CENG 322 – Software Project

DELIVERABLE 4

Team Name: SmartShelf Innovators

Project Title: Smart Produce Management System For Grocery Stores

Group No.: 13

Group Members:

(1) Maharshkumar Raval
Student ID: N01391355
Github ID: MaharshRaval1355

(2) Ayushkumar Patel
Student ID: N01537221
Github ID: AyushPatel7221

(3) Riyankumar Patel
Student ID: N01542237
Github ID: Riyan1102

(4) Winso Tuke
Student ID: N01544313
Github ID: WinsoTuke4313

Project Goals & Final Vision:

The goal of the Smart Produce Management System is to revolutionize grocery store management by using smart sensors to monitor and manage environmental factors such as stock levels, moisture, lighting, and temperature in real-time. The final vision is to automate produce management, reducing waste, ensuring optimal freshness, and providing alerts for restocking and system anomalies. The system will also feature manual controls, visual feedback using NeoPixel LEDs, and secure access to the stockroom using RFID technology. An Android app will allow store staff to interact with and monitor the system remotely, improving operational efficiency and enhancing the customer shopping experience.

The 2 Apps that we compared our app to are:

1.) Vencru Invoicing & Accounting
Link to app:
https://play.google.com/store/apps/details?id=com.vencrubusinessmanager&pcampaignid=web_share

2.) Lightspeed Retail POS (S)
Link to app:
https://play.google.com/store/apps/details?id=com.shopkeep.register&pcampaignid=web_share

Comparing Our App with Vencru and Lightspeed Retail

Differences:

1. **Vencru:** It's mostly about keeping track of what's in stock and handling money stuff. It doesn't really get into monitoring things like temperature or how much light hits the shelves, which are big deals for grocery stores because they sell a lot of fresh stuff.
2. **Lightspeed Retail:** This app is like the big league, meant for stores with lots of locations and more complex needs. It might be too much for a small store because it has tons of features and can be pretty pricey.

Why Our App Might Be Better

- **Custom Features:** Our app, SmartShelfInnovators, isn't just about inventory. It’s specifically made for grocery stores, so it also checks on things like temperature and light, which are super important for keeping food fresh.
- **Easy to Use:** It's made to be easy for smaller stores, so you don't need to be a tech whiz to use it.
- **Cost-Effective:** It’s also cheaper than some big-shot systems, making it a good choice for stores that don't want to break the bank just to keep track of their carrots and cereal.

Pros and Cons Table

Features/Apps	SmartShelfInnovators	Vencru	Lightspeed Retail
Pros	- Custom sensors for store conditions - Designed specifically for groceries - User-friendly for smaller stores	- Good at tracking inventory - Helps manage finances - Works for small to medium stores	- Handles lots of store locations - Lots of integrations and features - Solid POS system
Cons	- Fewer financial tools - Newer on the market	- No sensors for store conditions - Not focused on environment factors	- Expensive - Complex for small stores - May have too many features for small operations

To summarise, our app is great for grocery stores because it's got what they need without going overboard. It keeps things simple, checks on important store conditions, and doesn't cost too much.

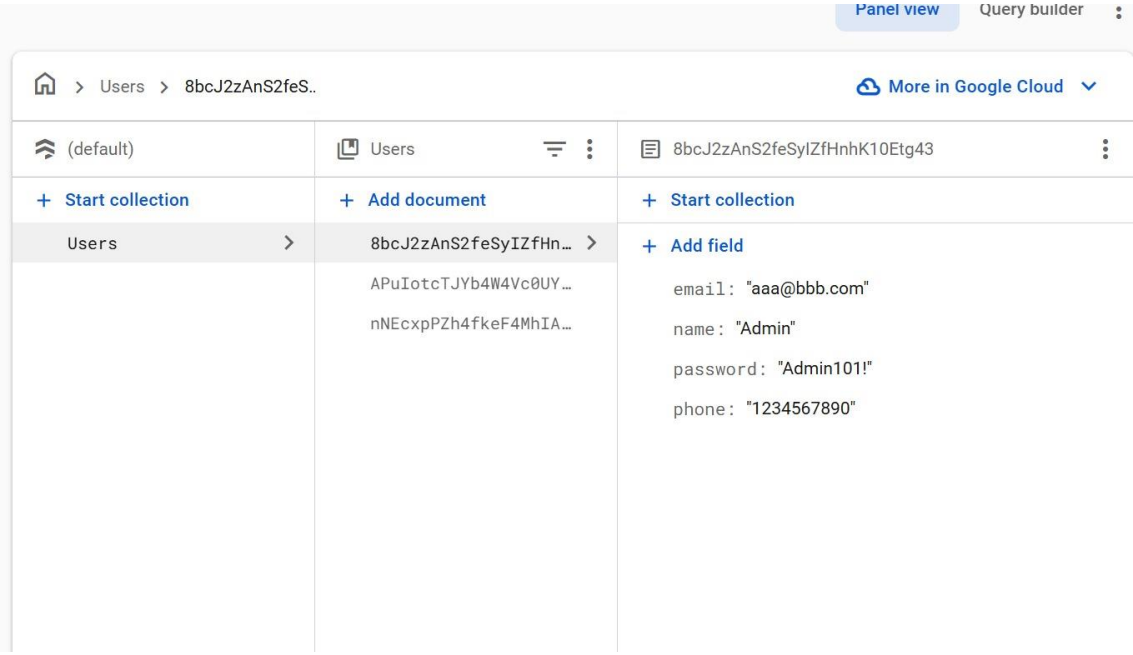
Name	Student Id	Github Id	Signature	Effort
Ayushkumar Patel	N01537221	AyushPatel7221		85%
Maharshkumar Raval	N01391355	MaharshRaval1355		85%

Riyankumar Patel	N01542237	Riyan1102		85%
Winso Tuke	N01544313	WinsoTuke4313		

GitHub Repo Link:
https://github.com/MaharshRaval1355/CENG322SoftwareProject.git

16.) Credentials that will be used for login:

Email: aaa@bbb.com Password: Admin101!



19.) Description of work completed by each team member in the current sprint:

Ayush: In this sprint, I focused on validating user credentials in both the login screen and the registration (signup) screen of our app. This involved implementing Regex Valadition for authentication logic to ensure accurate and secure user validation. Additionally, I developed a total of 10 unit test cases for one of our Java class files, aiming to verify the functionality and reliability of the class. Beyond coding, I reviewed the project's codebase to ensure best practices were followed, paying particular attention to eliminating hardcoding and maintaining clean, maintainable code. These updates not only improved the app's functionality but also enhanced its overall quality and readiness for further development.

Maharsh: In this sprint, I focused mainly on developing the dashboard screen for our app, SmartShelfInnovators. I put together the layout and integrated various features like environmental sensors and stock level indicators to give a clear, real-time overview of the store’s conditions. This involved coding in Android Studio, tweaking the UI to make it user-friendly, and ensuring the backend processes were smooth and efficient. Additionally, I spent some time reviewing the contributions of my team members to ensure that everything was aligned with our project goals and that all parts of the app worked well together. This collaborative review helped us identify a few areas for improvement which we plan to address in the next sprint.

Riyan: In this sprint, I worked on the Settings and Feedback screens of our app. The Settings Screen uses Firebase Authentication to display the logged-in user's name or a placeholder for unauthenticated users. It features switches for toggling Dark Mode and a Lock Screen, enhancing user preference management. The Feedback Screen allows users to submit feedback through a form validated for correctness, with submissions limited to once per 24 hours using SharedPreferences.

Feedback is securely stored in Firebase Firestore, and a ProgressBar indicates submission status. I also implemented back press handling to ensure smooth navigation between the Feedback and Settings screens, along with an exit confirmation dialog to prevent accidental loss of data, ensuring a user-friendly experience throughout the app.

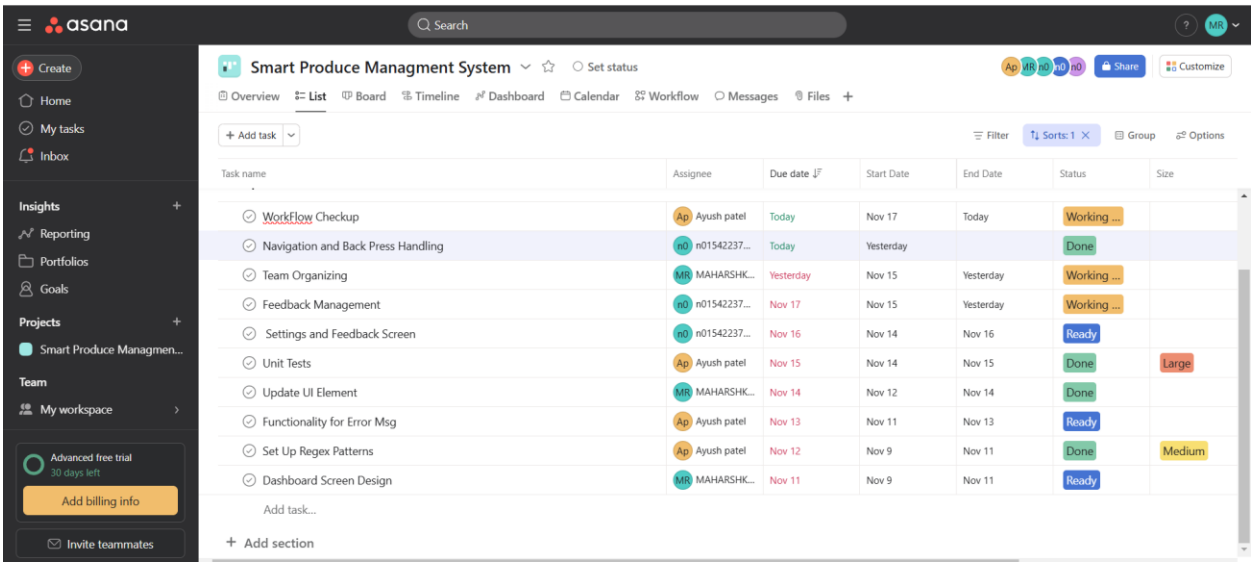
Sprint Goals:

This sprint is all about making big strides in enhancing different areas of our app, SmartShelfInnovators. Ayush plans to focus on the login and signup screens, ensuring user credentials are properly validated using Regex Validation, and aims to develop 10 unit tests for a Java class to ensure our code's reliability and maintainability. I'm set to work on the dashboard screen, planning to integrate sensor data and stock levels to provide a real-time view of store conditions, refine the user interface, and ensure our project goals are in sync with team efforts. Riyan will enhance the user experience by setting up a robust Settings and Feedback system that uses Firebase for authentication and manages user preferences with toggles for Dark Mode and Lock Screen options. He also plans to ensure that user feedback is handled efficiently, with secure storage and thoughtful navigation aids like back press handling.

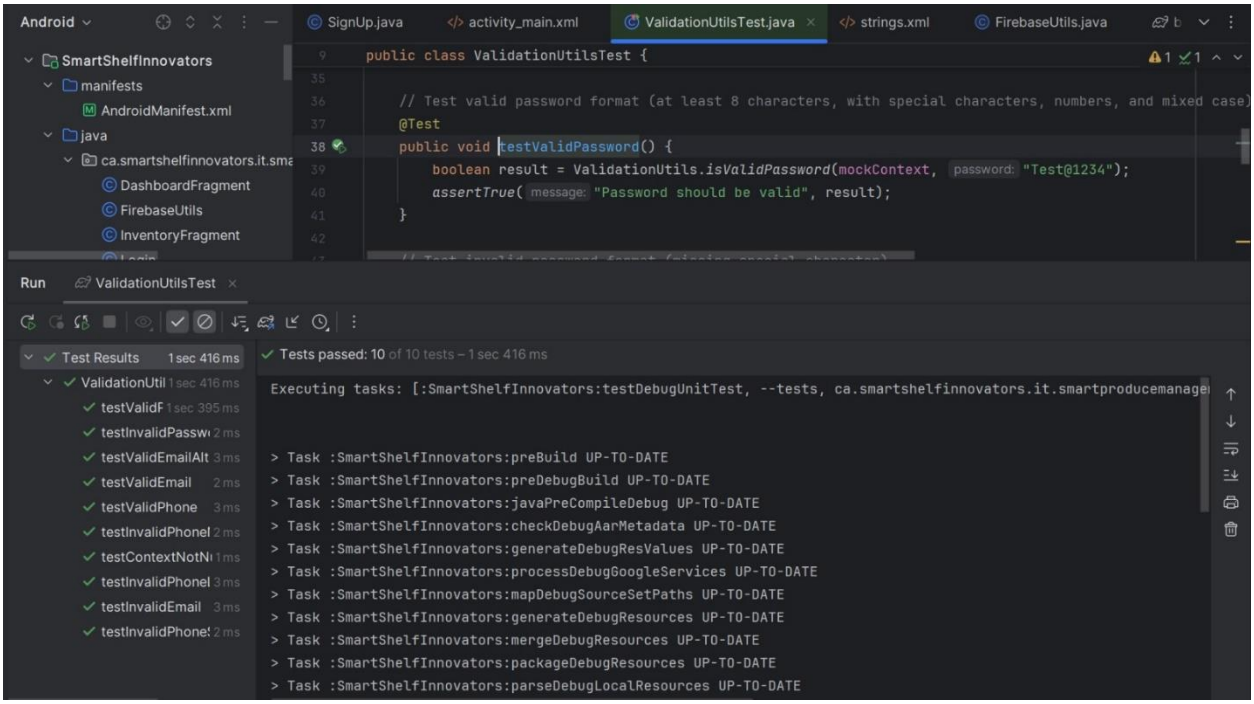
1. **Enhance User Authentication**: Build on Ayush's foundation to include more robust security features and streamline the user login experience.
2. **Expand Dashboard Functionality**: Add more interactive elements to the dashboard to allow real-time updates and better user engagement.

3. **Improve Feedback Handling**: Plan to enhance the feedback mechanism to include more interactive and responsive features based on user inputs.
4. **Increase Test Coverage**: Aim to develop more comprehensive unit tests for new features and existing code to ensure stability and reliability.
5. **Code Optimization**: Focus on refining the codebase, reducing redundancy, and improving code efficiency across all screens.

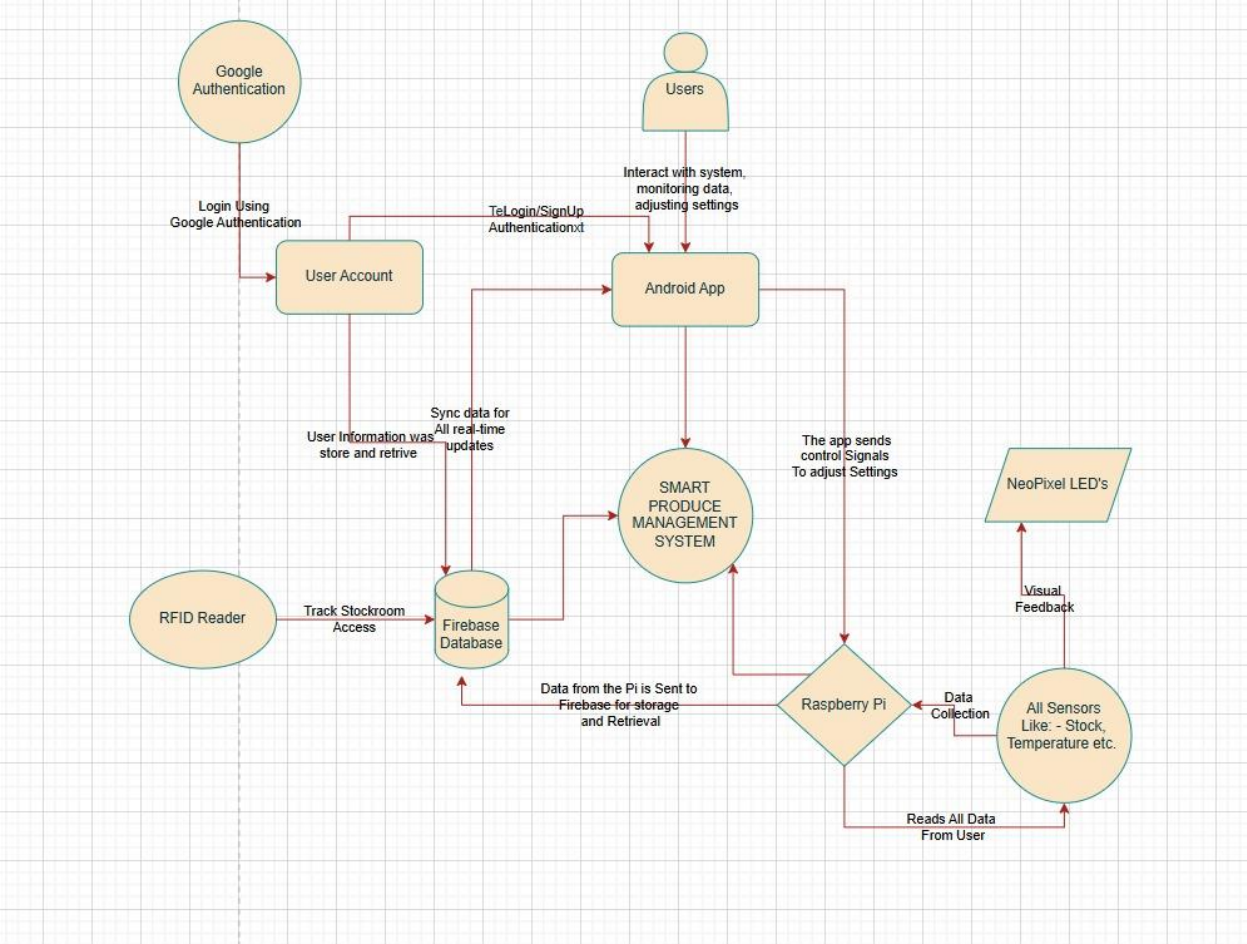
Sprint Dashboard:



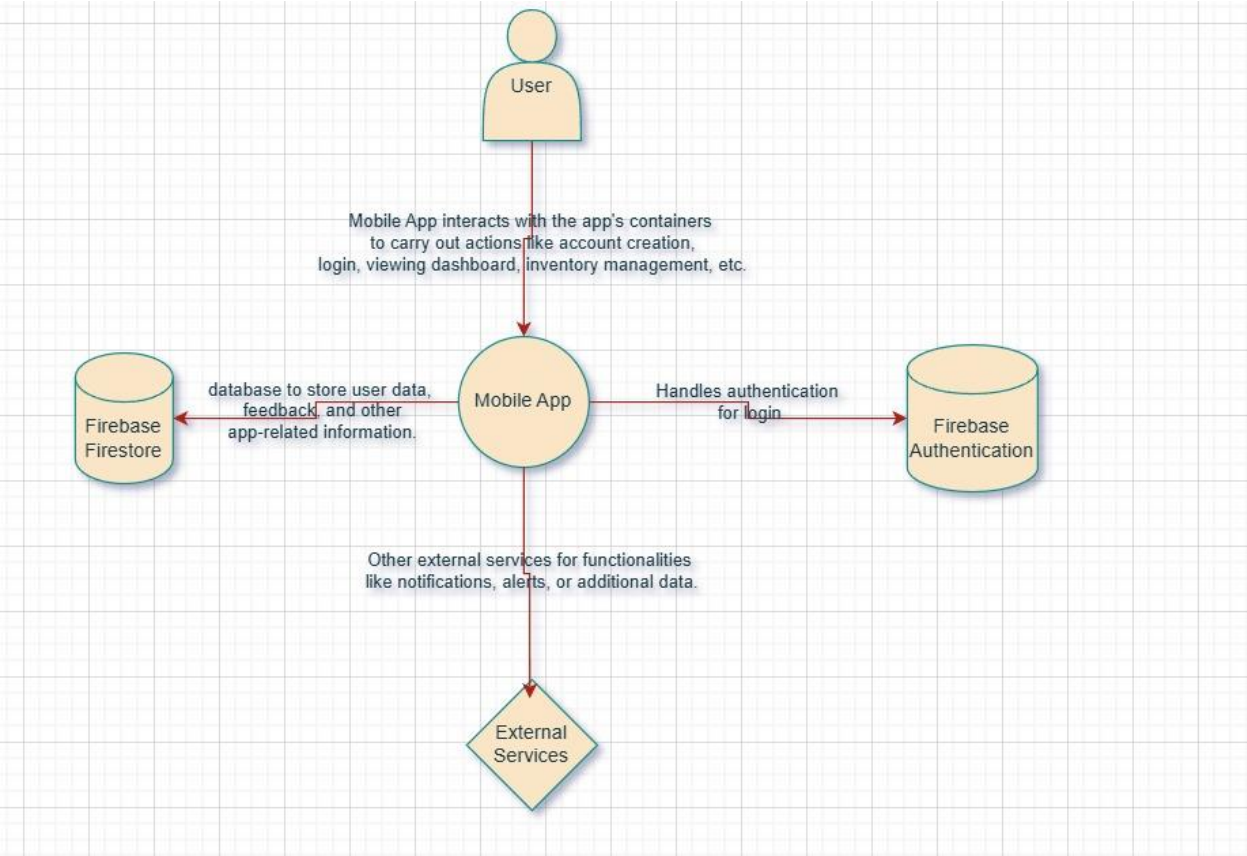
All Test Cases Passing:



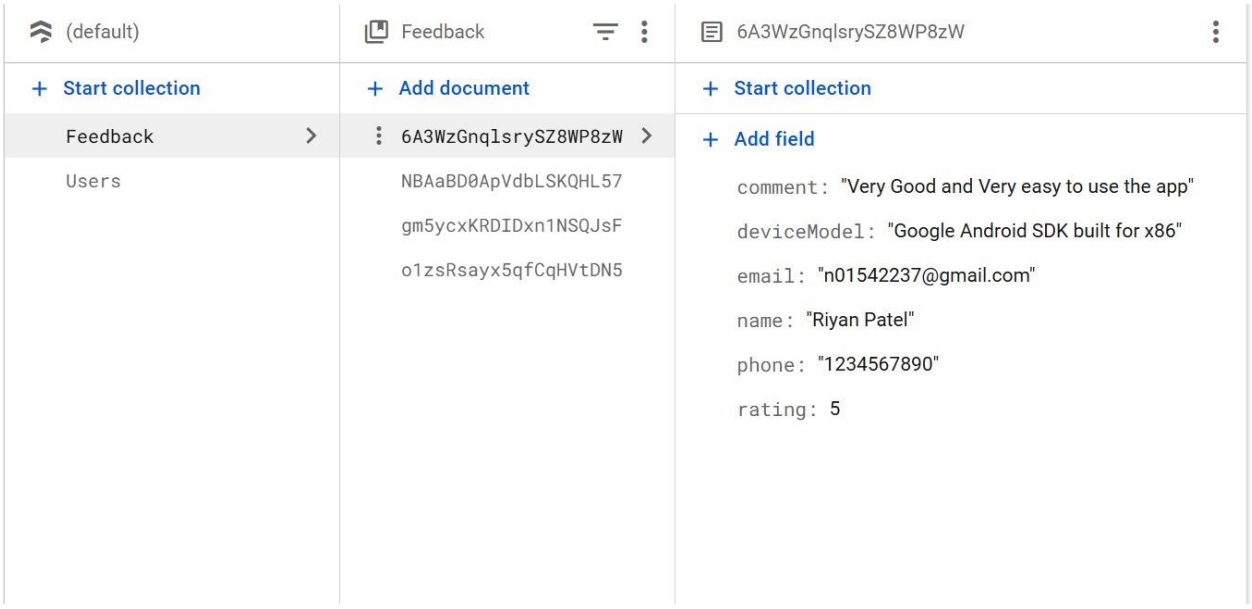
31.) System Context Diagram:

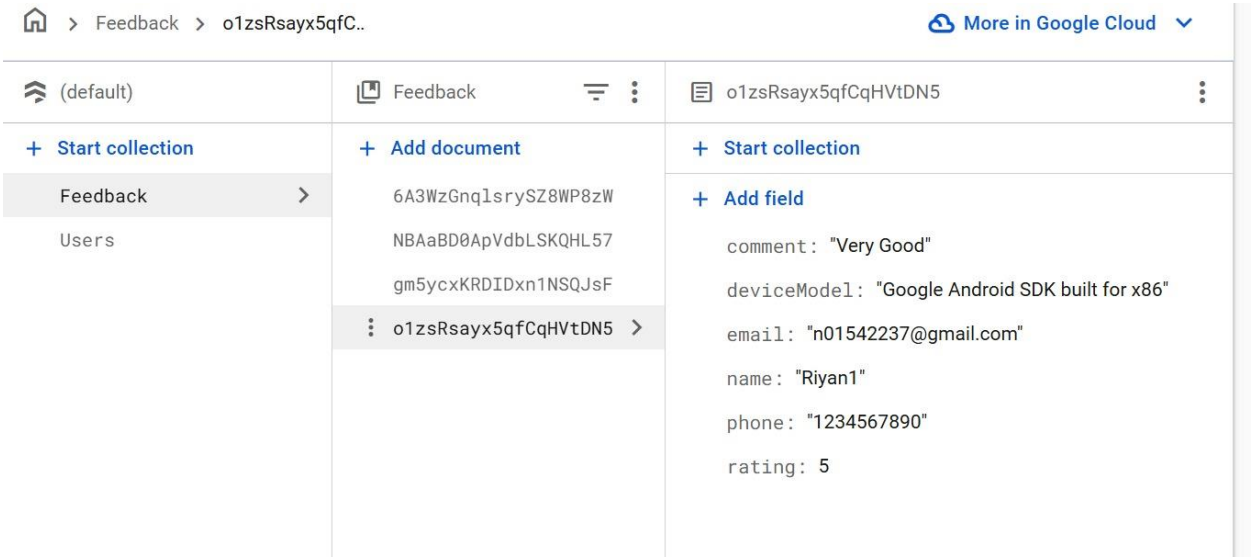


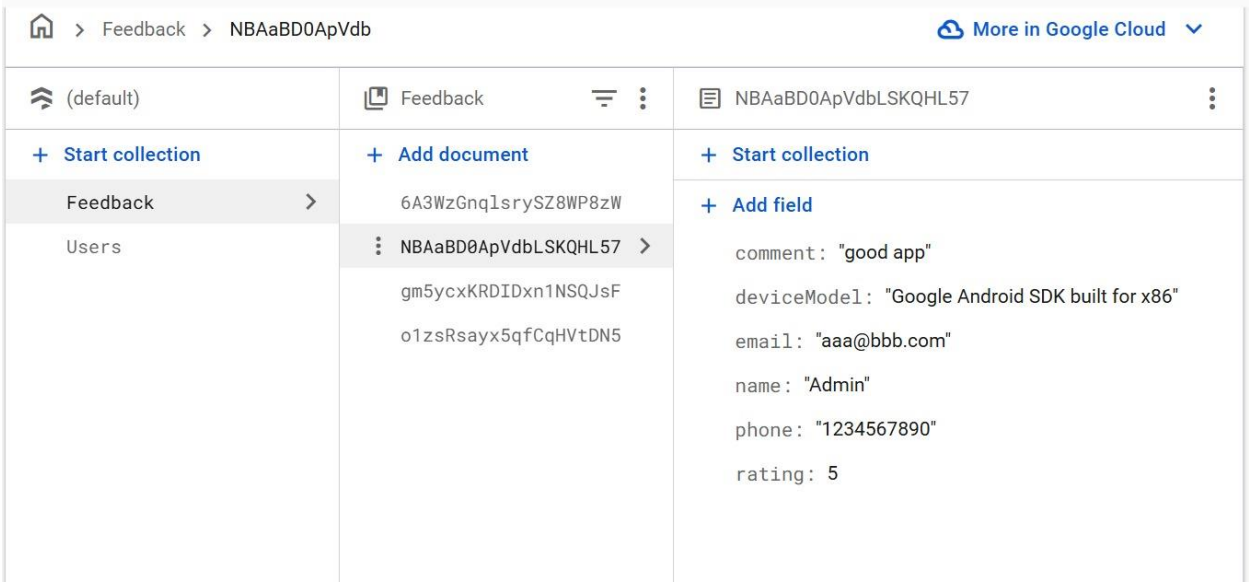
32.) Container Diagram:



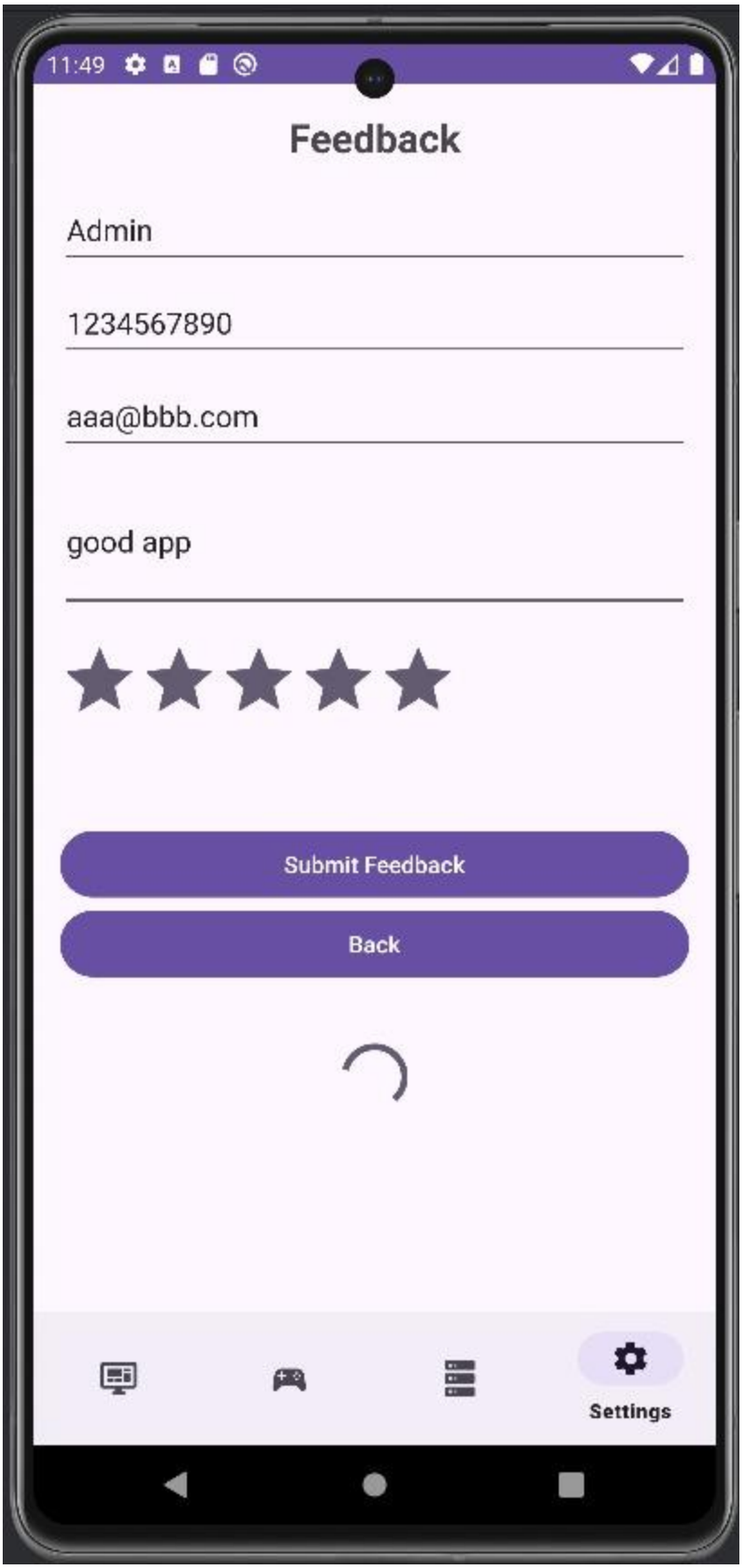
Feedback at database:







Feedback on emulator: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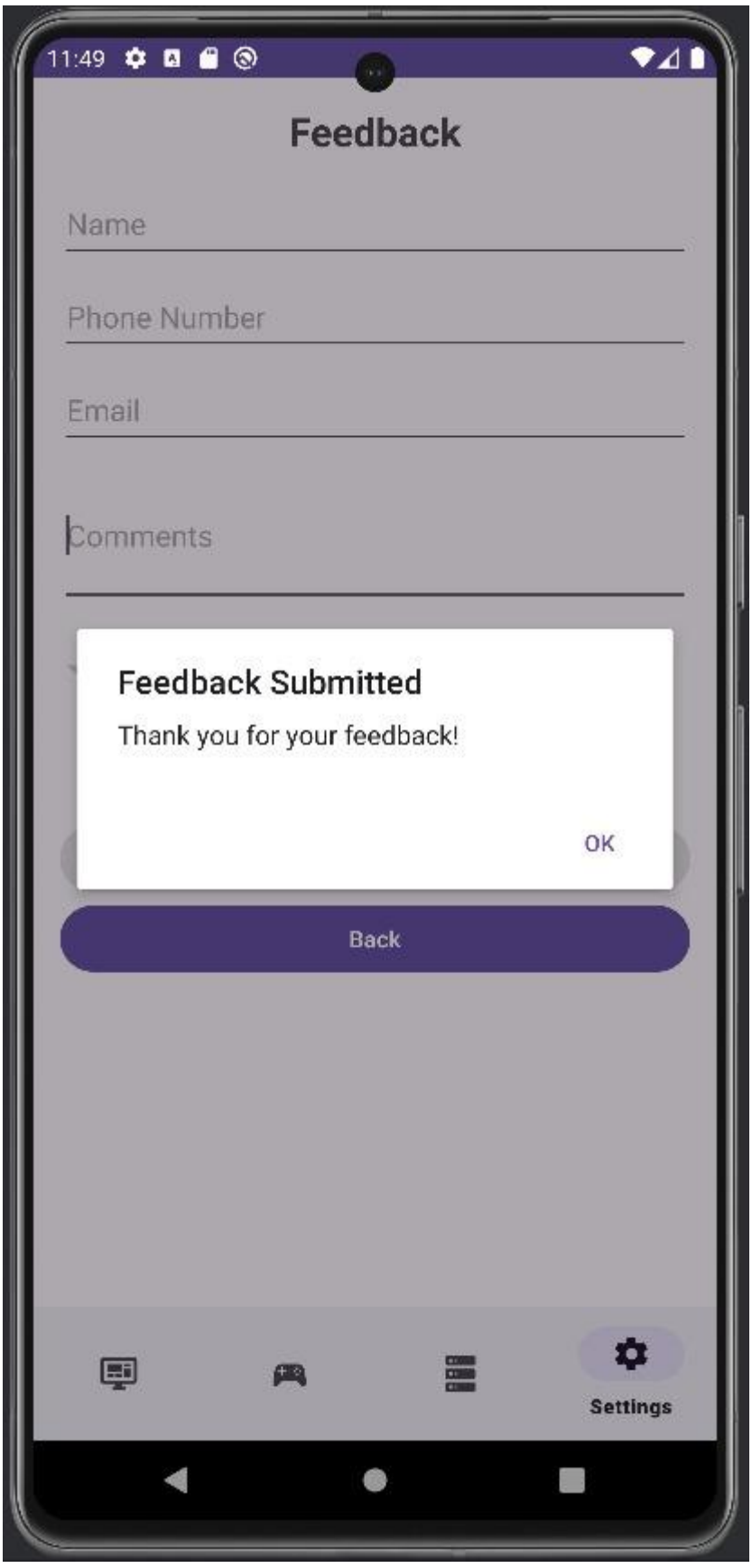
Settings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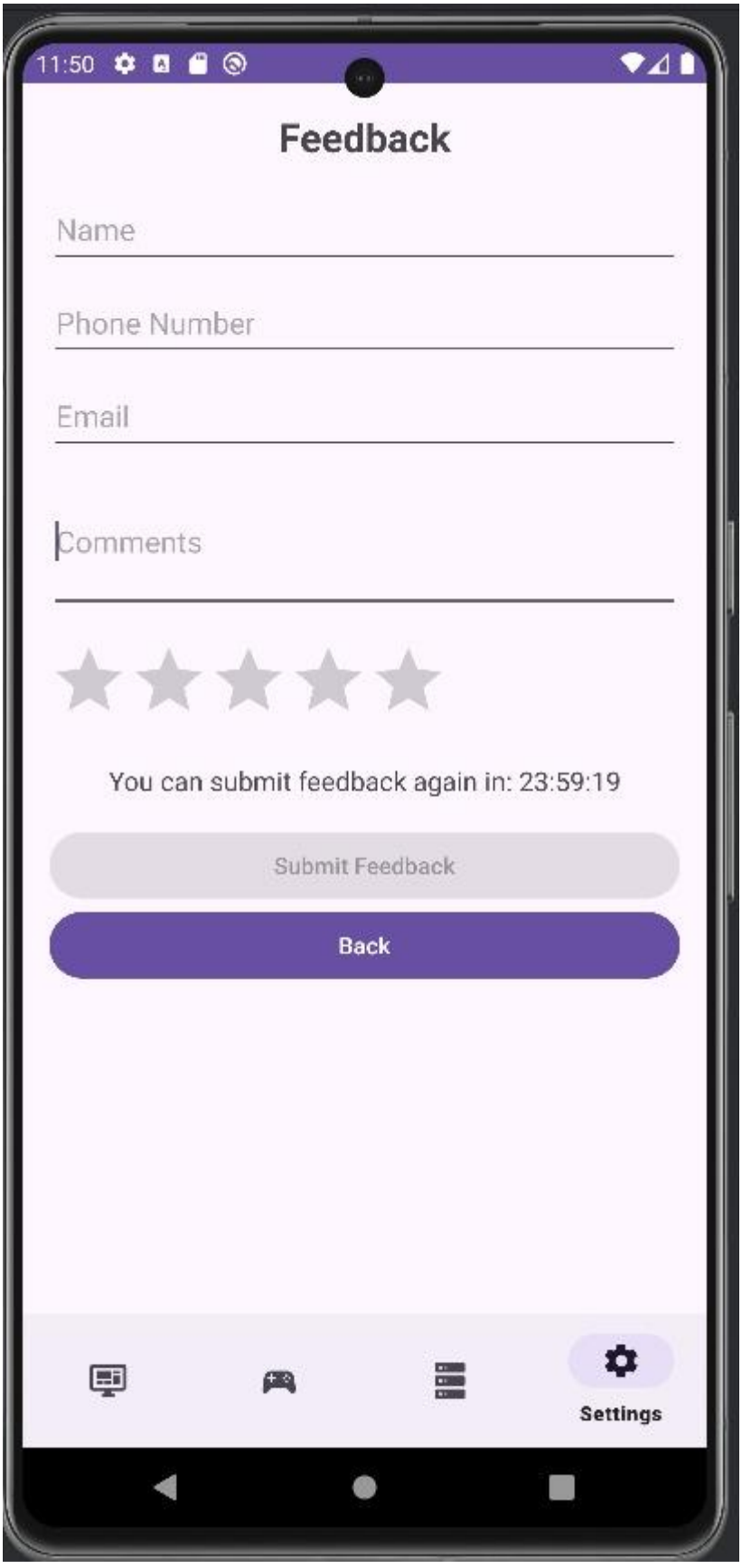
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Feedback
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