Deliverable #3

CENG-322

Secure Home Automation (Software)

By Future Home *(Team)

Development Team:

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Project Description

Project Scope & Goal:

This project aims to develop a system with various functions pertaining to the remote control of home automotive functions. The goal of developing such a system will be achieved by developing an app that allows the user to connect to and monitor these sensor controls from remote areas. Users will benefit from being granted access to all of these controls important in managing the functions and security of your home from a single app.

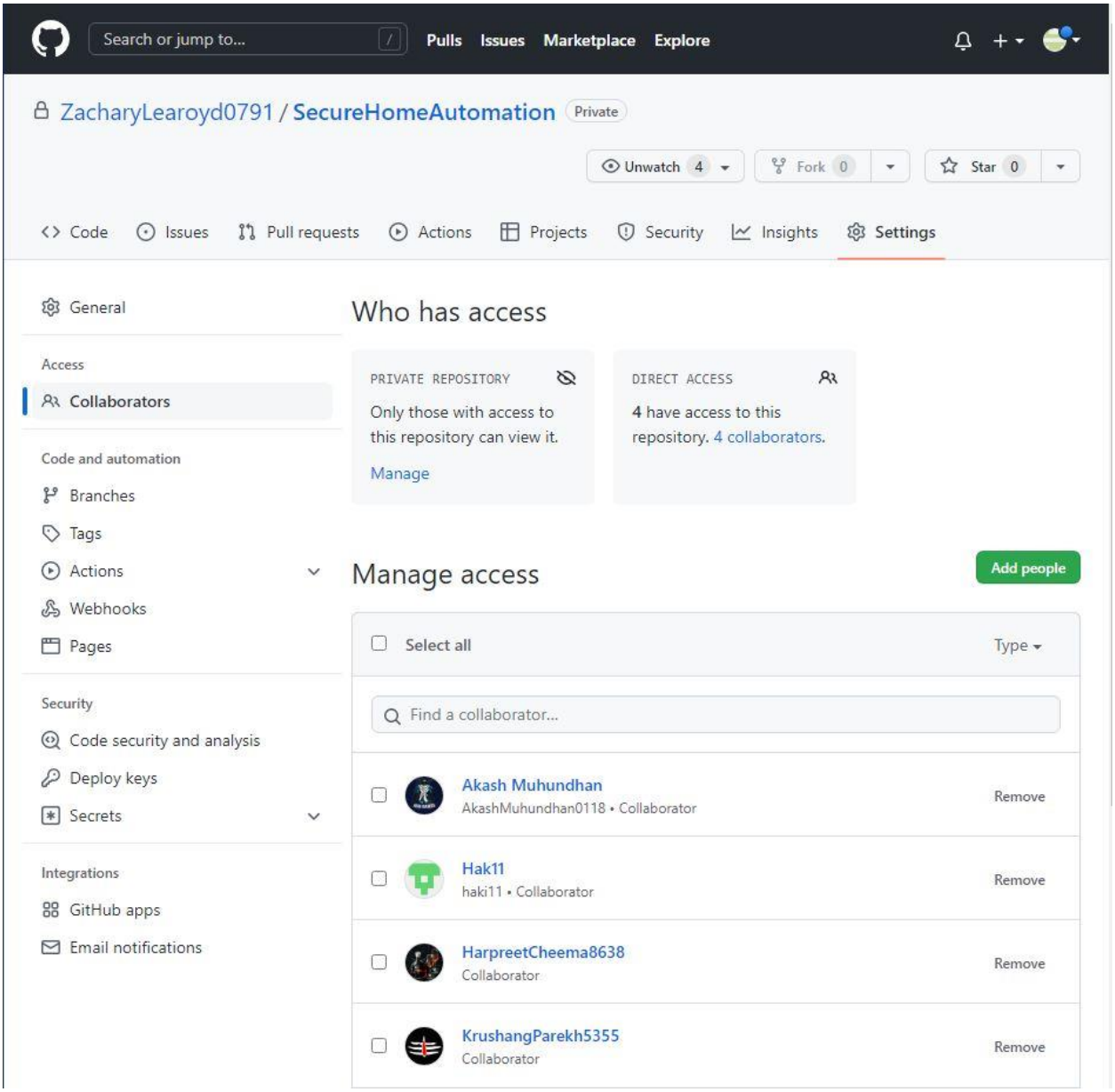
Peer Review

Name	ID	Signature	Effort
Zachary Learoyd	LRDZ0002	ZL	9.5/10
Akash Muhundhan	N01420118	AM	9/10
Harpreet Cheema	N01438638	HC	6.5/10
Krushang Parekh	N01415355	KP	9/10

GitHub

Repo link: https://github.com/ZacharyLearoyd0791/SecureHomeAutomation

Invite screenshot:



Sprints

https://momscooking.monday.com/boards/3348844741

Sprint 3

Story 1:

November 2022 - Sprint 3

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Design UI for door sensor/lock screen (pre-complete functionality) 6	ZL	Done	Oct 18	Oct 19 - Nov 2	Large

Subitem	Owner	Priority	Status	Completed Date
Create general layout design of screen	ZL	1	Done	Nov 5
Design/create additional screen for adding a new RFID key	ZL	2	Done	Nov 7
Design/create additional screen for removing an RFID key	ZL	3	Done	Nov 7
Create door status history log to show timestamps of successful locks/unlocks & unsu...	ZL	4	Done	Nov 7
Complete door lock status button/icon for locked/unlocked door (with functionality)	ZL	5	Done	Nov 5
Format fonts, colours, sizing, styles etc.	ZL	6	Done	Nov 12

Story 2:

November 2022 - Sprint 3

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Design UI for door sensor/lock screen (pre-complete functionality) 6	ZL	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for temperature sensor/control screen (pre-complete functionali... 5	HC	Done	Oct 18	Oct 19 - Nov 2	Large

Subitem	Owner	Priority	Status	Completed Date
Add AC/Heater gui and functions for turning these on and off from java	HC	1	Done	Nov 8
Add firebase database support for minimum and maximum temperature configurations	HC	2	Done	Nov 10
Add custom dialog for input minimum and maximum temperature input values	HC	3	Done	Nov 9
Add arc guage view for the current temperature indicator	HC	4	Done	Nov 13
Create landscape view for the temperature fragment	HC	5	Done	Nov 8

Story 3:

November 2022 - Sprint 3

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Design UI for door sensor/lock screen (pre-complete functionality) 6	ZL	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for temperature sensor/control screen (pre-complete functionali... 5	HC	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for lights control/config screen (pre-complete functionality) 5	AM	Done	Oct 18	Oct 19 - Nov 2	Large

Subitem	Owner	Priority	Status	Completed Date
Add scheduler with functionality	AM	1	Done	Nov 12
2 new buttons to turn on and turn off lights with functionality	AM	2	Done	Nov 9
Read data from database	AM	2	Done	Nov 10
Add timer button with functionality	AM	3	Done	Nov 13
Send data to database	AM	3	Done	Nov 10

Story 4:

November 2022 - Sprint 3

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Design UI for door sensor/lock screen (pre-complete functionality) 6	ZL	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for temperature sensor/control screen (pre-complete functionali... 5	HC	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for lights control/config screen (pre-complete functionality) 5	AM	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for window (break in detection) screen (pre-complete functionali... 7	K	Working on it	Oct 18	Oct 19 - Nov 2	Large

Subitem	Owner	Priority	Status	Completed Date
Create User Interface	K	1	Done	Oct 31
creating profile fragment UI	K	1	Done	Nov 8
Creating quick service tiles to turn On/Off lights	K	2	Done	Nov 10
Getting data from realtime database for device status	K	2	Working on it	
Getting data from realtime database for Activities	K	2	Working on it	
Implementing AsycTask	K	3	Working on it	
Creating quick service tiles to turn windows sensor On/Off	K	4	Done	Nov 9

Story 5:

November 2022 - Sprint 3

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Design UI for door sensor/lock screen (pre-complete functionality) 6	ZL	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for temperature sensor/control screen (pre-complete functionali... 5	HC	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for lights control/config screen (pre-complete functionality) 5	AM	Done	Oct 18	Oct 19 - Nov 2	Large
Design UI for window (break in detection) screen (pre-complete functionali... 7	K	Working on it	Oct 18	Oct 19 - Nov 2	Large
Design UI for account management screen (with functionality) 5	AM K	Done	Oct 18	Oct 19 - Nov 2	Medium

Subitem	Owner	Priority	Status	Completed Date
Sign Out	K AM	1	Done	Oct 19
Check if connected to Google or Firebase auth connection	K AM	1	Done	Nov 8
User name info	K AM	2	Done	Nov 8
User Email Info	K AM	2	Done	Nov 8
Button to edit profile details	K AM	3	Done	Nov 8

Sprint 4

Story 1:

November 2022 - Sprint 4

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Implement reading data from database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Medium

Subitem	Owner	Priority	Status	Completed Date
Read door frag/screen data from database (status, log, keys)	ZL	1	Done	Nov 9
Read light frag/screen data from database (status, scheduler, timer)	AM	1	Done	Nov 8
Read temperature frag/screen data from database (status, min, max)	HC	1	Done	Nov 13
Read window frag/screen data from database (status, logs, alarm)	K	1	Done	Nov 8
Read quick access/home frag/screen data from database (status)	ZL	2	Working on it	

Story 2:

November 2022 - Sprint 4

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Implement reading data from database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Medium
Implement writing sensor (or temp) data to the database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Large

Subitem	Owner	Priority	Status	Completed Date
write door frag/screen data to the database (status, log, keys)	ZL	1	Done	Nov 9
write light frag/screen data to the database (status, scheduler, timer)	AM	1	Done	Nov 8
write temperature frag/screen data to the database (status, min, max)	HC	1	Working on it	Nov 10
write window frag/screen data to the database (status, logs, alarm)	K	1	Done	Nov 8
write quick access/home frag/screen data to the database (status)	ZL	2	Working on it	

Story 3:

November 2022 - Sprint 4

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Implement reading data from database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Medium
Implement writing sensor (or temp) data to the database 5 Open	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Large
Create and implement functionality for users to leave feedback 5	ZL AM	Done	Oct 30	Oct 30 - Nov 14	Medium

Subitem	Owner	Priority	Status	Completed Date
Design UI for feedback screen	ZL	1	Done	Nov 11
Implement full functionality of UI objects (buttons, textfield etc.)	AM	2	Done	Nov 11
Connect user feedback to database and store the data	AM	2	Done	Nov 11
Create a doc for suggestions to be added to the backlog for future implementation	ZL	3	Done	Nov 14
Implement functionality for users to submit additional feedback, appending the db data	AM	4	Done	Nov 14

Story 4:

November 2022 - Sprint 4

Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Implement reading data from database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Medium
Implement writing sensor (or temp) data to the database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Large
Create and implement functionality for users to leave feedback 5	ZL AM	Done	Oct 30	Oct 30 - Nov 14	Medium
Complete UI design for the settings screen 6	ZL +3	Done	Oct 30	Oct 30 - Nov 14	Small

Subitem	Owner	Priority	Status	Completed Date
Design layout of screen	ZL	1	Done	Nov 13
Add switch to enable/disable facelock and save toshared preferences	K	2	Done	Nov 12
implement fingerprint login option and save to shared preferences	K	2	Done	Nov 13
implement portrait lock option in app settings screen and shared preferences	K	2	Done	Nov 9
implement dark mode option and save to shared preferences	ZL	2	Done	Nov 13
implement bold text option and save to shared preferences	ZL	2	Done	Nov 12

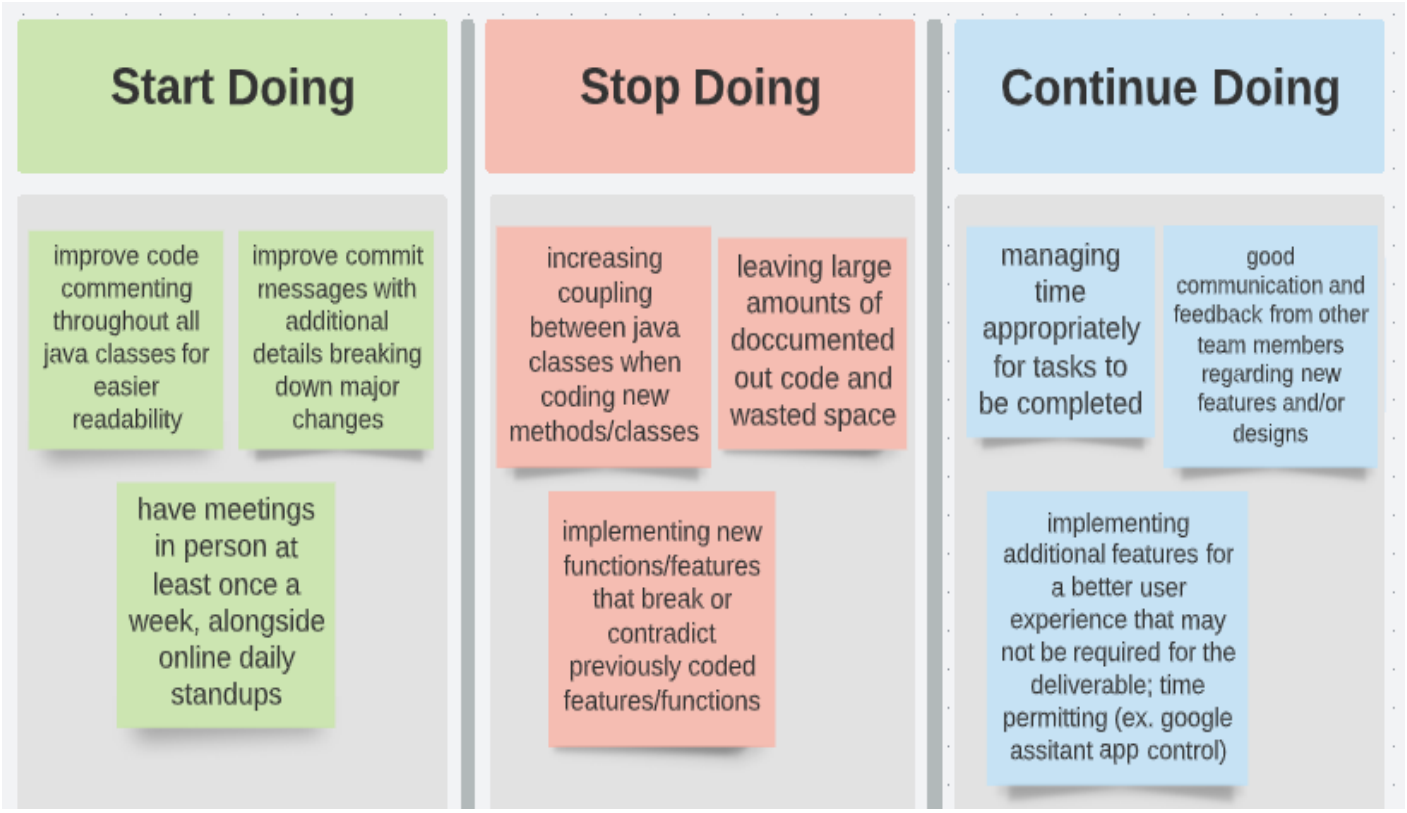
Story 5:

November 2022 - Sprint 4

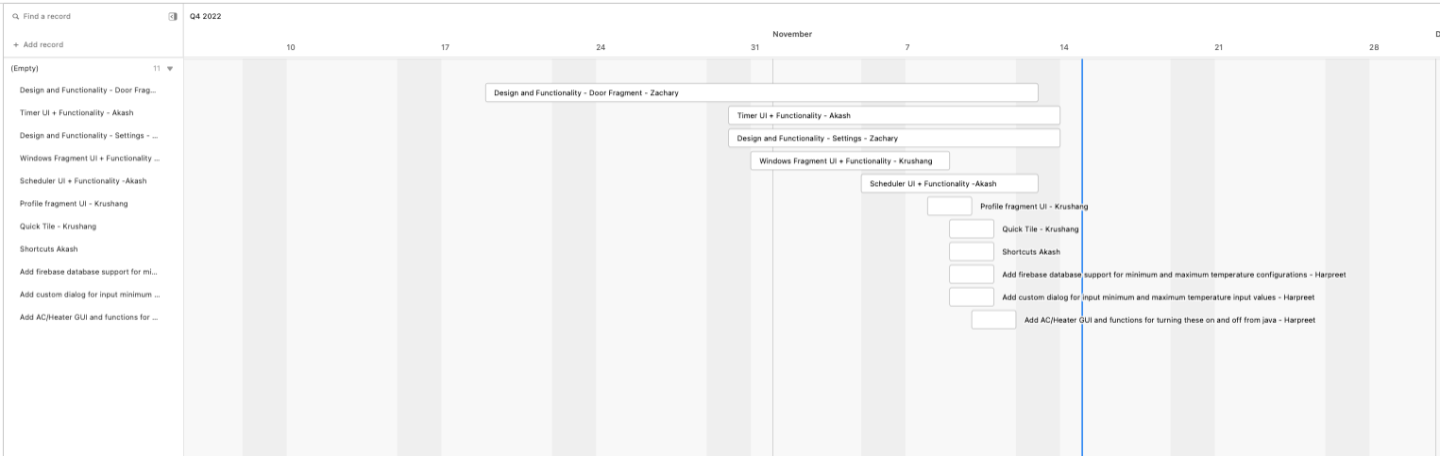
Task	Person	Status	Date Assigned	Timeline (ETA)	Size
Implement reading data from database 5 Open	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Medium
Implement writing sensor (or temp) data to the database 5	ZL +3	Working on it	Oct 30	Oct 30 - Nov 14	Large
Create and implement functionality for users to leave feedback 5	ZL AM	Done	Oct 30	Oct 30 - Nov 14	Medium
Complete UI design for the settings screen 6	ZL +3	Done	Oct 30	Oct 30 - Nov 14	Small
Complete UI for edit profile 5		Done		Nov 1 - 14	Medium

Subitem	Owner	Priority	Status	Completed Date
Design UI layout	K	1	Done	Nov 8
Button to save changes	K	2	Done	Nov 8
Add an option to edit name	K	3	Done	Nov 8
Added option to edit email, phone number	K	3	Done	Nov 8
Button to change password	K	4	Done	Nov 13

Sprint Retrospective

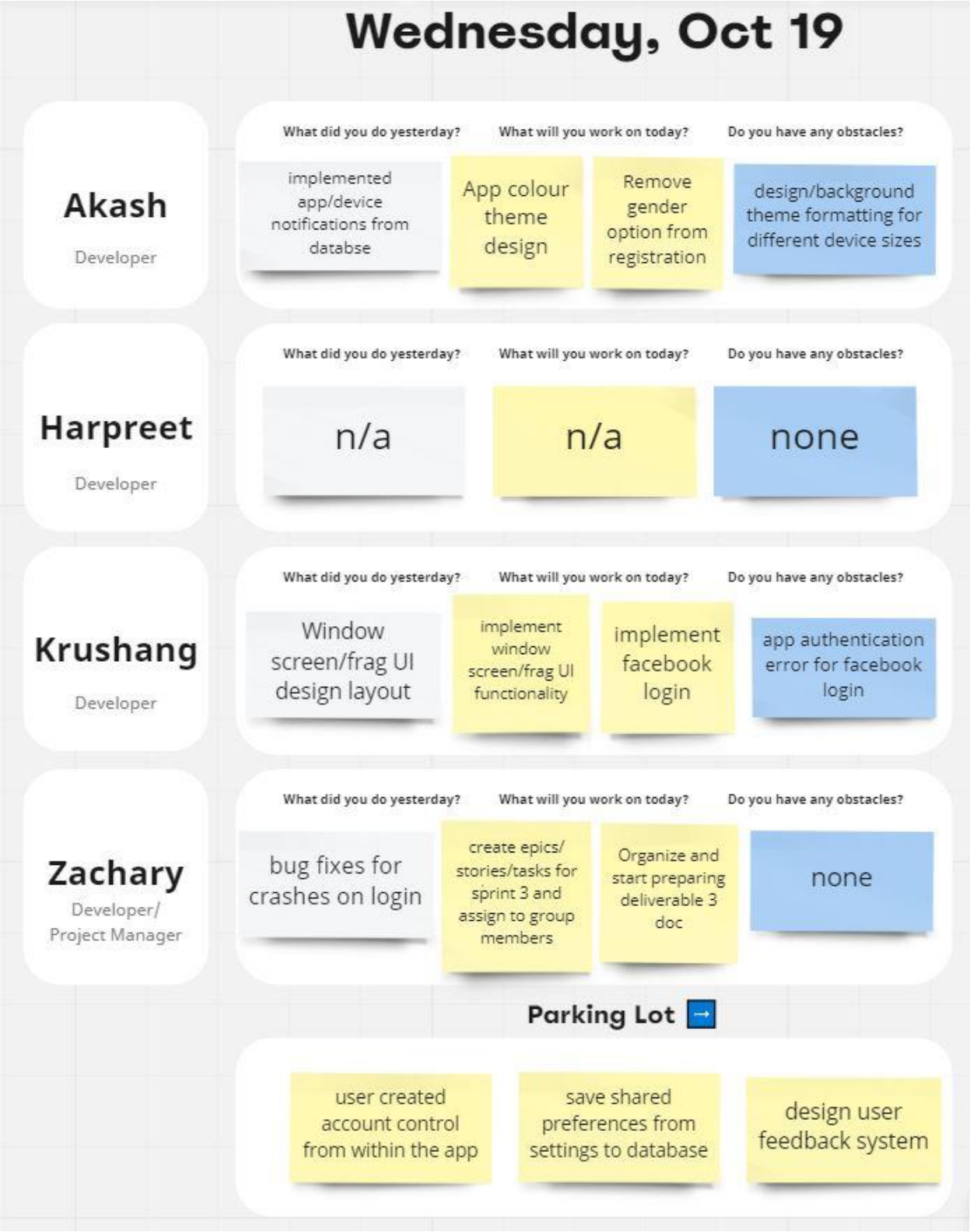


Gantt Chart

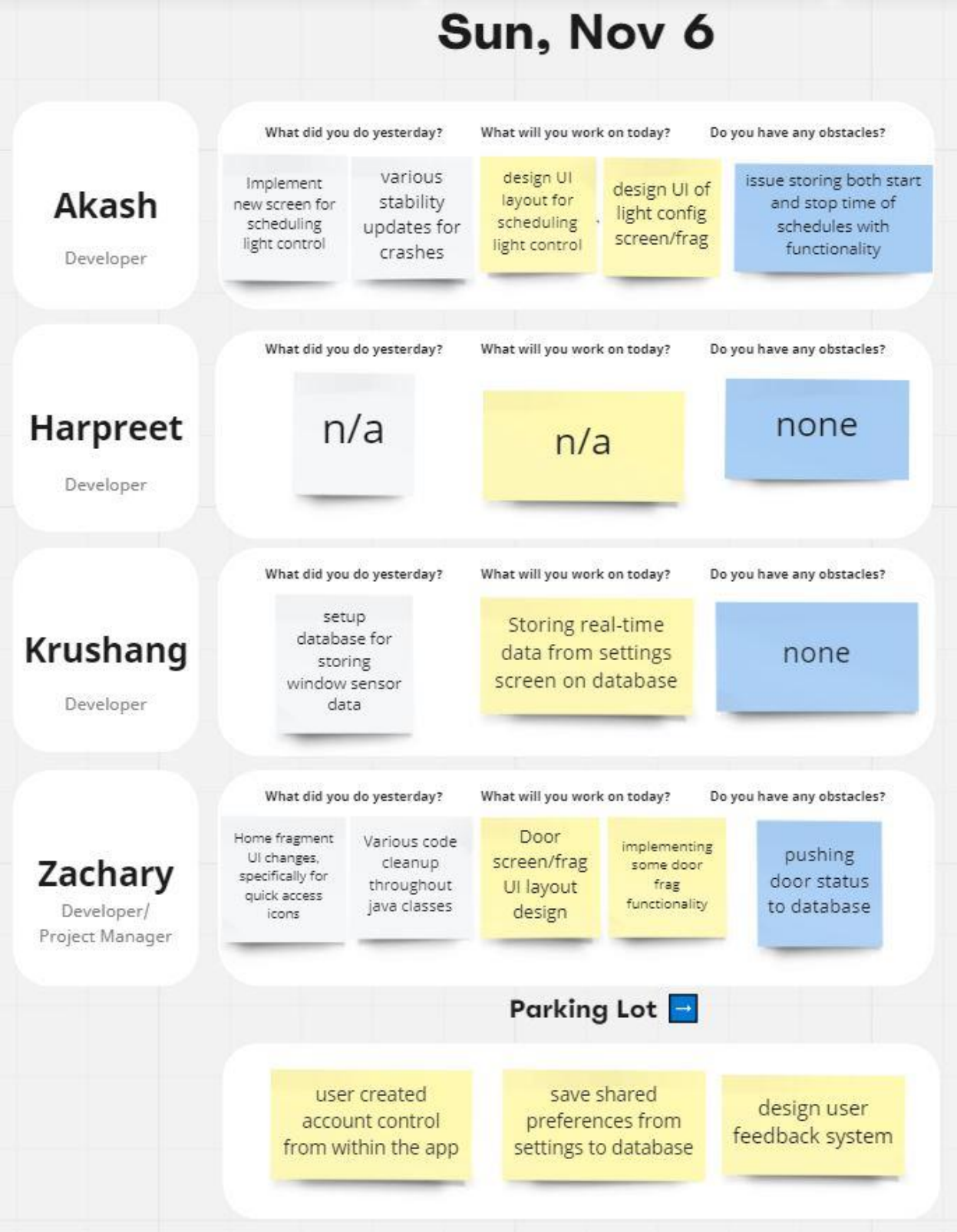

Find a record
Add record
(Empty)
11
Design and Functionality - Door Frag...
Timer UI + Functionality - Akash
Design and Functionality - Settings - ...
Windows Fragment UI + Functionality ...
Scheduler UI + Functionality -Akash
Profile fragment UI - Krushang
Quick Tile - Krushang
Shortcuts Akash
Add firebase database support for mi...
Add custom dialog for input minimum ...
Add AC/Heater GUI and functions for ...
Q4 2022
November
10
17
24
31
7
14
21
28
Design and Functionality - Door Fragment - Zachary
Timer UI + Functionality - Akash
Design and Functionality - Settings - Zachary
Windows Fragment UI + Functionality - Krushang
Scheduler UI + Functionality -Akash
Profile fragment UI - Krushang
Quick Tile - Krushang
Shortcuts Akash
Add firebase database support for minimum and maximum temperature configurations - Harpreet
Add custom dialog for input minimum and maximum temperature input values - Harpreet
Add AC/Heater GUI and functions for turning these on and off from java - Harpreet

Daily Standups

Meeting #1



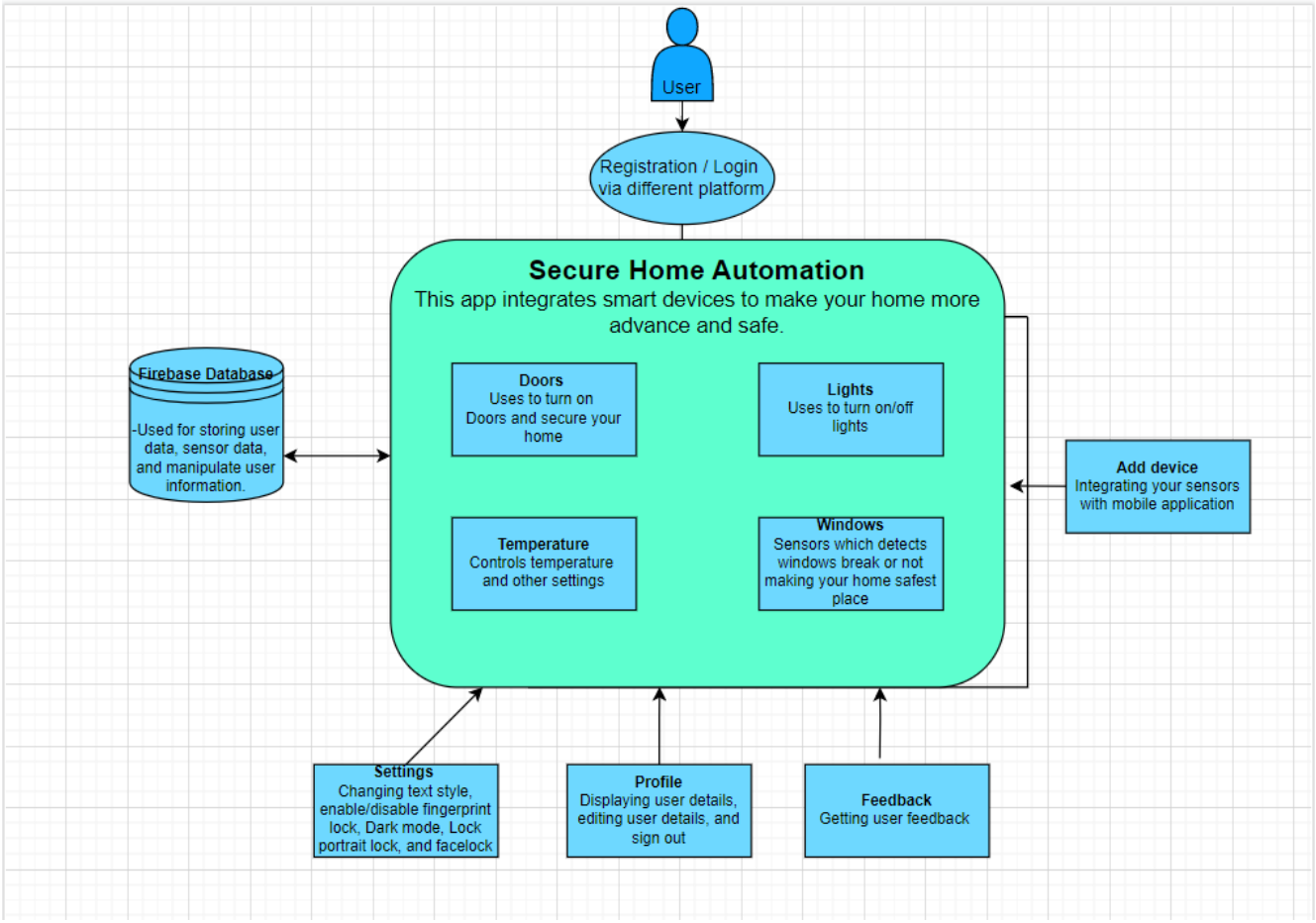
Meeting #2


Sun, Nov 6
Akash
Developer
What did you do yesterday?
Implement new screen for scheduling light control
various stability updates for crashes
What will you work on today?
design UI layout for scheduling light control
design UI of light config screen/frag
Do you have any obstacles?
issue storing both start and stop time of schedules with functionality
Harpreet
Developer
What did you do yesterday?
n/a
What will you work on today?
n/a
Do you have any obstacles?
none
Krushang
Developer
What did you do yesterday?
setup database for storing window sensor data
What will you work on today?
Storing real-time data from settings screen on database
Do you have any obstacles?
none
Zachary
Developer/ Project Manager
What did you do yesterday?
Home fragment UI changes, specifically for quick access icons
Various code cleanup throughout java classes
What will you work on today?
Door screen/frag UI layout design
implementing some door frag functionality
Do you have any obstacles?
pushing door status to database
Parking Lot
user created account control from within the app
save shared preferences from settings to database
design user feedback system

Meeting #3

Friday, Nov 11
Akash
Developer
What did you do yesterday?
Device notifications for light control (on/off)
implement light screen/frag status to database
What will you work on today?
send user account data to database
code cleanup (remove hardcoded text)
retrieve user data, sensor data, light settings from databse
Do you have any obstacles?
none
Harpreet
Developer
What did you do yesterday?
implement code to handle min/max temp set by the user for temp frag
min/max temperature settings stored to database
What will you work on today?
bug fixes for min/max functionality not working correctly
Do you have any obstacles?
issues with storing min/max temp settings to database
Krushang
Developer
What did you do yesterday?
Remove password as plain text in database
create device quick tiles for window sensor and light sensor activate/ deactivate
What will you work on today?
create fingerprint login functionality
save user shared preferences from settings screen/frag
Do you have any obstacles?
some shared preferences are deleted on app close and reopen
Zachary
Developer/ Project Manager
What did you do yesterday?
Code cleanup, added comments, removed hardcoded text
formatted all fragment screens title alignment
crash fixes created from UserInfo class, changed manifest file for action bar name
What will you work on today?
Update home screen layout to better fit for different screen sizes
implement simulated buttons pressed on quick access icons/buttons
implement new review screen for customer feedback
Do you have any obstacles?
none
Parking Lot
user created account control from within the app

System Context Diagram



Design Principles/Patterns

Design principles used in code:

In our program, some of the classes use the DRY (Don't repeat yourself) principle. This principle states that the design should not have multiple repeated code. We have a class just for Database users where we can grab user information such as Name, Email and user ID. We call the information needed from the class so we do not repeat the code in each class.

We also use KISS (Keep it simple, stupid) principle. This principle states that the design should be as simple as possible. We have a class for profile information where it is simple. It is just information about the user and does not have anything that does not make sense within the class.

Design patterns used in code:

We used Object oriented programming in the majority of our code. This design pattern is about creating objects that contain both data and methods. One of the classes that uses OOP is the UserInfo class, where it uses data from the database and outputs it in its own method. An object can be created of type UserInfo to retrieve various account data through methods.

We used the Builder Pattern in some of our classes. This design pattern, using getters and setters, works step by step, before finally returning a complete object. The class we used builder pattern is in our HomeFragment and UserInfo classes, in which we get user id info from another class, then build the next step and send it to another method to build a unique key for the database. The UserInfo class uses getters to retrieve all user account data to build a complete profile, accessible by the AccountFragment.

Current Progress

Brief description of current progress:

We have completed fingerprint lock for authentication, created a new UI for windows fragment, profile fragment, Temp fragment, and all others. We also have implemented reading and writing from the database in multiple fragments. In edit profile fragment implemented the feature to add an image on the profile photo from the device which user selects. We have also implemented some advanced features like quick setting tiles, short cuts, moreover, we are also working to integrate smart A.I systems like google assistance to work.

Features added since deliverable 2:

1. Quick setting tiles service, from which some things can be done from the control panel itself.
2. We have also created shortcuts by which when long pressed on the app icon you can have quick access to some of the features like turn on/off lights.
3. We have also added fingerprint functionality through which if enabled from settings users have to pass with an extra security layer by accessing it after validating his/she fingerprint.
4. We have also implemented reading data from the firebase database. Like sending feedback to the user and their review.
5. Added remember me functionality for login.
6. We have implemented the UI of almost all screens.

Runtime permissions implemented:

We are asking permission from the user to Allow us to send notification, get their location, get their Bluetooth, using their biometric fingerprint.

Customer Reviews

Fig 1. Feedback screen with test feedback to be sent to the database:

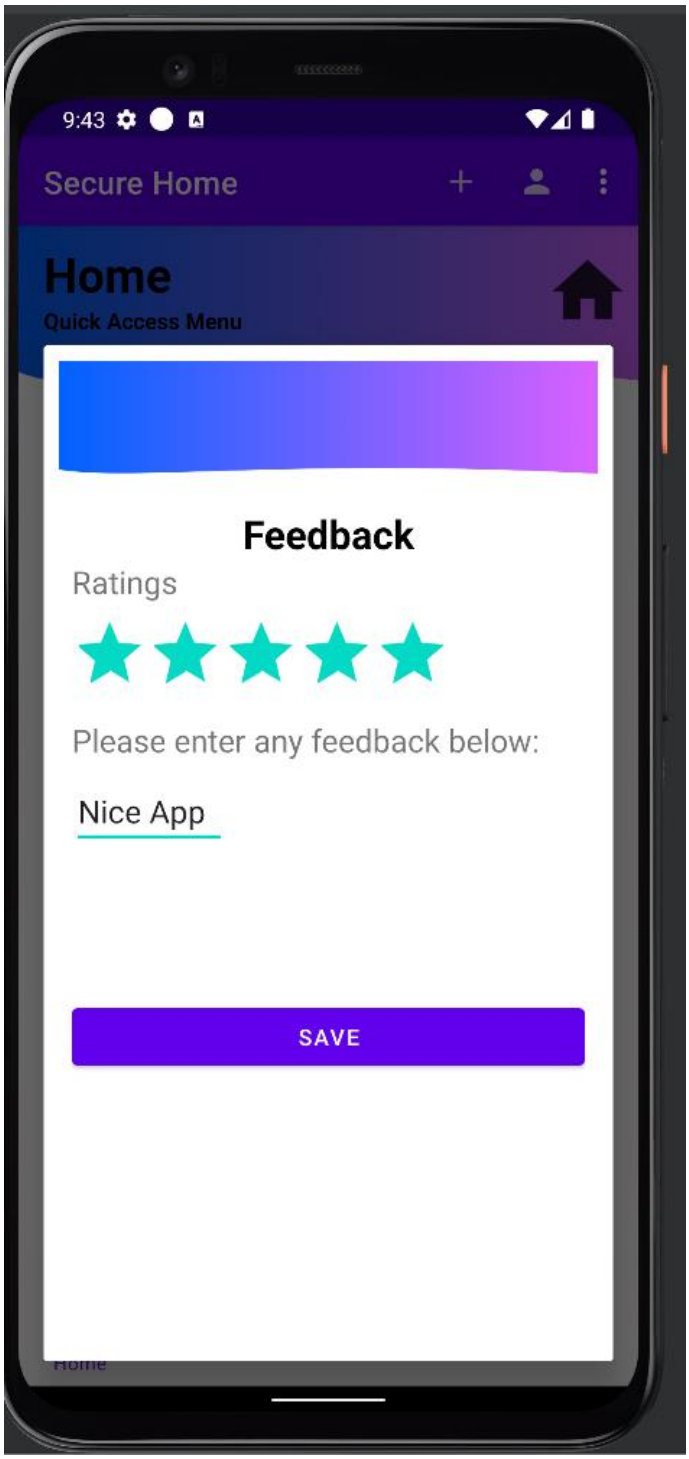
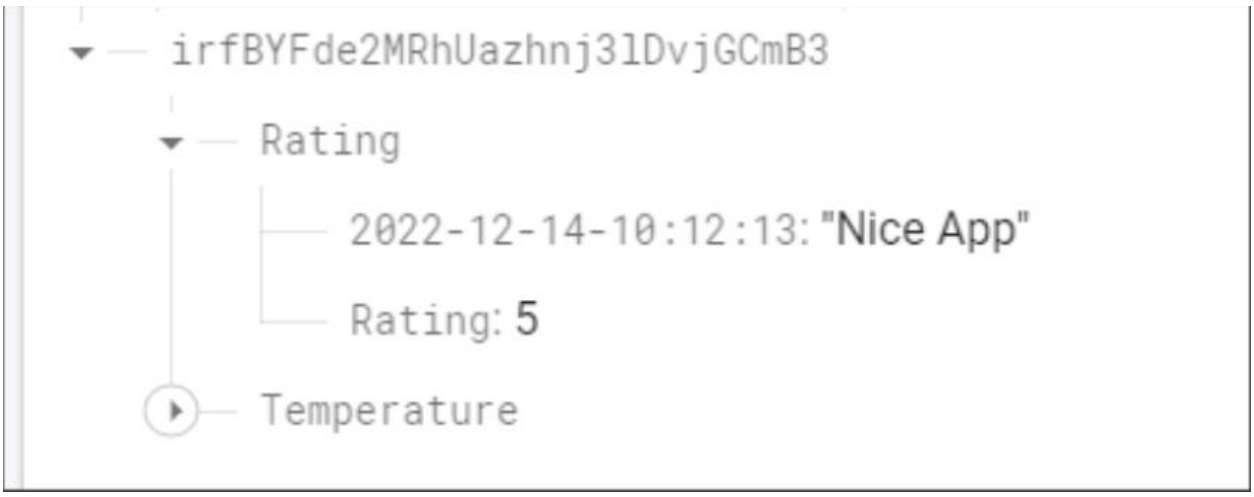



Fig 2. Feedback stored in the database under unique user ID: