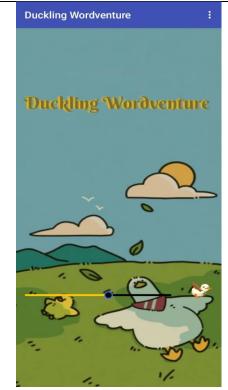Final Stage - Clearly marked navigation allow users to replay, or move to a different section

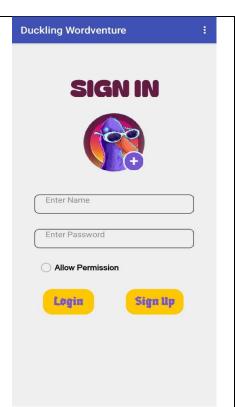Ducks Collection Page - Interactivity (clicking on for more details) keeps users engaged.

Screenshot & Share Page - Visual vibrant colors make the collection visually appealing.

Application Screenshots

Main Page - main entry point to the app, providing a welcoming interface for users
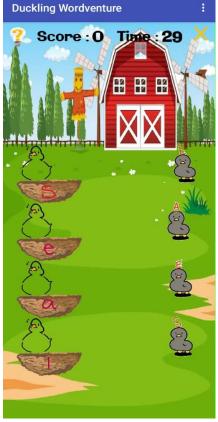

Sign In Page - allows users to log into the app, ensuring a personalized experience.
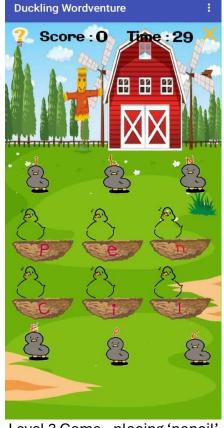

Level Selection Page - Providing multiple level options, catering to different preferences
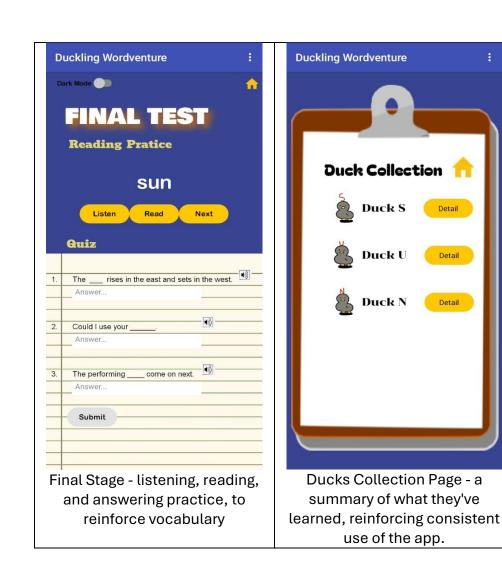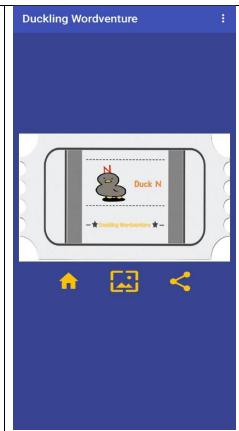

Level 1 Game - placing 'sun' ducks to 'SUN' nests

Level 2 Game - placing 'seal' ducks to 'SEAL' nests

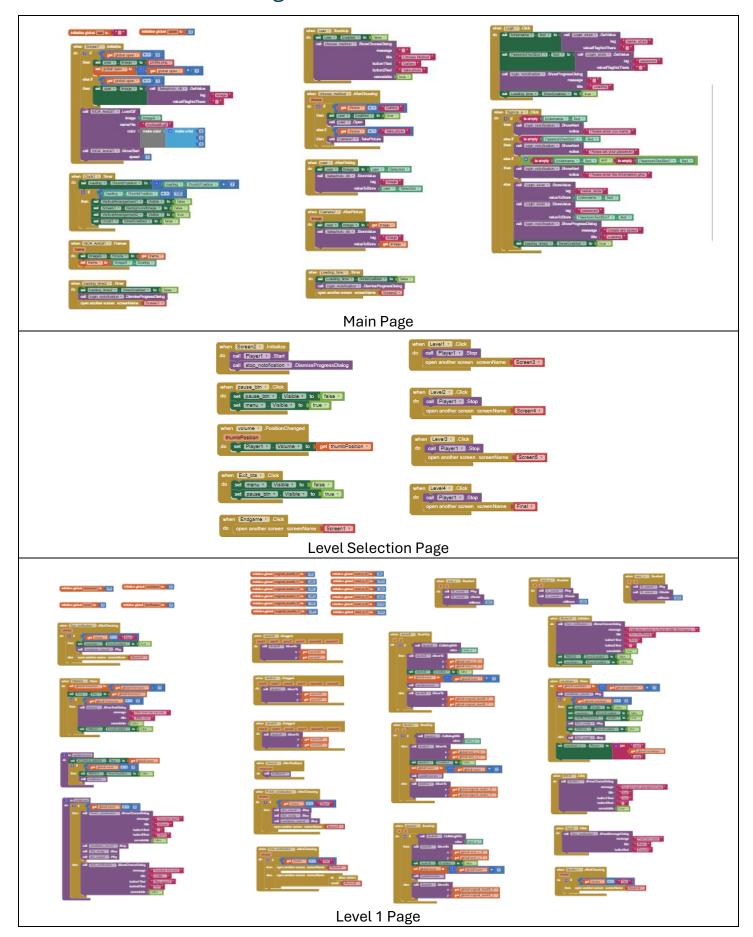Level 3 Game - placing 'pencil' ducks to 'PENCIL' nests

Final Stage - listening, reading, and answering practice, to reinforce vocabulary

Ducks Collection Page - a summary of what they've learned, reinforcing consistent use of the app.

Screenshot & Share Page - showcases all the cutesy ducks a user has collected, motivates children to continue learning.
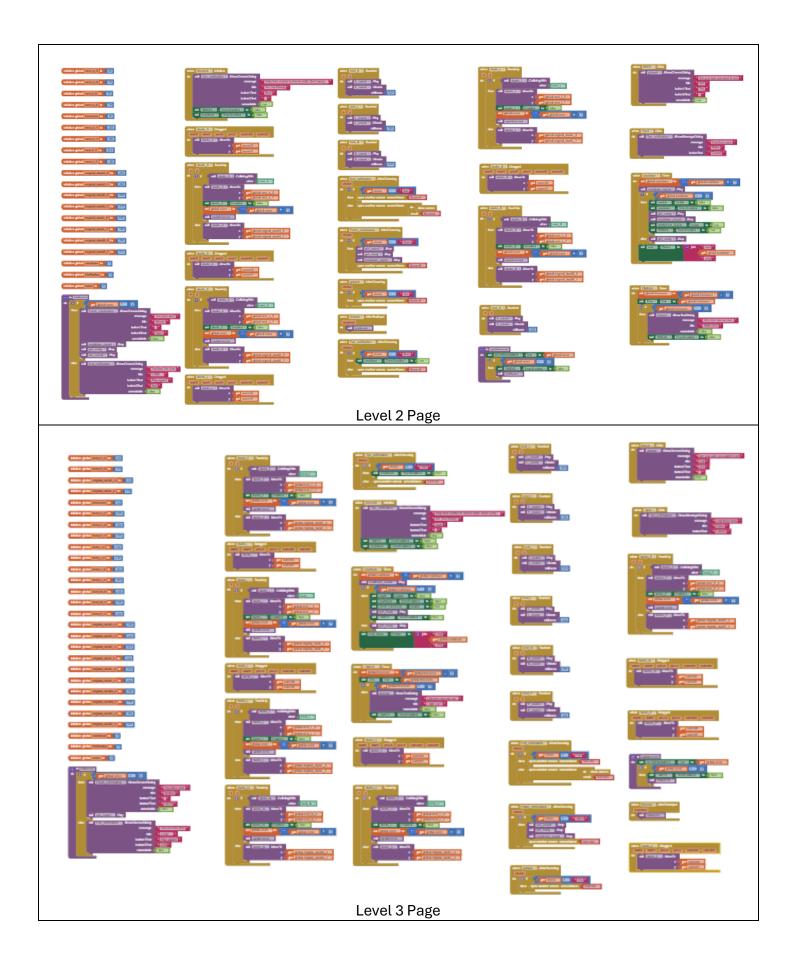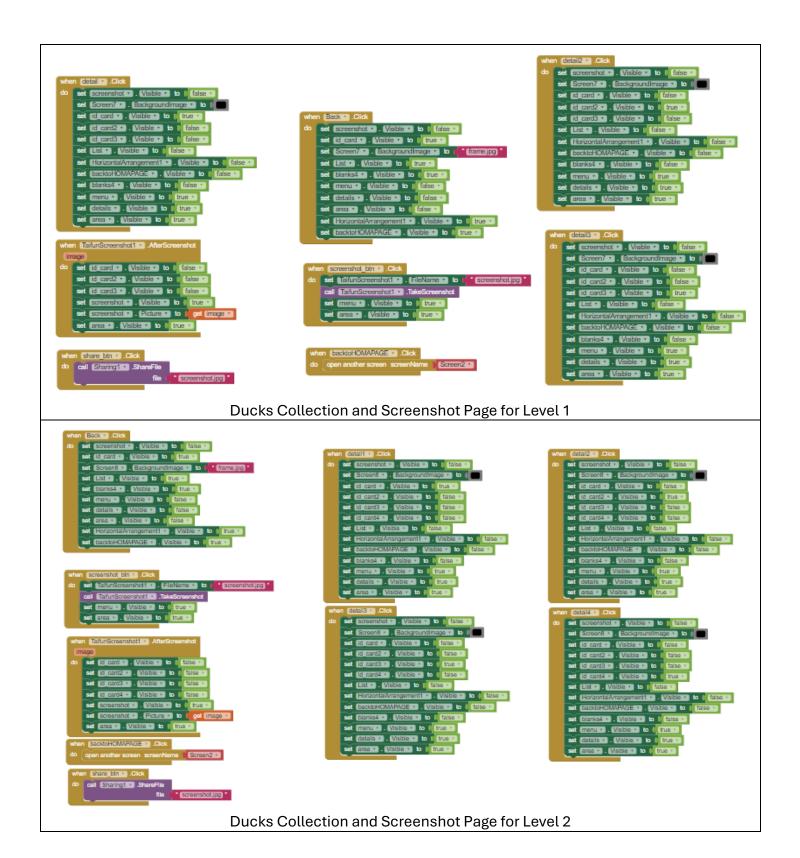
Conclusion

Duckling Wordventure represents a significant step forward in making vocabulary learning engaging and effective for young learners. By leveraging interactive gameplay, personalized learning paths, and progress tracking, the application provides an immersive educational experience that keeps children motivated and interested in learning new words. The project has successfully achieved its primary objectives of creating a user-friendly and engaging educational tool.
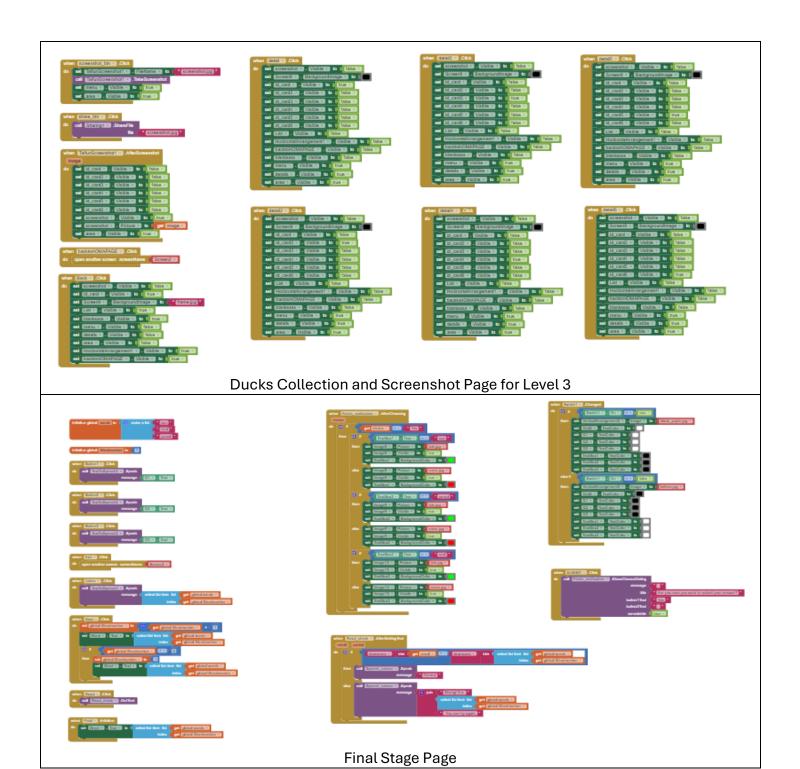
Moving forward, the team plans to explore additional features and content to further enhance the learning experience and address any limitations identified during the development process. Future enhancements may include expanding the vocabulary database, incorporating more advanced gamification elements, and developing features that facilitate better parent and teacher involvement. The future of Duckling Wordventure looks promising as it continues to evolve and adapt to the needs of young learners and their educators.

Screenshot of the coding block

Main Page

Level Selection Page

Level 1 Page

Level 2 Page

Level 3 Page

Ducks Collection and Screenshot Page for Level 1

Ducks Collection and Screenshot Page for Level 2

Ducks Collection and Screenshot Page for Level 3

Final Stage Page

Part 4: Task Distribution (Appendix 2)

NO.	TASK DESCRIPTION	MEMBER-IN-CHARGE	DATE ASSIGNED	DATE COMPLETED	REMARKS
1	Project Plan and Timeline	Chin Zi Qi	3/6/2024	3/6/2024	Register the project title and distribute tasks.
2	Create wireframes and prototypes.	Lee Sii Ca	3/6/2024	6/6/2024	Design the layout of the game screens using tools like Justinmind.
3	Implement the game logic and functionality.	Wong Mei Jing	6/6/2024	12/6/2024	Set up the MIT App Inventor project and coordinate with the designer
4	Design the UI/UX of the game.	Lee Sii Ca	8/6/2024	14/6/2024	Provide necessary graphics and assets. Assist with integrating designs.
5	Integrate the UI/UX designs into the game.	Wong Mei Jing	14/6/2024	18/6/2024	• Add game controls (share button, score system). • Implement sound effects and additional game features.
6	Organize meetings and track progress.	Chin Zi Qi	18/6/2024	20/6/2024	Ensure all members are on track and aid if needed.
7	Test the game for bugs and usability issues.	Tan Kai Yieng	20/6/2024	22/6/2024	• Conduct testing on different devices. • Identify and document bugs and issues.
8	Project Report	Chin Zi Qi	22/6/2024	26/6/2024	Ensure adherence to the report guidelines and formatting requirements.
9	Presentation Video	Tan Kai Yieng	26/4/2024	30/6/2024	Assist in editing for the presentation video.
10	Final Review and Submission	Chin Zi Qi	1/7/2024	3/7/2024	Ensure all submission items are complete and uploaded properly.

Prepared by:

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Group Leader

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