Project Definition: My Pantry App

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Objective: To develop an application that aids users in reducing food waste and saving money by efficiently tracking food and perishable items' expiration dates, managing inventory, and suggesting meals based on available ingredients.

Core Features:

1. **Meal Suggestions**: Display a recipe fragment upon app launch, including an image, recipe title, ingredients, and instructions.
2. **Inventory Management**: A scrolling recycler-view displaying items in the user's pantry with properties like item name, expiration date, unique ID, location, and quantity.
3. **Item Creation**: Users can add new items to their pantry.
4. **Inventory Sort**: Users can sort their pantry list based on various criteria.
5. **Grocery List**: A separate list where users can add items they need to buy.
6. **Grocery Item Creation**: Users can add new items to their grocery list.

Database Design:

Tables:

1. **PantryItems**:
   - ItemID (Primary Key, Unique)
   - ItemName (String)
   - ExpirationDate
   - Location (String)
   - Quantity (Integer)
   - Notes (String)
2. **GroceryItems**:
   - GroceryItemID (Primary Key, Unique)
   - ItemName (String)
   - Quantity (Integer)
3. **Recipes** (for meal suggestions):
   - RecipeID (Primary Key, Unique)
   - RecipeTitle (String)
   - Image
   - Ingredients (String or Array)

- Instructions (Text)

Functionalities:

1. **CRUD Operations**:

   - Create, Read, Update, and Delete operations for both PantryItems and GroceryItems tables.
2. **Sorting Mechanism**:

   - Implement sorting algorithms to sort pantry items based on user-selected criteria.
3. **Notification System**:

   - To notify users of nearing expiration dates or reminders for grocery items.
4. **Bar-code Integration** (Future Enhancement):

   - Integrate a bar-code scanning system to facilitate easy addition of items to the database.
5. **Sharing & Collaboration** (Future Enhancement):

   - Allow users to share their lists with others and collaborate in real-time.

Technical Stack:

- **Frontend**: Mobile Application (Android)
- **Backend**: Cloud-based server (Spring Boot / Firebase)
- **Database**: Relational Database Management System (Firestore / MySql)
- **Possible Additional Tools**: Firebase Authentication, Bar-code scanning API(Google's ML kit), Notification services(Firebase Cloud Messaging) GitHub(Automate continuous build, test, and deployment processes).

Milestones:

1. **Database Setup**: Creation of tables and establishing relationships.
2. **Backend Development**: Setting up server, API endpoints for CRUD operations.
3. **Frontend Development**: Designing and developing the user interface.
4. **Integration**: Connecting frontend with backend services.
5. **Testing**: Unit tests, integration tests, and user acceptance testing.
6. **Deployment**: Launching the app on app stores(Future Launch Date).

By following this project definition, the 'My Pantry App' will provide a comprehensive solution to users, ensuring they have a seamless experience in managing their food inventory and reducing waste.