Smart Grocery Management System

CISC. 4900

Contact Information

Group Members:

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Abstract

Smart Grocery Management System is a mobile application designed to help users efficiently manage their grocery inventory by tracking expiration dates, suggesting recipes based on available ingredients, and alerting users of food recalls. The project aims to reduce food waste, save money, and enhance household food organization through an intuitive and automated system. The core functionalities include barcode scanning for easy item input, real-time expiration tracking, and integration with food safety APIs for recall alerts.
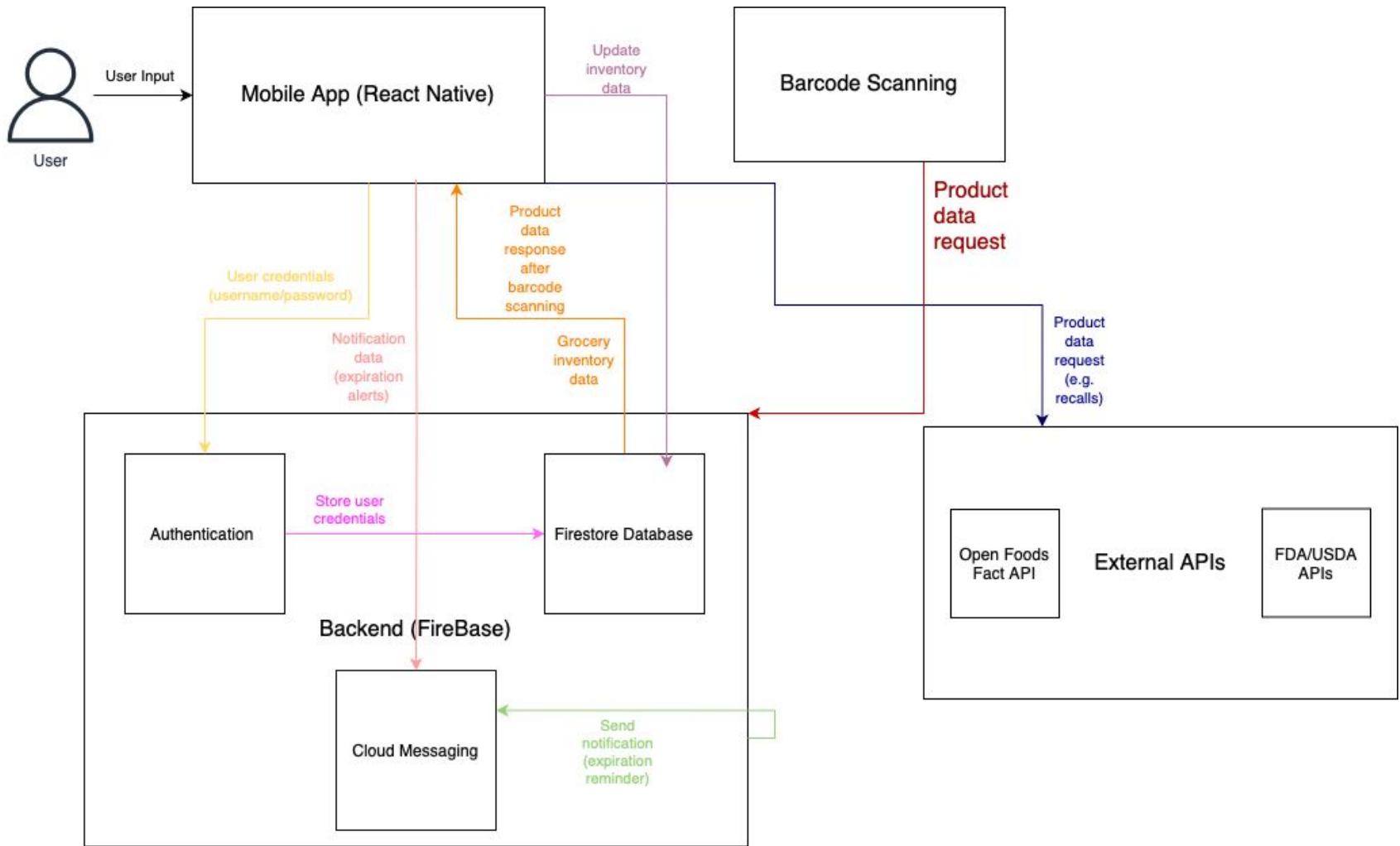
Tools

Software & Frameworks:

- React Native (Latest Version) for cross-platform mobile development
- Firebase Authentication & Firestore Database for backend services
- OpenAI API for potential NLP-related features
- FDA/USDA & Open Food Facts API for food recall data
- React Native Camera for barcode scanning

Hardware:

- Smartphones (iOS & Android) for testing
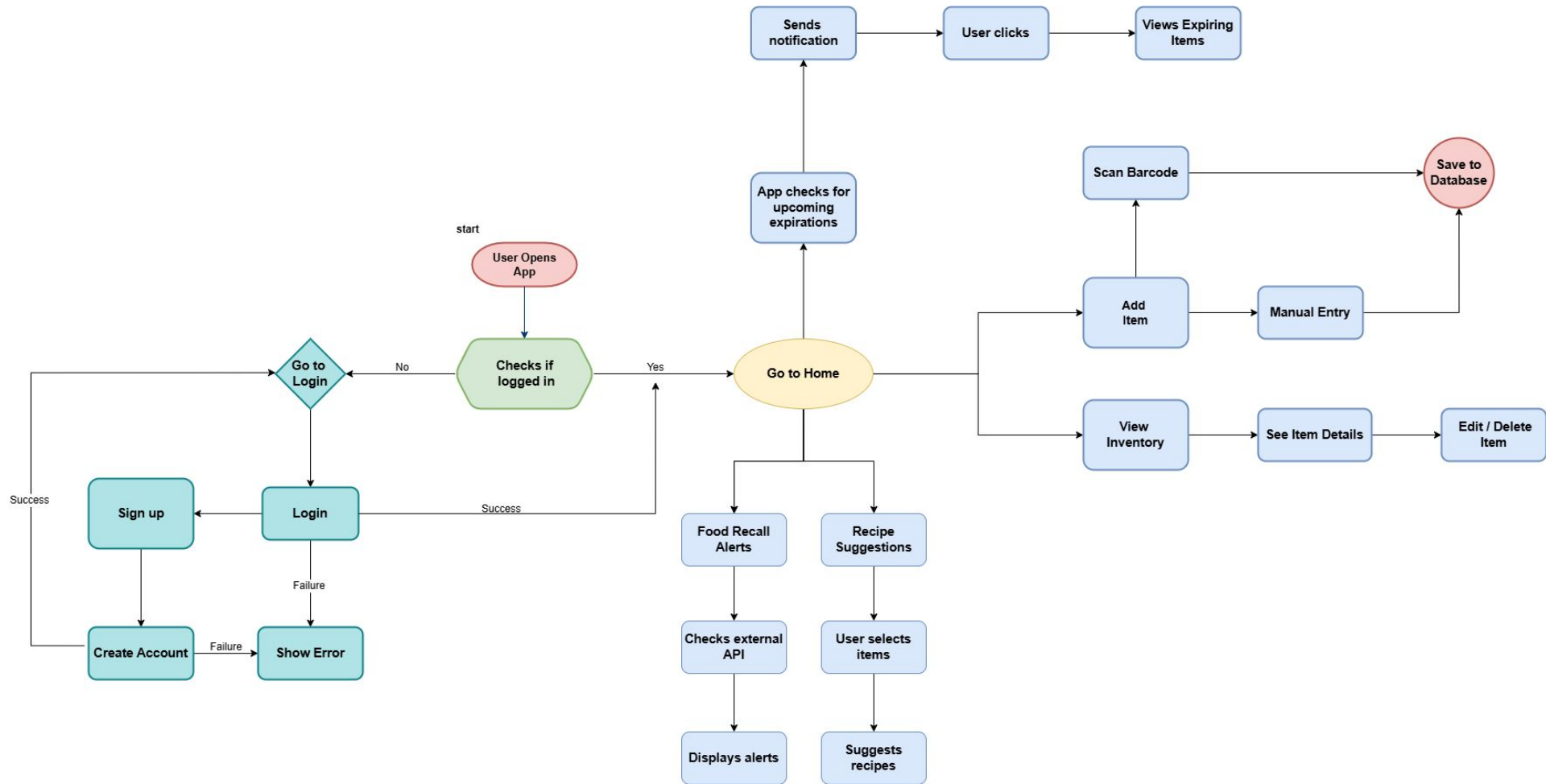- Development Machines (Windows/Mac) for coding

System Architecture Diagram

- Illustrates the interaction between the frontend (React Native app), backend (Firebase Firestore & Authentication), and external APIs.

User Flow Diagram

- ○ Visualizes the user's journey from login/signup, adding grocery items, setting expiration alerts, and receiving notifications.

Wireframes (Optional UI/UX Mockups)

- ○ Showcases the app's general layout and design. It includes the key screens and interactions, with some extra features planned for development if time permits.

Smart Grocery Management App

Your Pantry's Best Friend

Already have an account?

Login

First time here?

Sign up

Welcoming animation/gif

Sign Up animation/gif

Name

Enter email address

Last Name

Enter email address

Email

Enter email address

Password

Enter password

Sign Up

Already have an account log in!

Log In animation/gif

Email

Enter email address

Password

Enter password

Log In

Don't have an account sign up!

Profile Mascot

Welcome Back John!

Inventory
(View / Add/ Edit)

Recipe Suggestions

View Recent Food Recalls

Settings (Notification settings/account settings etc.)

Saved Recipes

Grocery List

Log Out

Contact Us

View Inventory

Banana	Item: Banana Purchase Date : 2/12/2025 Expiration Date: 2/22/2025 Labels: **Fruit** Room Temperature	Edit Delete
Tomatoes	Item: Tomatoes Purchase Date : 2/12/2025 Expiration Date: 2/28/2025 Labels: **Fruit** Fridge	Edit Delete
Milk	Item: Milk Purchase Date : 2/15/2025 Expiration Date: 2/20/2025 Labels: **Dairy** Fridge	Edit Delete
Chicken Breast	Item: Chicken Breast Purchase Date : 2/12/2025 Expiration Date: 11/6/2025 Labels: **Meat** Frozen	Edit Delete
Egg	Item: Egg Purchase Date : 2/12/2025 Expiration Date: 3/6/2025	Edit Delete

Go Back(Dashboard)	Add New Item Manually	Add New Item Scan Barcode

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Add New Item

Item Name:

[   ]

Purchase Date:

[MM / DD / YYYY]

Expiration Date:

[MM / DD / YYYY]

Category:

[▼]

Select storage condition:

[▼]

[Back]   [Add]

Add New Item

[Start Scanning]

[Back]

Recipe Suggestions for Your Inventory....

Banana Pancakes ☆

Creamy Garlic Butter Chicken ★

Double Chocolate Brownies

[Back]

Your Saved Recipes

Spicy Shrimp Tacos

Strawberry Shortcake

Chickpea & Spinach Curry

Avocado Toast

Grilled Veggie & Hummus Wrap

Fluffy Banana Pancakes

Classic New York Cheesecake

One-Pot Lemon Herb Pasta

Tropical Mango Smoothie

Back | Edit

Settings

Account & Security 〉

Push Notifications 〉

F&Q 〉

About 〉

Back

Account & Settings

Account Information

Name: John Doe

Email: john.doe@gmail.com

Edit Profile

Password

Change Password

Back

Push Notification

Notifications

Expiration Notifications   On Off

Remind me 3 ▼ before.

Notification Sound & Vibration

Sound

Vibration

Silent Mode

Back

F&Q

Getting Started

How do I add items to my inventory?	▼
How does the barcode scanner work?	▼

Account & Security

How do I reset my password?	▼
How does the barcode scanner work?	▼

Troubleshooting

How do I reset my password?	▼
I'm not receiving notifications - how do i fix it?	▼
The app is not recognizing a barcode, what do I do?	▼

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About Smart Grocery Management App

About The App

Smart Grocery Management System is a mobile app that helps users track grocery inventory, manage expiration dates, get recipe suggestions, and receive food recall alerts. Designed to reduce food waste and save money, it features barcode scanning for easy input, automated reminders, and real-time food safety updates.

App Version	You're using version X.X.X
Developer Info	Made by Logi Team
Rate The App	Link to App Store/ Play Store

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Recent Food Recalls

Mauna Loa Milk Chocolate Covered Macadamias
Aleppo Tahini Sesame Paste
Fresh Direct Dark Chocolate Covered Pretzels
Shirakiku Snack foods-Corn Puffs
Paras Premium Golden Raisins
Pearl Milling Company Pancake and Waffle
Mauna Loa Milk Chocolate Covered Macadamias
Fresh Direct Dark Chocolate Covered Pretzels
Shirakiku Snack foods-Corn Puffs
Pearl Milling Company Pancake and

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Contact Us

Customer Support

- smart.management.help@gmail.com

Social Media

- Instagram
- LinkedIn
- TikTok

Since 2025

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Database Schema Diagram

- ○ Shows Firestore collections and document structure (e.g., Users, Inventory, Expiration Date, Recipes).

Users

user_id 🔑	string
email	string
name	string
created_at	timestamp

Inventory

item_id 🔑	string
user_id	string
name	string
barcode	string
quantity	integer
unit	string
expiration_date	timestamp
category	string
added_at	timestamp

Recipes

recipe_id 🔑	string
name	string
ingredients	string[]
instructions	string

Food_Recalls

recall_id 🔑	string
barcode	string
product_name	string
reason	string
date_issued	string
source	string

Notifications

notification_id 🔑	string
user_id	string
message	string
timestamp	timestamp
type	string

Tentative Schedule

WEEK	TASK	ESTIMATED TIME
Feb 10 - Feb 16	Setup Development Environment, Learn React Native & Firebase	1 week
Feb 17 - Feb 23	Finalize MVP Features, Implement Authentication	1 week
Feb 24 - Mar 9	Develop Inventory Management & Barcode Scanning	2 week
Mar 10 - Mar 23	Add Expiration Alerts & Testing	2 week
Mar 24 - Apr 6	Feature Refinement & Demo Preparation	2 week
Apr 7 - Apr 20	Final Testing, Debugging, and Presentation Prep	2 week
Apr 21 - May 5	Final Demo Recording & Submission	2 week
May 6 - May 12	Final Review & Submission	1 week

Data Sources

- **Inventory Data:** User-inputted grocery items with expiration dates.
- **Food Recall Data:** FDA/USDA APIs & Open Food Facts database.
- **Recipe Suggestions:** Basic rule-based system with OpenAI API for NLP-enhanced recommendations.

Use Cases

1. **User Authentication**

   - **Input:** Email/password signup or Google Authentication.
   - **Process:** Firebase Authentication verifies credentials.
   - **Output:** User gets access to the app dashboard.
2. **Inventory Management**

   - **Input:** User scans barcode or manually enters item details.
   - **Process:** System saves item data to Firestore.
   - **Output:** Item appears in inventory list with expiry tracking.
3. **Expiration Alerts**

   - **Input:** System checks stored items for approaching expiration dates.
   - **Process:** Sends push notification reminders to the user.
   - **Output:** User receives alerts and can take necessary action.