Grocery Web App

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10/10/2024

8.	Conclusion	

Introduction

Overview

The Shared Grocery List App is a web-based solution designed to facilitate collaborative grocery shopping for families and groups. It allows users to create and manage shared grocery lists, enabling them to add items, track purchases, and notify each other about specific needs. Key features include individual and common item columns, expense tracking, and notifications for users. Targeted primarily at families and roommates, this app aims to streamline grocery shopping by reducing duplication of efforts and enhancing communication, ultimately making the grocery shopping experience more efficient and organized.

Problem Statement

Managing grocery shopping for multiple users can be chaotic, as individuals often forget items or buy duplicates, leading to wasted money and frustration. Existing apps do not effectively support real-time collaboration, making it difficult for families or groups to maintain a comprehensive and organized grocery list.

Target Audience

The main customer segment on focus here is mainly:

1. Families: Families where the household responsibilities are shared among its members can collaborate to create and manage grocery list ensuring better coordination.
2. Roommates: Individuals who share living spaces can utilize a more organized manner to keep track of what items are needed, who bought what and track expenses of it accordingly.
3. Friends: A group of friends who are organizing an event or a get-together can easily update what items are needed and keep track of who bought what exactly.
4. Elderly: Seniors who live alone or with their spouses and may benefit from assistance in remembering items when shopping.

Objectives

- **Enhance Collaboration**:
  Enable users to collaboratively create, manage, and update grocery lists in real-time, ensuring everyone is aware of current needs and contributions.
- **Reduce Duplication**:
  Minimize the occurrence of duplicate purchases by allowing users to see what items have already been added by others, thereby saving money and reducing waste.
- **Track Expenses**:
  Provide functionality for users to log expenses associated with grocery purchases, allowing for easy tracking of costs and contributions from different members.
- **Improve Communication**:
  Facilitate easy communication among users by allowing them to notify each other about specific items or needs, making the grocery shopping process more organized.
- **User-Friendly Interface**:

Design an intuitive and accessible interface that allows users of all tech-savviness levels to easily navigate and utilize the app's features.

- **Increase Efficiency**:
  Streamline the grocery shopping experience by organizing lists by category (e.g., dairy, produce) and providing quick access to frequently purchased items.
- **Support Customization**:
  Allow users to customize their lists by creating personal columns for individual needs while maintaining a common list for shared items.
- **Facilitate Reminders and Notifications**:
  Implement reminders for users to add items or check the list before shopping, helping to prevent last-minute oversights.

Deliverables

1. **User-Specific Columns**:
    a. Users have separate columns in order to distinguish between their personal and shared items of the group.
2. **Visibility of Contributions**:
    a. A tracking system for users to see who added items and who has paid for what, promoting transparency.
3. **Notification and Communication**:
    a. An alert system for users to notify each other about additions or specific item requests.
4. **Expense Management Tool**:
    a. A feature for users to log and monitor their grocery-related expenditures, providing a summary for individuals and the group.
5. **User Invitation Process**:
    a. An onboarding feature for users to invite others to the grocery list and manage their roles.
6. **Web-Based Application Access**:

    a. Delivering a responsive web application that can be accessed across multiple devices.
7. **Shared Grocery List Creation**:
    a. A functionality that allows users to collaboratively create and update a grocery list in real-time

Market Research

Industry Overview

The global grocery market size was valued at $12.6 billion in 2023 and is expected to reach $19.34 billion by 2031. This drastic rise is driven by the increased usage of online shopping and delivery apps. The global online grocery market was valued at $549.4 billion in 2023 and is expected to reach $5533.9 billion in 2032. The global food delivery market generated over $1 trillion in revenue in 2023, with $640 billion coming from grocery delivery.

Target Market

The target market dependencies include:

Demographics:

- **Age**: The app targets a diverse age range, including:
    - Young adults (18-24) who would have started living independently and may need some help managing groceries
    - Parents (25-45) who often manage family grocery needs.
    - Older adults (46+) may seek convenience and organization.
- **Gender**: The app is designed for all genders but may primarily appeal to women, who often take the lead in household grocery shopping decisions.
- **Income Level**: Focus on middle to upper-middle-income households that have a higher likelihood of using technology for everyday tasks.

- **Location**: Target users in urban and suburban areas where grocery shopping can be complex, allowing for better marketing of app features that streamline the process.

Psychographics:

- **Lifestyle**: Users include:
  - Busy professionals who need quick solutions.
  - Health-conscious individuals looking for nutritious options.
  - Budget-conscious shoppers who want to manage their spending effectively.
- **Values and Interests**: Many users value convenience, sustainability, and the ability to track their grocery spending.

Behavioral Characteristics:

- **Shopping Habits**: Users generally prefer a mix of in-store shopping and online ordering, valuing tools that help streamline their shopping experience.
- **Technology Use**: Most users are tech-savvy and comfortable using technology, making features like notifications and reminders highly desirable.
- **Challenges and Pain Points**:
  - Forgetting items while shopping.
  - Difficulty in organizing and updating grocery lists.
  - Managing shared grocery lists with family members effectively.
  - Forgetting who paid for what while living in a bunch of people

Market Segmentation:

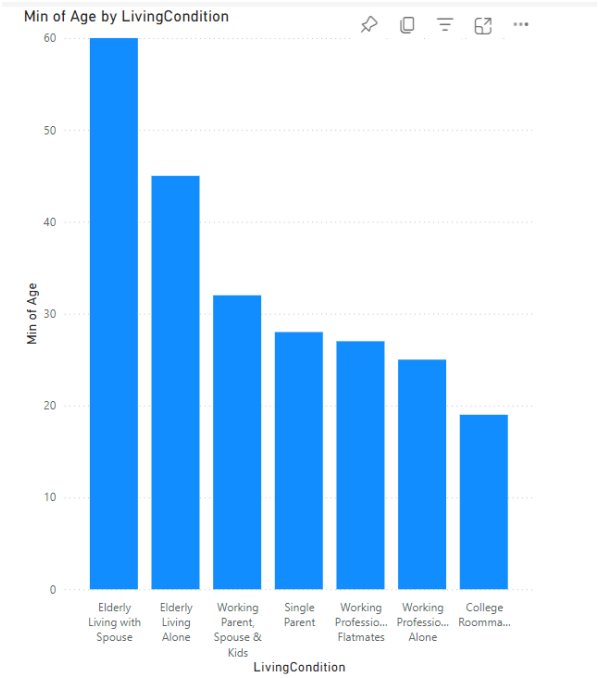
1. **Busy Professionals**: They value quick access to grocery lists and integration with online grocery ordering services.
2. **Families**: They require features that allow list sharing and organization, making it easier to coordinate shopping.

3. **Health-Conscious Shoppers**: This segment is interested in nutritional information and recipes, enhancing their shopping experience.

DATA-DRIVEN INSIGHTS

UTILIZING POWER BI FOR DATA ANALYSIS

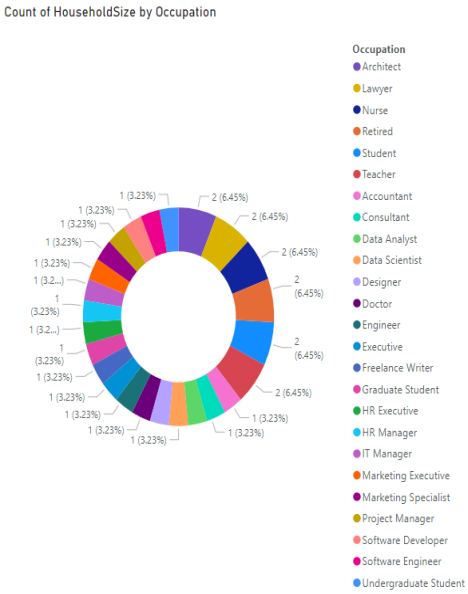
To understand user behavior and preferences better, leveraged Power BI to analyze hypothetical data related to shared living conditions. Below are the key findings from the analysis and how they informed the product strategy.



1. **Age Distribution by Living Conditions (Sum of Age by Living Conditions)**

- **Insight**: Younger users (18-34 years old) tend to live in shared spaces, which aligns with the target market for the shared grocery list app.
- **Recommended Features**:
    - **Real-time collaboration**: Allow users to add items to the list simultaneously, making it easier for multiple people to manage a single shopping list.
    - **Duplicate detection**: Highlight duplicate items in the list to avoid buying the same product multiple times.

    - **Social sharing**: Enable users to share grocery lists with their household members or friends.
- **Goal**: Tailor the app to the preferences of younger, shared-living users by adding collaboration features and simplifying the shopping experience.



2. Household Size by Occupation (Sum of Household Size by Occupation)

- **Insight**: Larger households (e.g., families) are typically associated with specific occupations, such as healthcare and education sectors. These users may need more extensive shopping lists and budgeting tools.
- **Recommended Features**:
    - **Bulk shopping**: Allow users to buy groceries in bulk and split the cost across household members.
    - **Budgeting tools**: Provide users with the ability to track who paid for what items in the list.
    - **Custom grocery list templates**: Offer pre-made templates for larger households, such as family meal plans or bulk shopping lists.
- **Goal**: Offer features tailored to large households, such as bulk purchasing and budgeting tools, to improve shopping efficiency and reduce costs.

COMPETITOR ANALYSIS

Below are some of the competitors and their objectives.

1. Anylist:

   Objective: Conducted a competitor analysis on AnyList to identify strengths, weaknesses, and differentiation opportunities for my grocery app.

   Key Strengths of AnyList: Recipe integration for seamless ingredient additions to shopping lists. Collaborative list features for shared shopping and meal planning.

   Identified Weaknesses: Limited customization for item categorization. Restricted sharing options, as noted in user feedback.

   Opportunities for Differentiation:

   - Real-Time Collaborative Updates: Enabling live list updates for multiple users.
   - Local Grocery Store Integrations: Tracking prices to offer a cost-effective shopping experience.
   - Enhanced Customization: More options for item categorization and personalized user experience.
   - User Experience (UX) Observations: AnyList's UX is user-friendly, but improvements could include a more visually engaging and customizable interface

2. Out of Milk:

   Objective: Out of Milk provides a streamlined solution for organizing grocery lists, pantry inventories, and to-dos, focusing on simplicity and ease of use.

   Key Strengths: Multi-List Functionality, User-Friendly Interface, Barcode Scanning

   Offline Access, Item Categorization.

Identified Weaknesses: No Real-Time Collaboration, Limited Store Integration, Basic Meal Planning, Low Personalization, Subscription Model.

Opportunities for Differentiation: Add real-time list collaboration, integrate local store data, enhance meal planning, offer personalized list features, and keep essential features free to attract broader users.

User Feedback

User Feedback (Anticipated / Research-Based)

1. **Expected Positive Feedback**:
    a. **Ease of Use**: Users are likely to appreciate a simple, intuitive interface for quick and efficient list creation.
    b. **Customization**: The ability to personalize lists based on user preferences (e.g., recurring items or preferred grocery stores) will likely be well-received.
    c. **Collaboration Features**: As grocery shopping is often a shared task, users are expected to value real-time collaboration on lists, allowing multiple users to edit and update the list simultaneously.
2. **Potential Areas for Improvement**:
    a. **Meal Planning Integration**: Users may want integrated meal planning, where recipes can directly generate shopping lists to save time.
    b. **Offline Functionality**: Given the reliance on mobile apps in low-connectivity areas, offline access is likely to be a crucial feature that users would expect.
    c. **Subscription Model**: If the app includes premium features, there could be concerns about free features being limited, so balancing the free vs. premium options will be important.
3. **Insights from Competitor Feedback**:

a. **Out of Milk**: Users often request improved collaboration features and integration with grocery stores for real-time inventory and price comparisons.
b. **AnyList**: Customers appreciate its recipe and shopping list integration, but some have mentioned the lack of a comprehensive barcode scanning system.

Concept Definition

Core Features:

- Purpose: The application aims to streamline grocery shopping by allowing users to create personalized and shared lists, track expenses for shared living spaces, and prevent item duplication to reduce waste.
- Key Features:
  1. Customized personal and shared lists
  2. Enables us to notify shared users on specific items.
  3. Expense tracking in shared lists
  4. Local stores collaboration
  5. Daily reminders
- Problems Solved:
  1. Duplication of items when living in shared spaces
  2. Expense tracking of who paid for what specific item avoiding confusion.
  3. Eliminating the need for paper lists
  4. No more forgetting items

User Personas:

Persona1:

Roommates

Persona Name	OCD Ben
Age	23
Background	Works full time and lives with his roommates in a metropolitan city
Goals	Record who covered each expense within shared lists and avoid duplication of items
Pain Points	Unable to track the expenses, dislikes food wastage
Motivation	Wants effective splitting of bills and hates mess
Scenario	Ben opens the app at the end of the month to check which item he has paid for and which item his roommate has, making it effective to split the expenses, and even verify who is going to buy day to day items to avoid wastage.

Persona2:

Busy Parent

Persona Name	Neat Nithya
Age	34
Background	Works full time while simultaneously managing children and spouse
Goals	Easily track grocery items, avoid duplicate purchases, and manage budgets
Pain Points	Difficulty coordinating shopping lists with a spouse; dislikes food waste
Motivation	Wants to have an effective way to keep everyone in sync.
Scenario	Nithya opens the app before her grocery runs checks for items her husband may have added, and monitors spending trends over the month.

Persona3:

Persona Name	Crazy Kevin
Age	18
Background	Full time student at NYU

Goals	Easily track necessary items required before organizing a party, avoid duplicate purchases, and manage budgets
Pain Points	Difficulty in keeping track of party items and its expenses
Motivation	Wants effective splitting of bills.
Scenario	Kevin organizes parties every weekend and has keeps track of the items, leftovers and the bills.

Product Documents

Market Requirement Document:

1. Why

Individuals in shared living situations often face challenges in managing grocery shopping, tracking expenses, and avoiding duplicate purchases. This app addresses these common pain points by centralizing list management, tracking expenses per user, and promoting efficient, organized grocery shopping.

2. Vision

To create a collaborative grocery management app that simplifies list sharing, expense tracking, and budget control, reducing waste and making shared grocery shopping a streamlined experience.

3. User Personas

- **Persona 1:** *Alice*, *26*, lives with two roommates. Wants an app to manage shared grocery lists and track expenses for easy reimbursements.

- **Persona 2:** *Jake*, *35*, parent managing groceries and budgets for his family. Needs list-sharing and budget monitoring.
- **Persona 3:** *Sam*, *18*, college student sharing a dorm room, wants to avoid duplicate purchases and manage roommate expenses.

4. Unmet Needs

- Effective shared expense tracking for grocery items.
- Real-time list synchronization to reduce duplicates.
- Budget tracking and spending insights tailored for communal grocery shopping.

5. Existing Solutions

- **Generic Grocery Apps**: Standard apps allow list-making but lack shared expense tracking.
- **Note and To-Do Apps**: Used for grocery lists but are limited in real-time sharing and budget tracking.

Limitations of Current Solutions: Few apps address shared expenses specifically, making them cumbersome for roommates or families managing joint grocery expenses.

6. Our Solution

A shared grocery app with expense-tracking features, real-time list updates, budget insights, and notifications for duplicate purchases, designed for users in shared living situations to streamline grocery shopping and reduce waste.

7. Use Scenarios

- **Roommates**: Track who paid for each item, manage monthly expenses, and avoid buying duplicates.

- **Families**: Coordinate family shopping lists, budget monitoring, and provide spending insights.
- **College Students**: Easily split grocery costs and manage joint purchases for shared dorm rooms.

8. Why Now

With rising living costs, more people are moving into shared housing arrangements, leading to an increased need for shared financial management tools. Additionally, consumers are increasingly focused on reducing waste and optimizing spending, creating a timely demand for an app that addresses these needs in the grocery space.

9. Market Size

The market size includes the growing number of young adults and families in shared housing, estimated at millions globally. The grocery app market itself has a substantial user base with high engagement and retention rates, providing a sizable opportunity for growth.

10. Adoption Barriers

- **Privacy Concerns**: Users may worry about sharing financial information.
- **Learning Curve**: Introducing new features may require user education for seamless adoption.

11. Risks and Strategic Considerations

- **Risk**: Privacy concerns shared expenses.
    - **Mitigation**: Employ encrypted data storage and customizable access to sensitive information.
- **Risk**: Competing apps add similar features.

- **Mitigation**: Continuously improve the user experience, focusing on unique aspects like budget control and item duplication prevention.

12. Recommendation

Move forward with development, emphasizing user-friendly design, privacy controls, and clear in-app guidance on managing shared lists and tracking expenses. Initial focus should be on roommates and families to test and validate features, with a potential expansion to student dormitories and shared workspaces if successful.

PRODUCT REQUIREMENT DOCUMENT:

This grocery list app will help users manage their shopping lists, track their grocery expenses, and prevent duplicate purchases in shared spaces

PURPOSE AND GOALS:

Objective:

To provide a seamless way for individuals, especially those living in shared spaces, to collaboratively manage grocery shopping and expenses.

Goals:

- Allow users to create and share grocery lists.
- Track expenses for each user.
- Avoid duplicate items in lists.

USER PERSONAS:

Persona1:

- Working Professional Living in a Shared Apartment

- Needs: Simple, easy-to-use app for grocery management.
- Pain Points: Difficulty in keeping track of who bought what and managing shared expenses.

Persona2:

- Family Manager
  - Needs: Easily track grocery items, avoid duplicate purchases, and manage budgets
  - Pain Points: Duplicate items in the cart, no centralized place to view all purchases and difficulty coordinating shopping lists with a spouse; dislikes food waste

Persona3:

- College Student Living in a Shared Apartment
  - Needs: Easily track necessary items required before organizing a party, avoid duplicate purchases, and manage budgets
  - Pain Points: Difficulty in keeping track of party items and its expenses

FEATURES:

- Create and Share Lists: Users can create grocery lists and share them with others.
- Expense Tracking: Track who bought which items and calculate individual expenses.
- Item Duplication Prevention: Automatically suggest items that are already on the list to prevent buying duplicates.
- Push Notifications: Reminders when a shopping list is updated or when items need to be bought.
- Search Functionality: Easily find items within shared lists.
- List Sorting: Option to sort items by category (e.g., fruits, vegetables, dairy).

USER STORIES:

- As a user, I want to be able to create a grocery list so that I can manage my shopping efficiently.
- As a user, I want to track how much I've spent and who has paid for what to keep shared expenses clear.
- As a user, I want to prevent adding duplicate items to the list to save time and avoid wasting money.

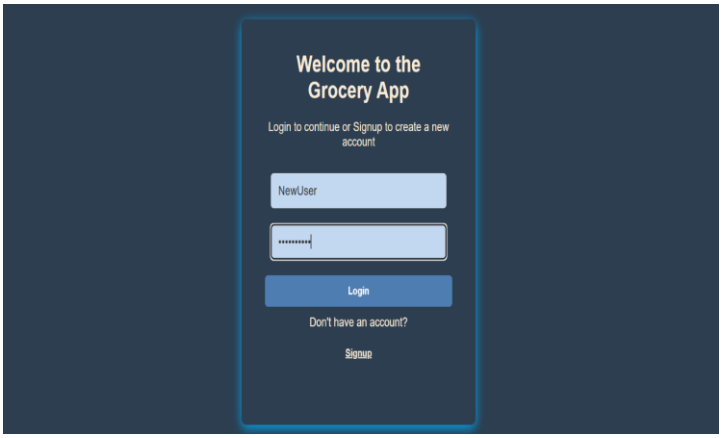
FUNCTIONAL REQUIREMENTS:

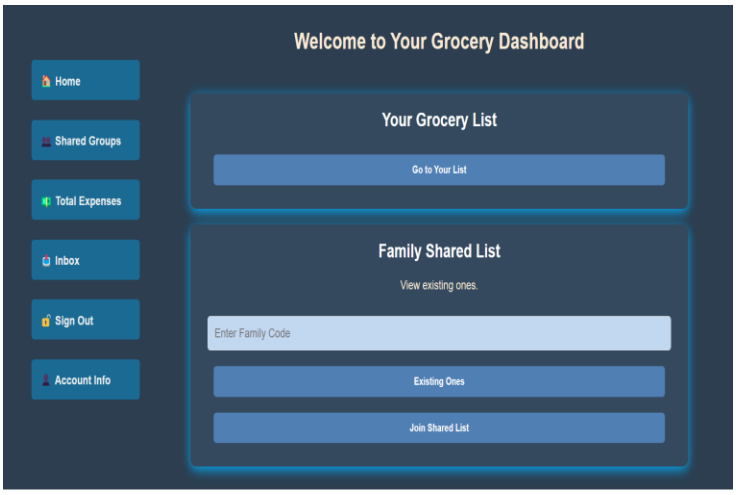
- List Management: Ability to add, edit, and remove items from the list.
- User Authentication: Users need to sign up, log in, and manage their profiles.
- Expense Allocation: Ability to enter and track individual user expenses.
- Item Duplication Check: System checks if an item is already on the list and prompts the user.
- Data Sync: Synchronization of lists across devices in real-time.

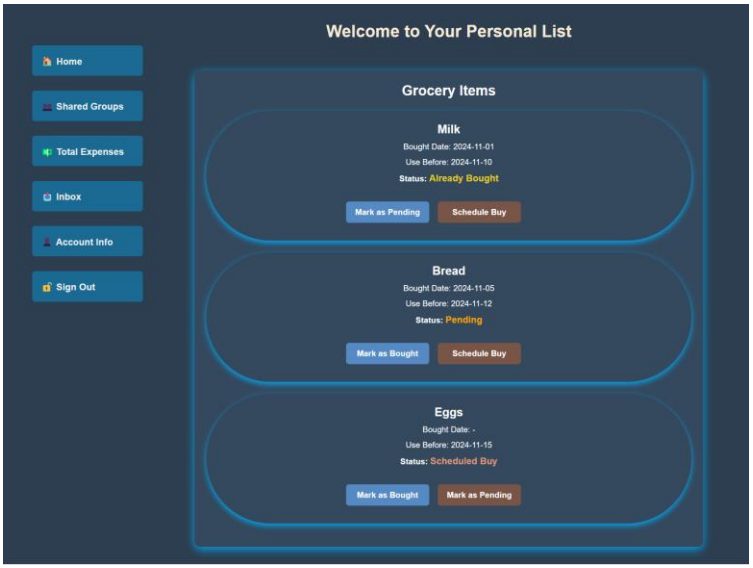
NON-FUNCTIONAL REQUIREMENTS:

- Performance: The app should load within 2 seconds.
- Security: User data must be encrypted and protected.
- Scalability: Able to handle increasing numbers of users and items.
- Usability: App should be intuitive, with minimal steps to create and share lists

WIREFRAMES / MOCKUPS:







ACCEPTANCE CRITERIA:

- Users are able to create a list and add items to it.
- Users can share the list with other users.
- Duplicate items are automatically identified and not added to the list.
- Expenses are correctly tracked and divided among users.

DEPENDENCIES AND ASSUMPTIONS:

- The initial stages of this app will be a web application as shown in the prototype.
- The app will be later developed for both android and iOS.
- The app will require internet connectivity for syncing lists.

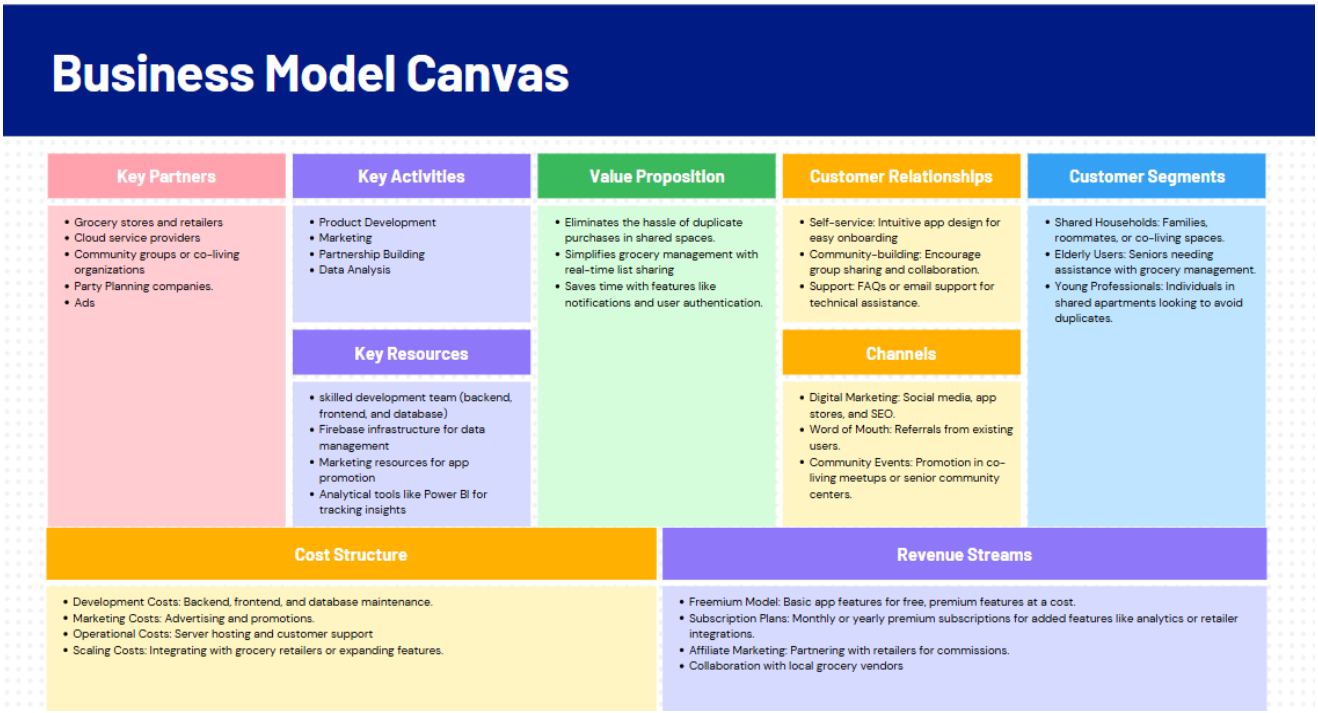
TIMELINE:

- MVP (Minimum Viable Product): 3 months (Include basic features like list creation and sharing).
- Full Product Launch: 6 months (Add advanced features like expense tracking, duplication checks).

RISK AND MITIGATION:

- Risk: Users might not use the expense tracking feature.
- Mitigation: Add a tutorial and make the feature easy to use with reminders.

BUSINESS MODEL CANVAS:



TECHNOLOGY REQUIREMENTS

Technology Stack

1. Frontend:

- **Languages:** JavaScript, HTML5, CSS.
- **Frameworks/Libraries:** Bootstrap (for responsive design).

2. Backend:

- Language: Java 11.
- Framework: Spring Boot (to manage APIs and business logic).

3. Database:

- Firebase: Cloud-based real-time NoSQL database for managing shared lists and user data.

4. Tools & Platforms:

- Version Control: GitHub for source code management.
- Development Environment: IntelliJ IDEA.
- Hosting: Firebase Hosting or AWS (optional, for scaling).

5. Analytics & Reporting:

- Tool: Power BI for analyzing user data and generating insights.

1. Architectural Style:

- Client-Server Architecture: The frontend communicates with the backend API to fetch and update data in Firebase.

2. High-Level Design:

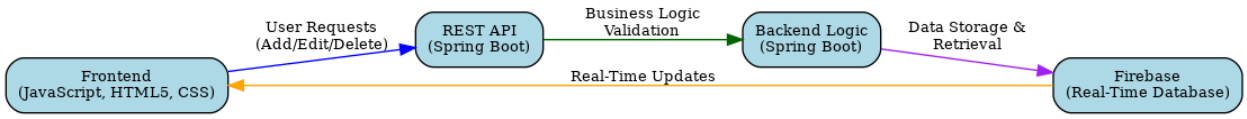
- Frontend Layer:
    - Handles user interactions and displays data.

    - Sends requests to the backend using REST APIs.
- Backend Layer:
    - Implements business logic using Spring Boot.
    - Validates user requests and interacts with Firebase.
- Database Layer:
    - Firebase stores user data, shared lists, and notifications.
    - Real-time sync ensures all users see updates immediately.

3. Data Flow:

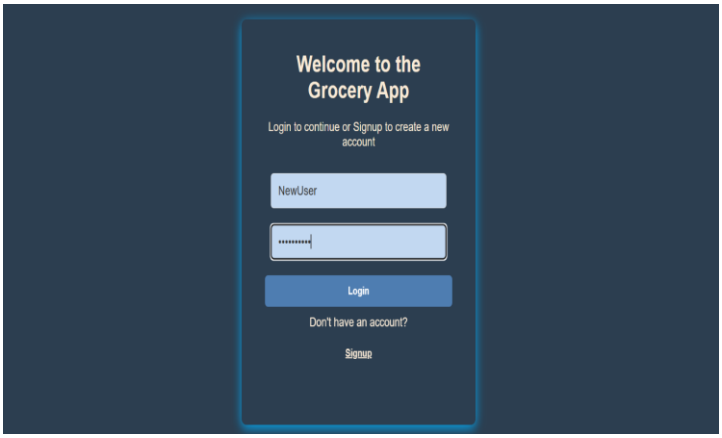
- User Interaction: Users interact with the frontend (e.g., adding items to the list).
- API Calls**:** Frontend sends API requests to the backend.
- Data Processing**:** Backend processes request, validates data, and interacts with Firebase.
- Real-time Updates**:** Firebase synchronizes data changes across all devices in real-time.

4. Diagram Representation:



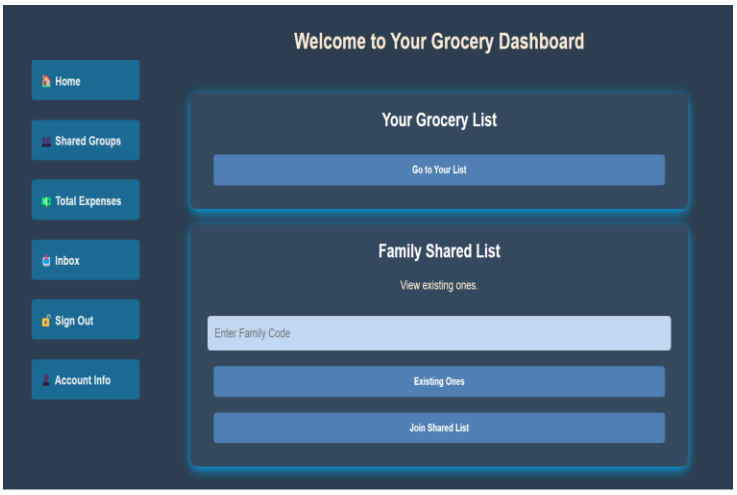
WIREFRAMES/MOCKUPS

1. This is the entry point of the app where users authenticate their identity. They can log in with their credentials or signup.



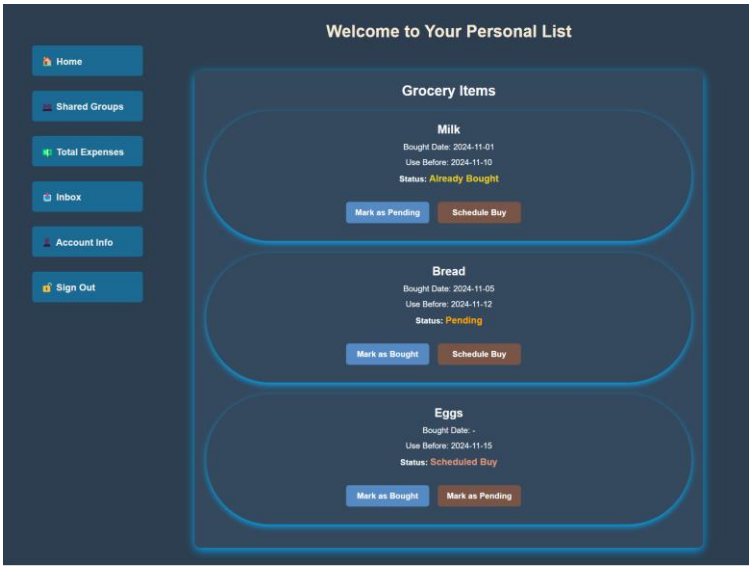
Description: The login page allows users to securely access their accounts.

2. Once logged in, users are directed to the Dashboard. This page gives a quick overview of their active grocery lists, including the ability to create new lists, edit, or delete existing ones. It also shows basic user statistics.



Description: The Dashboard page provides an overview of the grocery lists and quick access to add new items or manage existing lists.

3. The Personal List Page displays a detailed view of a grocery list, including items, quantities, and an option for users to mark items as completed. This page also allows users to share lists with others for collaboration.



Description: This page displays the contents of a selected grocery list. Users can manage items, mark them as bought, and see the total count.

What Next?

As we move forward with the Shared Grocery List App, several exciting features and enhancements are planned to further improve the user experience and extend the app's functionality. Some of the planned updates include:

- **Voice-enabled Shopping Lists**: Adding voice recognition features to allow users to add items to their grocery lists simply by speaking, making the app even more convenient and hands-free.
- **Integration with Grocery Stores**: Partnering with local grocery stores to allow users to directly order items from the app, streamlining the process from list creation to checkout.
- **Intelligent Item Suggestions**: Using machine learning to suggest grocery items based on users' previous shopping habits, preferences, and seasonal trends, making the shopping experience more personalized.
- **Meal Planning Integration**: Adding a feature to help users plan meals for the week, generating shopping lists based on selected recipes and the items required.

- **Recipe Generation**: Suggesting recipes of meals based on the items present in the household.
- **Personalized diet plans**: Integrating specific diet plans based on personal details and preferences.
- **Family and Group Collaboration**: Enhancing the collaborative features to support more complex scenarios, such as tracking items across multiple household members, with the ability to assign tasks or share lists with different groups.

CONCLUSION

The Shared Grocery List App is designed to address a fundamental challenge many users facei.e managing grocery shopping effectively in shared living environments. By focusing on collaborative features like real-time list sharing, duplicate item detection, and personalized notifications, the app aims to reduce confusion and prevent unnecessary purchases.

As demonstrated through the Power BI analysis and user insights, the app has the potential to enhance the shopping experience for individuals living in shared spaces, making it more organized and efficient. The initial features and ongoing enhancements will continue to empower users to create, share, and manage their grocery lists with ease.

The next steps for the project include rolling out future features, optimizing performance, and exploring opportunities for partnerships with grocery stores to streamline the shopping process even further. The overall goal is to continuously iterate on the app based on user feedback, ensuring it meets the evolving needs of our target audience.