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**Date:** 2023.10.23

# Specification

## Recipe Book Management System

The Recipe Book Management System is a user-friendly and efficient tool for managing recipes, ingredients, and cooking logs. It simplifies the process of meal planning and ensures that users can make the most of their available ingredients while minimizing food waste.

### 1. System Components:

- **Recipe Management:** Users can create, edit, and delete recipes. Each recipe includes a unique ID, a name, a list of ingredients, and a description of how to prepare the dish.
- **Ingredient Management:** Users can add ingredients. Each ingredient includes a unique ID, a weight, a unit, a name, and an expiration date.
- **Log Management:** The system logs the date when a recipe is prepared.

### 2 Features:

- **Add and Delete Recipes:** Users can add new recipes to their collection and delete recipes they no longer need.
- **Add Ingredients:** Ingredients can be added to the system, including specifying their weight, unit, name, and expiration date.
- **Generate Random Recipes:** The system can suggest random recipes based on available ingredients, ensuring that there are enough ingredients to prepare the dish.
- **Generate Recipes Based on Expiration Date:** The system suggests recipes that include ingredients nearing their expiration date.
- **Generate Recipes from Log:** Users can generate recipes based on their cooking history to revisit dishes prepared in the past.
- **Unit Conversion:** The system supports different unit types (e.g., liters, kilograms, grams) and can perform unit conversions.

### 3. Data Storage:

The Recipe Book Management System stores data in CSV (Comma-Separated Values) files to manage recipes, ingredients, storage, connections, and logs. Here are the details for each CSV file:

- **Recipe File (recipes.csv):**
  - **ID (Primary Key):** A unique identifier for each recipe.
  - **Name:** The name or title of the recipe.
- **Ingredients File (ingredients.csv):**
  - **ID (Primary Key):** A unique identifier for each ingredient.
  - **Name:** The name of the ingredient.
- **Storage File (storage.csv):**
  - **ID (Foreign Key):** A reference to the corresponding ingredient.
  - **Weight:** The weight of the ingredient.
  - **Unit:** The unit of measurement for the ingredient (e.g., kg, g, l).
  - **Expiration Date:** The expiration date of the ingredient.
- **Connections File (connections.csv):**
  - **Recipe\_ID (Foreign Key):** A reference to the corresponding recipe.
  - **Ingredient\_ID (Foreign Key):** A reference to the corresponding ingredient.

- Weight: The weight of the ingredient in the recipe.
- Unit: The unit of measurement for the ingredient in the recipe.
- Log File (logs.csv):
  - Date: The date when the log entry was recorded.
  - ID: A reference to either a recipe or an ingredient based on the context of the log entry.
  - Operation Description: A string describing the operation performed, such as adding, deleting,

or updating a recipe or ingredient.

The system reads and writes data to these CSV files to manage recipes, ingredients, storage, connections, and logs. The use of primary and foreign keys ensures data integrity and consistency, and the log file records operations performed within the system for tracking and auditing purposes.

#### **4. User Interface:**

Here's a breakdown of the menu options:

1. View Recipes: Display a list of available recipes.
2. Add Recipe: Add a new recipe to the system.
3. Delete Recipe: Delete an existing recipe.
4. View Ingredients: Display a list of available ingredients.
5. Add Ingredient: Add a new ingredient to the system.
6. View Storage: Display the current ingredient inventory in storage.
7. Add to Storage: Add ingredients to storage.
8. Generate Random Recipe: Generate a random recipe based on available ingredients.
9. Suggest Recipe by Ingredients: Suggest recipes based on selected ingredients.
10. Suggest Recipe by Expiry Date: Suggest recipes based on ingredients nearing their expiration dates.
11. Generate Recipe from Logs: Generate recipes based on past usage and logs.
12. Exit: Quit the application.

Users can navigate the menu by entering the corresponding number or option. Each option leads to a specific function within the system, allowing users to perform tasks such as managing recipes, ingredients, storage, and generating recipes based on various criteria.

The console-based menu provides a user-friendly interface for interacting with the Recipe Book Management System and performing various operations. Users can input their choices to access and utilize the system's features.