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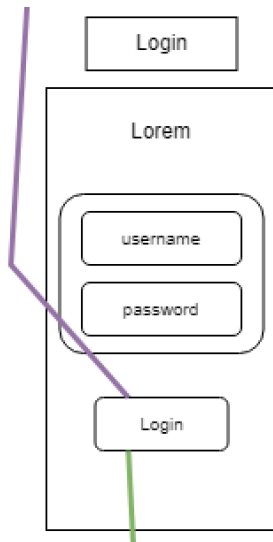
GrowOps Design Document

Our GrowOps application is for owners and farm technicians to monitor and control multiple aspects of the farm containers. There will be four main pages, login, plants, geolocation and security as well as a settings page.

Pages

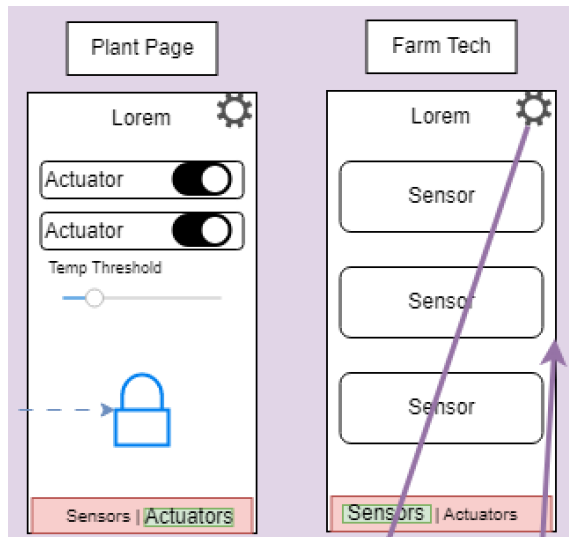
Login Page

The login page will prompt the user to use their credentials to log in to the app. Based on the credentials and the roles assigned to that user, they will be navigated to different pages. No other buttons or anything will be available to the users because we want everything to be as secure as possible.



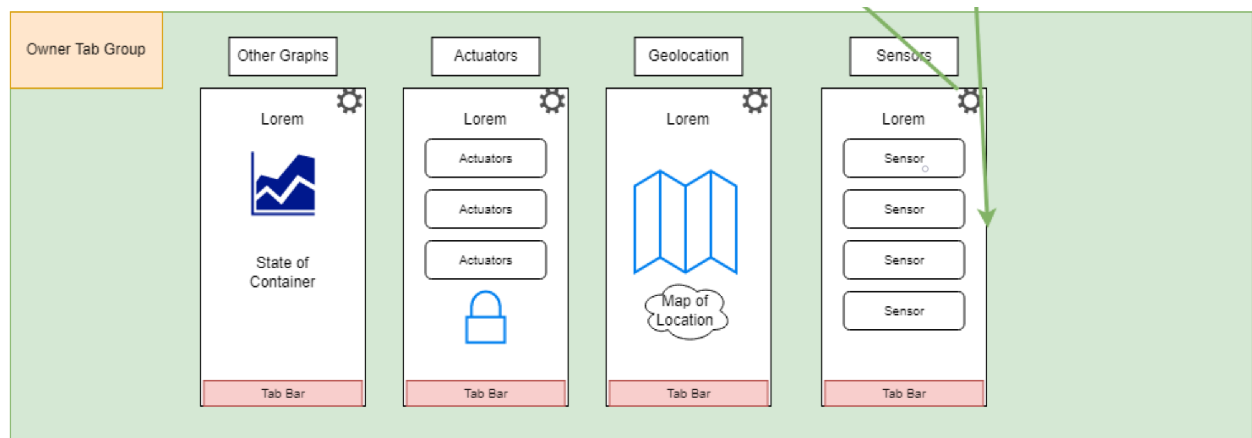
Plants Page

If the user is a farm technician they will be brought to this page first which will be their 'Home Page'. There will be a user interface for temperature, humidity, relative water levels, and soil moisture levels. There will also be toggle buttons for the fan state and light state.



Security Page

If the user logs in as an owner they will be brought to this page. There will be sensors for the security features of the farm containers. These include luminosity levels, motion detection and door state. There will also be toggle buttons for the door lock and for the buzzer to turn on or off the alarm.



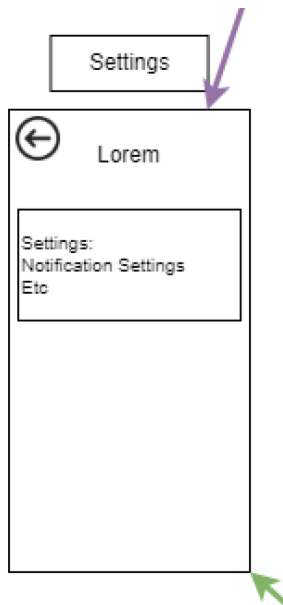
Geolocation Page

This page is only accessible to the owners and will feature graphs about the location of the storage container to monitor the transportation and placement of containers. Another graph

will be off the pitch/roll angles and another graph to read vibration levels. These graphs are to ensure the integrity of the farm container. There will also be a toggle for the buzzer here. There will also be a way of displaying the GPS location. This is unclear how this will be done at the moment.

Settings Page

This page is accessible by either role and features different settings that can be toggled by the user. These include but are not limited to theme and notification settings.



Features

***Milestone 1 Stories. See JIRA for most up to date stories

1. As the farm technician, I want to know the environmental conditions inside the container in near real-time so that I can make necessary adjustments.

As a Farm technician, I want to be able to measure Temperature and Humidity inside the container to know if I should turn on or off the fan.

- Sensor measures Temperature and Humidity
- Data is sent to IoT Hub
- UI displays Data on a dashboard
- Priority: Must develop.

As a Farm technician I want to be able to measure relative water levels of my farm to know if there is water needed.

- Sensors measure relative water levels
- Data is sent via MQTT
- UI displays data
- Priority: Must develop.

As a farm technician, I want to be able to measure soil moisture levels so I can make changes if necessary.

- Sensor captures soil moisture levels
- Data is sent via MQTT
- UI displays data
- Priority: Must develop.

As a farm technician I want to read the state of the fan to know if it is on/off.

- Fan state is displayed in UI to know if the fan is operational
- Priority: Must develop.

As a farm technician I want to be able to read light state to know if I need to change the state.

- UI shows the state of the lights to know if they are on or off.
- Priority: Must develop.

2. As the farm technician, I need to be able to control the environmental conditions inside the container to make sure that plants are healthy.

As a farm technician, I want to be control the fans inside the container to change the state from on or off to manage the temperature.

- UI has a dashboard to control the state of the fan in the container.
- Priority: Must develop.

As a farm technician, I want to be able to control the state of the lights from on or off to manage the plant growth.

- UI has a dashboard to control the state of the lights.
- Priority: Must develop.

3. As the fleet investor/owner, I want to know the location and placement of the container farms so that I can track company assets.

As a fleet owner, I want to read noise levels around the container to see if there are any security concerns.

- Read from the buzzer
- Implement a User Interface
- Priority: Must develop.

As a fleet owner, I want to be able to see light levels to determine if the lights are on or if someone has breached the container.

- UI for light levels
- Read from sensors and store that info
- Priority: Must develop.

As a fleet owner, I want to be able to detect if there is any motion detected to see if any unpermitted users are around the container.

- Read from motion sensors and store data
- Have a UI and perhaps notifications when motion is detected
- Priority: Must develop.

As a fleet owner, I want to be able to see if the door is locked or unlocked to be able to ensure security of the container.

- Read data from the lock sensor
- Implement UI
- Priority: Must develop.

As a fleet owner I want to be able to remotely lock the door with the push of a button.

- UI button switch to be able to turn it off
- Be able to receive command from the back end and actuate appropriately
- Priority: Must develop.

As a fleet owner I want to be able to see if the security buzzer is alarming currently to be notified of any incident.

- Have a UI of alarm on or off
- Read from sensor data
- Have a notification to the application
- Priority: Must develop.

As a fleet owner I want to be able to press a button and activate the buzzer or turn it off so I can control safety.

- Have a UI with a button
- Send data and actuate the buzzer
- Priority: Must develop.

As a fleet owner I want to be able to see if the door is open or closed at any moment to ensure safety of container.

- UI to see door status
- Read sensor data
- Priority: Must develop.

4. As the fleet owner, I want to be informed of security issues inside the container farm so that I can mobilise an appropriate response.

As a fleet investor, I want to see the gps location of the container, so that I can keep track of it's transportation.

- Have a UI that shows the gps location. Also possibly have a graph that displays a comparison of location and temperature depending on requirements.
- Priority: Must develop.

As a farm technician, I want to be able to read the buzzer state to monitor for transportation issues.

- Have a toggle button in UI that displays state of buzzer.
- Priority: Must develop.

As a farm technician, I want to be able to control the buzzer state for transportation issues.

- Have a toggle button in UI that allows the user to control the state of the buzzer.
- Priority: Must develop.

As a farm technician, I want to be able to read pitch and roll angles to monitor transportation.

- Have a graph that displays pitch and roll angles.
- Priority: Must develop.

As a farm technician, I want to be able to read vibration levels to monitor transportation.

- Have a graph that displays the vibration level.
- Priority: Must develop.

5. As a user I want the app to be good-looking and user-friendly as well as have extra features that add useful functionality to the app.

As a user I want a settings page that allows me to view and modify any user settings

- A settings page is created that allows user to control settings.
- Priority: Would like to develop.

As a user I want the UI to be visually appealing and intuitive so that the app is more user friendly.

- The UI's colour scheme and format is visually appealing and intuitive.
- Priority: Would like to develop.

Wireframe Diagram

