KOCAELI UNIVERSITY
DEPARTMENT OF COMPUTER ENGINEERING

Recipe Guide App

A desktop application will be developed where the user can store recipes and show which dishes can be made with the available ingredients. The application should support functions such as database management, dynamic search and filtering.

Objective:

1. Dynamic Development of a desktop application with search and filtering features.

2.To provide the features of filtering and sorting products with the desired properties within an application.

3.Developing skills in database management and algorithm development.

4.Gaining experience in user interface design and user-friendly software development.

Programming Language: C# or JAVA.

1.Database Design

The database will have several associated tables to manage recipes and ingredients.

Database Tables

- **Table of Recipes:**
  - RecipeID (Primary Key, int): A unique ID for each recipe.
  - RecipeName (varchar): Name of the recipe.
  - Category (varchar): The category to which the recipe belongs (each recipe should only be matched to one category) (Main Course, Dessert, etc.)
  - PreparationTime (int): Preparation time of the recipe (in minutes).
  - Instructions (text): Steps in the preparation of the recipe.

- **Table of Ingredients:**
  - MaterialID (Primary Key, int): A unique ID for each material.
  - MaterialName (varchar): Name of the material.
  - TotalQuantity (varchar): Total quantity of the material in the warehouse
  - MaterialUnit: (e.g. "kilo", "liter", gram").
  - UnitPrice: The cost value of the unit quantity of the material.
- **Recipe-Material Relationship Table:**
  - RecipeID (Foreign Key): ID of the related recipe.
  - MaterialID (Foreign Key): ID of the related material.
  - MaterialQuantity (float): The unit amount of material to be used in the related recipe

Normalization:

Tables should be designed according to database normalization rules. Since the same ingredients can be used in more than one recipe, the Recipe-Material Relationship table will represent a many-to-many relationship.

2.User Interface (GUI) Design

- There should be an area on the main screen of the app where all recipes are listed.
- Menu There should be menu options for adding, updating and deleting recipes.
- Recipe List: All recipes should be displayed on the main screen with their names, preparation times and cost information. Clicking on any recipe should show the recipe details.
- Search and Filtering Area: The user should be able to search and filter recipes from this area at the top of the application.
  Result Screen: It should list the dishes that can be made according to searches with different criteria.

3.Functional Features

Adding a Recipe

- The user adds the name of the recipe, the category, the preparation time and the instructions for making the recipe.
- Each recipe can have more than one material and these materials will be entered with their quantity. If the unit material is already registered in the database, the user will select and add it as an option when adding material to the recipe, but if it is not registered, the user will save the unit material and its information to the database with the "add new material" button.
- When the user presses the "Add Recipe" button on the user interface, recipe and material information will be saved to the database.

Recipe Suggestion

- Among all recipes, recipes with insufficient or missing ingredients should be colored red, and recipes with sufficient ingredients should be colored green.
- For recipes colored in red, the total cost of the missing ingredients should be calculated and shown separately.
- The Recipe Suggestion function must be active in all search and filtering operations.

Dynamic Search

- by recipe name or ingredient via the search bar.

- **Search by Recipe Name**

- The user should search for recipes by recipe name from the search field in the interface and the appropriate recipes should be listed.

Search by Material

- The user interface have a material input field.
  After the user selects the available ingredients, the system should check the recipes in the database
- A match percentage should be calculated by comparing the input ingredients with the ingredients of the recipes registered in the system and recipes should be listed from highest to lowest according to the match percentage.
- During listing, recipes should be shown with the match percentage.

Filtering and Sorting

- The user can sort recipes by preparation time (fastest to slowest or vice versa), by recipe cost (Ascending-Decreasing).
- You will also be offered filtering options based on the number of materials, category or cost range.

Recipe Updating and Deleting

- The user can update or delete previously added recipes.
- The database is automatically updated when a recipe is updated or deleted.

Duplicate Control

- The database will be checked for duplicates to prevent the same recipe from being saved more than once.

Warnings:

- Before the project presentations, at least 5 different categories and at least 10 recipes belonging to each category should be available and saved in the database.
- The user interface should be simple, intuitive and user-friendly, enabling users to achieve their goals with minimal effort. It should also prioritize visual hierarchy, clarity and functionality with a consistent design language.