AgriGear Exchange

Farm Equipment Rental Market Place Web Application

OVERVIEW

Name Of Hackathon:	HACKOUT 2024
Problem Statement:	High Costs and Inaccessibility of Farm Equipment
Team Name:	Code Titans

OUTLINE

1. Problem Statement
2. IDEA / Approach Details
3. Dependencies
4. UseCase Diagram
5. System Flow Diagram
6. Two-Day Workflow for Building a AgriGear Exchange Web App
7. Two-Day Workflow Diagram

PROBLEM STATEMENT

- Small-scale farmers consistently encounter significant barriers due to the prohibitive costs associated with purchasing, maintaining, and upgrading essential agricultural equipment. These high expenses can deplete limited financial resources and prevent these farmers from employing modern farming techniques, thereby reducing their crop yields and operational efficiency.

- Furthermore, the physical inaccessibility of such equipment, often due to geographic and logistical constraints, exacerbates the issue, leaving many farmers without the necessary tools to compete effectively or expand their operations. Consequently, there is an urgent need for an innovative solution that facilitates cost-effective access to these vital resources, enabling farmers to maximize productivity, sustain their livelihoods, and contribute more significantly to the agricultural sector.

IDEA / APPROACH DETAILS

- The AgriGear Exchange (Farm Equipment Rental Marketplace) is designed to connect farmers with equipment owners, facilitating access to necessary machinery without the cost of purchase. This platform aims to boost agricultural productivity by enabling a sharing economy that reduces operational costs for farmers.

- The web application will feature user-friendly interfaces for account creation, equipment listings, and reservation management. Equipment owners can post detailed listings, while farmers can search for and reserve equipment through an intuitive interface.

- A robust search and filter system will help users find equipment by location, type, and price. A secure payment gateway will ensure safe financial transactions, providing a seamless experience for both parties.

- The platform will offer customer support and dispute resolution services, ensuring a smooth rental process and addressing any issues that may arise.

DEPENDENCIES AND USE CASES

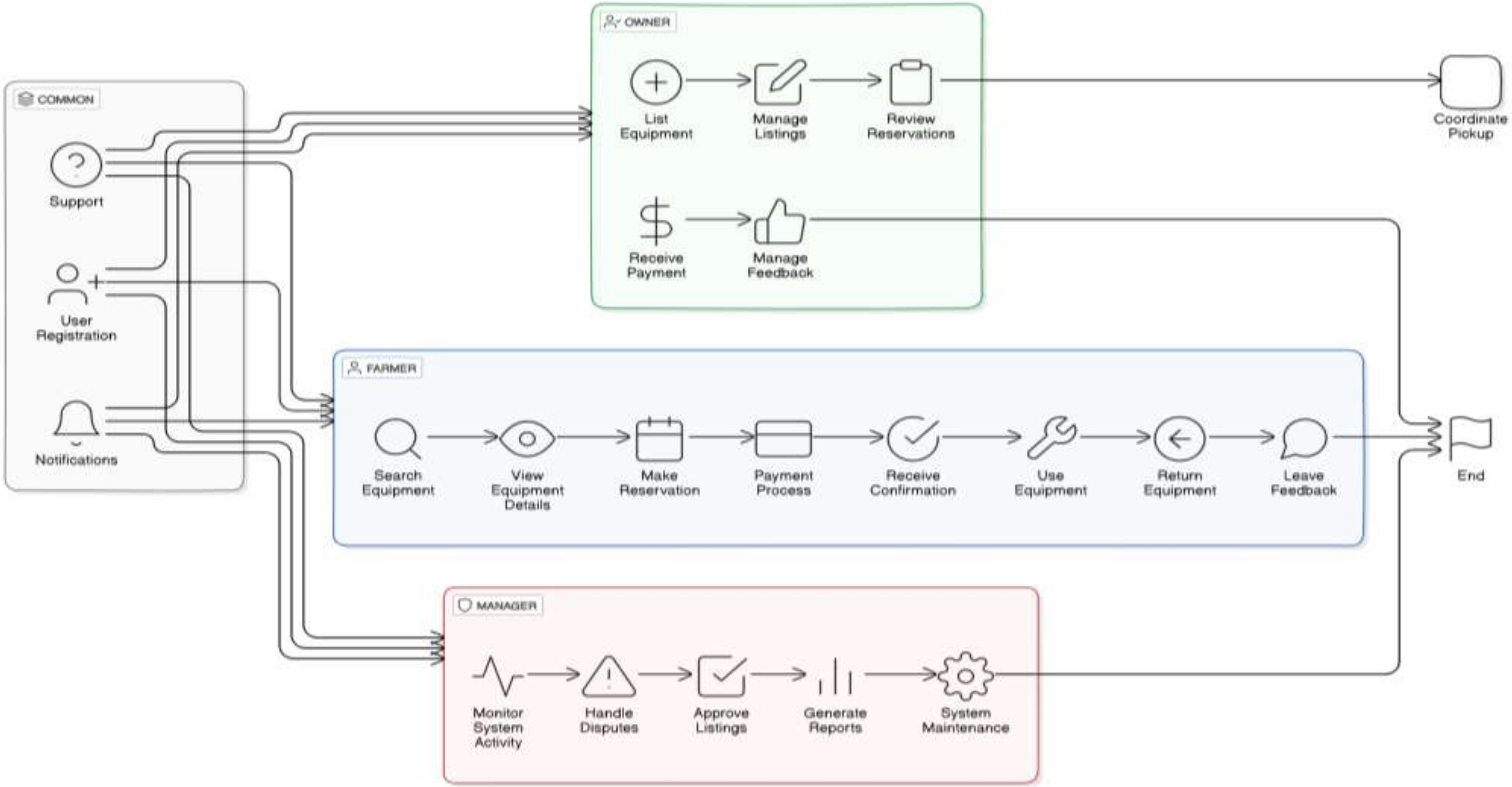
DEPENDENCES

1. Visual Code IDE | PyCharm
2. SQLite
3. Pythonanywhere | render
4. Python PyPi django-admin-interface
5. Python PyPi django-bootstrap4
6. Python PyPi pillow
7. Python PyPi Gunicorn
8. Python PyPi numpy
9. Python PyPi pandas
10. Python PyPi djangorestframework

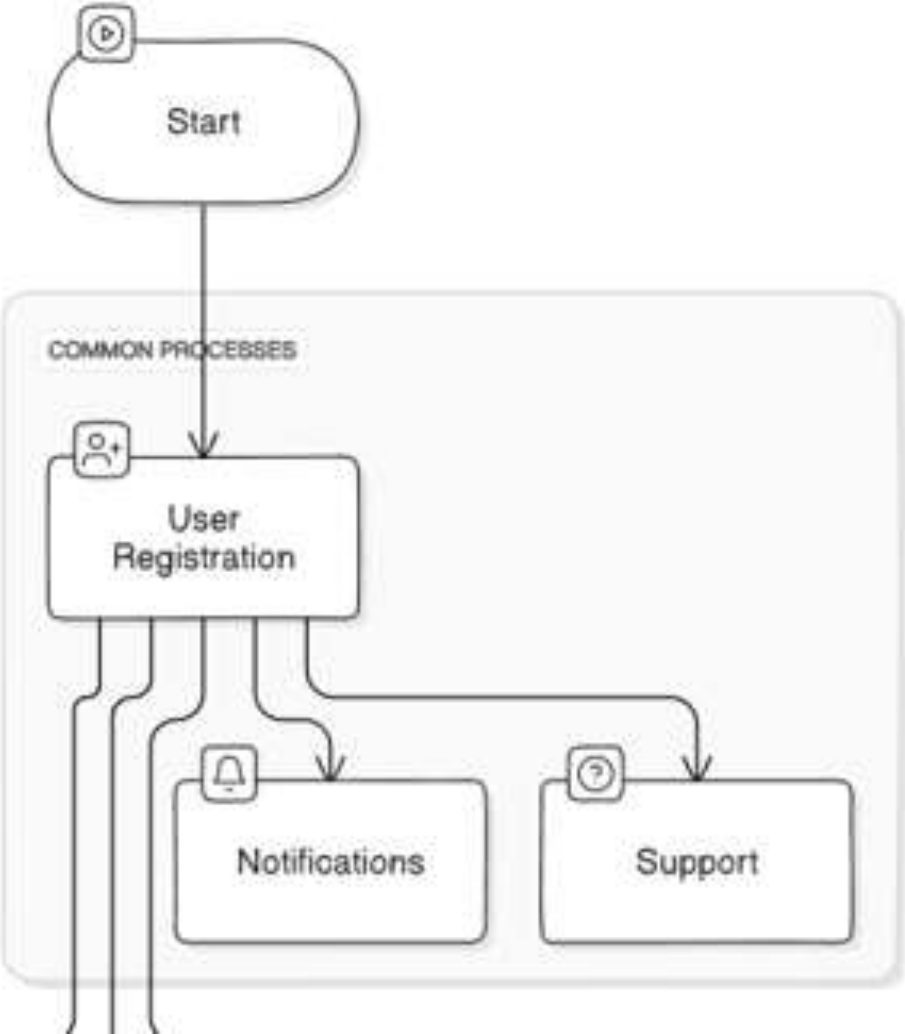
TECHNOLOGY STACK

1. Python
2. DJango
3. REST API
4. HTML
5. CSS
6. JavaScript
7. Bootstarp
8. Google Firebase/ Python Hosting

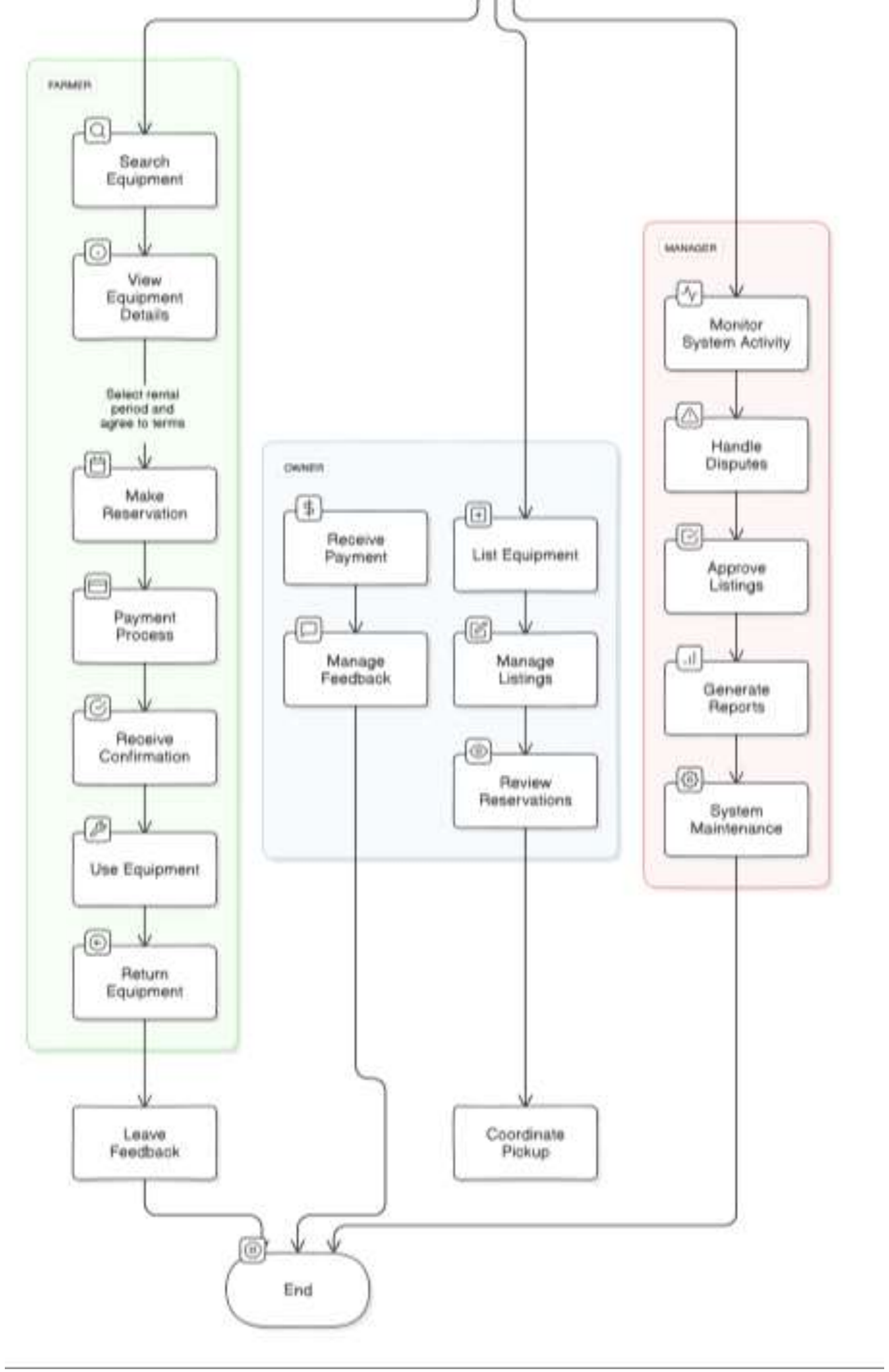
USECASE Diagram:



System Flow Diagram:



Cont..


FARMER
Search Equipment
View Equipment Details
Select rental period and agree to terms
Make Reservation
Payment Process
Receive Confirmation
Use Equipment
Return Equipment
Leave Feedback
OWNER
Receive Payment
Manage Feedback
List Equipment
Manage Listings
Review Reservations
Coordinate Pickup
MANAGER
Monitor System Activity
Handle Disputes
Approve Listings
Generate Reports
System Maintenance
End

Two-Day Workflow for Building a AgriGear Exchange Web App

Day 1: Basic Setup and Core Functionality

1. **Project Setup:**
   - **Initialize the Project:**
     - Start a new Django project and set up a basic environment.
   - **Create User Roles:**
     - Set up accounts for three types of users: Farmers, Owners, and Managers.
2. **Database Setup:**
   - **Design Models:**
     - Create the database structure to store information about equipment, bookings, payments, and feedback.
   - **Run Migrations:**
     - Apply the database changes to create the necessary tables.
3. **Core Features Development:**
   - **Equipment Listing:**
     - Build a system where Farmers can search for and view available equipment.
   - **Booking System:**

     Allow Farmers to reserve equipment by selecting dates and confirming the rental.

Cont..

4. Basic Frontend:

- **Create HTML Templates:**
  - Develop simple web pages for the home page, equipment listings, and booking details.
- **Integrate with Backend:**
  - Connect the web pages with the backend to display real data from the database.

5. Testing Core Features:

- **Test Basic Workflows:**
  - Ensure Farmers can search for equipment, view details, and make a booking without issues.

Two-Day Workflow for Building a AgriGear Exchange Web App

Day 2: Advanced Features and Polishing

1. **Advanced Backend Features:**
   - **Payment Integration:**
     - Set up an online payment system so Farmers can pay for their rentals securely.
   - **Review System:**
     - Allow Farmers to leave reviews and ratings for equipment they've rented.
2. **Manager and Admin Features:**
   - **Dashboard for Managers:**
     - Build a simple dashboard where Managers can monitor system activity, approve new listings, and handle disputes.
   - **Admin Controls:**
     - Set up the ability for Managers to approve or reject new equipment listings and manage bookings.
3. **Frontend Enhancements:**
   - **CSS Styling:**
     - Improve the design with CSS to make the site more attractive and user-friendly.
   - **JavaScript for Interactivity:**

     Add JavaScript for features like date pickers in the booking process and form validations.

Cont..

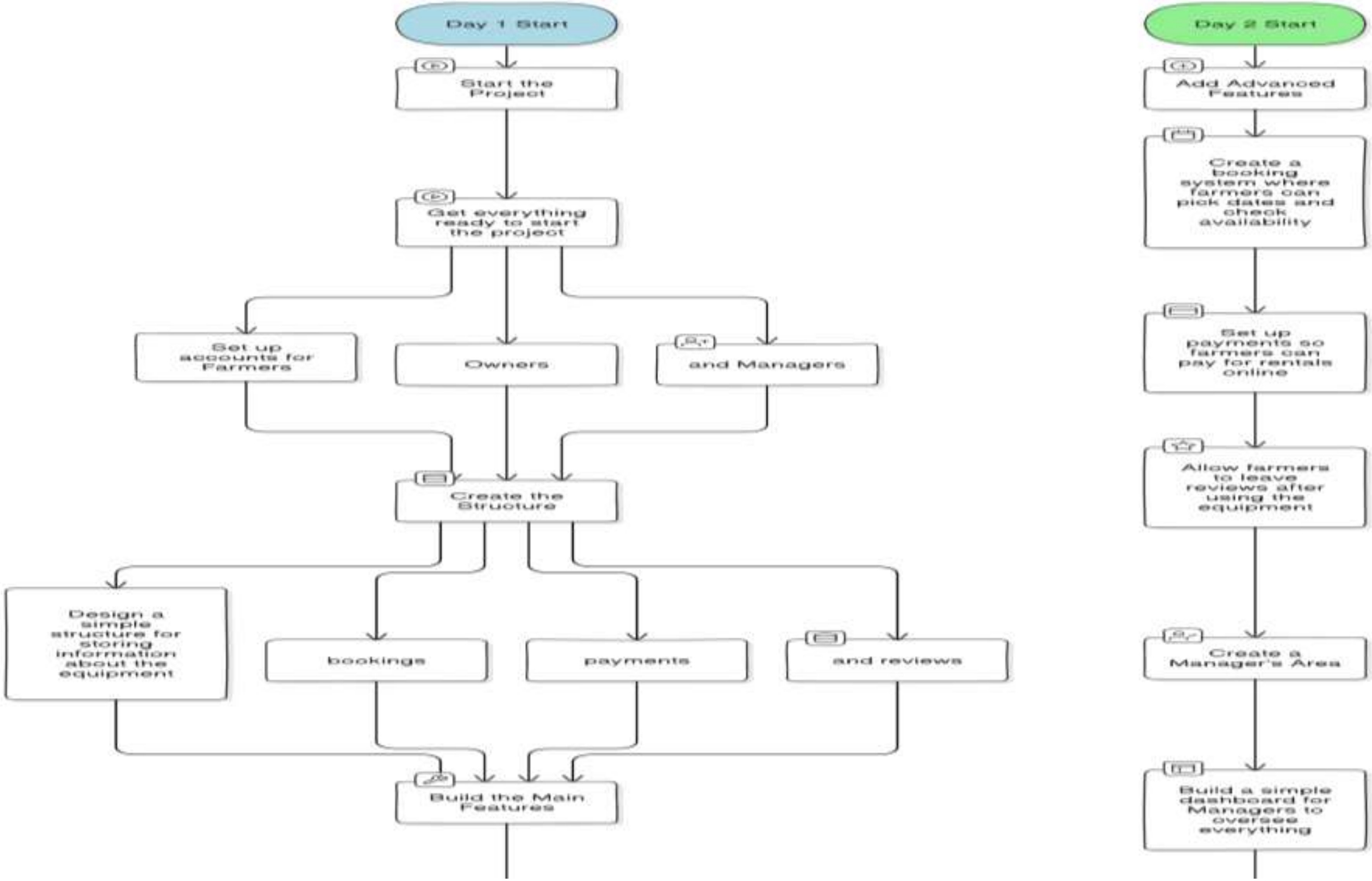
4. Final Testing and Deployment:

- **Comprehensive Testing:**
  - Test all features thoroughly to ensure everything works as expected.
- **Deploy the System (Optional):**
  - If time allows, deploy the project to a hosting platform like Heroku or AWS for a live demo.

5. Prepare for Presentation:

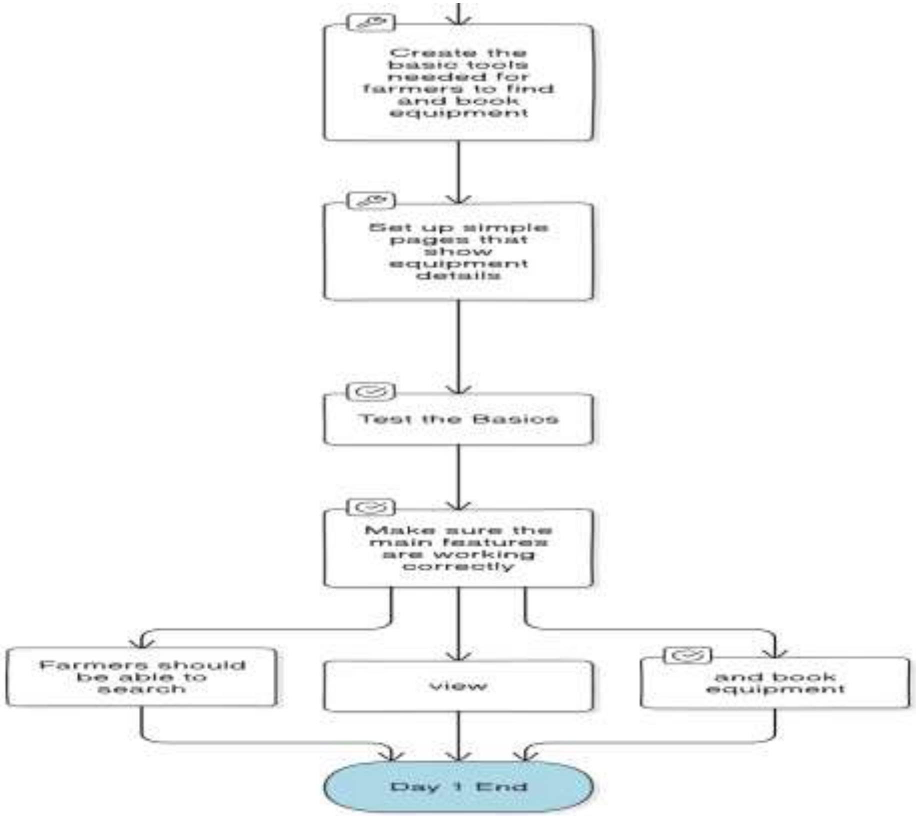
- **Finalize the System:**
  - Ensure the project is polished and ready to be shown to others, including any final adjustments needed for the presentation.

Two Day Workflow Diagram



Day 1 Start
Start the Project
Get everything ready to start the project
Set up accounts for Farmers
Owners
and Managers
Create the Structure
Design a simple structure for storing information about the equipment
bookings
payments
and reviews
Build the Main Features
Day 2 Start
Add Advanced Features
Create a booking system where farmers can pick dates and check availability
Set up payments so farmers can pay for rentals online
Allow farmers to leave reviews after using the equipment
Create a Manager's Area
Build a simple dashboard for Managers to oversee everything

Cont..



Create the basic tools needed for farmers to find and book equipment

Set up simple pages that show equipment details

Test the Basics

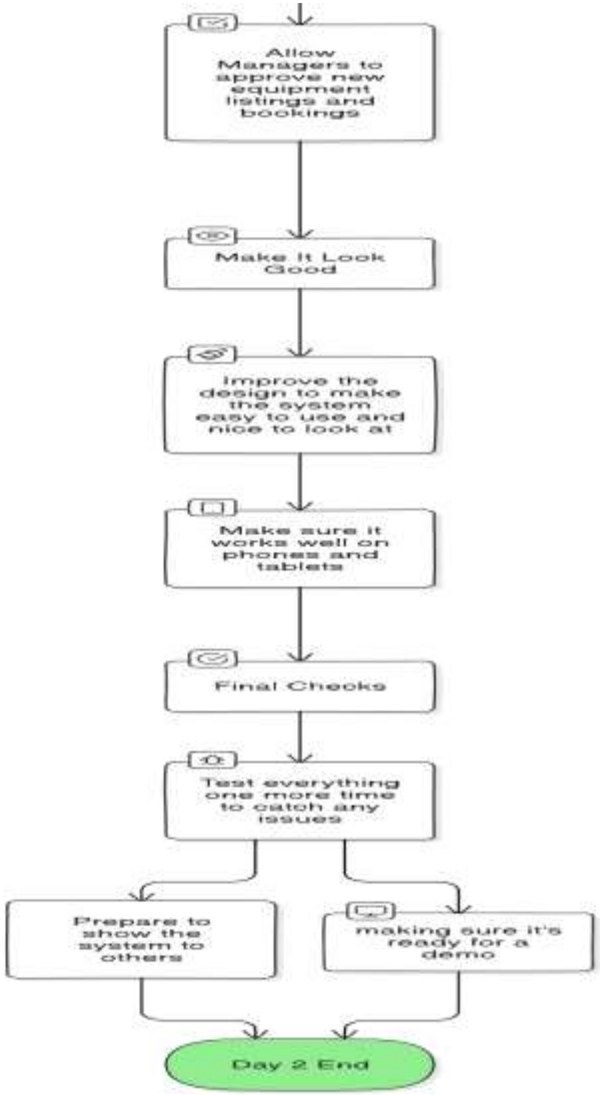
Make sure the main features are working correctly

Farmers should be able to search

view

and book equipment

Day 1 End



Allow Managers to approve new equipment listings and bookings

Make It Look Good

Improve the design to make the system easy to use and nice to look at

Make sure it works well on phones and tablets

Final Checks

Test everything one more time to catch any issues

Prepare to show the system to others

making sure it's ready for a demo

Day 2 End