NARLA: AI-DRIVEN APARTMENT CO-PILOT

SENIOR DESIGN PROJECT | UNIVERSITY OF CINCINNATI | CLASS OF 2026

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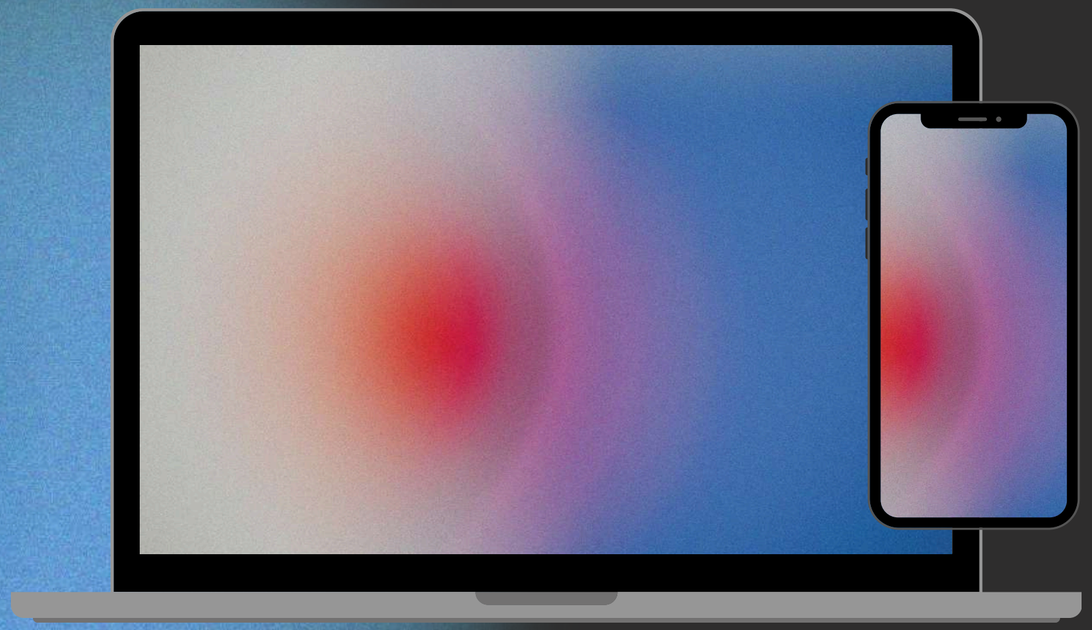
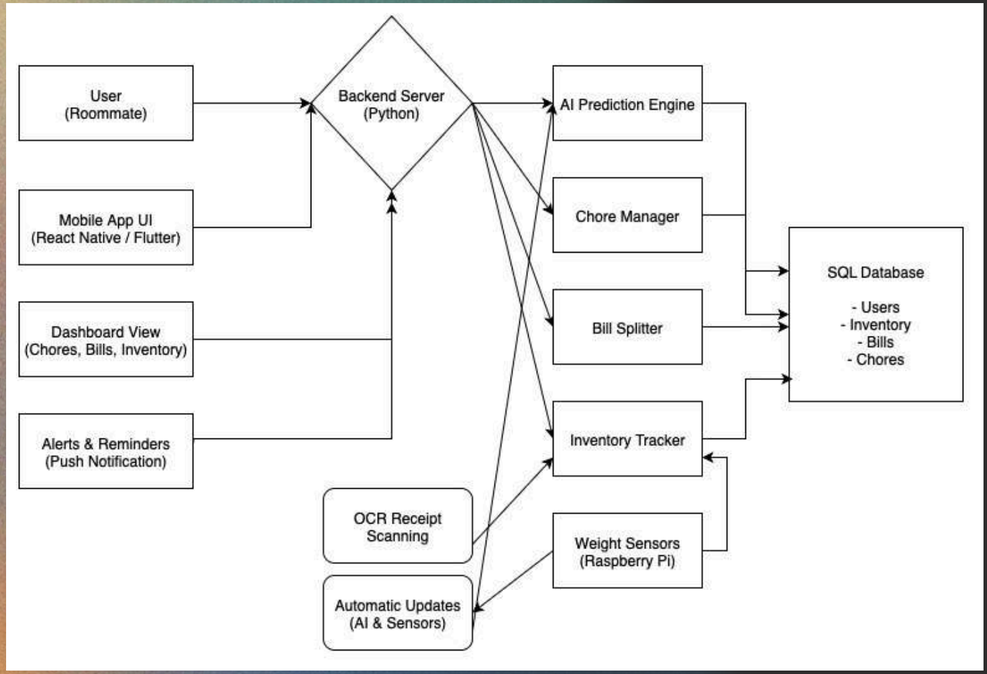
PROJECT PURPOSE & GOALS

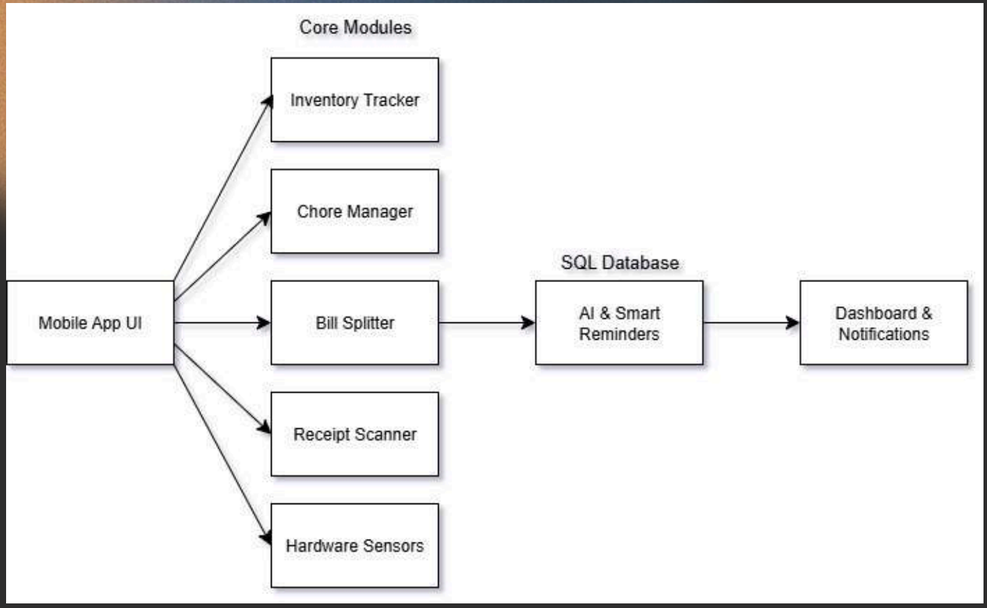


To create a mobile app that helps roommates and students better manage shared living tasks such as groceries, chores, and bills while using AI-driven predictions and automation.

PROJECT ABSTRACT

NARLA is an AI-driven apartment co-pilot designed to help roommates and students efficiently manage shared living responsibilities. The mobile app integrates chore scheduling, bill splitting, and inventory tracking through an intelligent system powered by Python, PostgreSQL, and machine learning. By analyzing user behavior and consumption patterns, NARLA provides predictive reminders, automated updates, and fair task distribution to minimize conflicts and improve collaboration. Future enhancements include OCR-based receipt scanning and IoT sensor integration for real-time inventory updates. The project's goal is to create a seamless, data-driven living assistant that promotes organization, fairness, and convenience in shared spaces.





- As a roommate, I want to see a shared dashboard of chores, bills, and inventory so that responsibilities and expenses are transparent and easy to track.
- As the primary bill payer, I want to scan receipts and have costs split automatically so that I can quickly settle balances without manual calculations.
- As a busy student, I want to receive AI-driven reminders for chores, groceries, and payments so that I stay organized and avoid last-minute stress.
- As a new roommate, I want a simple onboarding checklist to set my preferences (diet, cleaning frequency, budgets) so that the app personalizes tasks from the start.
- As a household, we want chores to be assigned and rotated fairly with reminders so that conflicts are reduced and tasks are completed on time.

USER STORIES & DESIGN DIAGRAMS

MAJOR PROJECT CONSTRAINTS

Main challenges influencing our project approach.

1

Economic and Professional:

Limited budget, using free tools and maintaining scalable, high-quality design.

2

Ethical and Legal:

Protect user privacy, get consent, and follow licensing rules.

3

Security:

Use encryption, authentication, and strong cloud protection.

4

Social and Diversity:

Ensure inclusive, accessible, and easy-to-use design.

PROJECT PROGRESS

FRONTEND

Basic app layout and navigation created. Initial screens for login, dashboard, and household management designed and refined for usability.

BACKEND

In the initial planning phase, Design diagrams and schema are being refined for efficiency and accuracy before finalizing API routes and integration testing.

OVERALL

Project is in early development stages with frontend and backend foundations established. AI integration and hardware components will be explored in upcoming phases.

TIMELINE

1

STEP 1
Fall 2025

- Build the core app (accounts, roommates, inventory, bills, chores)
- Add AI predictions, reminders, and receipt scanning
- Explore optional hardware integration, testing, and final polish

2

STEP 2
Winter 2026

3

STEP 3
Spring 2026

LOAD

DIVISION OF WORK

Backend - Aditya Anand

Aditya is in charge of the backend development and AI integration for the project. His tasks include designing the SQL database schema, developing the Flask server logic, and implementing API endpoints that handle data securely between the client and server. He is also integrating the AI assistant to automate tasks such as smart reminders, predictive suggestions, and data-driven insights. Aditya's work ensures the system's performance, security, and intelligence, providing the foundation that powers the app's core functionalities.

Frontend - Neha Ross Lenin

Neha is responsible for designing and developing the user interface (UI) and ensuring an intuitive user experience (UX) across the app. Her work involves creating smooth navigation flows, visually appealing layouts, and responsive screens using frameworks like React Native. She focuses on optimizing usability and accessibility so users can easily interact with the app's features. Neha is also handling the integration of frontend components with the backend APIs, ensuring that data is displayed accurately and in real time to provide a seamless and engaging experience.

EXPECTED DEMO @ EXPO

At the Expo, we plan to showcase an early working prototype of our NARLA app, highlighting its core features such as user authentication, household dashboard, and intelligent task management. The demo will feature smooth navigation, real-time sample data interactions, and an initial glimpse of the AI assistant's capabilities in automating daily routines. Alongside the software demonstration, we aim to present early developments of the hardware integration that will enable smart inventory tracking through sensors. This preview will offer a clear picture of how NARLA combines AI, automation, and intuitive design to simplify shared living experiences.

THANK YOU