Recipe Sharing Platform – Full Project Documentation

1. Introduction

The Recipe Sharing Platform is a **web-based application** designed to help users **create, share, and save their favorite recipes** in an interactive and organized manner. Traditional recipe-sharing methods, such as cookbooks or social media, lack personalization and easy access to saved recipes. This platform provides a **secure, user-friendly, and community-driven solution**, where users can register, upload recipes with images, and explore a variety of dishes shared by others.

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2. Problem Statement

Many existing recipe-sharing solutions do not offer **personalized recipe management, secure authentication, or seamless access to saved recipes**. Users often find it difficult to **store, organize, and retrieve** their favorite recipes conveniently. Additionally, platforms without proper **security and data management** pose risks to user information and recipe data.

To address these issues, this project provides a **centralized recipe-sharing system** that enables users to:

- **Securely register and log in** to manage their personalized recipe collections.
- **Create, edit, and delete** their own recipes, including images and detailed instructions.
- **Browse, search, and filter** recipes shared by other users.
- **Save favorite recipes** for quick access.
- **Ensure data security and scalability** with authentication and proper data storage.

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3. Objectives

The main objectives of the Recipe Sharing Platform include:

- Creating an **intuitive and user-friendly** interface.
- Implementing **secure authentication** to protect user data.
- Allowing users to **manage their own recipes**, including text and images.
- Providing **search, filter, and save functionalities** to improve accessibility.
- Ensuring **scalability and security** for a growing user base.

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4. Technologies Used

Frontend (User Interface)

- **React.js** – For building a dynamic and responsive interface.
- **React Router** – For seamless navigation between pages.
- **Axios** – For handling API requests efficiently.
- **Tailwind CSS** – For a modern and responsive design.

Backend (Server & Logic)

- **Node.js** – Handles server-side operations.
- **Express.js** – Manages routing and API requests.
- **JWT (JSON Web Token)** – Provides secure authentication for users.

Database & Storage

- **MongoDB** – Stores user accounts, recipes, and saved recipes.
- **Cloudinary** – Manages image uploads for recipe photos.

Additional Tools & Libraries

- **bcrypt.js** – Hashes passwords for security.
- **Multer** – Handles image uploads before storing them in Cloudinary.
- **CORS** – Enables cross-origin communication between the frontend and backend.
- **dotenv** – Manages environment variables securely.

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5. System Architecture

The project follows the **Model-View-Controller (MVC) architecture**, ensuring a well-structured and maintainable codebase:

1. **Frontend (React.js)** – Displays the UI and interacts with the backend through API calls.
2. **Backend (Express.js, Node.js)** – Processes user requests, manages authentication, and handles data operations.
3. **Database (MongoDB)** – Stores user details, recipes, and saved recipe data.

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6. Features & Functionalities

6.1 User Authentication

- Secure **login and registration system** using JWT.
- Encrypted password storage for enhanced security.

6.2 Recipe Management

- Users can **create, edit, delete, and view recipes**.
- Each recipe includes:
  - Title
  - Ingredients
  - Instructions
  - Image upload option

6.3 Recipe Discovery

- Users can **browse all recipes** shared by the community.
- Recipes can be **searched and filtered** for easy discovery.

6.4 Saved Recipes

- Users can **save their favorite recipes** for quick access later.

6.5 Responsive & Scalable Design

- Works across **mobile, tablet, and desktop** devices.
- Can **handle a growing number of users and recipes** efficiently.

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7. User Flow

1. **User Registration & Login**
   - Users sign up with an email and password.
   - Upon login, they receive a **secure JWT token** for authentication.
2. **Recipe Creation & Upload**
   - Users add a new recipe by entering a **title, ingredients, and instructions**.
   - They can **upload an image** to enhance the recipe presentation.
3. **Recipe Browsing & Discovery**
   - Users can **view recipes shared by others**.
   - Search and filter options help in finding relevant recipes.
4. **Saving Favorite Recipes**
   - Users can **save recipes to their collection** for easy access.
5. **Managing Recipes**
   - Users can **edit or delete** their own recipes.

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8. API Endpoints (Overview)

Method	Endpoint	Description
POST	`/auth/register`	Registers a new user
POST	`/auth/login`	Logs in a user and returns a JWT token
GET	`/recipes`	Fetches all recipes
POST	`/recipes`	Creates a new recipe
GET	`/recipes/:id`	Retrieves a specific recipe
PUT	`/recipes/:id`	Updates an existing recipe
DELETE	`/recipes/:id`	Deletes a recipe
POST	`/recipes/save/:id`	Saves a recipe to the user's collection

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9. Future Enhancements

To further improve the platform, the following features can be added in the future:

- **Comments & Ratings** – Allow users to review and rate recipes.
- **Recipe Categories & Tags** – Enhance search and filtering options.
- **AI-Powered Recommendations** – Suggest recipes based on user preferences.
- **Meal Planning Feature** – Enable users to organize meals for the week.

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10. Conclusion

The Recipe Sharing Platform provides a **secure, user-friendly, and scalable solution** for food lovers to **create, share, and manage their favorite recipes**. By leveraging the **MERN stack**, the platform ensures efficiency, **seamless user authentication**, and **organized recipe management**. The inclusion of features like **image uploads, saved recipes, and search functionality** enhances the user experience, making cooking and recipe discovery more engaging.

As future updates, the platform can incorporate **ratings, comments, and AI-powered recommendations** to further personalize the experience. With its **scalable and community-driven approach**, the Recipe Sharing Platform serves as a valuable tool for culinary enthusiasts worldwide.