CENG 322

Deliverable 2

Team Name: Sleep Deprived
Project Name: Evee the Pet Companion
Team Number: Group 5

Chloe Chai - N01447321
Ubay Abdulaziz - N01437353
John Aquino - N01303112
Jennifer Nguyen - N01435464

Table of Contents

Signatures of Participants

Name	ID	Signature	Effort
Wei Wen Chai	N01447321		100%
Jennifer Nguyen	N01435464		100%
John Aquino	N01303112	John Aquino	100%
Ubay Abdulaziz	N01437353		100%

Project Scope and Goals

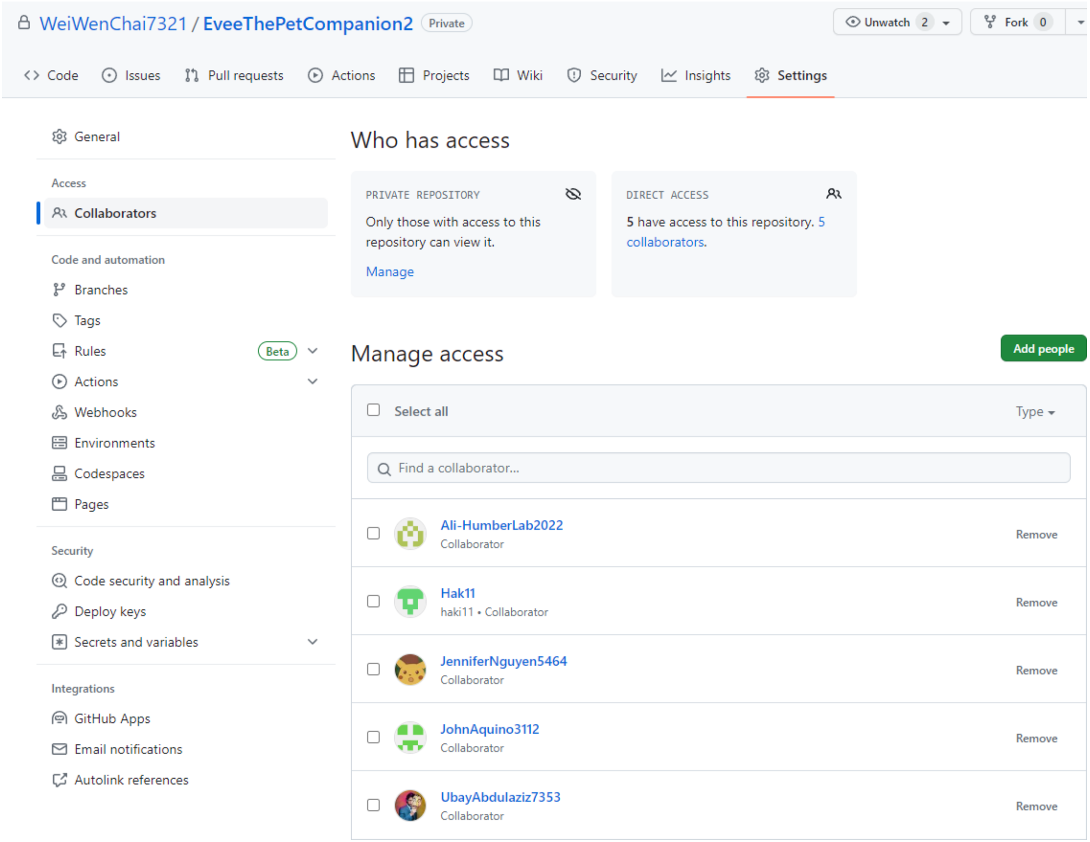
The technical scope of the project involves developing the mobile application and integrating it with the pet monitoring device. The project plan includes designing the app's user interface, implementing the required functionality, conducting thorough testing, and ensuring seamless communication between the app and the device. The project will be considered complete when the app is fully functional, allowing users to control the device, monitor their pets through live streaming, dispense treats, and access saved pictures and videos.

We aim to develop an advanced pet monitoring device with remote control and interaction, named Evee the Pet Companion. We want to build an Android mobile app to allow users to monitor their pets with ease and control the device to move freely in homes.

In our vision, Evee will feature a high-quality camera for live streaming, obstacle avoidance to keep pets safe, and a touch sensor-activated treat dispenser. We also plan to have the device autonomously follow designated paths in homes so the user can take often travelled routes without having to pilot the device. Ultimately, our goal is to enhance convenience, safety, and the bond between pets and their devoted owners.

GitHub Repo Link and Strategy

https://github.com/WeiWenChai7321/EveeThePetCompanion2



Who has access

PRIVATE REPOSITORY

Only those with access to this repository can view it.

Manage

DIRECT ACCESS

5 have access to this repository. 5 collaborators.

Manage access

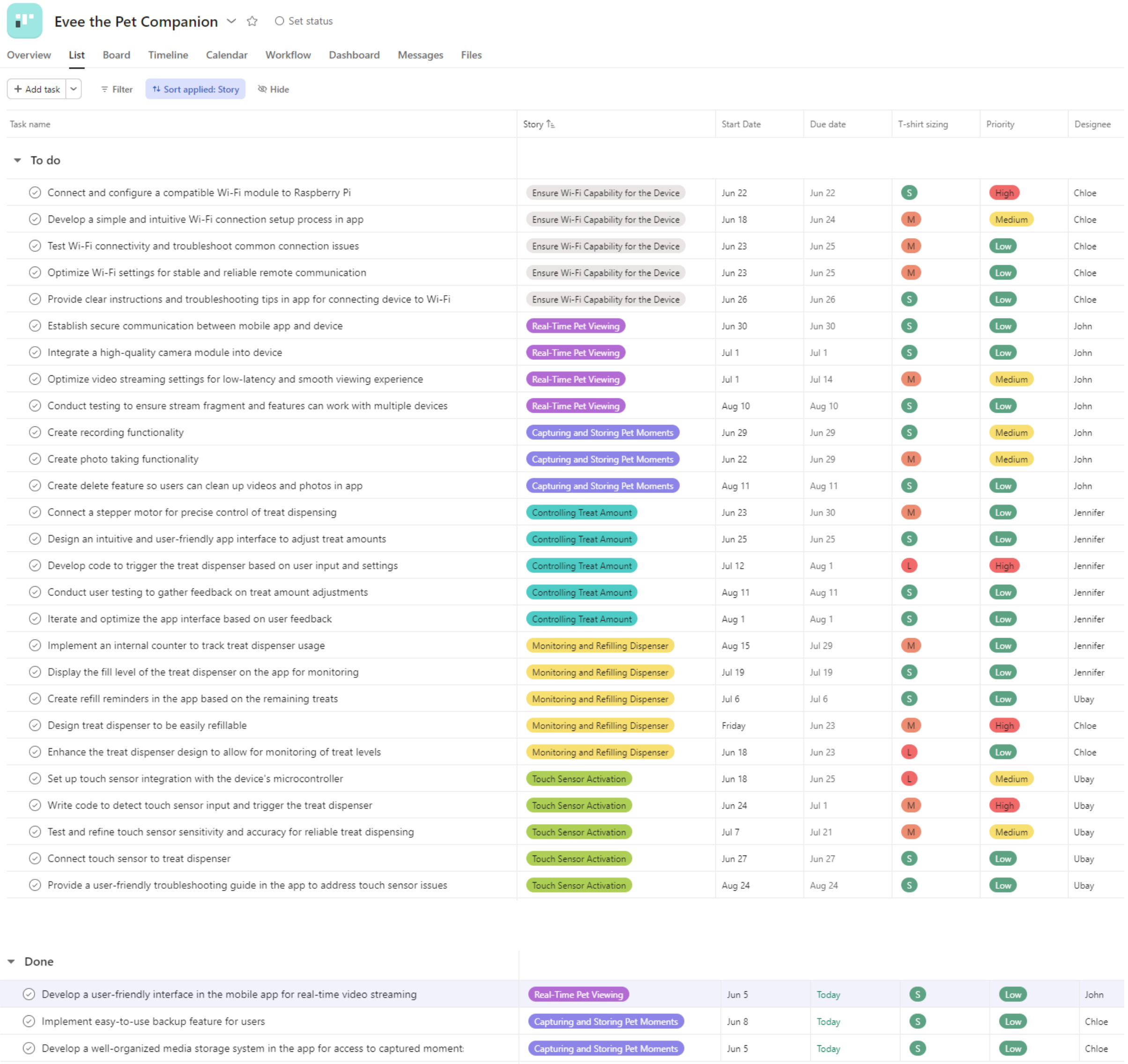
□	Ali-HumberLab2022 Collaborator	Remove
□	Hak11 haki11 • Collaborator	Remove
□	JenniferNguyen5464 Collaborator	Remove
□	JohnAquino3112 Collaborator	Remove
□	UbayAbdulaziz7353 Collaborator	Remove

Our strategy and approach to using GitHub in a group is simple but effective. This has been our plan:

- Designate one person to make the initial changes and commit them to the main branch
- Other group members work on their assigned screens or features after pulling latest version
- Each member commits and pushes their changes to the repository regularly, providing clear commit messages
- Collaborate and communicate to resolve conflicts that may arise during the process
- Thoroughly test and review the combined work to ensure it meets project requirements
- Before starting the next work session, pull the latest changes from the main branch to stay updated

Stories and Tasks

Please enlarge/download the images below.



Task name	Story	Start Date	Due date	T-shirt sizing	Priority	Designee
To do						
Connect and configure a compatible Wi-Fi module to Raspberry Pi	Ensure Wi-Fi Capability for the Device	Jun 22	Jun 22	S	High	Chloe
Develop a simple and intuitive Wi-Fi connection setup process in app	Ensure Wi-Fi Capability for the Device	Jun 18	Jun 24	M	Medium	Chloe
Test Wi-Fi connectivity and troubleshoot common connection issues	Ensure Wi-Fi Capability for the Device	Jun 23	Jun 25	M	Low	Chloe
Optimize Wi-Fi settings for stable and reliable remote communication	Ensure Wi-Fi Capability for the Device	Jun 23	Jun 25	M	Low	Chloe
Provide clear instructions and troubleshooting tips in app for connecting device to Wi-Fi	Ensure Wi-Fi Capability for the Device	Jun 26	Jun 26	S	Low	Chloe
Establish secure communication between mobile app and device	Real-Time Pet Viewing	Jun 30	Jun 30	S	Low	John
Integrate a high-quality camera module into device	Real-Time Pet Viewing	Jul 1	Jul 1	S	Low	John
Optimize video streaming settings for low-latency and smooth viewing experience	Real-Time Pet Viewing	Jul 1	Jul 14	M	Medium	John
Conduct testing to ensure stream fragment and features can work with multiple devices	Real-Time Pet Viewing	Aug 10	Aug 10	S	Low	John
Create recording functionality	Capturing and Storing Pet Moments	Jun 29	Jun 29	S	Medium	John
Create photo taking functionality	Capturing and Storing Pet Moments	Jun 22	Jun 29	M	Medium	John
Create delete feature so users can clean up videos and photos in app	Capturing and Storing Pet Moments	Aug 11	Aug 11	S	Low	John
Connect a stepper motor for precise control of treat dispensing	Controlling Treat Amount	Jun 23	Jun 30	M	Low	Jennifer
Design an intuitive and user-friendly app interface to adjust treat amounts	Controlling Treat Amount	Jun 25	Jun 25	S	Low	Jennifer
Develop code to trigger the treat dispenser based on user input and settings	Controlling Treat Amount	Jul 12	Aug 1	L	High	Jennifer
Conduct user testing to gather feedback on treat amount adjustments	Controlling Treat Amount	Aug 11	Aug 11	S	Low	Jennifer
Iterate and optimize the app interface based on user feedback	Controlling Treat Amount	Aug 1	Aug 1	S	Low	Jennifer
Implement an internal counter to track treat dispenser usage	Monitoring and Refilling Dispenser	Aug 15	Jul 29	M	Low	Jennifer
Display the fill level of the treat dispenser on the app for monitoring	Monitoring and Refilling Dispenser	Jul 19	Jul 19	S	Low	Jennifer
Create refill reminders in the app based on the remaining treats	Monitoring and Refilling Dispenser	Jul 6	Jul 6	S	Low	Ubay
Design treat dispenser to be easily refillable	Monitoring and Refilling Dispenser	Friday	Jun 23	M	High	Chloe
Enhance the treat dispenser design to allow for monitoring of treat levels	Monitoring and Refilling Dispenser	Jun 18	Jun 23	L	Low	Chloe
Set up touch sensor integration with the device's microcontroller	Touch Sensor Activation	Jun 18	Jun 25	L	Medium	Ubay
Write code to detect touch sensor input and trigger the treat dispenser	Touch Sensor Activation	Jun 24	Jul 1	M	High	Ubay
Test and refine touch sensor sensitivity and accuracy for reliable treat dispensing	Touch Sensor Activation	Jul 7	Jul 21	M	Medium	Ubay
Connect touch sensor to treat dispenser	Touch Sensor Activation	Jun 27	Jun 27	S	Low	Ubay
Provide a user-friendly troubleshooting guide in the app to address touch sensor issues	Touch Sensor Activation	Aug 24	Aug 24	S	Low	Ubay
Done						
Develop a user-friendly interface in the mobile app for real-time video streaming	Real-Time Pet Viewing	Jun 5	Today	S	Low	John
Implement easy-to-use backup feature for users	Capturing and Storing Pet Moments	Jun 8	Today	S	Low	Chloe
Develop a well-organized media storage system in the app for access to captured moment:	Capturing and Storing Pet Moments	Jun 5	Today	S	Low	Chloe

<u>DoD explanation for Done Tasks:</u>

Task	Story	Definition of Done	Explanation
Develop a user-friendly interface in the mobile app for real-time video streaming	Real Time Pet Viewing	- Code peer-reviewed - Acceptance criteria met	The team peer-reviewed the code for this StreamFragment layout and agreed there were no obvious faults, it had appropriate placeholders for features-to-be-implemented - which was our acceptance criteria.
Implement easy-to-use backup feature for users	Capturing and Storing Pet Moments	- Code peer-reviewed - Acceptance criteria met	The team peer-reviewed the code for this backup feature (Download All button in HighlightFragment) functioned, did not identify any bugs, and determined it was easy to use - which was part of our acceptance criteria.
Develop a well-organized media storage system in the app for access to captured moments	Capturing and Storing Pet Moments	- Acceptance criteria met	The team agreed that this storage system (in HighlightFragment) was simple, easy to use and well organized - which was part of our acceptance criteria.

Definition of Done (for entire project):

- Mobile device testing passed
- Code peer-reviewed
- Documentation peer-reviewed
- Acceptance criteria met
- Bugs are considered acceptable by Product Owner
- Line following test passed
- Obstacle test passed
- Remote control functionality tested and functioning properly
- Real-time video streaming tested and working without significant latency
- Treat dispenser tested and dispensing treats accurately
- Wi-Fi connectivity tested and stable
- Security vulnerabilities addressed and considered acceptable by Product Owner

Business Model Canvas

<table>
<tr>
<td rowspan="2"><b>Key Partners</b>

- Device manufacturers

- Retailers for distribution and sales partnerships

- Influencers and pet communities

- Pet supply stores

- Cloud service providers for data storage and streaming capabilities</td>
<td colspan="2"><b>Key Activities</b>

- Ensuring the app and device comply with relevant standards for pet safety and data privacy

- Testing and quality assurance for seamless functionality

- Continuous app updates and improvements according to user feedback and support tickets</td>
<td rowspan="2"><b>Value Propositions</b>

- Precise treat dispensing

- Customizable agenda and reminders

- Wide range of features including obstacle avoidance and line following</td>
<td><b>Customer Relationships</b>

- Prompt customer support through email

- Regular updates and enhancements based on user feedback

- Self service help page based on commonly asked questions</td>
</tr>
<tr>
<td colspan="2"><b>Key Resources</b>

- Skilled app developers and designers

- Gathered data from reviews/critique on similar products in market

- Strong customer support team</td>
<td><b>Channels</b>

- Collaboration with pet-related influencers and communities via social media

- Retail partnerships for distribution

- Word of mouth</td>
</tr>
<tr>
<td colspan="2"><b>Cost Structure</b>

- Development and maintenance costs for the mobile app

- Manufacturing and production costs for the hardware component

- Marketing and advertising expenses

- Customer support and operational costs</td>
<td colspan="2"><b>Revenue Streams</b>

- Sales revenue from device and app purchases

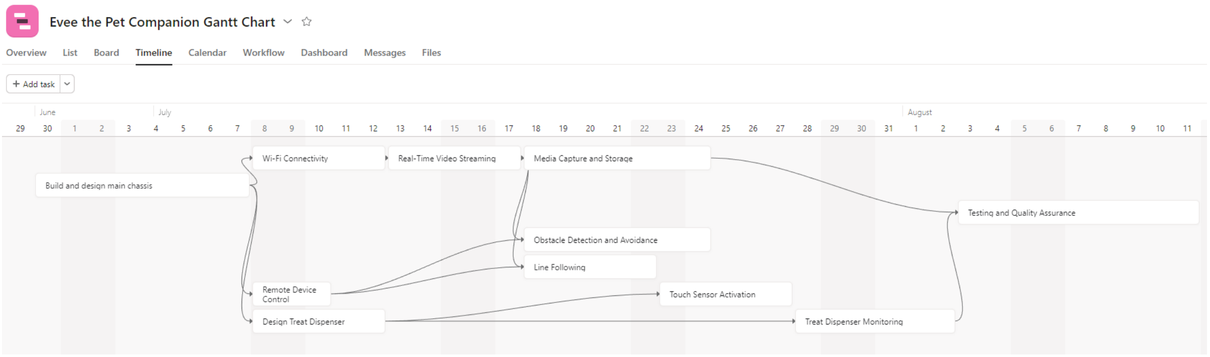
- Subscription fees for premium features and content

- Potential revenue from social media partnerships and collaborations</td>
<td><b>Customer Segments</b>

- Pet owners
- Robotic enthusiasts</td>
</tr>
</table>

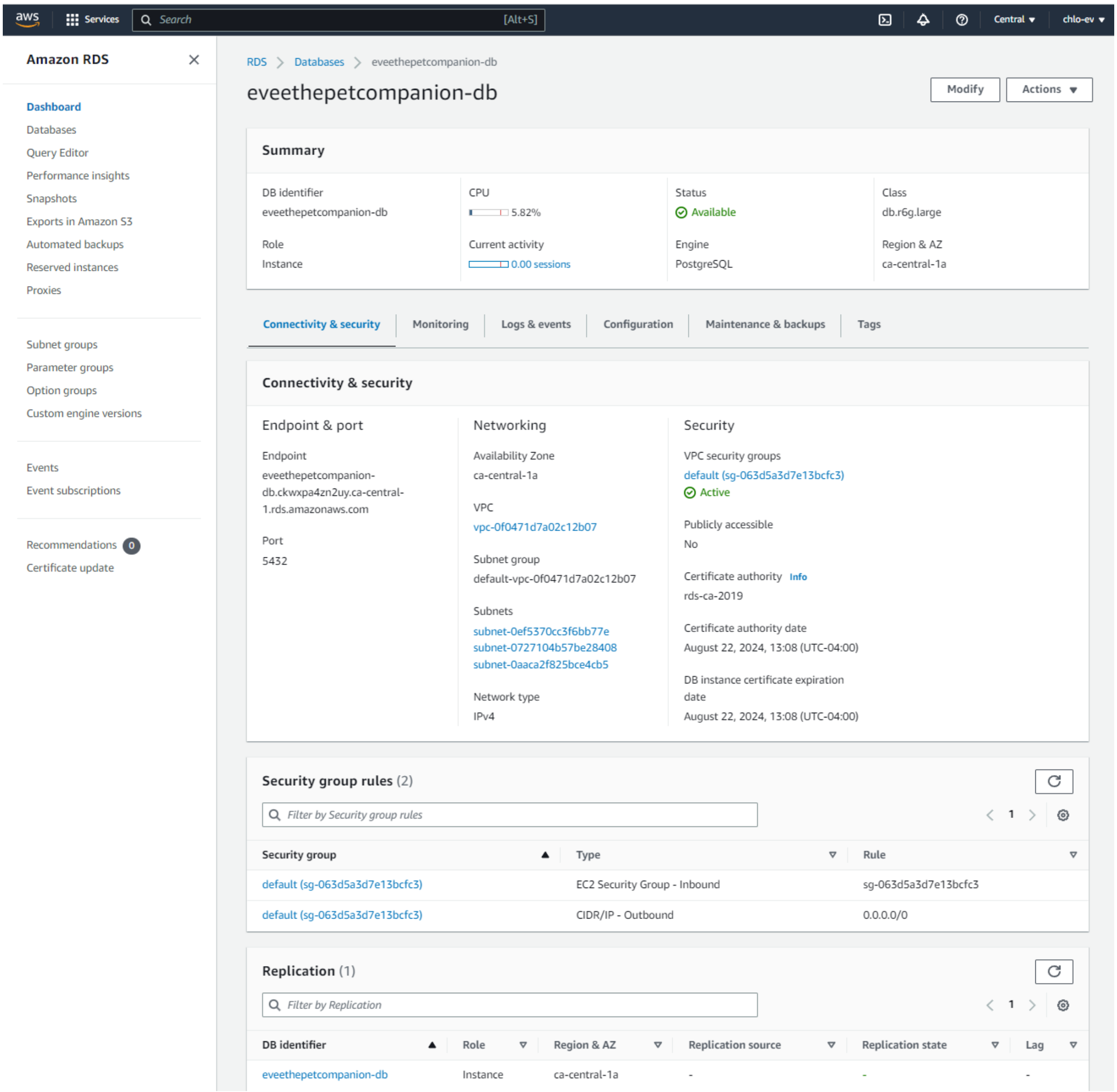
Gantt Chart

Please enlarge/download the image below.



Database

We have decided to use Amazon Web Services' RDS (Relational Database Service) for several reasons. The most obvious reason is because it is beginner-friendly and there is a free tier available for the first 12 months. It is also a managed service, so most of our infrastructure management tasks will be handled by AWS. This will allow us to spend more time on our application and data vs. server administration tasks. Additionally, there are built in security features and it can easily be integrated with AWS' IAM (which we will need as we have login capability). Lastly some of our team members have experience working with AWS so this will come in handy as they can use CloudWatch to monitor and manage the database.



eveethepetcompanion-db

Summary

DB identifier: eveethepetcompanion-db
CPU: 5.82%
Status: Available
Class: db.r6g.large
Role: Instance
Current activity: 0.00 sessions
Engine: PostgreSQL
Region & AZ: ca-central-1a

Connectivity & security

Endpoint & port
Endpoint: eveethepetcompanion-db.ckwxpa4zn2uy.ca-central-1.rds.amazonaws.com
Port: 5432

Networking
Availability Zone: ca-central-1a
VPC: vpc-0f0471d7a02c12b07
Subnet group: default-vpc-0f0471d7a02c12b07
Subnets: subnet-0ef5370cc3f6bb77e
subnet-0727104b57be28408
subnet-0aaca2f825bce4cb5
Network type: IPv4

Security
VPC security groups: default (sg-063d5a3d7e13bcfc3) Active
Publicly accessible: No
Certificate authority Info: rds-ca-2019
Certificate authority date: August 22, 2024, 13:08 (UTC-04:00)
DB instance certificate expiration date: August 22, 2024, 13:08 (UTC-04:00)

Security group rules (2)

Filter by Security group rules

Security group	Type	Rule
default (sg-063d5a3d7e13bcfc3)	EC2 Security Group - Inbound	sg-063d5a3d7e13bcfc3
default (sg-063d5a3d7e13bcfc3)	CIDR/IP - Outbound	0.0.0.0/0

Replication (1)

Filter by Replication

DB identifier	Role	Region & AZ	Replication source	Replication state	Lag
eveethepetcompanion-db	Instance	ca-central-1a	-	-	-

To read and write data from our cloud database, our app will establish a connection to the cloud hosting service using appropriate authentication credentials. This will allow the app to retrieve information about the remaining treats in the dispenser and store captured pictures and videos. The app will utilise database operations such as querying and updating records to read and write data efficiently.

Progress

Additional screens

Actionbar Menu: The app now includes an actionbar menu with options to navigate to 4 different sections. The "Help" option provides access to a knowledge base, Q&A section, and contact information. The "Pet Profile" option allows users to manage schedules, reminders, and customize feeding/playtime appointments. The "Settings" option offers various functionalities like locking the screen to portrait mode, deleting the account, updating email settings, and enabling/disabling push notifications. Additionally, a "Logout" screen has been added for easy account logout. This will replace the screen with the login page.

Login Design and Functionality: Users can enter their username and password to access their accounts. This screen appears right after the initial loading screen. If users forget their password or want to create a new account, there are placeholders for those options, although they will be implemented later. After a successful login, users will be taken to the main part of the app to start using its features.

Main screens

Dashboard Design: A new dashboard screen has been introduced, displaying general information about pets. It also features editable reminders that can be accessed and modified from the pet profile screen. Additionally, the dashboard includes recently taken images of the pet, sourced from the stream screen.

Stream Design: The app now includes a dedicated stream screen with a live stream layout. Users can eventually control the device and camera movement using arrow keys. Placeholder buttons are available for functions like taking photos and videos, and dispensing treats to the pet.

Highlights Screen: A new highlights screen has been added, showcasing all videos and photos captured from the stream screen. It includes a convenient "Download All" button, which prompts the user for runtime permission to write to the SD card and allows them to save all the videos and photos from the page to their SD card.

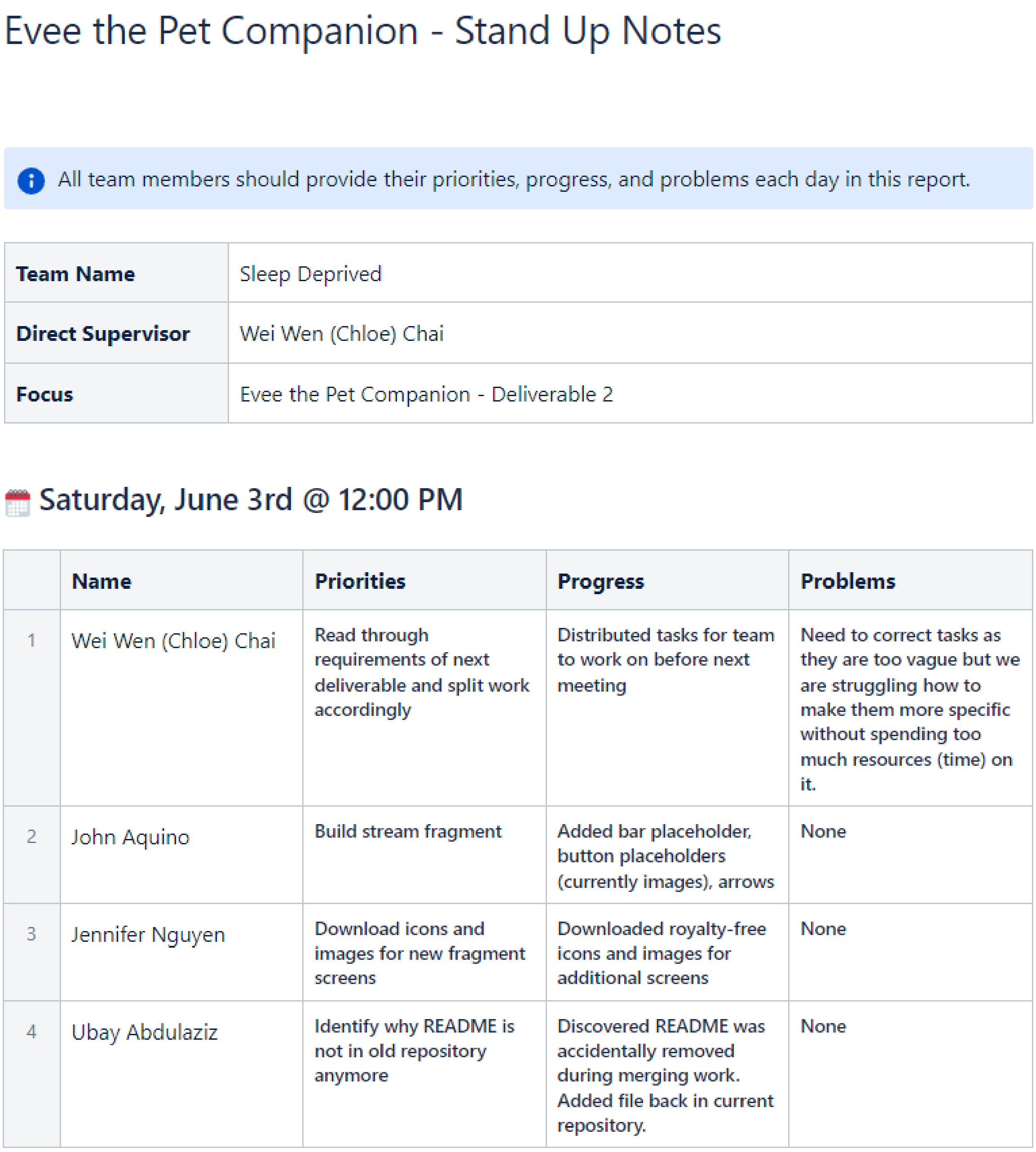
Smaller features

Multiple Resolutions: The app supports three different image resolutions (xxxhdpi, xxhdpi, xhdpi) to ensure optimal image quality and efficient resource utilization across devices with varying screen densities.

Portrait and Landscape Mode: The app now adapts to both portrait and landscape orientations, providing a seamless user experience regardless of how the device is held.

Daily Stand-ups

We decided to use Atlassian as our tool to manage our stand-up notes. Please see the screenshots below.



Evee the Pet Companion - Stand Up Notes

All team members should provide their priorities, progress, and problems each day in this report.

Team Name	Sleep Deprived
Direct Supervisor	Wei Wen (Chloe) Chai
Focus	Evee the Pet Companion - Deliverable 2

Saturday, June 3rd @ 12:00 PM

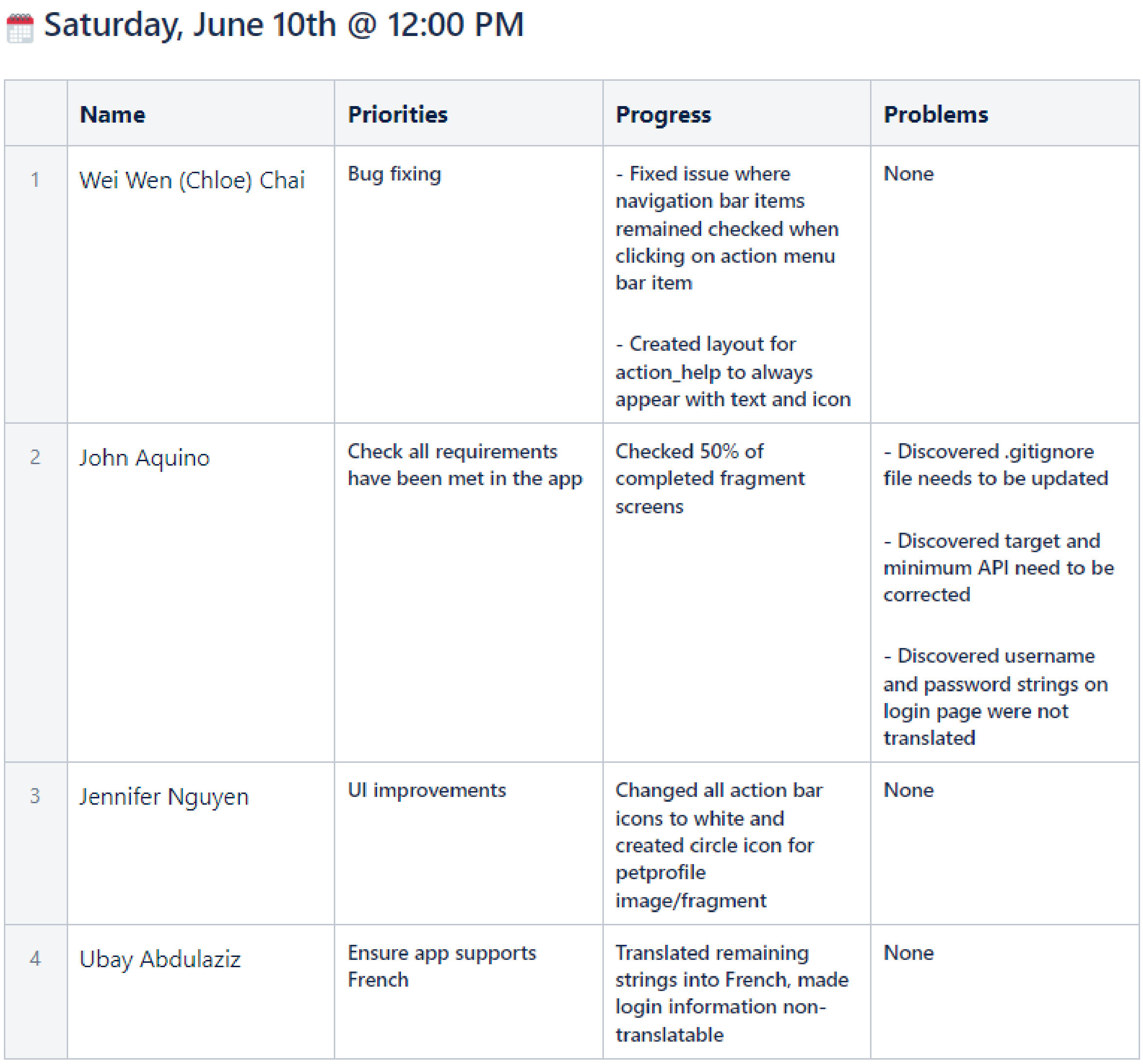
	Name	Priorities	Progress	Problems
1	Wei Wen (Chloe) Chai	Read through requirements of next deliverable and split work accordingly	Distributed tasks for team to work on before next meeting	Need to correct tasks as they are too vague but we are struggling how to make them more specific without spending too much resources (time) on it.
2	John Aquino	Build stream fragment	Added bar placeholder, button placeholders (currently images), arrows	None
3	Jennifer Nguyen	Download icons and images for new fragment screens	Downloaded royalty-free icons and images for additional screens	None
4	Ubay Abdulaziz	Identify why README is not in old repository anymore	Discovered README was accidentally removed during merging work. Added file back in current repository.	None

📅 Sunday, June 4th @ 10:00 PM

	Name	Priorities	Progress	Problems
1	Wei Wen (Chloe) Chai	- Correct tasks - Ensure we are demonstrating use of styles.xml, color.xml, and dimens.xml	- Made tasks more specific for next deliverable - Added a few demonstrations of styles.xml, color.xml, and dimens.xml - assumed professor does not require us to exclusively use these for all screens	None
2	John Aquino	Ensure all images are in 3 resolutions	Created images in xxxhdpi, xxhdpi, xhdpi	Need to figure out how to add these in app
3	Jennifer Nguyen	Highlights fragment	Completed highlights screen, added photo and video section	None
4	Ubay Abdulaziz	Help fragment	Completed help page, added sample Q&A's and contact us section	None

📅 Monday, June 5th @ 10:00 PM

	Name	Priorities	Progress	Problems
1	Wei Wen (Chloe) Chai	- Login/logout functionality - Add John's different resolutions to app	- Completed full login/logout screens and functionality - Created folders for different resolutions	Login screen does not appear before MainActivity when starting up app
2	John Aquino	- Pet Profile fragment - Ensure "action_help" is set to always|withText	- Added all elements for pet profile - Set action_help to always|withText	Text for action_help only appears if in landscape mode
3	Jennifer Nguyen	Runtime permissions feature in Highlights screen	Created download all button, achieved partial functionality (can download images)	The flow does not make sense (click button once to open prompt, click again to download images). Deny option does not pop up toast message.
4	Ubay Abdulaziz	Correct hardcoding of strings	Created @string resources for all hardcoded strings	@string/controlanswer throwing error



📅 Saturday, June 10th @ 12:00 PM

	Name	Priorities	Progress	Problems
1	Wei Wen (Chloe) Chai	Bug fixing	- Fixed issue where navigation bar items remained checked when clicking on action menu bar item - Created layout for action_help to always appear with text and icon	None
2	John Aquino	Check all requirements have been met in the app	Checked 50% of completed fragment screens	- Discovered .gitignore file needs to be updated - Discovered target and minimum API need to be corrected - Discovered username and password strings on login page were not translated
3	Jennifer Nguyen	UI improvements	Changed all action bar icons to white and created circle icon for petprofile image/fragment	None
4	Ubay Abdulaziz	Ensure app supports French	Translated remaining strings into French, made login information non-translatable	None