## Front End Engineering-II /Artificial

## Intelligence and Machine Learning

Project Report

Semester-VI (Batch-2022)

Food App

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**Supervised By: Submitted By:**

Mr. Rohan Sanya(2210992255)

Samiksha Singh(2210992238)

Sanjal Jain(2210992248)

Ishaan Singla(2210992582)

**Department of Computer Science and Engineering**

## Chitkara University Institute of Engineering & Technology,

## Chitkara University, Punjab

**Abstract**

The Culinary-Crafts-Food-App is a comprehensive web application designed to enhance the culinary experience by integrating recipe browsing, ingredient purchasing, and social interaction. Built using the MERN stack (MongoDB, Express.js, React.js, and Node.js), this platform offers a seamless user experience through personalized login and signup features, allowing users to save favorite recipes and track cooking history. Key features include a to-do list integrated with recipes, an e-commerce section for purchasing ingredients, and a social chat system for users to share experiences and discover new recipes. The app aims to provide convenience, engagement, and monetization opportunities by leveraging scalable APIs and secure payment gateways.

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**1.Introduction:**

The Culinary-Crafts-Food-App is an innovative web application designed to revolutionize the culinary experience by integrating personalized recipe browsing, interactive to-do lists, e-commerce functionality for purchasing ingredients, and a social chat system. Built using the MERN stack (MongoDB, Express.js, React.js, and Node.js), this platform offers users a seamless experience through secure login and signup features, allowing them to save favorite recipes and track cooking history. The app aims to enhance user engagement by fostering a community where users can share cooking experiences and discover new recipes. Additionally, it provides a convenient e-commerce solution for buying ingredients directly from the platform, opening up new revenue streams while ensuring scalability and security through robust API integrations.

**1.1 Background:**

The background of the Culinary-Crafts-Food-App project is rooted in the increasing demand for comprehensive online platforms that cater to culinary needs, combining recipe browsing, ingredient purchasing, and social interaction. The project leverages the MERN stack (MongoDB, Express.js, React.js, and Node.js), a popular choice for web development due to its scalability, versatility, and ease of use. This stack has been successfully utilized in various food-related applications, such as food delivery apps, which have shown the potential for seamless user experiences and robust backend systems.

The project's objectives align with the broader trend of integrating technology into daily life, enhancing user engagement through interactive features like to-do lists and social sharing, while also providing a convenient e-commerce solution for buying ingredients. The MERN stack's ability to handle complex web applications efficiently makes it an ideal choice for this project, which aims to deliver a personalized and engaging culinary experience.

**1.2 Objectives:**

The objectives of the Culinary-Crafts-Food-App project are multifaceted, focusing on creating a comprehensive and engaging culinary experience for users. Here are the primary objectives:

1. User-Centric Design:
   * Develop a user-friendly interface that allows users to easily navigate through recipes, manage cooking tasks, and purchase ingredients.
   * Implement personalized features such as user profiles to save favorite recipes and track cooking history.
2. Recipe and Ingredient Management:
   * Provide an extensive library of recipes with integrated to-do lists to enhance the cooking experience.
   * Allow users to purchase ingredients directly from the platform, streamlining the cooking process.
3. Social Interaction:
   * Create a social chat system where users can share cooking experiences and discover new recipes, fostering a community around the app.
4. E-commerce Integration:
   * Offer a seamless e-commerce experience for buying ingredients and potentially other kitchen-related products, opening up new revenue streams.
5. Scalability and Security:
   * Ensure the platform is scalable and secure, using robust APIs and secure payment gateways to protect user data and transactions.
6. AI generated recipe:
   * User can generate custom recipe by simply adding a prompt

**1.3 Significance:**

The Culinary-Crafts-Food-App project holds significant importance for several reasons:

1. Enhanced User Experience: By integrating recipe browsing, ingredient purchasing, and social interaction, the app provides a comprehensive culinary experience that enhances user engagement and satisfaction. Users can explore new recipes, manage cooking tasks, and connect with others who share similar interests, fostering a sense of community.
2. Market Opportunity: The food recipe app market is growing rapidly, with a large user base and increasing demand for innovative culinary solutions. This project can capitalize on this trend by offering unique features and personalized experiences, potentially attracting a significant share of the market.
3. Revenue Streams: The app offers diverse revenue streams through e-commerce, subscriptions, and potential partnerships with food suppliers or cookware brands. This versatility in revenue generation can help sustain the business and support future development.
4. Global Reach and Scalability: By leveraging digital platforms, the app can reach a global audience, overcoming geographical limitations and allowing for scalable growth as the user base expands.
5. Innovation and Differentiation: By combining recipe sharing, social interaction, and e-commerce, the app can differentiate itself from existing platforms, offering a unique value proposition that attracts users seeking more than just recipe lists.

**2. Problem Definition and Requirements**

Currently, users face challenges in finding a comprehensive platform that integrates recipe browsing, ingredient purchasing, and social interaction. Existing platforms often lack a seamless experience, requiring users to navigate multiple apps or websites for different culinary needs. Furthermore, users desire a personalized experience where they can save favorite recipes, track cooking history, and engage with a community of like-minded individuals.

**Key Challenges:**

* **Fragmented Experience:** Users must use multiple platforms for recipe discovery, ingredient shopping, and social sharing.
* **Lack of Personalization:** Existing platforms often fail to provide personalized experiences tailored to individual users' preferences and cooking histories.
* **Limited Social Interaction:** Current platforms may not offer robust social features for users to share cooking experiences and discover new recipes.

**Functional Requirements**

1. User Authentication:
   * Secure login and signup features to ensure personalized experiences.
   * User profiles for saving favourite recipes and tracking cooking history.
2. Recipe Management:
   * Comprehensive recipe database with diverse cuisines and dietary options.
   * Step-by-step cooking instructions and multimedia integration (images, videos).
   * Nutritional information for each recipe.
3. E-commerce Integration:
   * Ability to purchase ingredients directly from the app.
   * Shopping list functionality to simplify grocery shopping.
4. Social Features:
   * Chat system for users to share cooking experiences and discover new recipes.
   * Social sharing options for recipes on external platforms.
5. To-Do List Integration:
   * Interactive to-do lists beside recipes for users to mark off tasks as they cook.
6. API Integration:
   * Integration with third-party APIs for payment processing and ingredient sourcing.
7. Offline Access:
   * Allow users to access recipes offline for convenience.
8. Push Notifications:
   * Send notifications for new recipes, promotions, or updates.
9. Generate recipe using AI:
   * AI-powered feature that allows users to generate customized recipes based on their preferences. By selecting options such as ingredients, cuisine type, dietary needs, and cooking methods, users can instantly receive a unique recipe tailored to their choices. This interactive feature makes cooking more personalized, fun, and accessible for everyone.

**3. Methodology**

The development of the Culinary-Crafts-Food-App follows a structured approach to ensure the platform is user-friendly, scalable, and efficient. The methodology employed for this project includes the following phases:

**3.1 Requirement Gathering and Analysis**

The first step in the project was to understand the requirements of the target users and the scope of the application. We gathered inputs by:

* Conducting surveys and interviews with potential users to understand their needs for a culinary platform.
* Analyzing existing food-related apps to identify gaps in features such as recipe management, social interaction, and ingredient purchasing.
* Defining functional and non-functional requirements for the app, which included features like user authentication, recipe management, shopping list, and social chat.

Key Outputs:

* A clear list of features and functionalities to be implemented.
* Understanding of market trends and user preferences.
* Defined technical stack (MERN: MongoDB, Express.js, React.js, Node.js).

**3.2 System Design**

Based on the requirements gathered, we designed the system architecture, focusing on building a user-centric, scalable, and secure web application.

Key Design Tasks:

1. UI/UX Design:
   * Designed wireframes for key user interfaces, such as the home page, recipe page, shopping cart, and Home page using tools like Figma and Adobe XD.
   * Focused on intuitive navigation and accessibility to ensure a seamless user experience.
   * Considered color schemes, typography, and responsive layouts for different devices (desktop, tablet, mobile).
2. Backend Design:
   * Designed a RESTful API architecture to handle requests between the frontend and backend using Express.js.
   * Decided on a NoSQL database (MongoDB) for flexibility in managing recipe data, user profiles, and transaction details.
3. E-commerce and Integration:
   * Planned for seamless integration of an e-commerce module where users can purchase ingredients directly within the app.
   * Designed integration with payment gateways like Stripe for secure transactions.
   * Designed and set up third-party API integrations for ingredient sourcing and payment processing.

**3.3 Development Process**

The project followed the Agile Development methodology with iterative development cycles. Each feature was developed, tested, and integrated incrementally.

Frontend Development:

* Used React.js to build dynamic and responsive user interfaces, allowing the app to update in real time without reloading the page.
* Integrated Redux for state management, ensuring consistent data flow across the app.
* Focused on creating components for recipe cards, shopping list, profile pages, and chat systems.

Backend Development:

* Built a RESTful API using Node.js and Express.js to handle requests such as user registration, authentication, retrieving recipes, and making purchases.
* Utilized MongoDB to store user data, recipes, and shopping lists. Designed the database schema to efficiently handle these data types.

E-commerce Features:

* Developed a shopping cart system where users can add and remove ingredients, view the total price, and proceed to checkout.
* Integrated a secure payment system using Stripe API, ensuring users could pay for ingredients directly through the app.
* Created user-specific shopping lists based on saved recipes, making it easy for users to purchase ingredients.

Social Features:

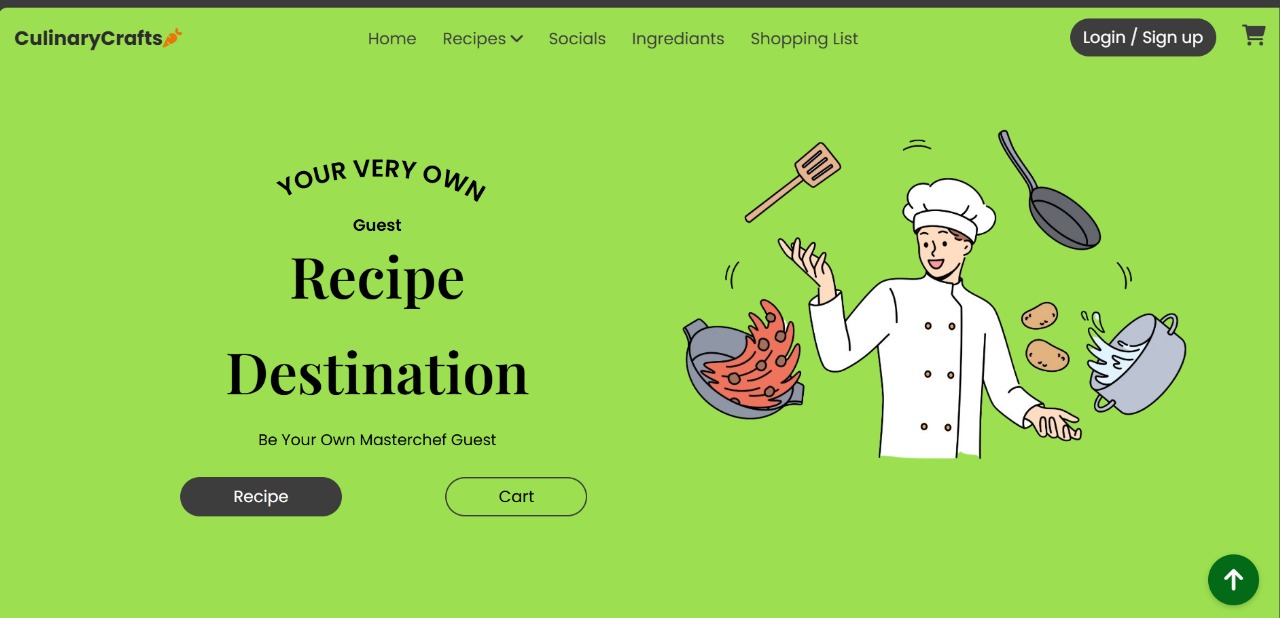
* Designed a chat system using Socket.io for real-time communication between users. This feature allowed users to share cooking tips, ask questions, and discover new recipes.
* Incorporated social sharing features so users could share their favorite recipes on platforms like Facebook, Instagram, and Twitter.

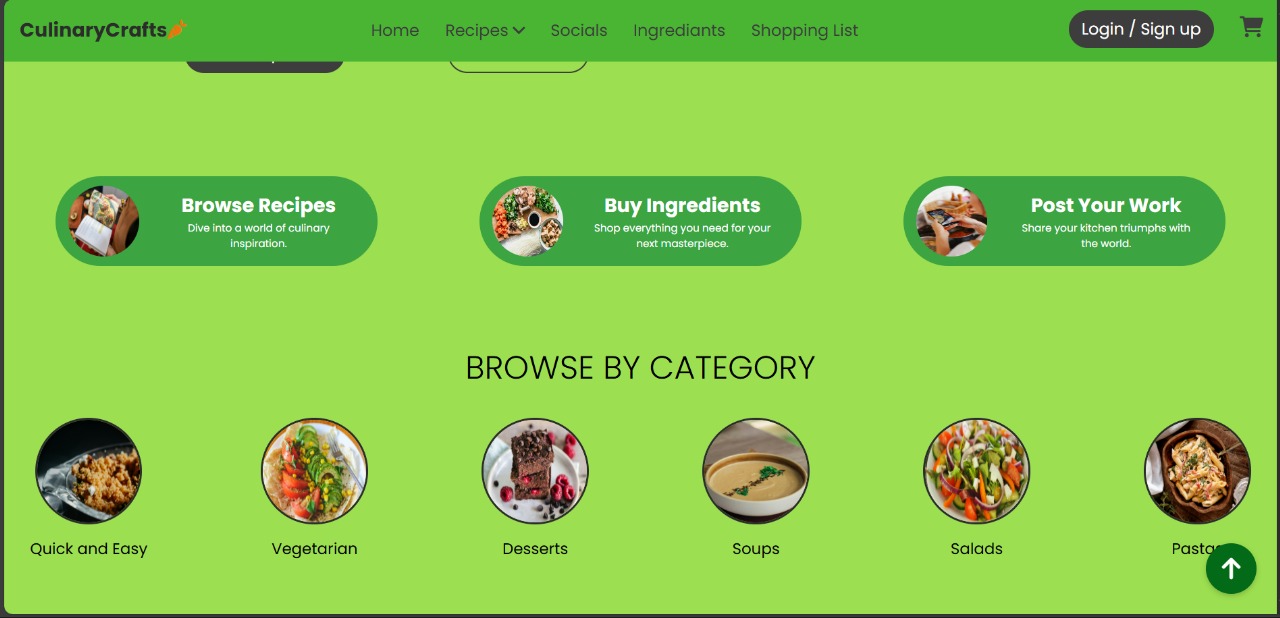
**3.4 Testing and Quality Assurance**

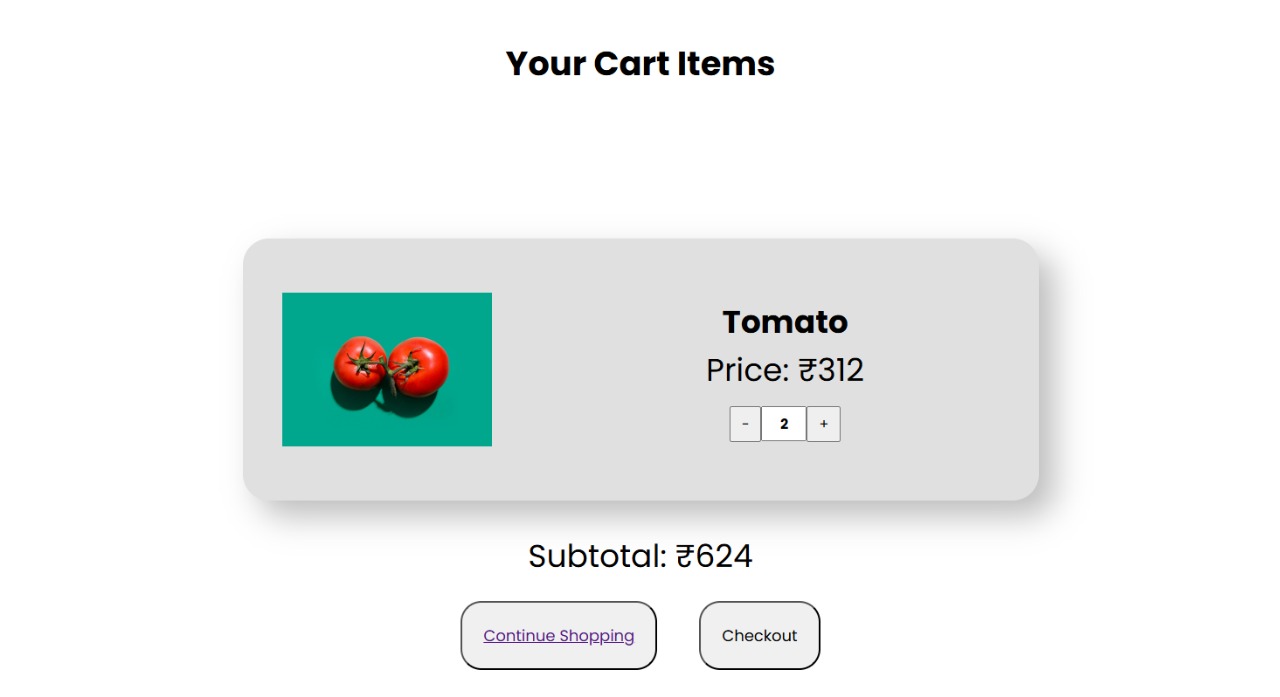
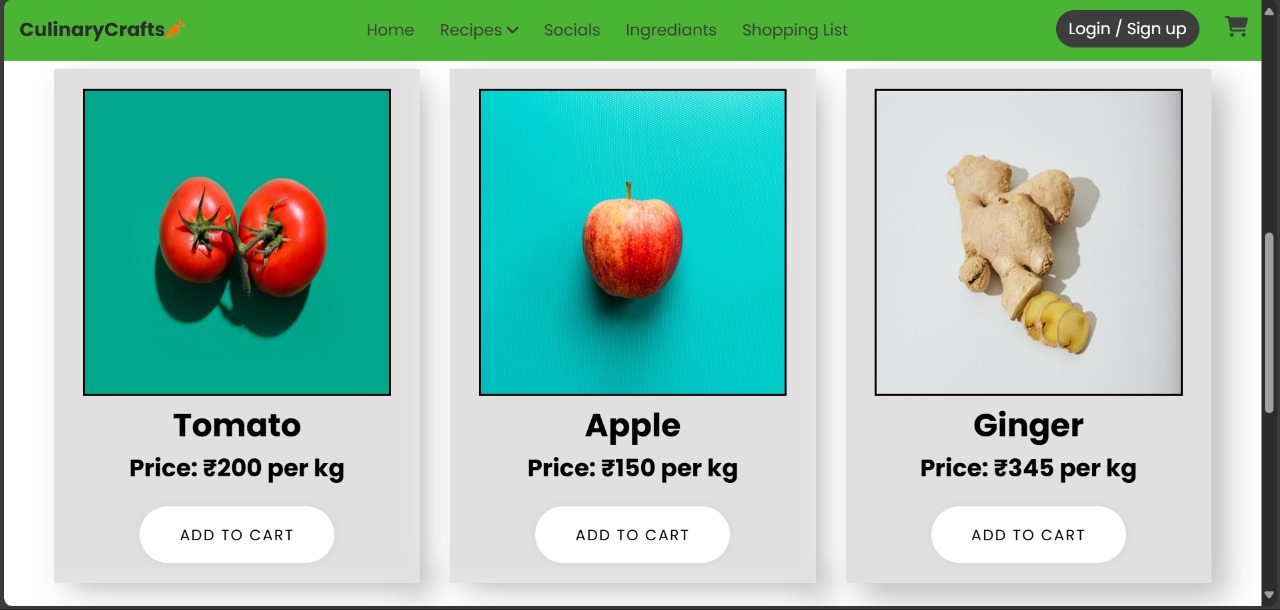
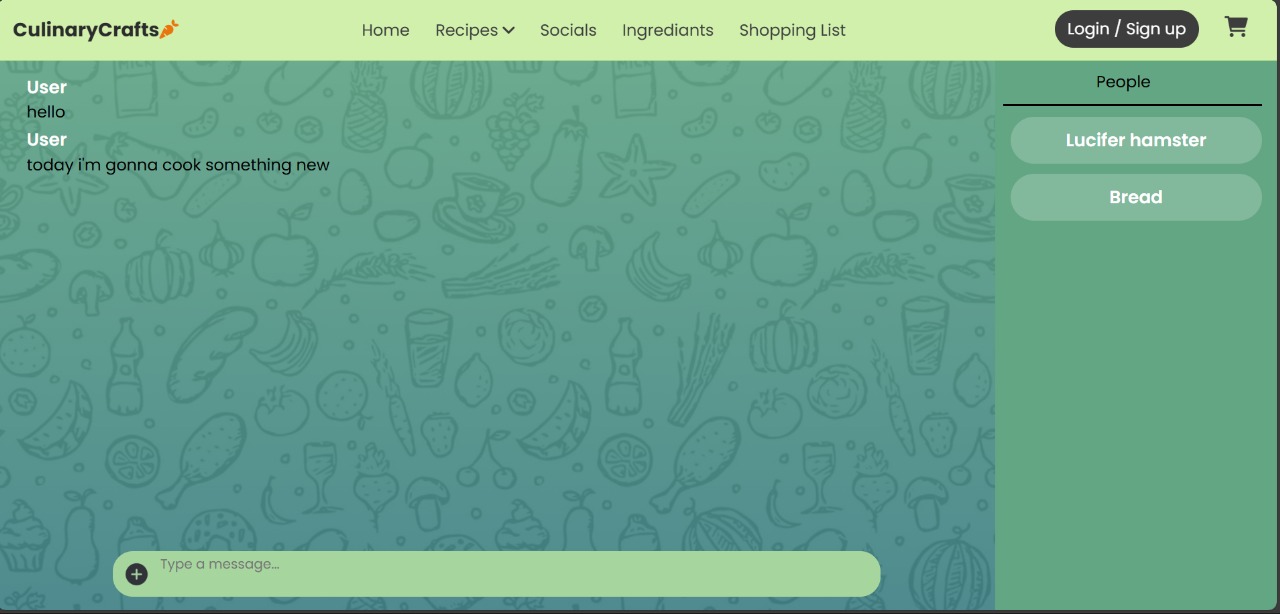
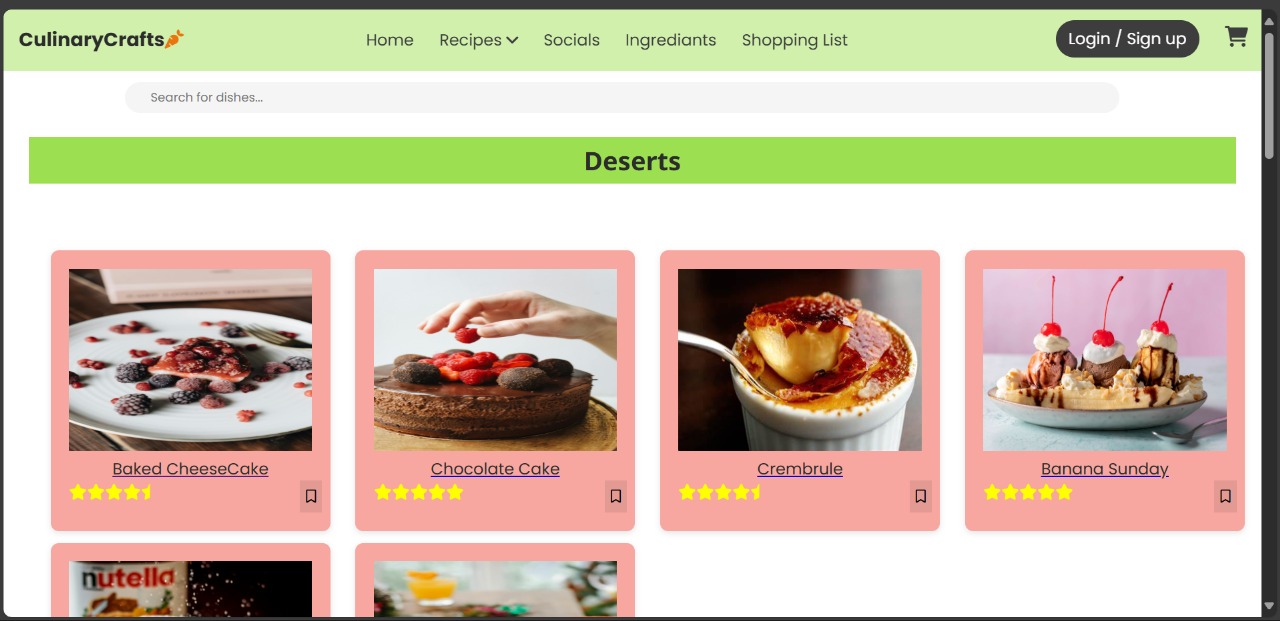
Testing was performed throughout the development cycle to ensure a bug-free and smooth user experience.

Testing Tools: Postman for API testing.

**4. Results**

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