Group Project Report: Recipe Sharing App

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1. Introduction to the App

Our group project focuses on developing a **Recipe Sharing App**. This app allows users to explore a variety of recipes, contribute their own, and interact with other users by rating and commenting on recipes. The app is designed for food enthusiasts who want to discover new recipes, save their favorites, and share their culinary creations with the community. With an intuitive interface and essential features such as recipe browsing, recipe creation, and personalized user interactions, the app aims to enhance the user experience for anyone passionate about cooking.

2. App Features

The app will include the following key features:

- **User Registration and Log-in**: Users can create an account and log in to access personalized app features.
- **Recipe Categories**: Recipes will be categorized into different sections such as "Quick & Easy," "Holiday Recipes," and "Low-Calorie Recipes."
- **Recipe Browsing**: Users can browse all uploaded recipes, with options to filter and search by ingredient or recipe name.
- **Recipe Creation and Editing**: Users can create and edit their own recipes, adding ingredients, cooking steps, estimated cooking time, and photos.
- **Recipe Details**: Users can view detailed information about each recipe, including ingredients, steps, cooking time, and user ratings/comments.
- **Favorites and Personal Collection**: Users can save recipes to their personal favorites list for easy access.
- **Rating and Commenting**: Users can rate and comment on recipes, providing feedback and suggestions to other users.

3. Data Storage in Firebase

Firebase will be used as the backend for handling both real-time data and media storage. Here’s how we will structure the data and use Firebase’s real-time database and storage:

3.1 Real-time Database Structure:

The Firebase real-time database will be used to store dynamic data related to users and their interactions with recipes. We will use a JSON-based structure to store the following data:

- **Users**:
    - userID: Unique identifier for each user.
    - username: User's display name.
    - email: User's email address.
    - favorites: Array of recipe IDs that the user has favorited.
- **Recipes**:
    - recipeID: Unique identifier for each recipe.
    - title: The recipe title.
    - description: A brief description of the recipe.
    - ingredients: List of ingredients required for the recipe.
    - steps: Step-by-step instructions for preparing the dish.
    - cookTime: Estimated time required to prepare the dish.
    - author: The userID of the user who created the recipe.
    - comments: Array of comment objects, each containing a userID, the comment text, a timestamp and ratings score.
- **Categories**:
    - categoryID: Unique identifier for each category.
    - name: The name of the category (e.g., "Quick & Easy").
    - recipes: Array of recipe IDs belonging to this category.

Firebase Console Sample

- Below is a sample of how the data might be structured in Firebase's real-time database:

3.2 Firebase Storage:

Firebase storage will be used for handling image uploads. Each user can upload images related to their recipes, such as a photo of the completed dish. We will store these images in Firebase Storage with the following structure:

- **Storage Path**:
    - /recipes/{recipeID}/images/{imageID}

Each recipe will have its own folder in Firebase Storage where images will be stored. The image URLs will be saved in the real-time database under the corresponding recipe entry.

Security and Access:

We will implement Firebase's authentication system to ensure that only registered users can create or edit recipes. Firebase rules will be applied to restrict data access based on user permissions:

- **Read Access**: All users (including non-logged-in users) will have read access to the recipes and their details.
- **Write Access**: Only logged-in users will have write access to create new recipes, edit their own recipes, or add comments/ratings.

4. Conclusion

This recipe-sharing app is designed to provide a user-friendly experience for food lovers who want to explore, create, and share culinary ideas. By utilizing Firebase for real-time data handling and media storage, the app will be able to efficiently manage user interactions, recipe submissions, and image uploads in a secure and scalable manner.

(**This is our group's initial concept, and the actual details may differ once we begin the project in earnest. We appreciate your understanding**)