CENG-322 Deliverable 3

Team #1 - **Algaerithms Inc.**

Project name - Phytoplankton-based air purifiers

Name	Student ID	Github ID	Signature	Effort
Julian Imperial	N01638310	JulianImperial8310	J.I	100%
Dhairya Pal	N01576099	DhairyaPal6099	D.P	100%
Sanskriti Mansotra	N01523183	SanskritiMansotra3183	S.M	100%
Dharmik Shah	N01581796	DharmikShah1796	D.S	100%

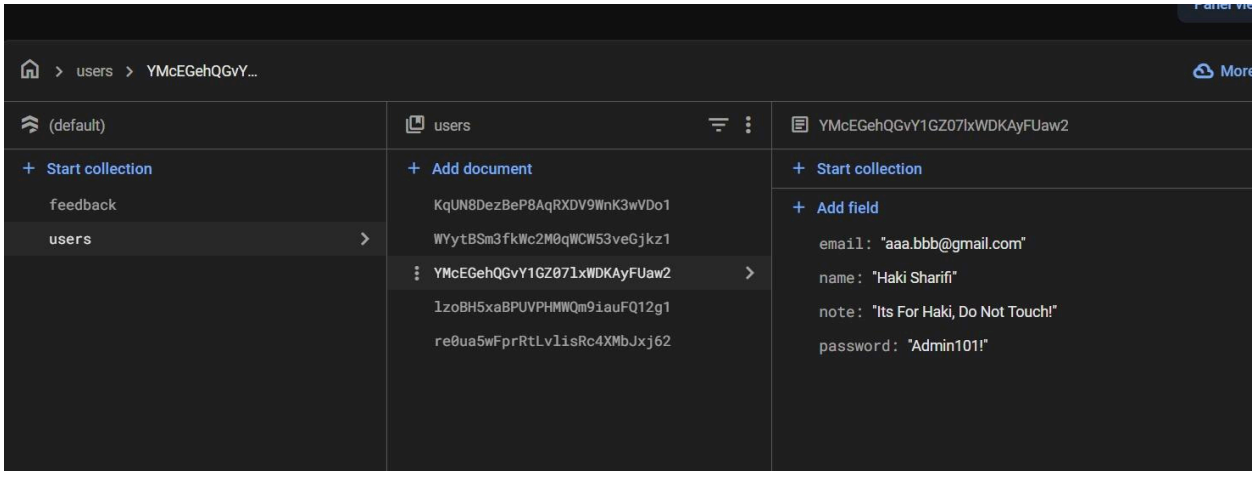
Brief description of the project - A smart and eco-friendly air purification system that uses phytoplankton to naturally convert CO_2 into oxygen. The system connects with an Android app for real-time monitoring, automated alerts, and sustainability-focused feedback.

GitHub Repo link - [Algaerithms-Inc/PhytoplanktonAirSystems]

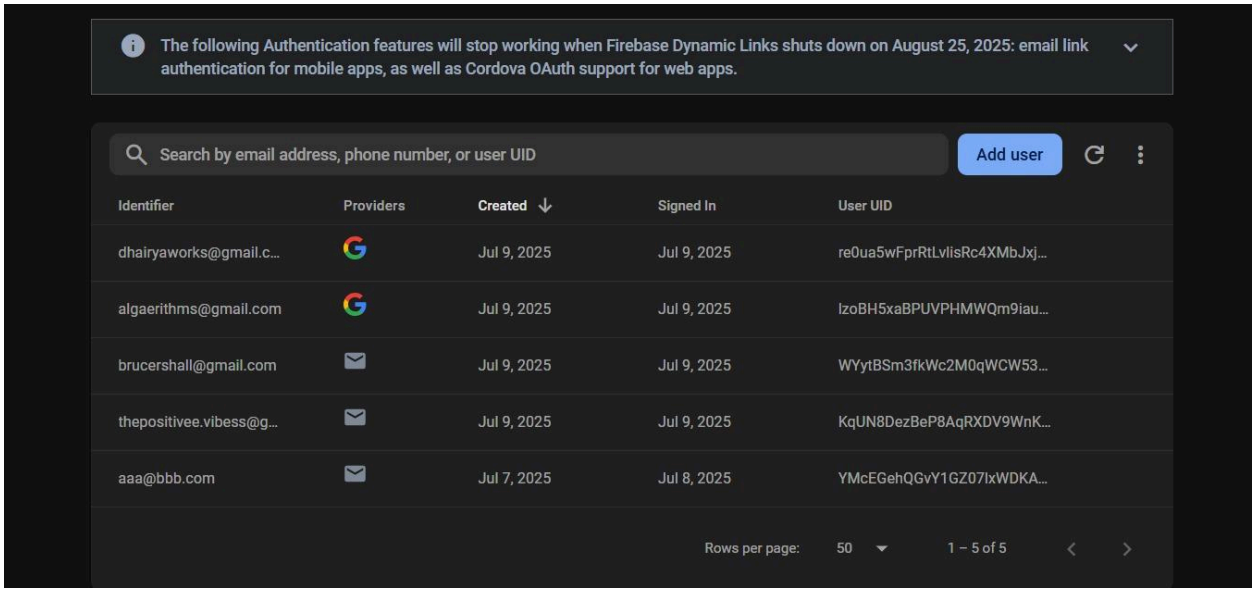
Login functionality, I will use the following credentials to test your app:

Email: aaa@bbb.com Password: Admin101!

14. Verify you had created an account in the DB with credentials above. Take a screenshot showing the account above in the DB.



15. Screenshot showing the Authentication and users logged in using gmail and their email accounts, i.e. below: some used their credentials, some used gmail accounts.



17. You are working on sprint 3. Describe in detail, the work that has been completed by each team member in this sprint only.

Answer:

Julian - Worked on feedback UI, and was the Scrum Master of this sprint, working on the scrum dashboard alongside the Gantt chart.

Dharmik - Worked on Registration screen, and helped with the functionality of the settings and feedback screen in regards to the DB reading and writing to it.
Sanskriti - Updated the Settings screen to have dark mode, privacy and terms of service, delete account, added an accessibility function as well. Basically completed the settings functionality.

Dhairya - Worked on the menu action bar, at the top of our application to have all the features fully functional, which includes, Support, Notifications, Achievements, Share, of which Notifications asks the user for permission.

20. Take a screenshot showing data is stored in Shared Pref:

SettingsFragment.java | settings.xml | strings.xml | fragment_settings.xml

Reader Mode

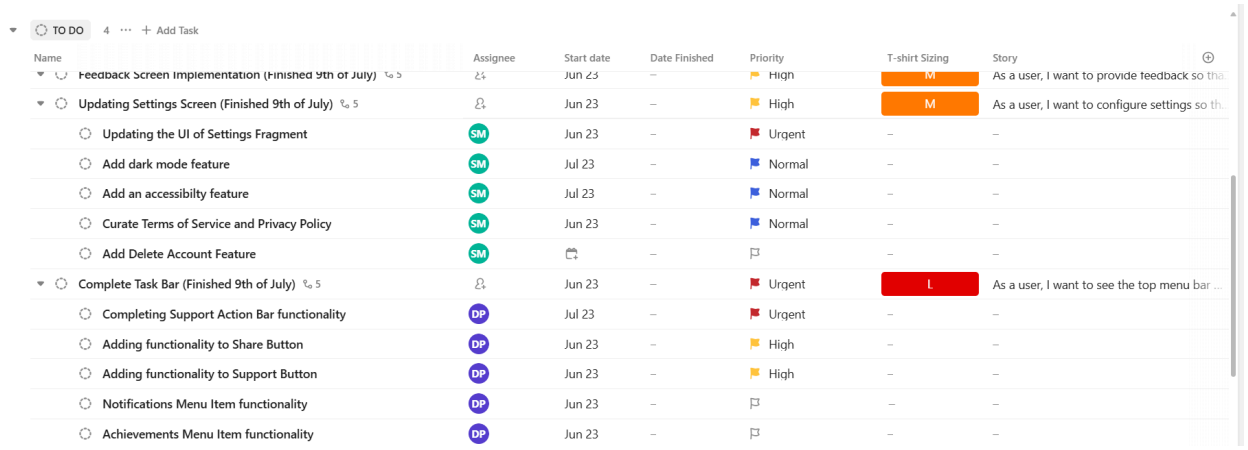
```xml
<?xml version='1.0' encoding='utf-8' standalone='yes' ?>
<map>
    <boolean name="lockPortrait" value="true" />
    <boolean name="reduce_motion" value="true" />
    <boolean name="darkMode" value="false" />
</map>
```

25. Take a screenshot showing clearly the stories and breakdown of tasks with all details for sprint 3 only.

- As a user, I want to register and log in securely so that I can access personalized app features.
- As a user, I want to provide feedback so that the developers can improve the app based on my experience.
- As a user, I want to configure settings so that I can personalize the app experience.
- As a user, I want to see the top menu bar working with its intended functionality

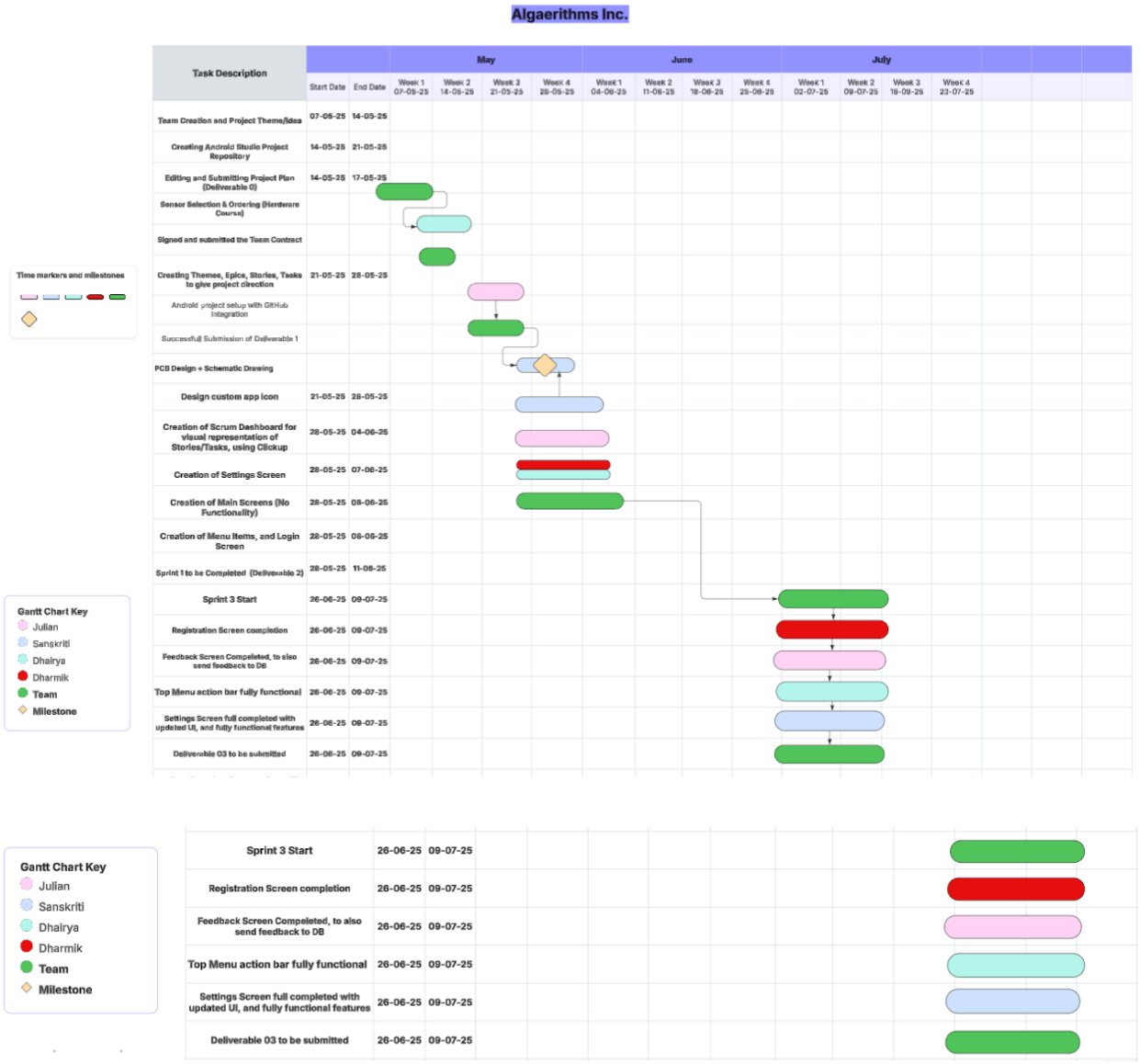
27. Must have a minimum of 4 stories and 5 tasks per story. Update gantt chart showing main milestones and work progress. You can use https://try.airtable.com/gantt2 or any other tool. Do the research and select the proper tool. Excel or word will not be accepted.

Name	Assignee	Start date	Date Finished	Priority	T-shirt Sizing	Story
Registration Screen (Finished 9th of July) 5		Jun 26	–	Urgent	L	As a user, I want to register and log in se…
Design and implement the Registration Screen	DS	Jun 26	–	Urgent	–	–
Validate user input on the registration screen	DS	Jun 26	–	High	–	–
Integrate Gmail login using Firebase	DS	Jun 26	–	High	–	–
Implement "Remember Me"	DS	Jun 26	–	Normal	–	–
Implement login functionality	DS	Jun 26	–	High	–	–
Feedback Screen Implementation (Finished 9th of July) 5		Jun 23	–	High	M	As a user, I want to provide feedback so tha…
Design the Customer Feedback Screen Fragment	JI	4 days ago	–	Urgent	–	–
Implement input validation	JI	4 days ago	–	High	–	–
Programmatically get the device model	DS JI	4 days ago	–	Normal	–	–
Save feedback data to cloud DB	DS JI	4 days ago	–	High	–	–
Implementing Auto filling for edit text fills	DS JI	6 days ago	–	Normal	–	–
Updating Settings Screen (Finished 9th of July) 5		Jun 23	–	High	M	As a user, I want to configure settings so th…



TO DO 4 + Add Task						
Name	Assignee	Start date	Date Finished	Priority	T-shirt Sizing	Story
Feedback Screen Implementation (Finished 9th of July) 5		Jun 23	–	High	M	As a user, I want to provide feedback so tha...
Updating Settings Screen (Finished 9th of July) 5		Jun 23	–	High	M	As a user, I want to configure settings so th...
Updating the UI of Settings Fragment	SM	Jun 23	–	Urgent	–	–
Add dark mode feature	SM	Jul 23	–	Normal	–	–
Add an accessibilty feature	SM	Jul 23	–	Normal	–	–
Curate Terms of Service and Privacy Policy	SM	Jun 23	–	Normal	–	–
Add Delete Account Feature	SM		–		–	–
Complete Task Bar (Finished 9th of July) 5		Jun 23	–	Urgent	L	As a user, I want to see the top menu bar ...
Completing Support Action Bar functionality	DP	Jul 23	–	Urgent	–	–
Adding functionality to Share Button	DP	Jun 23	–	High	–	–
Adding functionality to Support Button	DP	Jun 23	–	High	–	–
Notifications Menu Item functionality	DP	Jun 23	–		–	–
Achievements Menu Item functionality	DP	Jun 23	–		–	–

28. The gantt chart must show the work for a minimum of 10 components and the time lines. Focus on main components and not every small task.



Gantt Chart Key
Julian
Sanskriti
Dhairya
Dharmik
Team
Milestone
Sprint 3 Start 26-06-25 09-07-25
Registration Screen completion 26-06-25 09-07-25
Feedback Screen Compeleted, to also send feedback to DB 26-06-25 09-07-25
Top Menu action bar fully functional 26-06-25 09-07-25
Settings Screen full completed with updated UI, and fully functional features 26-06-25 09-07-25
Deliverable 03 to be submitted 26-06-25 09-07-25

29. Add a column to show the person assigned.

30. The Gantt chart should reflect the entire project from start to end. One of the main goals for gantt chart is to know the final delivery date for this term.

32. Take a screenshot of the gantt chart. Updated records of the daily stand-ups outcome, use any tool you like, include a screenshot into the document. Tables include date, outcome and who missed the daily standup.

33. **Daily standup :**

Date	Team Member	Yesterday's Work	Today's Plan	Blockers
2025-06-25	Julian	Created the UI for Feedback screen and linked it to the Navigation Drawer	Write methods to store feedback in the database	None
	Dhairya	Moved around the menu bar options and implemented share functionality	Create Contact Support screen and implement functionality	None
	Sanskriti	Researched and prepared Privacy Policy and Terms of Service	Draft and write app policy documents	None
	Dharmik	Worked on Registration Activity	Review and integrate registration with app flow	None
2025-06-28	Julian	Wrote DB methods for feedback	Update Scrum dashboard and finalize feedback integration	None
	Dhairya	Created Contact Support screen and implemented functionality	Start building Achievements screen	None
	Sanskriti	Implemented App Preferences feature	Fix UI of Settings screen for alignment and spacing	None
	Dharmik	Worked on Login Activity	Start Account Info screen layout	None
2025-07-07	Julian	Updated Scrum dashboard and wrote Sprint goals	Polish dashboard and finalize submission material	None
	Dhairya	Created Achievements screen and implemented functionality	Assist with final UI polishing and screen testing	None
	Sanskriti	Fixed Settings screen UI (functionality complete)	Start developing accessibility features (color filtering)	None
	Dharmik	Worked on Account Info and Feedback screens	Complete feedback logic and connect to Firebase DB	None

35. Document two different design principles used in the code. Copy the code you used, and add your explanations.

Answer :

1. KISS (Keep It Simple, Stupid) :

```
darkModeSwitch.setOnCheckedChangeListener((buttonView, isChecked) -> {
    prefs.edit().putBoolean(getString(R.string.dark_mode), isChecked).apply();
```

```
    AppCompatDelegate.setDefaultNightMode(
        isChecked ? AppCompatDelegate.MODE_NIGHT_YES :
AppCompatDelegate.MODE_NIGHT_NO
    );
});
```

This code implements dark mode with a minimal, direct approach — toggling the switch saves the value to `SharedPreferences` and immediately applies the theme using `AppCompatDelegate`. No unnecessary abstraction is used, reflecting the **KISS** principle through clarity and simplicity.

2. SRP (Single Responsibility Principle):

```
private void togglePasswordVisibility(EditText passwordEditText) {
    int inputType = passwordEditText.getInputType();
    if ((inputType & InputType.TYPE_TEXT_VARIATION_VISIBLE_PASSWORD) ==
InputType.TYPE_TEXT_VARIATION_VISIBLE_PASSWORD) {
        passwordEditText.setInputType(InputType.TYPE_CLASS_TEXT |
InputType.TYPE_TEXT_VARIATION_PASSWORD);
        passwordEditText.setCompoundDrawablesWithIntrinsicBounds(0, 0,
R.drawable.visibility_on, 0);
    } else {

passwordEditText.setInputType(InputType.TYPE_TEXT_VARIATION_VISIBLE_PASSWORD);
        passwordEditText.setCompoundDrawablesWithIntrinsicBounds(0, 0,
R.drawable.visibility_off, 0);
    }
    passwordEditText.setSelection(passwordEditText.getText().length());
}
```

This method only handles toggling the password visibility and nothing else. By separating this logic from `onCreate()`, it adheres to the Single Responsibility Principle, making the code modular, reusable, and easier to test or modify without affecting unrelated parts.

36. Document one different design pattern used in the code.

```
public class AchievementManager {
    private static final FirebaseFirestore firestore =
FirebaseFirestore.getInstance();
    private static AchievementManager instance;
```

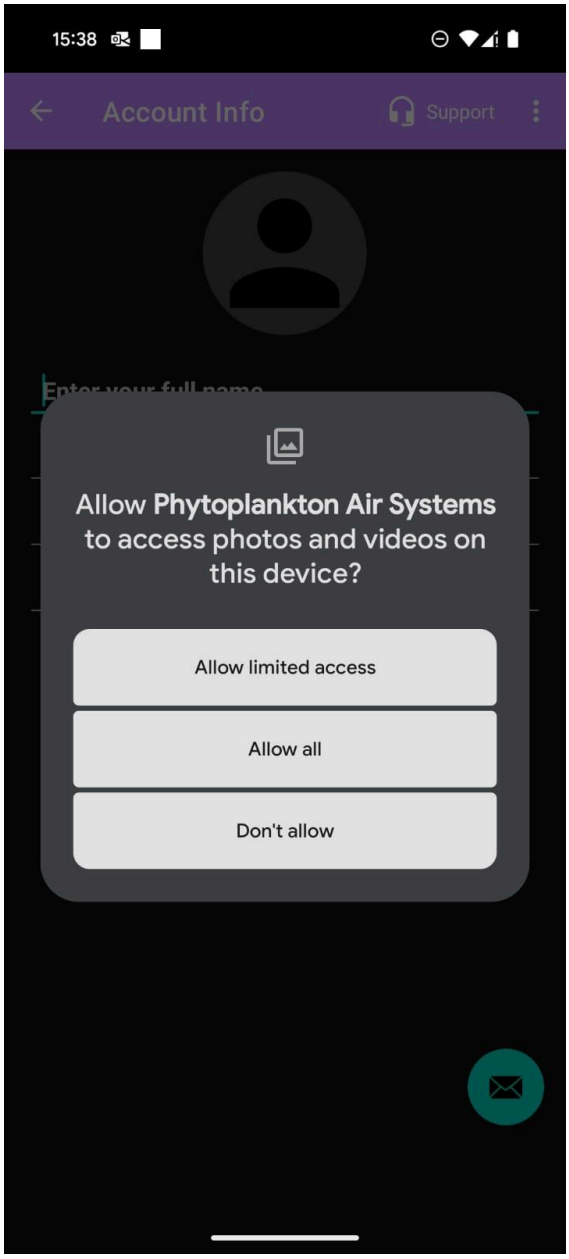
```
private AchievementManager() {
}

public static AchievementManager getInstance() {
    if (instance == null) {
        instance = new AchievementManager();
    }
    return instance;
}
```

We used singleton design pattern for two of these Manager classes because they should only be implemented once since they are directly working with the Firebase to retrieve/store contents related to their names (i.e., AchievementManager is retrieving/storing data from/to the database related to achievements and NotificationManager is retrieving/storing data from/to the database related to notifications). Making them singleton makes sure that they aren't instantiated twice so there would be no multiple references to Firebase so no confusion.

37. Document what runtime permission you have implemented, with a screenshot.

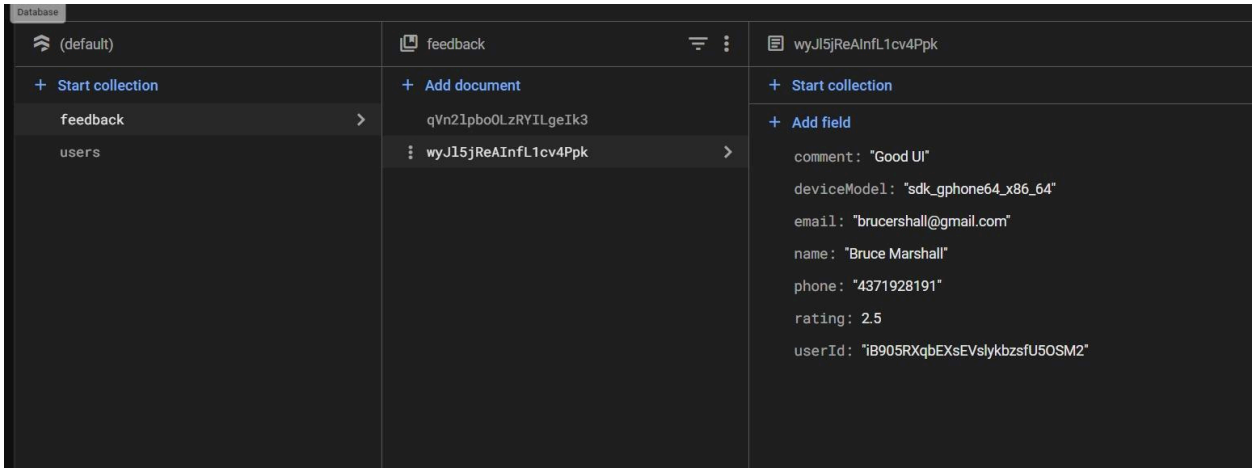
We used run time permission when selecting Profile picture in account info.



Document the two main functionality of your app that was implemented in this release.

Answer: Dashboard screen, showcasing the different metrics our air system has to offer. Leaderboard Screen, to keep friendly competition between the enterprises and homeowners. We also added an insights page, for users that want to learn more about our system and phytoplankton in general.

39. Provide a screenshot of how the data from the Customer Feedback Screen stored in the DB. See example.



40. Create a subfolder called deliverable 3 under docs in the repo and add the pdf file.

41. Push the pdf into github.