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HOMEMADE FOOD ORDERS IN THE ECOMMERCE SPACE INTERACT WITH RAZORPAY AS A PROTOTYPE

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1. Abstract

The Homemade Food Ordering System is a web-based platform designed to connect home chefs with customers seeking hygienic and affordable homemade meals. The system begins with a secure registration and login process, providing role-based access for customers, chefs, and administrators. To enhance user experience, a video-based guide explains the registration and ordering process in a simple manner. The application also supports multiple languages, ensuring accessibility for users from different regions. Developed using React.js, Spring Boot, and MongoDB, the platform offers secure authentication and scalable performance. Integrated digital payment ensures safe transactions, improving convenience, transparency, and overall efficiency.

Keywords: E-Commerce, Video-Based Onboarding, Razorpay Integration, Web Application.

2. Introduction

The advancement of e-commerce has significantly changed the way goods and services are delivered, particularly in the food industry. Online food ordering platforms have enabled customers to access a wide variety of food options through digital interfaces. However, most existing systems are primarily designed for restaurants and organized vendors, while home-based food entrepreneurs often lack a dedicated and accessible digital platform.

A major challenge in digital platforms is usability for uneducated users. Text-based registration and navigation processes may create barriers for such users. To address this issue, the proposed Homemade Food Ordering System introduces a customer registration process supported by video format in any language. This feature enables users to understand the platform instructions visually and audibly, improving accessibility and inclusiveness.

Developed using modern technologies such as React.js, Spring Boot, and MongoDB, the system ensures scalability, security, and efficient order management. This platform empowers home chefs by expanding their reach while offering customers a convenient and transparent food-ordering experience.

Objective:

The objective of this research is to design and develop a prototype model that supports inclusive registration, secure payment processing, and efficient order management to promote home-based food entrepreneurship in the digital marketplace.

3. Literature Survey

The evolution of online food delivery systems has been closely associated with the expansion of electronic commerce platforms. Early food-ordering applications were designed to simplify restaurant services by enabling digital menu display, online ordering, and payment confirmation. These systems primarily focused on improving operational efficiency and customer convenience.

Sharma [1] developed an online food delivery system focused on restaurant-based services with integrated digital payment support. The study emphasized user authentication, menu management, and order tracking functionalities. However, the system primarily targeted commercial restaurants and did not address small-scale home-based vendors.

Kumar [2] proposed a web-based e-commerce food portal that included user registration, shopping cart functionality, and order management features. The research highlighted the importance of secure payment gateways but did not explore multilingual or accessibility features for uneducated users.

Patel[3] introduces as this research introduced a cloud-integrated food ordering application that utilized cloud storage for menu data and implemented secure online payment systems.

Table 1. Comparative analysis of existing food ordering systems.

Author (Year)	Focus Area	Key Contribution	Limitation
Sharma (2019)	Restaurant delivery	Payment gateway + tracking	No home-kitchen support
Kumar (2020)	E-commerce food portal	Role-based access control	Restaurant-scale only
Patel (2021)	Cloud food ordering	Elastic storage; 99.5% uptime	Franchise-oriented
Reddy (2022)	Hyperlocal vendors	Mobile booking & delivery	No analytics/auth
Proposed System	Homemade food	Full stack + Razor pay	Prototype stage

3.1 Existing System

Current systems mainly focus on commercial establishments and urban markets. Home-based food vendors are often excluded due to complex onboarding procedures, high commission charges, and strict operational requirements. Additionally, the registration process in many platforms is text-based and may require documentation uploads, which can be difficult for uneducated or semi-literate users.

Disadvantages of Existing System

- Most platforms are designed mainly for restaurants and commercial vendors.
- Home based food entrepreneurs face difficulty in registration and approval.
- The registration process is text-band not user-friendly for uneducated people.
- No video-based guidance is provided during onboarding.
- Limited support for multilingual interaction

3.2 Proposed System

The Proposed solution follows a client-server paradigm that is structured into four logically divided layers: the presentation layer, the API gateway, business logic layer and persistence layer. The fifth cross-cutting concern, which is called payment integration, cuts across both the backend and the client tiers. This division of labour allows unidirectional

scaling and technology replacement on any level without trickle-down changes. The access control is controlled by three main user roles across the platform. Customers role allows one to discover food, manage carts, checkout and pay.

A key feature of the proposed system is the video-based registration process that supports any language. This innovative approach ensures accessibility for uneducated or semi-literate users who may face difficulties understanding text-based instructions. During registration, users can watch step-by-step video guidance explaining how to create an account and use the platform

Table 2. Comparison between existing system and proposed system

Parameter	Existing System	Proposed System
Data Management	Orders recorded manually in notebooks or simple spreadsheets	Centralized MySQL database with normalized schemas for secure data storage
Food Search Mechanism	Customers contact home chef directly through phone or social media	Multi-parameter digital search(rating, location, price) with real-time filtering
Menu Updates	Manual Updates through WhatsApp or word of mouth	Dynamic menu management with instant updates on dashboard
Order Process	Orders placed via phone calls without proper tracking	Digital order placement with order ID and confirmation notifications
User Authentication	No proper login or verification system	JWT-based secure authentication with role-based access (Customer, Chef, Admin)
Reporting & Analytics	No structured reporting	Dashboard with sales reports, order history, and performance analytics
Security	No secure data handling	Encrypted data storage and secure session management

1. Methodology

1.1 System Architecture

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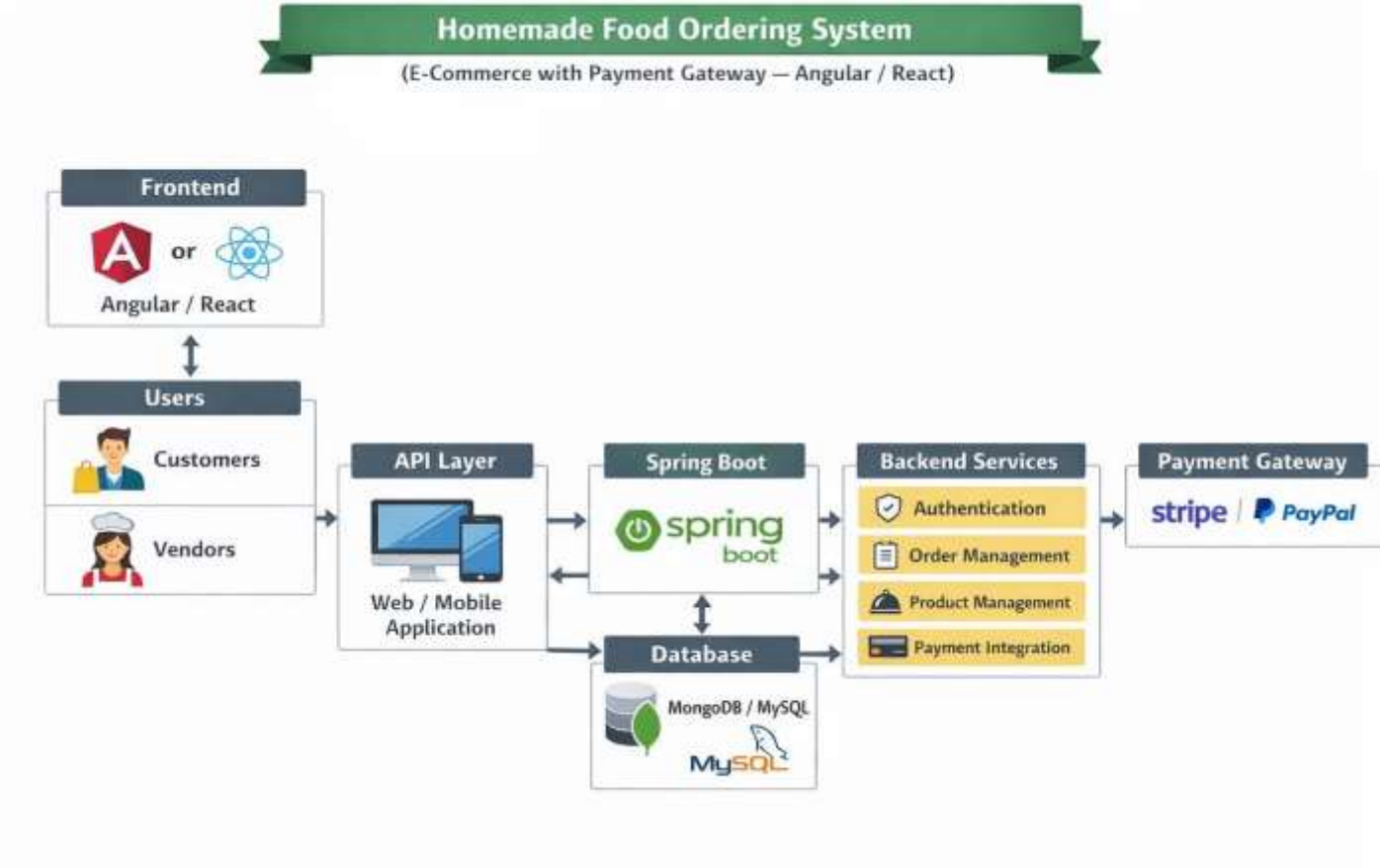

The **User Layer**[1] includes customers, home chefs, and administrators who interact with the system. Customers register, browse food items, and place orders. Home chefs manage food listings and order updates. Administrators monitor and control overall platform activities. This layer represents the entry point of the system.

The **Frontend Layer**[2] is developed using modern web technologies such as Angular or React. It provides an interactive and responsive user interface for both web and mobile platforms. A key feature of this system is video-based registration support in any language. This functionality enhances accessibility, particularly for uneducated or semi-literate users, by providing audio-visual instructions during registration and usage. The frontend captures user inputs and sends requests to the API layer through secure HTTP protocols.

The **API Layer**[3] acts as an intermediary between the frontend and backend services. It handles client requests, validates input data, and routes requests to appropriate backend modules. The API layer ensures secure communication using authentication tokens and structured request-response mechanisms. This layer enhances system modularity and simplifies integration with external services.

The **Backend Layer**[4], implemented using Spring Boot, contains the core business logic of the system. It manages user authentication, role-based authorization, food product management, order processing, and transaction handling. When a customer places an order, the backend generates a payment request and communicates with the payment gateway. After payment confirmation, the backend updates order status and stores transaction details. The backend ensures secure processing and prevents unauthorized access through encrypted data handling and session management.

The **Database Layer**[5] uses MySQL or MongoDB to store structured and unstructured data. It maintains customer information, vendor profiles, food listings, order records, payment details, and video registration data. The database ensures data integrity, consistency, and reliable retrieval. Backup and recovery mechanisms can be implemented to enhance data protection.

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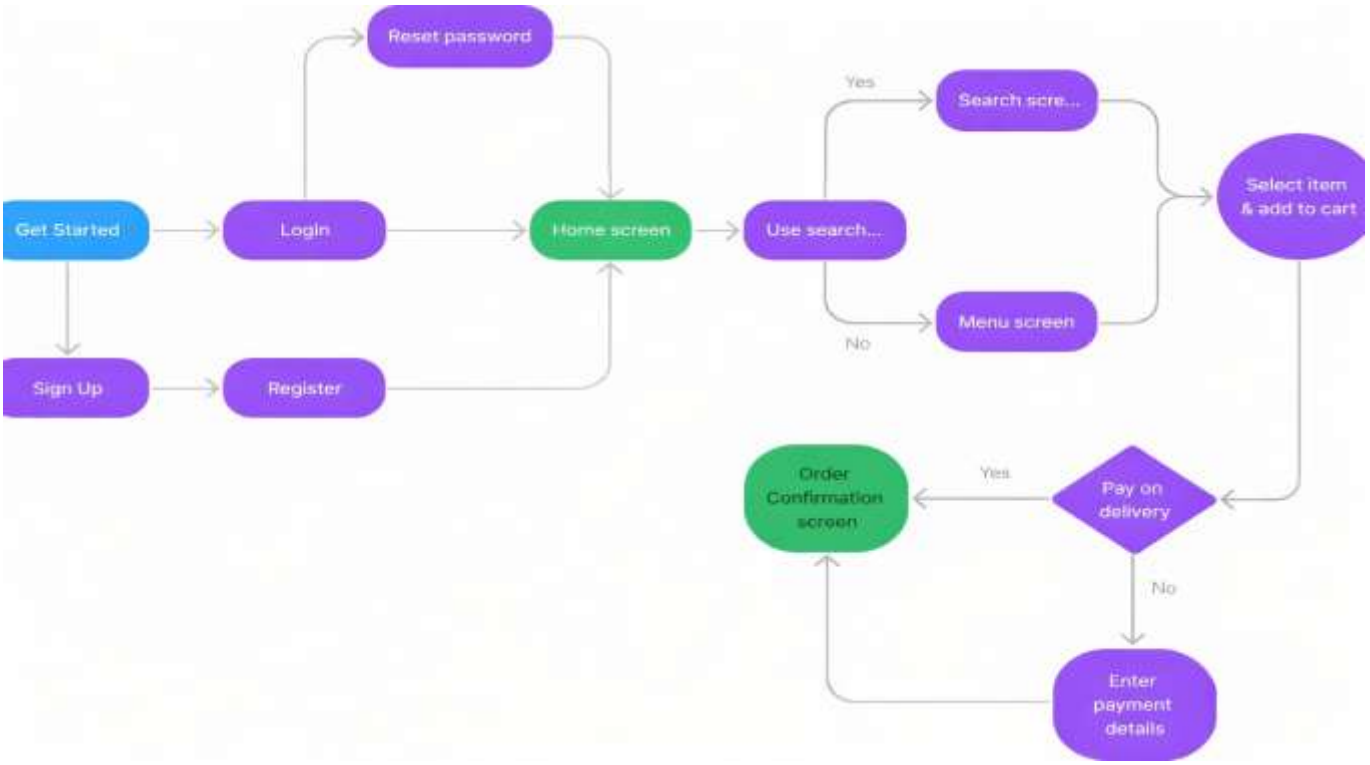
The **Payment Gateway**[6] Integration module connects the system to Razor pay for secure digital transactions. Razor pay processes payments through multiple modes such as UPI, credit card, debit card, and net banking. It returns transaction status and verification signatures to the backend, ensuring secure and authenticated payment processing.

1.2 Modules



The **Customer Module** [1] is designed to provide an accessible and user-friendly interface. Customers can register using video-based guidance in any language, which helps uneducated users understand the process easily. After registration, customers can log in, browse available homemade food items, search products, add items to the cart, and place orders. The module also allows users to track order status and view previous transactions.

The **Home Chef Module** [2] enables home based food vendors to manage their business digitally. Vendors can register, create profiles, upload food items with descriptions and pricing, and update availability. They can receive notifications for new orders, confirm order preparation, and update delivery status. This module helps small scale entrepreneurs expand their reach through a digital platform. Vendors can register and create profiles with details such as name, contact information, and food specialties.

The **Admin Module** [3] controls overall system operations. The administrator verifies user registrations, monitors vendor activities, manages food listings, and supervises transactions. This module ensures platform reliability, security, and smooth functioning. The administrator verifies customer and vendor registrations, monitors uploaded food items, and supervises transactions. This module also handles complaint management, dispute resolution, and system

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maintenance tasks. The admin can remove inappropriate content, block suspicious accounts, and generate reports related to user activity and transactions.

The **Payment Module** [4] integrates the Razor pay payment gateway to support secure online transactions. It handles payment requests, verifies transaction signatures, updates order confirmation, and maintains transaction records. Payment Module integrates the Razor pay payment gateway to support secure and reliable online transactions. When a customer places an order, the backend generates a payment request and redirects the user to Razor pay's secure payment interface.

Razor pay processes payments using multiple options such as UPI, debit card, credit card, and net banking. After successful payment, Razor pay sends a verification response to the backend. The system validates the transaction signature and updates the order status accordingly. This module ensures secure digital payment processing, reduces fraud risks, and enhances customer trust.

After successful verification, the order status is updated to confirmed, and the transaction details are stored securely in the database. In case of payment failure, the system notifies the user and allows retry options. The Payment Module ensures encrypted data transmission, real-time confirmation, and transparent transaction tracking. Overall, it enhances customer trust, improves financial security, and ensures smooth digital payment processing within the platform.

2. Result and Discussions

The customer registration interface integrated with video guidance in any language. The page contains input fields for name, contact number, email, and password along with an instructional video panel. The video assists users in understanding the registration steps, making the system accessible to uneducated individuals. Successful registration confirms proper validation and secure data storage.

Fig.1. Customer Registration Page (Video-Based Support)

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The interface displays food items in a structured layout with images, dish names, prices, descriptions, and chef details. This visual presentation helps customers make informed decisions. Search and filter options allow users to quickly find specific dishes based on category, price range, or food type (vegetarian or non-vegetarian). Each food item includes an "Add to Cart" button, enabling customers to select products easily. The system dynamically updates cart information, ensuring real-time price calculation and quantity management.

Home chefs can upload food items along with descriptions, pricing, and availability status. They can update product information, manage stock availability, and receive real-time notifications for new orders.

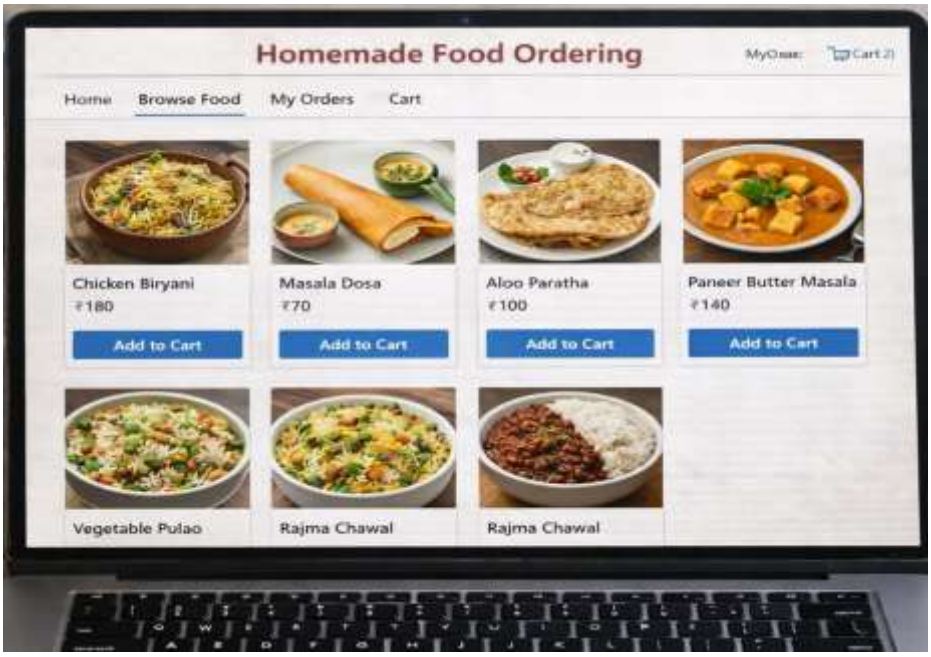

Fig.2. Food Browsing Interface

The cart page shows selected items, quantity adjustments, and total price calculation. This confirms correct data processing and dynamic price updates before order confirmation. The secure Razor pay payment gateway integration. Users can select payment methods such as UPI, debit card, or net banking.

The Order Confirmation module is the final stage of the purchasing process in the Homemade Food Ordering System. It ensures that the customer receives clear and verified information after successfully placing an order and completing the payment. Once the payment is processed through the Razorpay gateway and the transaction is verified, the backend updates the order status to "Confirmed."

After payment verification, the system displays order confirmation details including transaction ID and order status. This confirms successful backend update and secure transaction recording.

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Fig.3. Order Confirmation Page

3. Conclusion

Homemade Food Ordering System successfully addresses the gap between home-based food vendors and digital consumers by providing a structured e-commerce platform with secure online payment integration. The system incorporates a video-based registration process that supports multiple languages, ensuring accessibility for uneducated and semi-literate users. This feature enhances digital inclusion and improves user onboarding efficiency. The integration of Razor pay enables secure, reliable, and seamless payment processing through UPI, debit card, credit card, and net banking options. The modular architecture ensures smooth interaction between frontend, backend, database, and payment gateway components.

From a social perspective, this project has significant impact. By focusing on home-based vendors, the system supports entrepreneurship at the grassroots level. It creates opportunities for individuals who may not have access to large restaurant networks or advanced technical knowledge. The platform particularly benefits women entrepreneurs and rural home chefs, enabling them to earn income and gain financial independence. Thus, the system contributes not only to technological innovation but also to social and economic development. Thus, the system contributes not only to technological innovation but also to social and economic development. Security has been given high priority throughout the system design.

The integration of secure digital payments plays a crucial role in enhancing user confidence. With support for UPI, debit cards, credit cards, and net banking, the platform ensures flexible and convenient payment options. Real-time confirmation and transaction validation minimize payment errors and build reliability. By reducing dependency on cash transactions, the system promotes safer and more transparent financial operations.

Overall, the system demonstrates scalability, usability, and security. It provides an innovative digital solution that empowers small-scale home chefs while offering customers a convenient and trustworthy food-ordering experience. The proposed model can be further enhanced with support for mobile application, AI-based recommendations, and real-time delivery tracking.

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