ShopSmart: Digital Grocery Store Project Report

1. INTRODUCTION

1.1 Project Overview

ShopSmart is a full-featured online grocery shopping application designed to enhance the digital retail experience. It allows users to browse, search, and purchase groceries efficiently from the comfort of their homes. The app streamlines operations such as user registration, product management, shopping cart, order placement, payment, and user feedback.

1.2 Purpose

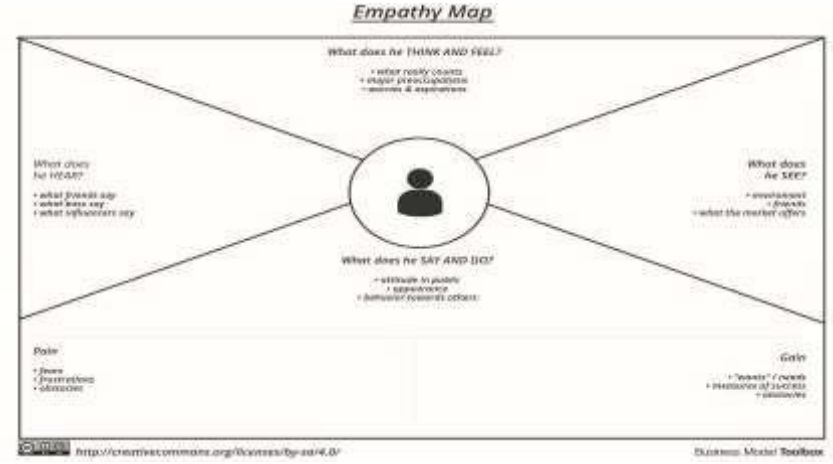
The primary goal of ShopSmart is to simplify grocery shopping through a user-friendly web interface. It aims to reduce the need for physical store visits, increase accessibility to groceries, and offer a seamless shopping experience using modern technologies like Node.js, MongoDB, and JWT authentication

2. IDEATION PHASE

2.1 Problem Statement

Traditional grocery shopping can be time-consuming and inconvenient, especially for people with tight schedules or mobility issues. There is a need for a reliable, scalable, and easy-to-use online grocery platform that ensures timely delivery and a wide range of product availability.

2.2 Empathy Map



Canvas

2.3 ShopSmart Template

A lightweight, mobile-responsive UI with:

- Categories like Fruits, Vegetables, Dairy, Snacks, and Household Items.

- Secure login/signup using JWT.
- Shopping cart and payment integration.
- Admin panel for product and order management.

3. REQUIREMENT ANALYSIS

3.1 Grocery-Example

- Example items: Apples, Milk, Bread, Rice, Soap, Shampoo, etc.
- Each item includes name, price, category, stock status, and image.

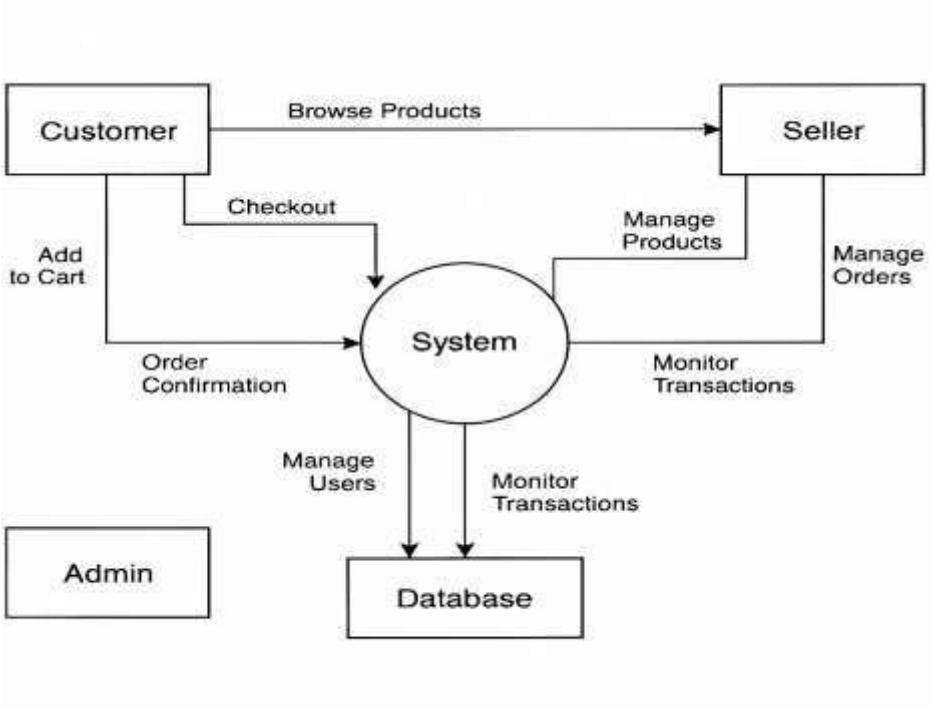
3.2 Solution Requirement

- User authentication (JWT)
- Product catalog and categorization
- Add to Cart, Checkout, and Order History
- Feedback and ratings
- Admin CRUD operations

3.3 Data Flow Diagram (DFD)

Level 0 and Level 1 diagrams illustrating:

- User -> Login/Register -> Dashboard -> Cart -> Payment
- Admin -> Manage Products/Orders -> View Feedback



3.4 Technology Stack

- **Frontend**: HTML, CSS
- **Backend**: Node.js, Express.js
- **Database**: MongoDB with Mongoose
- **Authentication**: JSON Web Token (JWT)
- **Tools**: Postman (API Testing), GitHub, VSCode

4. PROJECT DESIGN

4.1 Problem Solution Fit

ShopSmart addresses the lack of time and convenience in traditional shopping by providing an all-in-one digital grocery solution with real-time product availability, delivery, and offers.

4.2 Proposed Solution

A web-based platform where users can:

- Register/Login securely
- Browse and filter products
- Add products to a cart
- Pay using integrated gateways
- Provide feedback and rate services

4.3 Solution Architecture

- **MVC Pattern**
- Routes → Controllers → Models → Views
- RESTful APIs for each module (User, Product, Cart, Order)

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Phases:

- Requirement Gathering
- Design and Architecture
- Module Development
- Integration & Testing

- Deployment

5.2 Planning Logic

Used Gantt charts and Trello board for sprint-based tracking:

- Week 1: Setup, Authentication
- Week 2: Product & Cart modules
- Week 3: Order, Feedback
- Week 4: Testing, Final Deployment

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6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

- Load tested using Apache JMeter
- API response time under 200ms for 100 concurrent users
- MongoDB indexed for faster product search

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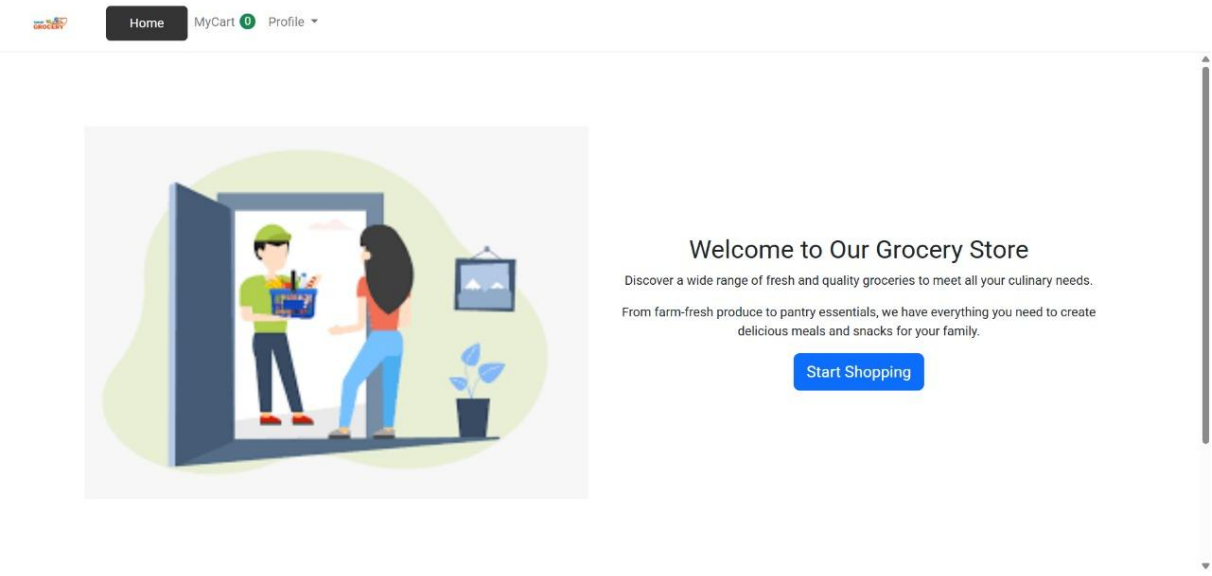
7. RESULTS

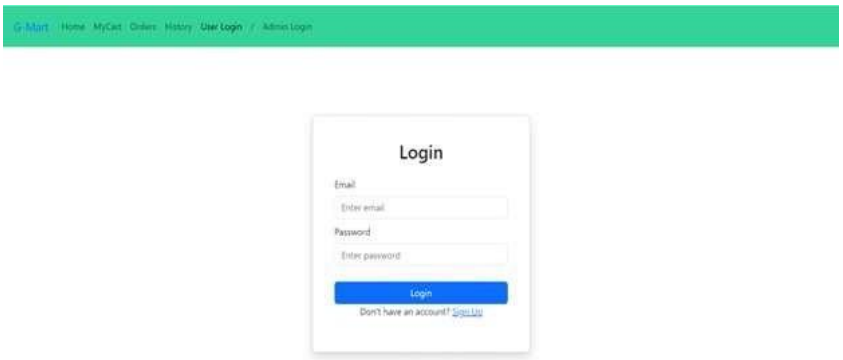
7.1 Output Screenshots

Include UI screenshots for:

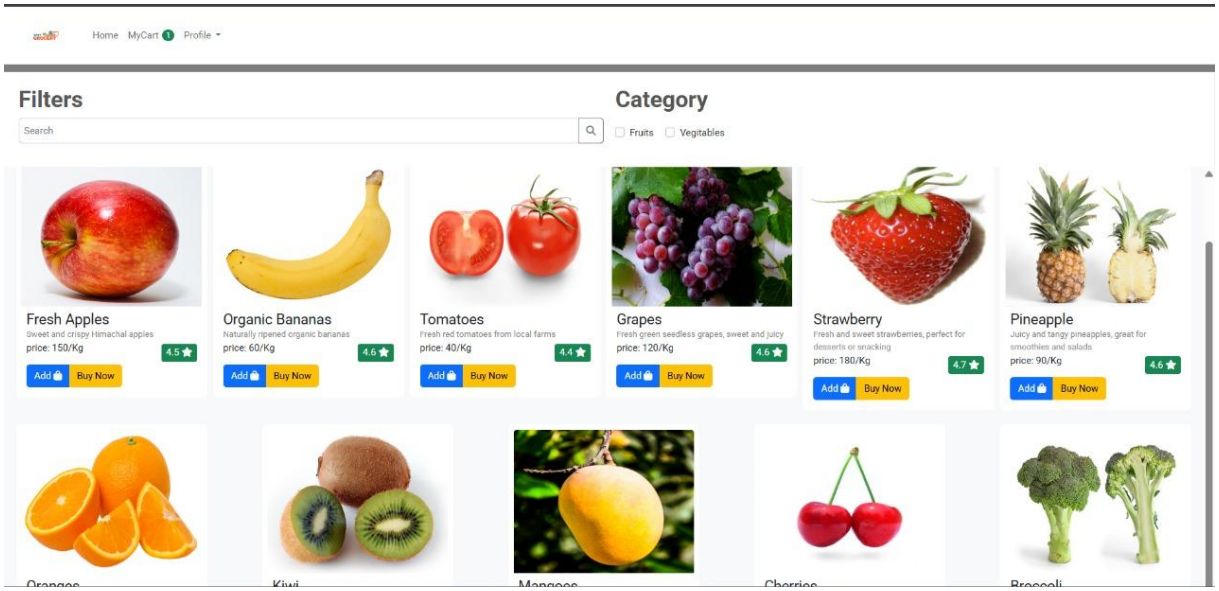
- Home page



- Login/Register



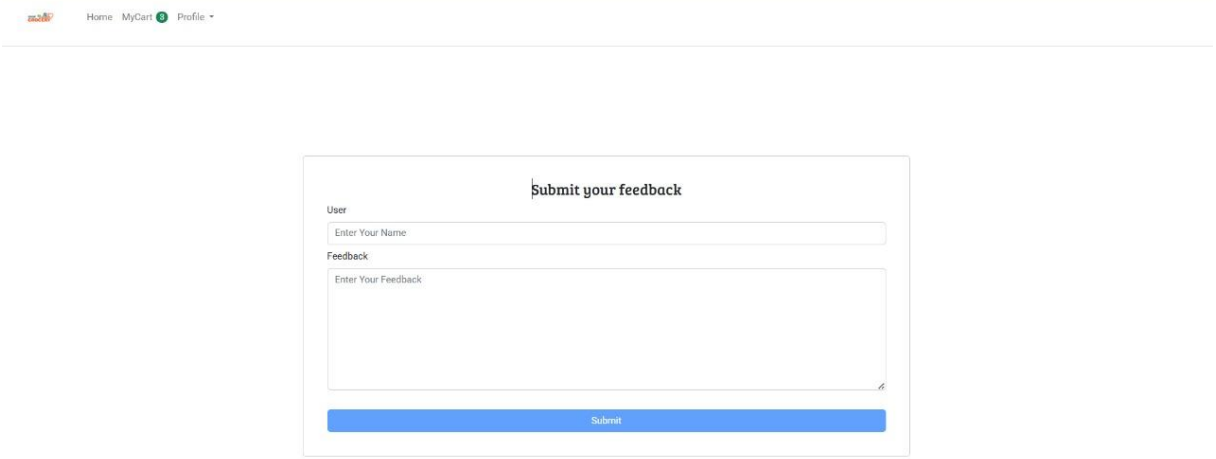
- Product Listing



- Cart and Checkout

- Admin Dashboard

- Feedback Page



8. ADVANTAGES & DISADVANTAGES

Advantages

- Reduces manual effort and time
- Wide product availability
- Scalable and secure
- Easy management for admins

Disadvantages

- Requires stable internet connection
- Initial setup cost for hosting and development
- May require user onboarding for elderly customers

9. CONCLUSION

ShopSmart provides a robust platform to digitalize grocery shopping. With core features like product filtering, seamless payment, and order tracking, it offers great value to users and administrators alike.

10. FUTURE SCOPE

- Mobile app integration (React Native/Flutter)
- AI-based product recommendations
- Real-time delivery tracking with geolocation
- Multi-vendor support

11. APPENDIX

- GitHub repo link: https://github.com/konankivarshitha/grocery-webapp