

Deliverable 2

Team Name: FurGuardian

Project Name: Pet Wellness App

Team Group: 8

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Contents

Project Scope	1
Github Strategy and link	2
Agile Breakdown	3
Charts and Screenshots	5
List of DoD	8
Daily stand-ups outcome	9
Business Model Canvas	9
Coding Progress Since Deliverable 1	11

Name	Student Id	Github Id	Signature	Effort
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Project Scope

The technical scope of the FurGuardian project encompasses both the development of the Android app and the integration of hardware components. This involves creating a fully functional and user-friendly application that connects to various hardware sensors, processes pet data, and offers real-time monitoring and interaction.

Week 1-2: Requirements Gathering & Research

Define app features and hardware components.

Research compatible sensors to ensure alignment with project goals.

Week 3-4: UI/UX Design

Create wireframes and mockups.

Plan the user journey for smooth navigation.

Week 5-6: Backend & Database Setup

Set up Firebase Firestore for data storage.

Configure user authentication and cloud access.

Week 7-8: Hardware Integration

Integrate sensors, motor, camera, and microphone with the app.

Test data transmission between hardware and the app.

Week 9-10: Core Features Development

Implement health tracking, remote feeding, video monitoring, and notifications.

Ensure real-time data syncing with the cloud.

Week 11-12: Testing & Debugging

Conduct unit and integration testing for the app.

Test hardware operation with the app.

Week 13-14: User Testing & Feedback

Test the app with pet owners.

Refine features and UI based on feedback.

Week 15: Final Deployment

Complete the app for submission to the Google Play Store.

Prepare for the app to go live.

Github Strategy and link

Our GitHub strategy has been for everyone to work on separate features on different branches and then when the feature is complete we merge our codes into the master branch while discussing the merge conflictions with each other to ensure the merge is done correctly.

<https://github.com/Chipman8472/FurGuardian.git>

Agile Breakdown

Theme: Develop the "FurGuardian" Pet Health Monitoring & Remote Feeding App

- **Epic 1: Heart Rate Monitoring and Activity Tracking**
 - **Story 1: Design and implement heart rate tracking UI**
 - Task 1: Create UI components for displaying heart rate data in real-time.
 - Task 2: Add integration points to receive simulated heart rate data.
 - Task 3: Implement logic for refreshing heart rate display at regular intervals.
 - Task 4: Optimize UI layout for different screen sizes and orientations.
 - **Story 2: Develop heart rate data processing logic**
 - Task 1: Simulate and generate heart rate data.
 - Task 2: Implement algorithms to interpret activity levels based on heart rate fluctuations.
 - Task 3: Store the data in Firebase for historical tracking.
 - Task 4: Implement error-handling and validation to ensure data accuracy and prevent outliers.
 - **Story 3: Create activity insights for pet owners**
 - Task 1: Analyze stored heart rate data to detect periods of high/low activity.
 - Task 2: Provide insights on the pet's activity trends over time (daily, weekly).
 - Task 3: Design an insights dashboard for owners to easily view activity levels.
 - Task 4: Implement a "download report" feature that exports activity insights as a PDF.
- **Epic 2: Food & Hydration Monitoring and Remote Feeding**
 - **Story 1: Create UI for food and hydration tracking**
 - Task 1: Design food and water level indicators within the app.
 - Task 2: Integrate with simulated food dispenser data for real-time tracking.
 - Task 3: Implement thresholds to alert owners when food/water levels are low.

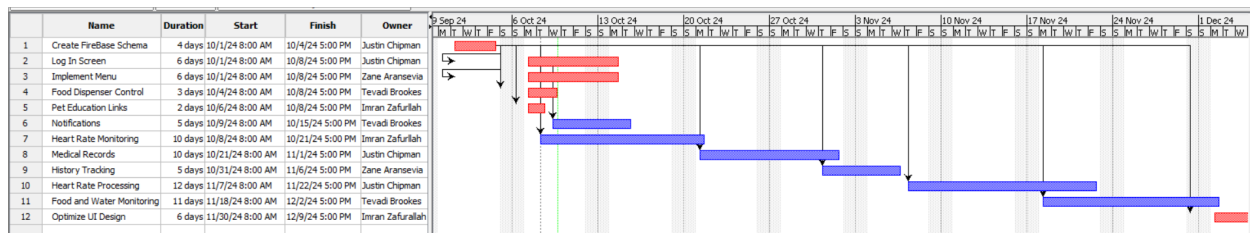
- Task 4: Design push notifications to alert users when thresholds are reached.
- **Story 2: Implement food dispenser control (remote/scheduled)**
 - Task 1: Set up UI controls to allow remote food dispensing.
 - Task 2: Add logic for scheduling automated feedings.
 - Task 3: Simulate food dispensing events and monitor their success in real-time.
 - Task 4: Implement a failsafe to handle scheduled feedings if the app is offline or the network connection fails.
- **Story 3: Store and retrieve food/hydration data from Firebase**
 - Task 1: Implement Firebase structure for storing food and hydration data.
 - Task 2: Write Java code to sync the dispenser data with Firebase.
 - Task 3: Implement retrieval of historical data to show trends over time.
 - Task 4: Add filtering and sorting options for the food and hydration data (e.g., by date, quantity).
- **Epic 3: Health Insights and Medical Records Storage**
 - **Story 1: Create Firebase structure for storing medical records**
 - Task 1: Design a Firebase schema for holding pet medical records.
 - Task 2: Write Java logic to add, update, and delete records in Firebase.
 - Task 3: Implement security measures for medical record access (authentication).
 - Task 4: Set up backup and recovery options for medical records in case of data corruption.
 - **Story 2: Implement health insights algorithm**
 - Task 1: Create logic to combine heart rate, activity, food, and hydration data into health insights.
 - Task 2: Develop algorithms that highlight significant health changes (e.g., dehydration, lethargy).
 - Task 3: Display health recommendations and alerts based on insights.
 - Task 4: Integrate machine learning to improve the accuracy of health insights and recommendations over time.
 - **Story 3: Design health insights UI**
 - Task 1: Design a user-friendly health insights dashboard.

- Task 2: Integrate real-time and historical health insights into the dashboard.
- Task 3: Allow owners to receive notifications for abnormal health events (e.g., low activity).
- Task 4: Implement a customizable notification system allowing owners to set their own alert thresholds for specific metrics.

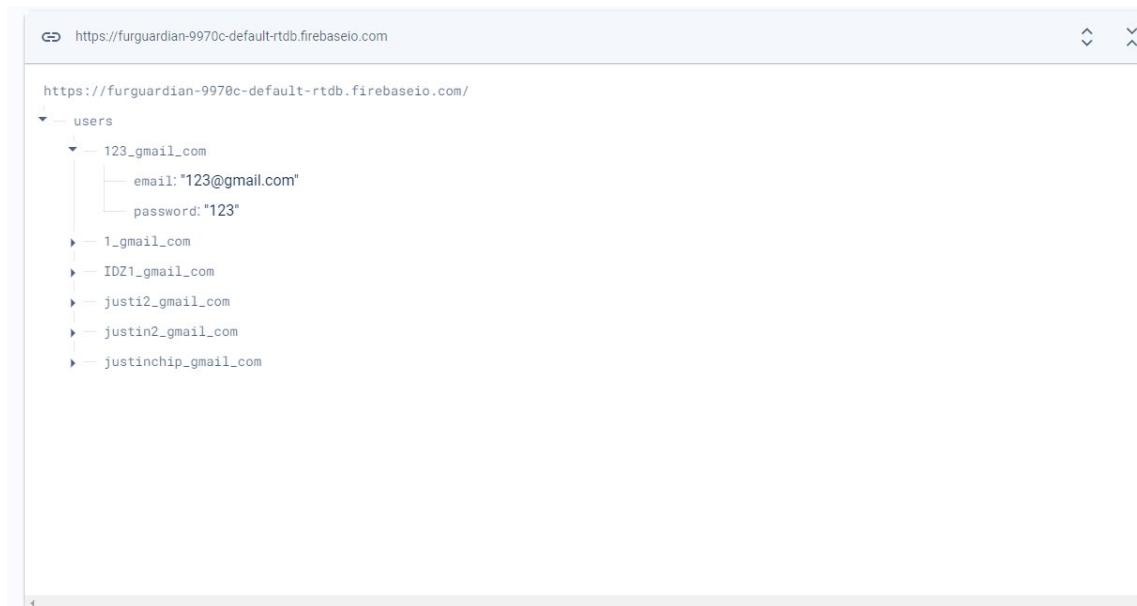
Charts and Screenshots

Menu

Gantt Chart



Firestore Database



We are in the process of securely fetching and managing account information, ensuring efficient and reliable data handling. Our platform is designed to store and retrieve medical records

seamlessly, providing easy access to critical health data. Additionally, we integrate data from hardware components and sensors to offer comprehensive real-time monitoring and insights.

Monday.com Tasks

Overview

New task

SearchPersonFilterSortHideGroup by

To-Do

	Task	Owner	Status	Due date	Priority	Notes	Timeline	Last updated
<input type="checkbox"/>	> Food and Water Monitor... 4	ZA	Not Started	Nov 30	High		Nov 17 - 29	2 hours ago
<input type="checkbox"/>	> Heart Rate Data Proces... 4		Not Started	Nov 30	High		Nov 6 - 17	2 hours ago
<input type="checkbox"/>	> Notifications 4	TB	Not Started	Nov 30	Medium		Oct 8 - 13	3 hours ago
<input type="checkbox"/>	> Medical Records 4		Not Started	Nov 30	High		Oct 20 - Nov 1	3 hours ago
<input type="checkbox"/>	> History Tracking 4	ZA	Not Started	Nov 30	High		Oct 31 - Nov 6	4 hours ago
<input type="checkbox"/>	> Heart Rate Monitoring 4	IZ	Not Started	Nov 30	High		Oct 8 - 20	4 hours ago
<input type="checkbox"/>	> Optimized UI Design 4		Not Started	Nov 30	Medium		Nov 30 - Dec 8	3 hours ago
<input type="checkbox"/>	> Food Dispenser Control 4	TB	Not Started	Oct 8	High	Other	Oct 5 - 8	4 hours ago
<input type="checkbox"/>	> Implement Menu 4	ZA	Not Started	Oct 8	High		Oct 1 - 8	3 hours ago
<input type="checkbox"/>	+ Add task							

Oct 8 - Nov 30

Oct 1 - Dec 8

Completed

	Task	Owner	Status	Due date	Priority	Notes	Timeline	Last updated
<input type="checkbox"/>	> Create FireBase Schema 4		Done	Oct-5	Critical		Oct 1 - 5	4 hours ago
<input type="checkbox"/>	> Log In Screen 4		Done	Oct-8	High	Action items	Oct 1 - 8	4 hours ago
<input type="checkbox"/>	> Pet Education links 4	IZ	Done	Oct-7	Medium	Action items	Oct 6 - 7	4 hours ago
<input type="checkbox"/>	+ Add task							

Oct 5 - 8

Oct 1 - 8

Breakdown

<input type="checkbox"/>	Task	Owner	Status	Due date	Priority	Notes	Timeline	Last updated
<input type="checkbox"/>	> Implement Menu 4	ZA	Not Started	Oct 8	High		Oct 1 - 8	2 minutes ago
<input type="checkbox"/>	Subitem	Owner	Status	Date				
<input type="checkbox"/>	Pet profile database							
<input type="checkbox"/>	Reminders							
<input type="checkbox"/>	Emergency contacts dat...							
<input type="checkbox"/>	Settings							

<input type="checkbox"/>	> Food Dispenser Control 4	TB	Not Started	Oct 8	High	Other	Oct 5 - 8	42 minutes ago
<input type="checkbox"/>	Subitem	Owner	Status	Date				
<input type="checkbox"/>	UI for remote dispensing							
<input type="checkbox"/>	logic for automated feedi...							
<input type="checkbox"/>	simulate for realtime eve...							
<input type="checkbox"/>	failsafe for lost connection							
<input type="checkbox"/>	+ Add subitem							

Optimized UI Design

4

Not Started

Nov 30

Medium

Nov 30 - Dec 8

IZ

14 minutes ago

▼

Create FireBase Schema

4

Done

Oct-5

Critical

!

Oct 1 - 5

12

7 minutes ago

<input type="checkbox"/>	▼ Log In Screen 4			Done		Oct-8	High	Action items	Oct 1 - 8	9 minutes ago
<input type="checkbox"/>	Subitem		Owner	Status	Date	+				
<input type="checkbox"/>	connection to firebase			Done						
<input type="checkbox"/>	creation of user logins			Done						
<input type="checkbox"/>	UI design			Done						
<input type="checkbox"/>	snackbar notifications			Done						

▼

Pet Education links

4

iz

Done

1

Oct-7

Medium

Action items

!

Oct 6 - 7

iz

8 minutes ago

Subitem

Owner

Status

Date

+

links for various website

Done

UI design

Done

linking websites to topic




Done

integration

Done

+ Add subitem

Hardware professor invite:

	 krismedri Awaiting krismedri's response	Pending Invite 	
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List of DoD

Firestore Implementation

Login screen implementation

Pet Education Fragment

Explanation:

We met the DoD by thoroughly testing the different login and data fetching cases. Initially we had issues with the app crashing if the user info was not found in the database or if the user input didn't match the corresponding data type. By adding in sufficient input validation we solved this problem. The testing for pet education fragment was much less extensive as the links worked under any circumstance, however we need to look into keeping the links up to date and possibly automating this.

Daily stand-ups outcome

Date	Team Member	Update/Task	Notes
03-10-2024	Team Discussion	Ensured continuity of color and theme throughout the app.	Final color palette needs approval.
04-10-2024	Team Discussion	Specified menu items with intuitive labels and clear navigation.	Mock-up menu design is ready.
06-10-2024	Team Discussion	Finalized list of required images for app, including icons and illustrations.	N/A
08-10-2024	Justin Chipman	Firebase schema for login screen completed.	Security features in progress.
07-10-2024	Zane Aransevia	Menu Items/Bar	Functionality required.
07-10-2024	Imran Zafurallah	Pet Education Links to be implemented.	Working on Calendar event creation.
08-10-2024	Tevadi Brookes	Setting Screen	Functionality needs improvement.

Business Model Canvas

1. Customer Segments
 - Pet product retailers (PetSmart, etc...)
 - Veterinarians
 - Pet owners

2. Value Proposition

- Providing real-time pet health monitoring and remote feeding options to ensure pet well-being for owners.

3. Channels

- Mobile app (Play Store, App Store)
- Social Media
- Veterinarians

4. Customer Relationships

- 24/7 customer support
- Community engagement (forums, etc...)
- Personalized notifications

5. Revenue Streams

- Subscription fees
- In-app purchases
- Hardware sales

6. Key Activities

- App Development
- Marketing
- Customer support

7. Key Resources

- Developers
- Cloud infrastructure
- Partnerships with veterinarians

8. Key Partnerships

- Form partnerships with veterinarians or clinics for insights into pet health data and recommendations
- Partner with pet product suppliers
- IoT devices manufacturers that specialize in producing pet health monitors or automated feeders.

9. Cost Structure

- Advertisement
- Marketing and customer support
- App development and maintenance

Coding Progress Since Deliverable 1

- Implemented login screen + registration
- Implemented database to store user details
- Implemented the education fragment with links to different educational resources
- Implemented a reminder menu option with push notifications + permissions requests
- Developed a theme for the app
- Created the settings menu