Grocery webapp using MERN STACK NM1042

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Abstract

This project is a comprehensive grocery web application developed (Fresh Today) using the MERN stack (MongoDB, Express.js, React.js, and Node.js). The app is designed to provide a seamless and efficient online grocery shopping experience with features such as product browsing, real-time cart management, and secure checkout.

The frontend, built with Angular, delivers a dynamic, interactive, and responsive user interface. React’s component-based architecture ensures reusability and maintainability, while Bootstrap enhances the design with modern, mobile-friendly aesthetics.

The backend, powered by Node.js and Express.js, facilitates robust server-side operations, including secure RESTful APIs and efficient data handling. MongoDB, a NoSQL database, provides a scalable solution for managing user, product, and order data.

This grocery app highlights expertise in full-stack development, leveraging the MERN stack to build a practical, user-friendly, and feature-rich e-commerce solution.

Introduction

"Introducing a user-friendly grocery app built (Fresh Today) using the MERN stack . Fresh Today aims to simplify grocery shopping with features like seamless browsing, secure checkout, and efficient admin management."

This web application is designed to revolutionize the way users shop for groceries by offering a smooth, efficient, and user-friendly experience. It allows customers to browse a wide range of products, manage their cart in real time, and complete purchases securely.

For administrators, the app provides powerful tools to manage inventory, update product details, and oversee orders. This project showcases modern web development practices, robust backend functionality, and a visually appealing frontend interface, all aligned to deliver a seamless e-commerce experience."

Features

User

- Browse products by category.
- Add products to the cart.
- Update or remove items from the cart.
- Secure checkout process.

Admin

- Add/edit/delete products.
- View and manage orders.

Architecture

Frontend

The frontend is built with Angular for a dynamic, modular structure and Bootstrap for responsive, user-friendly design. Angular handles real-time updates and navigation, while Bootstrap ensures a modern and mobile- friendly interface.

Backend

The backend uses Node.js and Express.js to create RESTful APIs for data handling. Node.js ensures scalability, while Express.js manages routing, authentication, and error handling efficiently.

Database

The app uses MongoDB to store data in collections for users, products, and orders. Its flexible JSON-like structure allows for fast and efficient data retrieval.

Frontend

The frontend of the grocery app is developed using Angular and Bootstrap to provide a dynamic, responsive, and user-friendly interface. Angular ensures a seamless user experience with features like two-way data binding for real-time updates and routing for smooth navigation between pages such as product listings, the cart, and checkout. Bootstrap enhances the design with pre-styled components, creating a modern, mobile-responsive layout. Together, these technologies deliver a visually appealing and highly interactive platform for users.

Backend

API Development

- Created RESTful APIs for seamless communication between the frontend and database.
- Handles CRUD operations for products, users, and orders.

Authentication

- Implemented secure user authentication using JSON Web Tokens (JWT).
- Ensures session management and protects sensitive data.

Middleware

- Manages request validation and error handling.
- Handles logging for better debugging and tracking

Backend

Order Management

- Processes user orders, including adding items, calculating totals, and updating statuses.
- Stores order history for user reference.

Admin Features

- APIs for managing inventory (add, update, delete products).
- Provides insights into user orders for better business operations.

Scalability and Efficiency

- Non-blocking architecture of Node.js ensures quick handling of concurrent requests.
- Optimized database queries for faster response times.

Workflow

- User Interaction:

Users browse products, add items to the cart, and place orders through a responsive React.js frontend.

- Frontend to Backend Communication:

The frontend sends user requests (like adding products or logging in) to the Node.js and Express.js backend via RESTful APIs.

- Backend Processing:

The backend handles business logic, such as validating inputs, managing carts, and processing orders.It uses JWT for secure user authentication.

- Database Operations:

The backend interacts with MongoDB to store and retrieve data for users, products, and orders.

- Admin Panel:

Admins manage inventory and orders through a dedicated interface connected to the backend.

Testing

Frontend

- Verified functionality like product listing, cart updates, and checkout flow.
- Tested responsiveness across multiple devices using browser tools

Backend

Conducted API testing with Postman to ensure endpoints handled requests correctly.Validated authentication processes, including JWT generation and verification.

Database

Verified MongoDB queries for accuracy and efficiency.Ensured data consistency for user orders, cart updates, and inventory management

Challenges & Solution

- Challenge: Real-Time Cart Updates

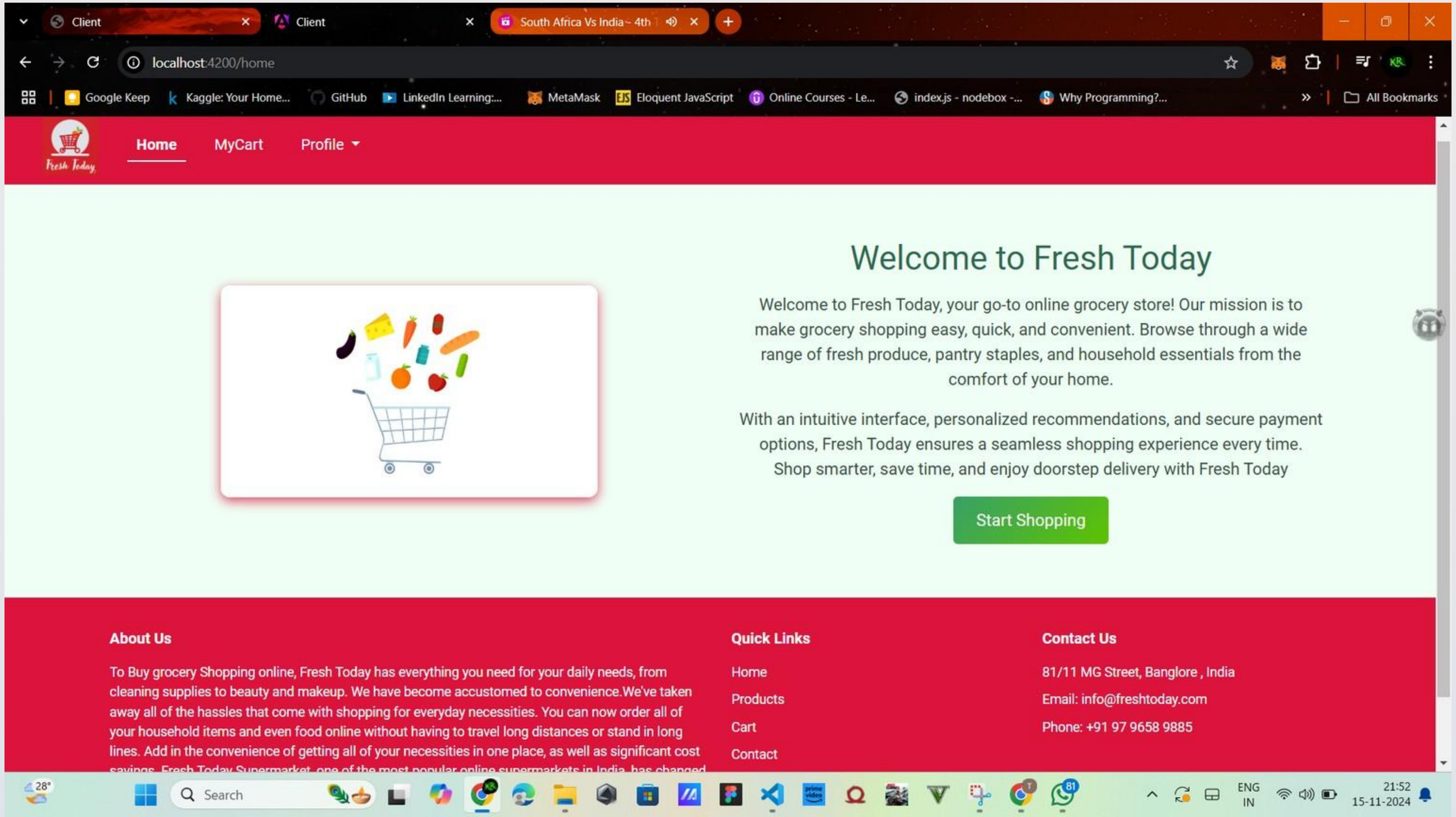
Problem: Ensuring that the cart reflects changes (adding/removing items) instantly for a smooth user experience.
Solution: Implemented Angular's two-way data binding to dynamically update the cart in real time, avoiding page reloads.

- Challenge: Secure User Authentication

Problem: Protecting sensitive user data during login and transactions.
Solution: Integrated JSON Web Tokens (JWT) for authentication and encrypted sensitive data using secure industry-standard algorithms.

Photo showcase

Home Page



Welcome to Fresh Today

Welcome to Fresh Today, your go-to online grocery store! Our mission is to make grocery shopping easy, quick, and convenient. Browse through a wide range of fresh produce, pantry staples, and household essentials from the comfort of your home.

With an intuitive interface, personalized recommendations, and secure payment options, Fresh Today ensures a seamless shopping experience every time. Shop smarter, save time, and enjoy doorstep delivery with Fresh Today

Start Shopping

About Us

To Buy grocery Shopping online, Fresh Today has everything you need for your daily needs, from cleaning supplies to beauty and makeup. We have become accustomed to convenience.We've taken away all of the hassles that come with shopping for everyday necessities. You can now order all of your household items and even food online without having to travel long distances or stand in long lines. Add in the convenience of getting all of your necessities in one place, as well as significant cost savings. Fresh Today Supermarket, one of the most popular online supermarkets in India, has changed

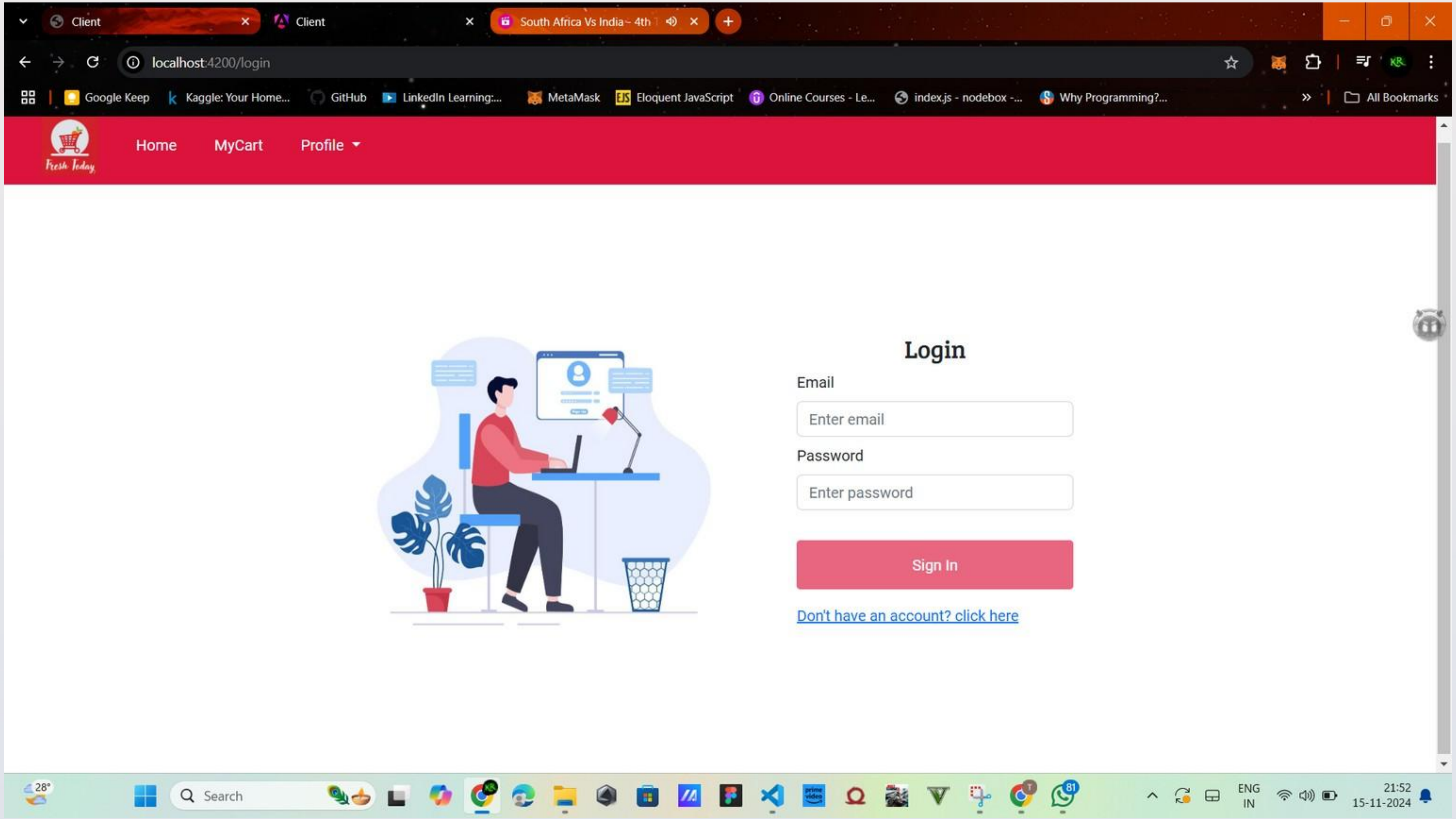
Quick Links

Home
Products
Cart
Contact

Contact Us

81/11 MG Street, Banglore , India
Email: info@freshtoday.com
Phone: +91 97 9658 9885

Login Page



Login

Email

Enter email

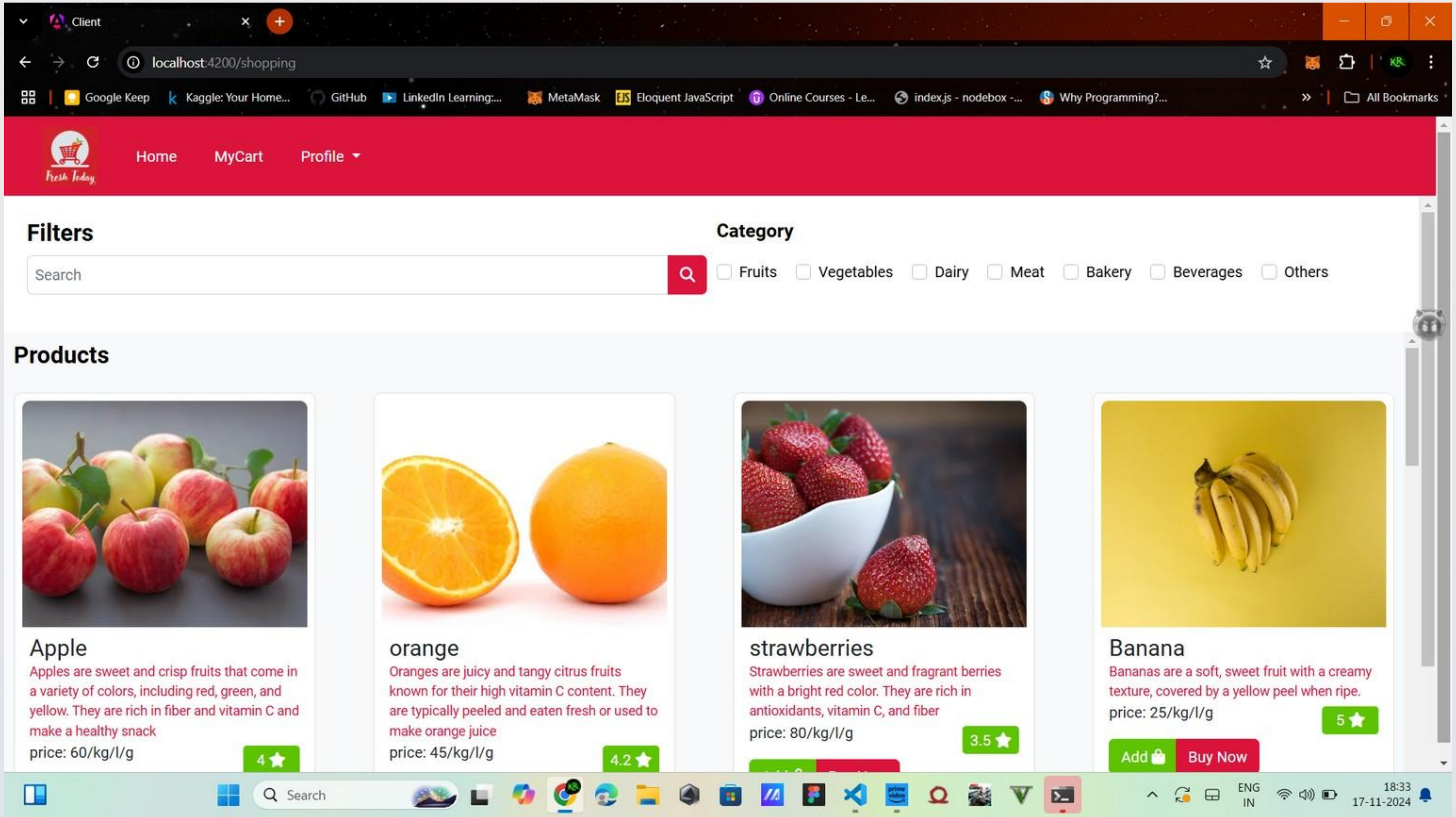
Password

Enter password

Sign In

Don't have an account? click here

Landing Page



Filters

Search

Category

□ Fruits □ Vegetables □ Dairy □ Meat □ Bakery □ Beverages □ Others

Products

Apple

Apples are sweet and crisp fruits that come in a variety of colors, including red, green, and yellow. They are rich in fiber and vitamin C and make a healthy snack

price: 60/kg/l/g

4 ★

orange

Oranges are juicy and tangy citrus fruits known for their high vitamin C content. They are typically peeled and eaten fresh or used to make orange juice

price: 45/kg/l/g

4.2 ★

strawberries

Strawberries are sweet and fragrant berries with a bright red color. They are rich in antioxidants, vitamin C, and fiber

price: 80/kg/l/g

3.5 ★

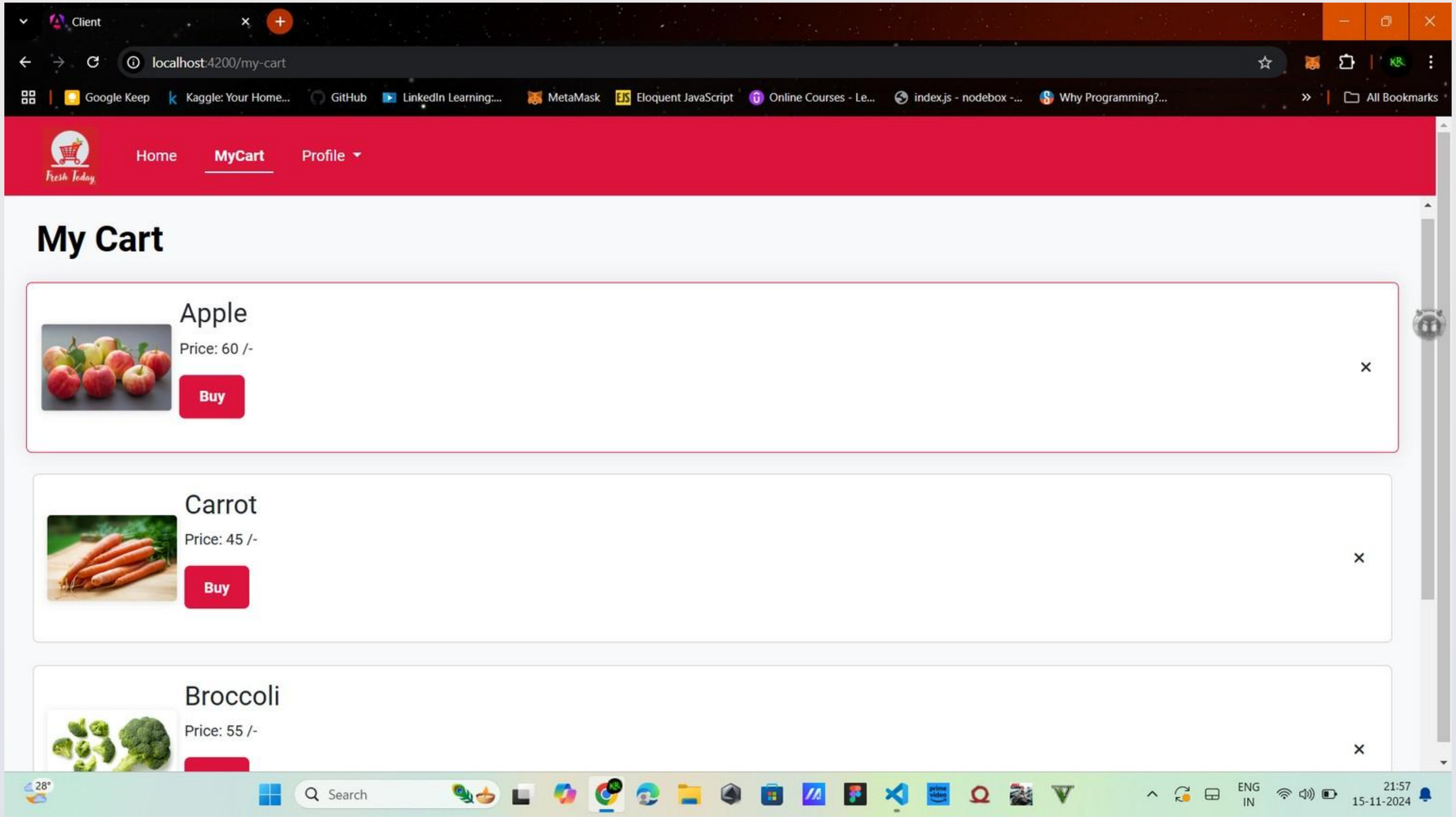
Banana

Bananas are a soft, sweet fruit with a creamy texture, covered by a yellow peel when ripe.

price: 25/kg/l/g

5 ★

Cart Page



My Cart

Apple

Price: 60 /-

Buy

Carrot

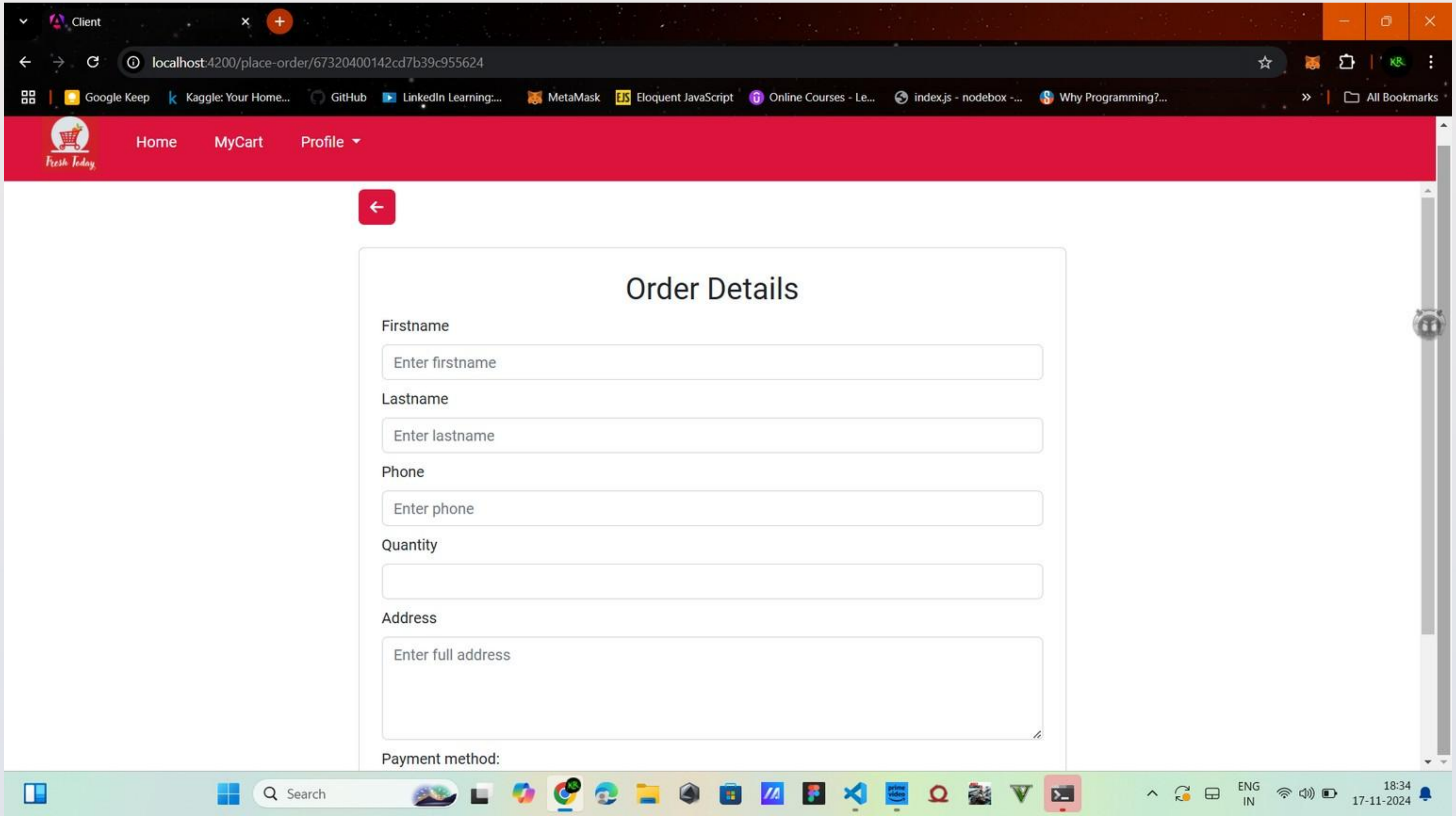
Price: 45 /-

Buy

Broccoli

Price: 55 /-

Order Page



Order Details

Firstname

Enter firstname

Lastname

Enter lastname

Phone

Enter phone

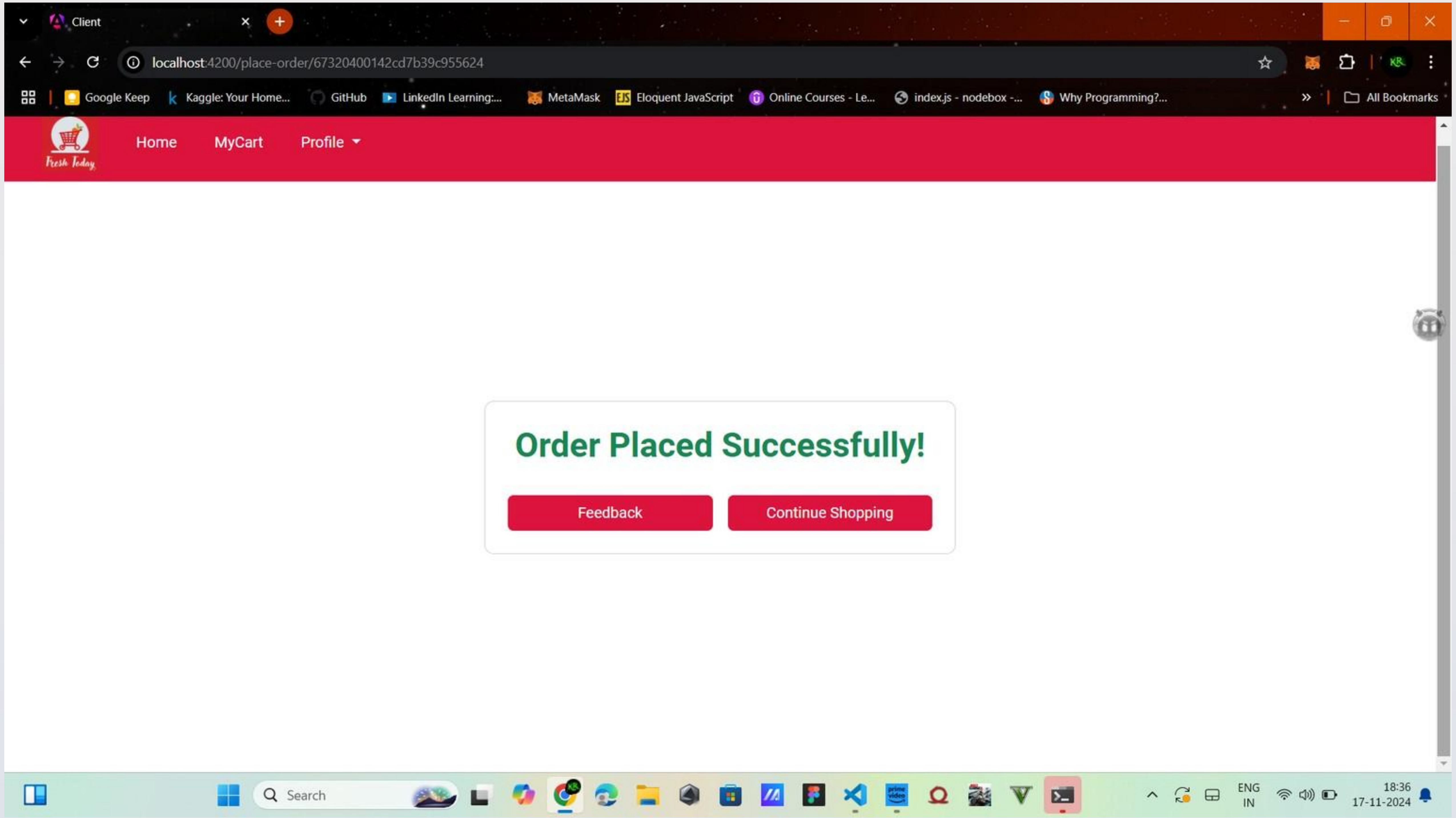
Quantity

Address

Enter full address

Payment method:

Order Successfull Page



Order Placed Successfully!

Conclusion

The grocery app, developed using the MERN stack, successfully meets the needs of both users and administrators by providing a seamless shopping experience and efficient management tools. The frontend, built with Angular and Bootstrap, offers a dynamic, responsive, and user-friendly interface. The backend, powered by Node.js and Express.js, ensures secure and efficient communication between the frontend and database, while MongoDB provides a flexible and scalable data storage solution.

Despite the challenges of implementing real-time cart updates, secure authentication, and maintaining scalability, the project overcame these hurdles through thoughtful design and robust solutions. Rigorous testing with tools like Postman ensured the app's reliability, security, and performance.

Thank You