

## Specification

### Recipe Book Management System

The Recipe Book Management System is a user-friendly and efficient tool for managing recipes, ingredients in the depot, 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 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, an amount, a unit, a name, and an expiration date.
- **Log Management:** The system logs the date, the recipe or the ingredient's ID, the operation, such as, meal was cooked, a recipe added or deleted and, ingredients added.

#### 2 Features:

- **Add and Delete Recipes:** Users can add new recipes to their collection and delete recipes that are no longer needed.
- **Add Ingredients:** Ingredients can be added to the system, including specifying their weight, unit, name, and expiration date.
- **Suggest Random Recipes:** The system can suggest random recipes based on available ingredients, ensuring that there are enough ingredients to prepare the dish.
- **Suggest Recipes Based on Expiration Date:** The system suggests recipes that include ingredients nearing their expiration date.
- **Log:** Users can see, their cooking history and, recipes added or deleted and what ingredients are added.
- **Unit Conversion:** The system supports different unit types and can perform unit conversions.  
Supported units:  
Liquids: ml < > dl < > l  
Solid ingredients: g < > dkg < > kg

#### 3. Data Storage:

The Recipe Book Management System stores data in CSV (Comma-Separated Values) files to manage recipes, ingredients, storage, connections, and logs. These files are not editable directly by the user. Export and import files are not supported. 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.
  - Description: How the dish should be cooked.
- **Ingredients File (ingredients.csv):**
  - ID (Primary Key): A unique identifier for each ingredient.
  - Name: The name of the ingredient.
  - Unit: The unit of measurement for the ingredient (e.g., kg, g, l).
- **Storage of the available ingredients file (storage.csv):**
  - ID (Foreign Key): A reference to the corresponding ingredient.
  - Amount: The amount of the ingredient.

- Expiration Date: The expiration date of the ingredient.  
In this file, could be the same ingredient multiple times.

- Connections File (connections.csv):

- Recipe\_ID (Foreign Key): A reference to the corresponding recipe.
- Ingredient\_ID (Foreign Key): A reference to the corresponding ingredient.
- Amount: The amount of 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.

Operations:    - A : Add  
                  - D: Delete  
                  - C : Cooked

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.

Datatypes:

ID: <string>  
Name:<string>  
Unit:<string>  
Amount:<double>  
Date: <struct> → day: <int>, month: <int> , year:<int>  
Recipe\_ID: <string>  
Ingredient\_ID: <string>  
Operation Description: <char>

#### 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. Suggest Random Recipe: Suggest a random recipes 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. Logs: See the cooked meals, added or deleted recipes and added ingredients.
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.

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.