

**CS4347 Database Systems  
Final Project Deliverable 2**

**Personalized Diet Planner**

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Danyaal Kashif, Cortland Kimzey, Tyler Lim,  
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## **0. Description:**

Project Name: Personalized Diet Planner

GitHub Repository: <https://github.com/Danyaalhk/CS4347.007Nutrition>

Team Members: Abhizeet Bomma, Stephanie Elizalde, Nandini Kansal, Danyaal Kashif, Cortland Kimzey, Tyler Lim, Basil Punnoose

## Delegation of Tasks:

Abhizeet Bomma:

- Phase I: Relational Data Model Design
- Phase II: Front End User Interface/Slides

Stephanie Elizalde:

- Phase I: Background/Related Work and References
- Phase II: Database Query Execution on Normalized Database & Create View

Nandini Kansal:

- Phase I: EER Conceptual Data Model Design
- Phase II: Normalized EER Conceptual Data Model Design and Relational Data, Database queries

Danyaal Kashif:

- Phase I: GitHub and Database
- Phase II: Front End User Interface

Cortland Kimzey:

- Phase I: Introduction and Description
- Phase II: Front End User Interface

Tyler Lim:

- Phase I: Create the Database and Populate
- Phase II: Create the Normalized Database and Populate

Basil Punnoose:

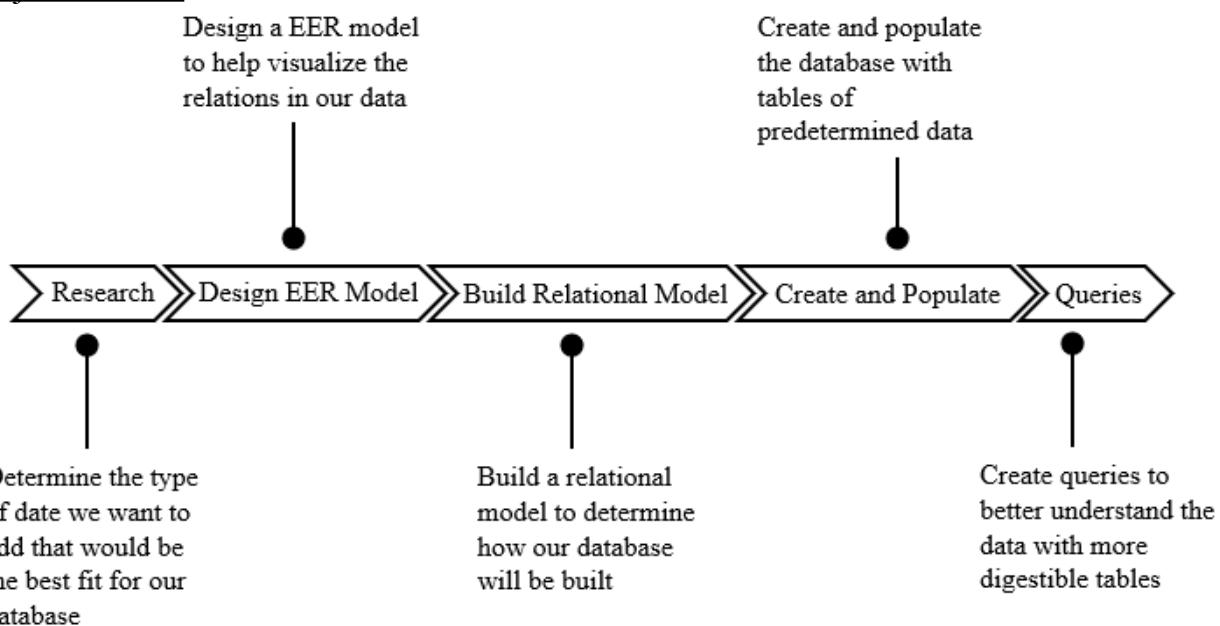
- Phase I: Database Query Execution
- Phase II: Database Query Execution

## Motivation:

The rising awareness of health and nutrition and the challenges of managing personalized diets motivated us to create this project. Many individuals find it difficult to track their nutrition or create meal plans that meet their dietary needs. This project will fill the gap by offering a simple, user-friendly platform that anyone can use to plan meals, track nutrients, and achieve their health goals.

This tool can be used by a wide range of individuals, including fitness enthusiasts, people with dietary restrictions (e.g., vegan, gluten-free), or those managing medical conditions through diet (e.g., diabetes, hypertension).

### Project timeline:



**1. Introduction:** The Nutrition Database is a great resource for quickly determining the nutritional facts about the food you are eating and helping design a meal plan that fits your lifestyle. We wanted to create a database to help the people who wanted to keep track of the food they eat and also create a balanced diet around the food they enjoy. We are contributing a place for anyone to enhance their access and use of nutritional information. Most projects in this category fail to create a place that allows people to not only create a meal plan but also browse different meals to quickly get their nutritional facts and add them to their meal plan, this is the gap our project fills. This project will help people create a healthier lifestyle which will ultimately help people to reach their health goals.

### **2. Background and Related Work:**

There are several projects and applications similar to our personalized diet planner for instance there's MyFitnessPal with over 200 million users [1], Eat This Much web-based application, Noom with over 50 million users, and many other similar applications [2]. The list below will briefly explain each application, relation, and comparison of our project.

#### **MyFitnessPal (2005)**

MyFitnessPal is a mobile application that provides meal tracking by allowing users to log their food intake for any fitness journey such as losing, maintaining, or gaining weight. It also gives nutritional information about the food being consumed [4].

This application shares similarities such as:

- Nutrition tracking abilities.
- Personalized application with individual health goals.
- Meal plans.
- Personal input Data.

However, there are differences such as:

- Our app personalized meal plans whereas MyFitnessPal is more of a wide range meal plan for people with similar goals to the designated meal plan description.
- Meal plans have dietary restrictions that can be added whereas MyfitnessPal does not have that option to add to your account to get those recommended meal plans.
- Our application will be completely free unlike MyFitnessPal you must pay to use the more advanced options of the application [5].

### **Eat This Much Inc. (2011)**

Eat This Much is both a web and mobile application that generates meal plans based on your personal goals and also suggests recipes and grocery lists for meals that can be delivered to you by one of their supported providers [6].

This application shares many similarities such as:

- Personal input Data.
- Food Tracking.
- Personalized meal planning (dietary needs, health goals, etc.).
- Individual health goals

Our application and *Eat This Much* are the most similar applications out of the three however there is still a huge difference which is that our application is completely free while once again the Eat This Much application requires a premium application that you must pay to use all advanced features one which includes planning a week worth of meals at a time where in our application can be done [7].

### **Noom (2008)**

Noom is a subscription-based application that combines psychology, coaching, and nutrition that help users reach their health goals. This application focuses on meal tracking and personal growth [8].

This application shares similarities such as:

- Goal adjustability
- Food tracking
- Meal Plans

However, there are many differences I stumbled upon when researching the Noom application such as:

- User-friendliness; Noom is not user-friendly, our application will be simple and easy to use for anyone.
- Free; Noom requires a very expensive subscription to use any feature; however our application will be free of charge to use any and every feature.
- Noom is mostly tailored for those who wish to lose weight while our application is for any goal a user wishes to reach.

## **Our Application**

Although our application shares many similarities to the previously mentioned applications, our application aims for simplicity to be used by everyone, health goal-oriented to achieve any personal goal, progress tracking to track and monitor your progress, and lastly make it freely accessible for anyone to use.

### **3. Design & Implementation (Phase I):**

#### **- 3.1. EER Conceptual Data Model Design:**

##### **Key Entities:**

###### **1. User:**

- Attributes: UserID (PK), Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences (multivalued).
- Relationships: The user sets goals and uses the planner.

###### **2. DietaryGoal:**

- Attributes: GoalID (PK), GoalType (e.g., weight loss, muscle gain), TargetWeight.
- Relationships: Linked to users (1).

###### **3. MealPlan (Weak Entity):**

- Attributes: PlanID (PK), PlanDate, Calories, NutritionalBreakdown.
- Relationships: Dependent on UserID (1:1 or 1), weak because it only exists in relation to a user.

###### **4. Meal:**

- Attributes: MealID (PK), MealName, Ingredients (composite), MealType (e.g., breakfast, lunch).
- Relationships: M relationship with MealPlan, as multiple meals can belong to one meal plan, and one meal can belong to different plans.

###### **5. NutritionalInfo:**

- Attributes: NutrientID (PK), FoodItem, Calories, Protein, Carbs, Fat, Vitamins.
- Relationships: Linked to Meals (1).

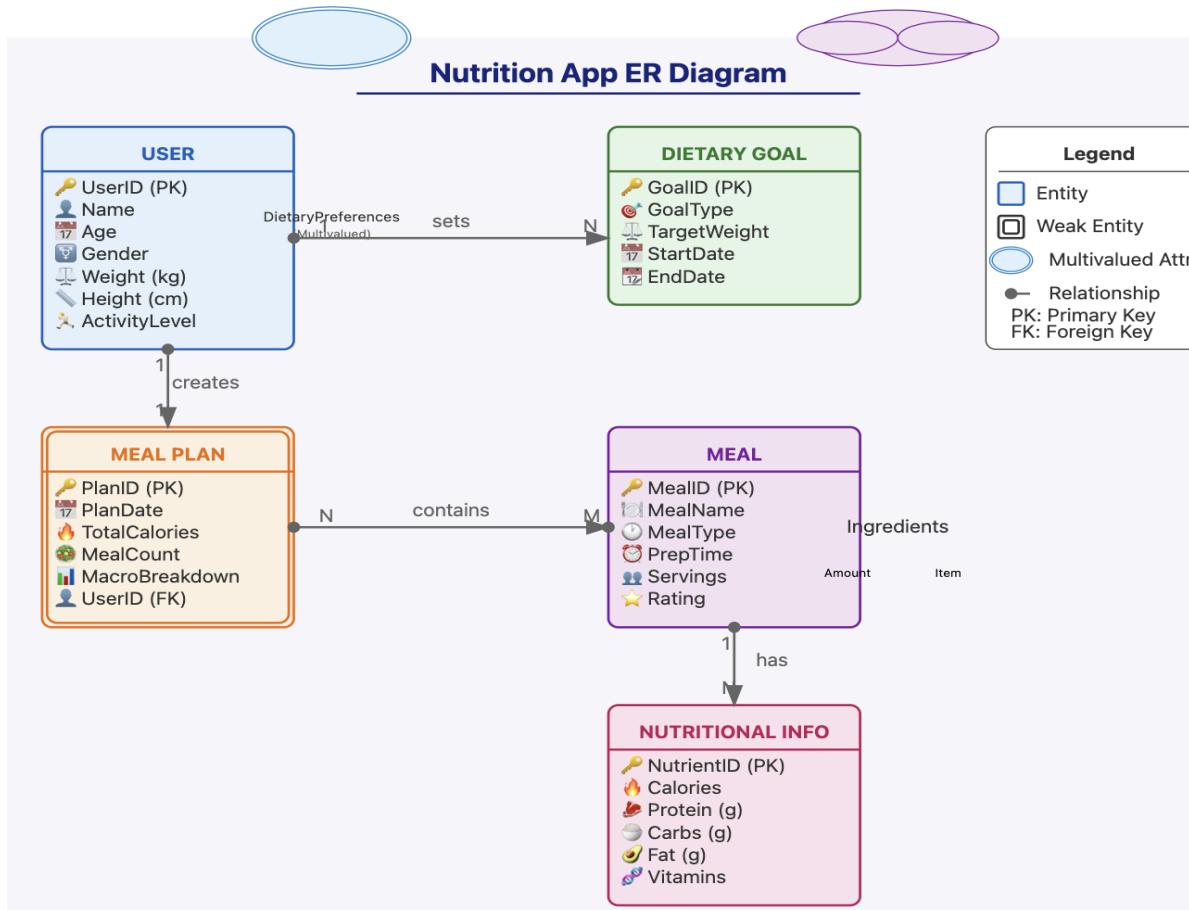
##### **Relationships:**

- **User-MealPlan:** A user can have multiple meal plans (1), but a meal plan only belongs to one user.
- **MealPlan-Meal:** A meal plan can contain multiple meals, and a meal can belong to multiple plans (M).
- **Meal-NutritionalInfo:** A meal consists of several food items with nutritional details (1).
- **User-DietaryGoal:** A user can have multiple dietary goals over time (1).

##### **Special EER Features:**

- **Weak Entity:** MealPlan is weak as it depends on UserID for identification.

- **Composite Attribute:** The Ingredients in the Meal entity is composite, as it can have multiple components.
- **Multivalued Attribute:** DietaryPreferences in User allows for multiple preferences (e.g., vegan, gluten-free).
- **Cardinalities:** You'll use different cardinalities, such as 1:1 for User-MealPlan, 1 for User-DietaryGoal, M for MealPlan-Meal.



**Normalized:**

### 1. User Table

Attributes:

UserID (PK)

Name

Age

Gender

Weight

Height

## ActivityLevel

Dietary Preferences: To manage the multivalued DietaryPreferences attribute, we create a new table.

### 2. DietaryPreferences

Attributes:

UserID (FK referencing User)

Preference (Multivalued, e.g., vegan, gluten-free)

Composite PK: (UserID, Preference)

### 3. DietaryGoal

Attributes:

GoalID (PK)

UserID (FK referencing User)

GoalType (e.g., weight loss, muscle gain)

TargetWeight

### 4. MealPlan

Attributes:

PlanID (PK)

UserID (FK referencing User)

PlanDate

Calories

NutritionalBreakdown

-As a weak entity in the original model, MealPlan now has its own primary key but maintains a foreign key link to User.

### 5. Meal Table

Attributes:

MealID (PK)

MealName

MealType (e.g., breakfast, lunch)

### 6. MealIngredients

Attributes:

MealID (FK referencing Meal)

IngredientName

Composite PK: (MealID, IngredientName)

### 7. NutritionalInfo

Attributes:

NutrientID (PK)

FoodItem

Calories  
Protein  
Carbs  
Fat  
Vitamins

### 8. MealPlan\_Meal (Associative Entity for M relationship between MealPlan and Meal)

Attributes:

PlanID (FK referencing MealPlan)

MealID (FK referencing Meal)

Composite PK: (PlanID, MealID)

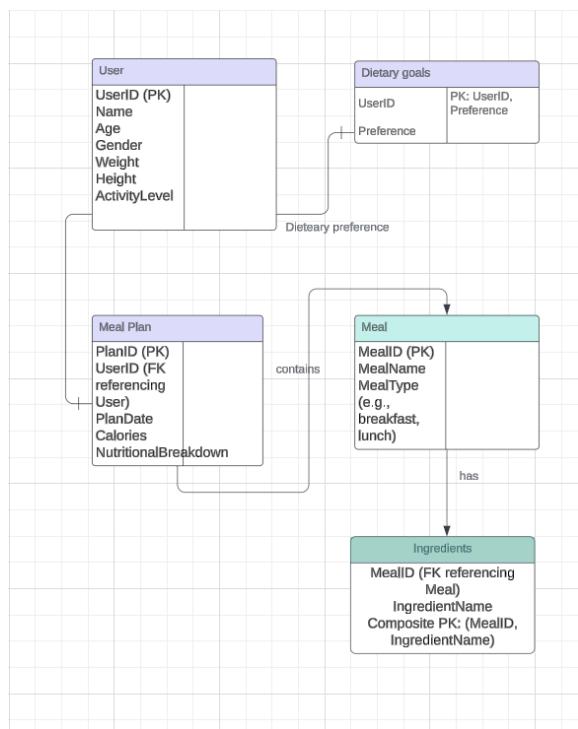
### 9. Meal\_NutritionalInfo (Associative Entity for M relationship between Meal and NutritionalInfo)

Attributes:

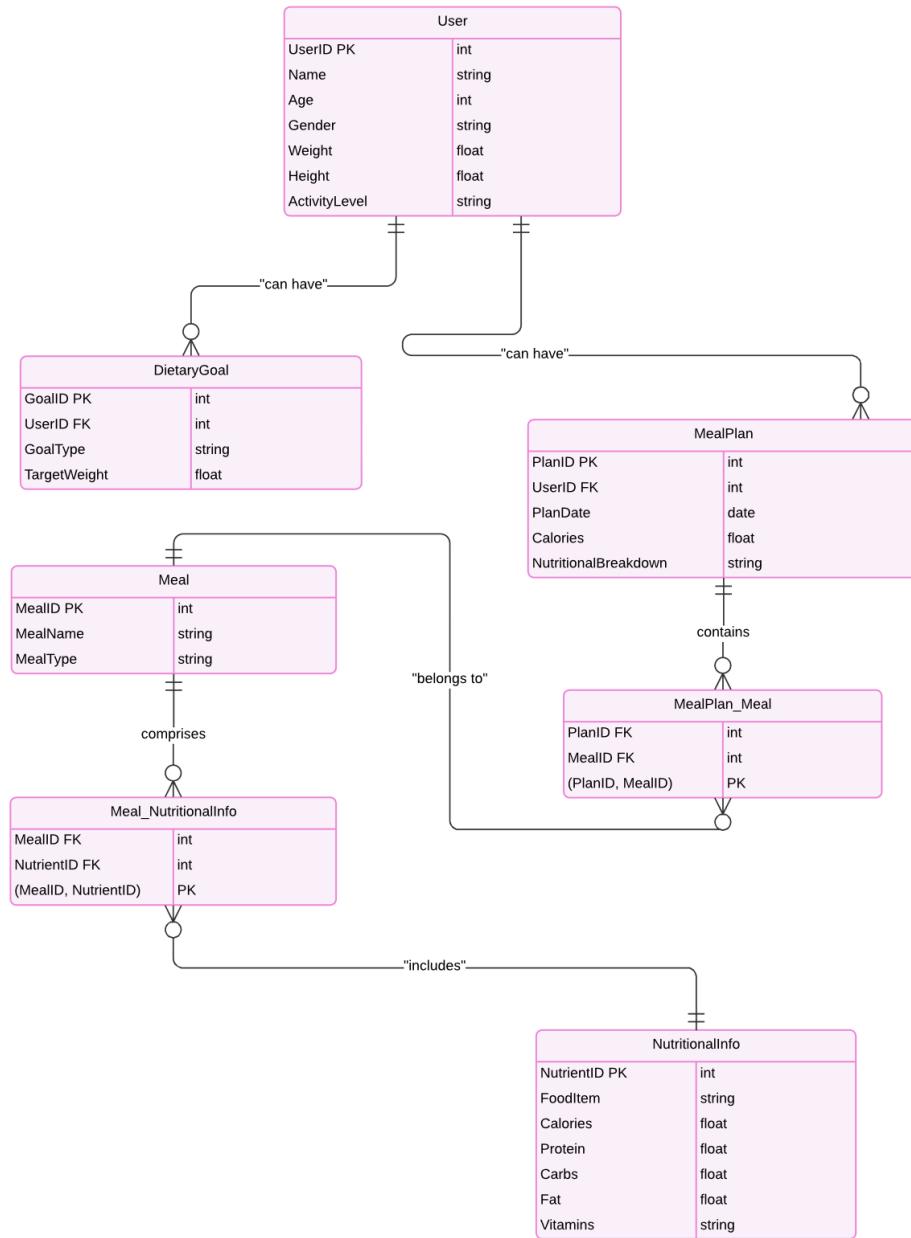
MealID (FK referencing Meal)

NutrientID (FK referencing NutritionalInfo)

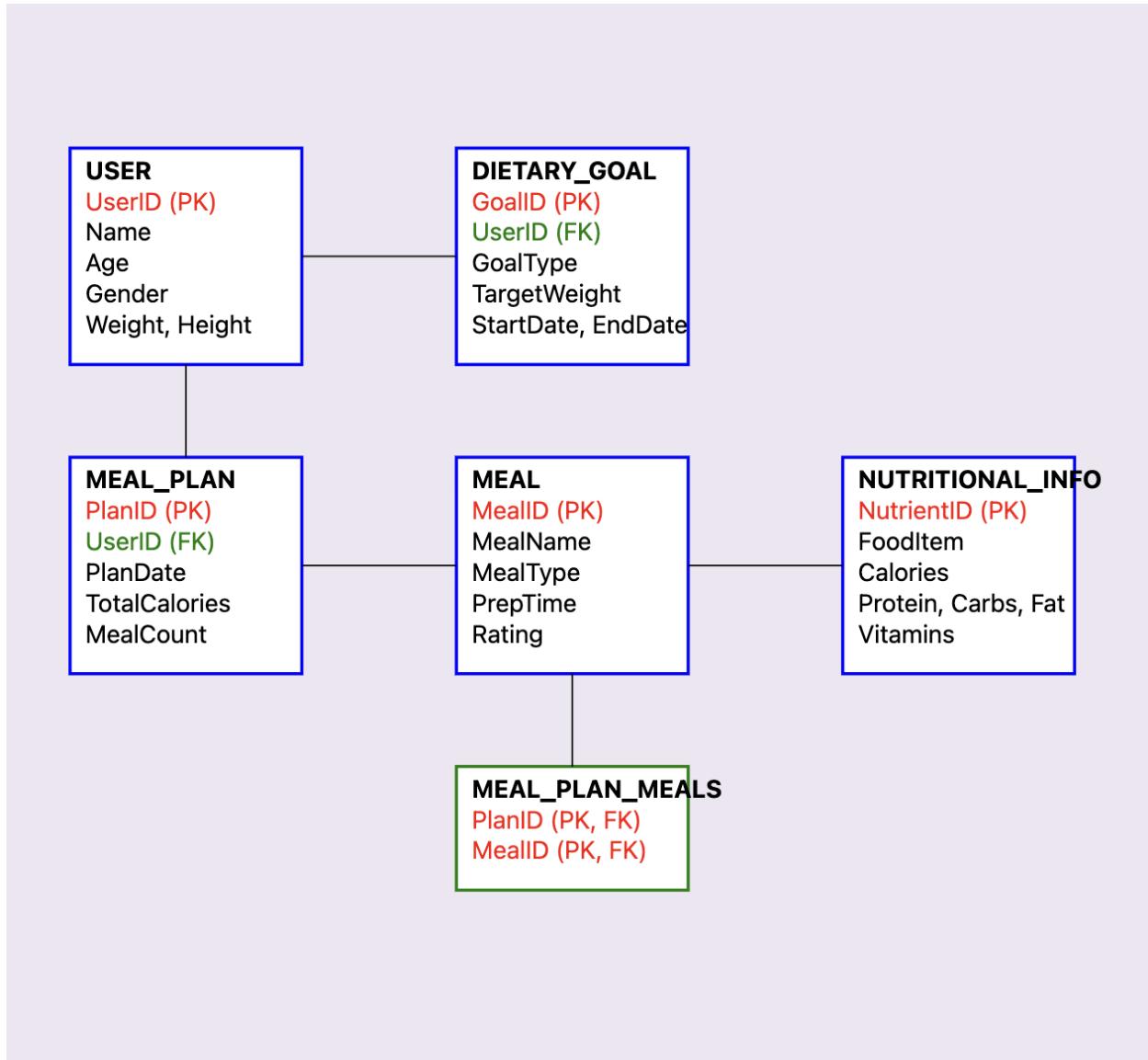
Composite PK: (MealID, NutrientID)



- **3.2. Relational Data Model Design:** Perform EER to relational model mapping to create the following: Draw the schema diagram of your design USING A TOOL, rather than drawing manually. Specify Primary Keys, Foreign Keys and referential integrity constraints in this schema.



**Normalized:**



- **3.3. Create your Database and Populate:** Use an SQL platform to create your database and its tables as you described in sections 3.1 and 3.2. Then, populate each table with corresponding data. Remember that each table should have minimum 10 tuples. Provide a screenshot of each database creation statement, and each database table population, as well as each resulting table in your report exactly in this section.

Table Creation:

```
CREATE DATABASE NutritionDB;

USE NutritionDB;

-- User Table
CREATE TABLE User (
    UserID INT AUTO_INCREMENT PRIMARY KEY,
    Name VARCHAR(100),
    Age INT,
    Gender VARCHAR(10),
    Weight FLOAT,
    Height FLOAT,
    ActivityLevel VARCHAR(50),
    DietaryPreferences TEXT
);

-- DietaryGoal Table
CREATE TABLE DietaryGoal (
    GoalID INT AUTO_INCREMENT PRIMARY KEY,
    GoalType VARCHAR(50),
    TargetWeight FLOAT,
    UserID INT,
    FOREIGN KEY (UserID) REFERENCES User(UserID)
);

-- MealPlan Table (Weak Entity)
CREATE TABLE MealPlan (
    PlanID INT AUTO_INCREMENT PRIMARY KEY,
    PlanDate DATE,
    Calories FLOAT,
    NutritionalBreakdown TEXT,
    UserID INT,
    FOREIGN KEY (UserID) REFERENCES User(UserID)
);
```

```
-- Meal Table
CREATE TABLE Meal (
    MealID INT AUTO_INCREMENT PRIMARY KEY,
    MealName VARCHAR(100),
    Ingredients TEXT,
    MealType VARCHAR(50)
);

-- NutritionalInfo Table
CREATE TABLE NutritionalInfo (
    NutrientID INT AUTO_INCREMENT PRIMARY KEY,
    FoodItem VARCHAR(100),
    Calories FLOAT,
    Protein FLOAT,
    Carbs FLOAT,
    Fat FLOAT,
    Vitamins VARCHAR(255)
);
```

Populated Tables:

User:

	UserID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
1	1	John Doe	30	Male	75	180	Moderate	["Vegan", "Low-Carb"]
2	2	Jane Smith	28	Female	65	165	Active	["Vegetarian"]
3	3	Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4	4	Emily Davis	22	Female	55	160	Light	["Paleo"]
5	5	Michael Brown	40	Male	90	182	Active	["Keto"]
6	6	Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7	7	David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]
8	8	Sophia Martinez	27	Female	60	162	Light	["Gluten-Free"]
9	9	Chris Lee	29	Male	78	175	Sedentary	["Paleo"]
10	10	Olivia Johnson	31	Female	62	168	Active	["Low-Carb", "Vegan"]

DietaryGoal:

	GoalID	GoalType	TargetWeight	UserID
1	1	Weight Loss	70	1
2	2	Muscle Gain	68	2
3	3	Weight Loss	75	3
4	4	Maintain	55	4
5	5	Weight Maintenance	90	5
6	6	Muscle Gain	72	6
7	7	Muscle Gain	88	7
8	8	Maintain	60	8
9	9	Weight Loss	72	9
10	10	Maintain	62	10

## MealPlan:

	PlanID	PlanDate	Calories	NutritionalBreakdown	UserID
1	1	2024-10-17	2000	{"Protein": 150, "Carbs": 250, "Fat": 50}	1
2	2	2024-10-18	2200	{"Protein": 180, "Carbs": 200, "Fat": 60}	2
3	3	2024-10-19	1800	{"Protein": 120, "Carbs": 150, "Fat": 50}	3
4	4	2024-10-20	1600	{"Protein": 100, "Carbs": 130, "Fat": 40}	4
5	5	2024-10-21	2500	{"Protein": 200, "Carbs": 50, "Fat": 180}	5
6	6	2024-10-22	2100	{"Protein": 160, "Carbs": 150, "Fat": 70}	6
7	7	2024-10-23	3000	{"Protein": 220, "Carbs": 250, "Fat": 100}	7
8	8	2024-10-24	1800	{"Protein": 100, "Carbs": 200, "Fat": 50}	8
9	9	2024-10-25	1900	{"Protein": 150, "Carbs": 100, "Fat": 70}	9
10	10	2024-10-26	1700	{"Protein": 120, "Carbs": 100, "Fat": 60}	10

## Meal:

	MealID	MealName	Ingredients	MealType
1	1	Vegan Salad	{"Lettuce": 50, "Tomato": 30, "Cucumber": 20}	Lunch
2	2	Quinoa Salad	{"Quinoa": 100, "Avocado": 50, "Spinach": 40}	Lunch
3	3	Chicken Salad	{"Chicken": 150, "Lettuce": 30, "Olives": 20}	Dinner
4	4	Egg Scramble	{"Eggs": 120, "Spinach": 30, "Mushrooms": 20}	Breakfast
5	5	Keto Omelette	{"Eggs": 120, "Cheese": 50, "Butter": 30}	Breakfast
6	6	Vegetarian Stir-Fry	{"Tofu": 100, "Broccoli": 50, "Bell Peppers": 40}	Dinner
7	7	Vegan Protein Shake	{"Almond Milk": 200, "Protein Powder": 50, "Banana": 50}	Snack
8	8	Gluten-Free Pasta	{"Rice Pasta": 200, "Tomato Sauce": 50, "Basil": 10}	Dinner
9	9	Paleo Steak	{"Beef": 200, "Olive Oil": 30, "Garlic": 10}	Dinner
10	10	Vegan Wrap	{"Whole Wheat Wrap": 70, "Hummus": 30, "Cucumber": 20}	Lunch

## NutritionalInfo:

NutrientID	FoodItem	Calories	Protein	Carbs	Fat	Vitamins
1	Apple	52	0.3	14	0.2	Vitamin C
2	Banana	89	1.1	23	0.3	Vitamin B6
3	Orange	62	1.2	15	0.2	Vitamin C
4	Strawberry	33	0.7	8	0.3	Vitamin C
5	Almonds	575	21	22	50	Vitamin E
6	Spinach	23	2.9	3.6	0.4	Vitamin K
7	Avocado	160	2	9	15	Vitamin K
8	Carrot	41	1	10	0.2	Vitamin A
9	Blueberries	57	0.7	14	0.3	Vitamin C
10	Broccoli	55	3.7	11	0.6	Vitamin C

## Table Population:

```

1 -- PERSON 1
2 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
3 VALUES ('John Doe', 30, 'Male', 75.0, 180.0, 'Moderate', ['Vegan', 'Low-Carb']);
4
5 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
6 VALUES ('Weight Loss', 70.0, 1);
7
8 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
9 VALUES ('2024-10-17', 2000, '{"Protein": 150, "Carbs": 250, "Fat": 50}', 1);
10
11 INSERT INTO Meal (MealName, Ingredients, MealType)
12 VALUES ('Vegan Salad', '{"Lettuce": 50, "Tomato": 30, "Cucumber": 20}', 'Lunch');
13
14 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
15 VALUES ('Apple', 52, 0.3, 14, 0.2, 'Vitamin C');
16

17 -- PERSON 2
18 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
19 VALUES ('Jane Smith', 28, 'Female', 65.0, 165.0, 'Active', ['Vegetarian']);
20
21 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
22 VALUES ('Muscle Gain', 68.0, 2);
23
24 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
25 VALUES ('2024-10-18', 2200, '{"Protein": 180, "Carbs": 200, "Fat": 60}', 2);
26
27 INSERT INTO Meal (MealName, Ingredients, MealType)
28 VALUES ('Quinoa Salad', '{"Quinoa": 100, "Avocado": 50, "Spinach": 40}', 'Lunch');
29
30 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
31 VALUES ('Banana', 89, 1.1, 23, 0.3, 'Vitamin B6');
32

33 -- PERSON 3
34 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
35 VALUES ('Sam Wilson', 35, 'Male', 80.0, 175.0, 'Sedentary', ['Low-Sugar', 'Gluten-Free']);
36
37 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
38 VALUES ('Weight Loss', 75.0, 3);
39
40 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
41 VALUES ('2024-10-19', 1800, '{"Protein": 120, "Carbs": 150, "Fat": 50}', 3);
42
43 INSERT INTO Meal (MealName, Ingredients, MealType)
44 VALUES ('Chicken Salad', '{"Chicken": 150, "Lettuce": 30, "Olives": 20}', 'Dinner');
45
46 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
47 VALUES ('Orange', 62, 1.2, 15, 0.2, 'Vitamin C');
48

```

```

49 -- PERSON 4
50 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
51 VALUES ('Emily Davis', 22, 'Female', 55.0, 160.0, 'Light', '["Paleo"]');
52
53 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
54 VALUES ('Maintain', 55.0, 4);
55
56 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
57 VALUES ('2024-10-20', 1600, '{"Protein": 100, "Carbs": 130, "Fat": 40}', 4);
58
59 INSERT INTO Meal (MealName, Ingredients, MealType)
60 VALUES ('Egg Scramble', '{"Eggs": 120, "Spinach": 30, "Mushrooms": 20}', 'Breakfast');
61
62 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
63 VALUES ('Strawberry', 33, 0.7, 8, 0.3, 'Vitamin C');
64

65 -- PERSON 5
66 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
67 VALUES ('Michael Brown', 40, 'Male', 90.0, 182.0, 'Active', '["Keto"]');
68
69 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
70 VALUES ('Weight Maintenance', 90.0, 5);
71
72 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
73 VALUES ('2024-10-21', 2500, '{"Protein": 200, "Carbs": 50, "Fat": 180}', 5);
74
75 INSERT INTO Meal (MealName, Ingredients, MealType)
76 VALUES ('Keto Omelette', '{"Eggs": 120, "Cheese": 50, "Butter": 30}', 'Breakfast');
77
78 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
79 VALUES ('Almonds', 575, 21, 22, 50, 'Vitamin E');
80

81 -- PERSON 6
82 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
83 VALUES ('Laura Green', 32, 'Female', 68.0, 170.0, 'Moderate', '["Vegetarian", "Low-Carb"]');
84
85 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
86 VALUES ('Muscle Gain', 72.0, 6);
87
88 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
89 VALUES ('2024-10-22', 2100, '{"Protein": 160, "Carbs": 150, "Fat": 70}', 6);
90
91 INSERT INTO Meal (MealName, Ingredients, MealType)
92 VALUES ('Vegetarian Stir-Fry', '{"Tofu": 100, "Broccoli": 50, "Bell Peppers": 40}', 'Dinner');
93
94 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
95 VALUES ('Spinach', 23, 2.9, 3.6, 0.4, 'Vitamin K');
96

-- PERSON 7
97 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
98 VALUES ('David Carter', 45, 'Male', 85.0, 177.0, 'Active', '["Vegan", "High-Protein"]');
99
100 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
101 VALUES ('Muscle Gain', 88.0, 7);
102
103 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
104 VALUES ('2024-10-23', 3800, '{"Protein": 220, "Carbs": 250, "Fat": 100}', 7);
105
106 INSERT INTO Meal (MealName, Ingredients, MealType)
107 VALUES ('Vegan Protein Shake', '{"Almond Milk": 200, "Protein Powder": 50, "Banana": 50}', 'Snack');
108
109 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
110 VALUES ('Avocado', 160, 2, 9, 15, 'Vitamin K');
111
112

```

```

144
113 -- PERSON 8
114 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
115 VALUES ('Sophia Martinez', 27, 'Female', 60.0, 162.0, 'Light', ['Gluten-Free']);
116
117 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
118 VALUES ('Maintain', 60.0, 8);
119
120 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
121 VALUES ('2024-10-24', 1800, '{"Protein": 100, "Carbs": 200, "Fat": 50}', 8);
122
123 INSERT INTO Meal (MealName, Ingredients, MealType)
124 VALUES ('Gluten-Free Pasta', {"Rice Pasta": 200, "Tomato Sauce": 50, "Basil": 10}, 'Dinner');
125
126 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
127 VALUES ('Carrot', 41, 1.0, 10, 0.2, 'Vitamin A');
128

129 -- PERSON 9
130 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
131 VALUES ('Chris Lee', 29, 'Male', 78.0, 175.0, 'Sedentary', ['Paleo']);
132
133 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
134 VALUES ('Weight Loss', 72.0, 9);
135
136 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
137 VALUES ('2024-10-25', 1900, '{"Protein": 150, "Carbs": 100, "Fat": 70}', 9);
138
139 INSERT INTO Meal (MealName, Ingredients, MealType)
140 VALUES ('Paleo Steak', {"Beef": 200, "Olive Oil": 30, "Garlic": 10}, 'Dinner');
141
142 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
143 VALUES ('Blueberries', 57, 0.7, 14, 0.3, 'Vitamin C');
144

145 -- PERSON 10
146 INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
147 VALUES ('Olivia Johnson', 31, 'Female', 62.0, 168.0, 'Active', ['Low-Carb', 'Vegan']);
148
149 INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
150 VALUES ('Maintain', 62.0, 10);
151
152 INSERT INTO MealPlan (PlanDate, Calories, NutritionalBreakdown, UserID)
153 VALUES ('2024-10-26', 1700, '{"Protein": 120, "Carbs": 100, "Fat": 60}', 10);
154
155 INSERT INTO Meal (MealName, Ingredients, MealType)
156 VALUES ('Vegan Wrap', {"Whole Wheat Wrap": 70, "Hummus": 30, "Cucumber": 20}, 'Lunch');
157
158 INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
159 VALUES ('Broccoli', 55, 3.7, 11, 0.6, 'Vitamin C');
160

```

## Normalized Database and Populate:

Table Creation:

```

CREATE TABLE User (
    UserID INT AUTO_INCREMENT PRIMARY KEY,
    Name VARCHAR(100),
    Age INT,
    Gender VARCHAR(10),
    Weight FLOAT,
    Height FLOAT,
    ActivityLevel VARCHAR(50),
    DietaryPreferences TEXT
);

-- DietaryGoal Table (linked to User)
CREATE TABLE DietaryGoal (
    GoalID INT AUTO_INCREMENT PRIMARY KEY,
    GoalType VARCHAR(50),
    TargetWeight FLOAT,
    StartDate DATE,
    EndDate DATE,
    UserID INT,
    FOREIGN KEY (UserID) REFERENCES User(UserID)
);

-- MealPlan Table (linked to User)
CREATE TABLE MealPlan (
    PlanID INT AUTO_INCREMENT PRIMARY KEY,
    PlanDate DATE,
    TotalCalories FLOAT,
    MealCount INT,
    UserID INT,
    FOREIGN KEY (UserID) REFERENCES User(UserID)
);

-- Meal Table
CREATE TABLE Meal (
    MealID INT AUTO_INCREMENT PRIMARY KEY,
    MealName VARCHAR(100),
    MealType VARCHAR(50),
    PrepTime INT,
    Rating INT
);

```

```

-- NutritionalInfo Table
CREATE TABLE NutritionalInfo (
    NutrientID INT AUTO_INCREMENT PRIMARY KEY,
    FoodItem VARCHAR(100),
    Calories FLOAT,
    Protein FLOAT,
    Carbs FLOAT,
    Fat FLOAT,
    Vitamins VARCHAR(255)
);

-- MealPlan_Meals Table (linking MealPlan and Meal)
CREATE TABLE MealPlan_Meals (
    PlanID INT,
    MealID INT,
    PRIMARY KEY (PlanID, MealID),
    FOREIGN KEY (PlanID) REFERENCES MealPlan(PlanID),
    FOREIGN KEY (MealID) REFERENCES Meal(MealID)
);

-- Meal_NutritionalInfo Table (linking Meal and NutritionalInfo)
CREATE TABLE Meal_NutritionalInfo (
    MealID INT,
    NutrientID INT,
    Quantity FLOAT, -- Quantity of the nutrient in the meal
    PRIMARY KEY (MealID, NutrientID),
    FOREIGN KEY (MealID) REFERENCES Meal(MealID),
    FOREIGN KEY (NutrientID) REFERENCES NutritionalInfo(NutrientID)
);

```

Table population:

```

-- PERSON 1
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ('John Doe', 30, 'Male', 75.0, 180.0,
        'Moderate', ['Vegan", "Low-Carb"]);

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ('Weight Loss', 70.0, '2024-10-01', '2025-01-01', 1);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ('2024-10-17', 2000, 3, 1);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ('Vegan Salad', 'Lunch', 10, 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ('Apple', 52, 0.3, 14, 0.2, 'Vitamin C');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES (1, 1);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity) VALUES (1, 1, 100);

```

```
-- PERSON 2
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Jane Smith', Age 28, Gender 'Female', Weight 65.0, Height 165.0,
ActivityLevel 'Active', DietaryPreferences '[{"Vegetarian"}]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Muscle Gain', TargetWeight 68.0, StartDate '2024-10-01',
EndDate '2025-01-01', UserID 2);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-18', TotalCalories 2200, MealCount 3, UserID 2);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Quinoa Salad', MealType 'Lunch', PrepTime 15, Rating 5);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Banana', Calories 89, Protein 1.1, Carbs 23, Fat 0.3, Vitamins 'Vitamin B6');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 2, MealID 2);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity) VALUES
(MealID 2, NutrientID 2, Quantity 100);

-- PERSON 3
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Sam Wilson', Age 35, Gender 'Male', Weight 80.0, Height 175.0,
ActivityLevel 'Sedentary', DietaryPreferences '[{"Low-Sugar", "Gluten-Free"}]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Weight Loss', TargetWeight 75.0, StartDate '2024-10-01',
EndDate '2025-01-01', UserID 3);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-19', TotalCalories 1800, MealCount 3, UserID 3);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Chicken Salad', MealType 'Dinner', PrepTime 20, Rating 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Orange', Calories 62, Protein 1.2, Carbs 15, Fat 0.2, Vitamins 'Vitamin C');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 3, MealID 3);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 3, NutrientID 3, Quantity 150);
```

```
-- PERSON 4
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Emily Davis', Age 22, Gender 'Female', Weight 55.0,
    Height 160.0, ActivityLevel 'Light', DietaryPreferences '[ "Paleo" ]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Maintain', TargetWeight 55.0, StartDate '2024-10-01',
    EndDate '2025-01-01', UserID 4);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-20', TotalCalories 1600, MealCount 2, UserID 4);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Egg Scramble', MealType 'Breakfast', PrepTime 10, Rating 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Strawberry', Calories 33, Protein 0.7, Carbs 8, Fat 0.3,
    Vitamins 'Vitamin C');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 4, MealID 4);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 4, NutrientID 4, Quantity 120);

-- PERSON 5
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Michael Brown', Age 40, Gender 'Male', Weight 90.0,
    Height 182.0, ActivityLevel 'Active', DietaryPreferences '[ "Keto" ]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Weight Maintenance', TargetWeight 90.0,
    StartDate '2024-10-01', EndDate '2025-01-01', UserID 5);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-21', TotalCalories 2500, MealCount 3, UserID 5);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Keto Omelette', MealType 'Breakfast', PrepTime 15, Rating 5);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Almonds', Calories 575, Protein 21, Carbs 22, Fat 50, Vitamins 'Vitamin E');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 5, MealID 5);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 5, NutrientID 5, Quantity 100);
```

```

-- PERSON 6
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Laura Green', Age 32, Gender 'Female', Weight 68.0,
         Height 170.0, ActivityLevel 'Moderate', DietaryPreferences '[{"Vegetarian", "Low-Carb"}]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Muscle Gain', TargetWeight 72.0, StartDate '2024-10-01',
         EndDate '2025-01-01', UserID 6);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-22', TotalCalories 2100, MealCount 3, UserID 6);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Vegetarian Stir-Fry', MealType 'Dinner', PrepTime 20, Rating 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Spinach', Calories 23, Protein 2.9, Carbs 3.6, Fat 0.4, Vitamins 'Vitamin K');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 6, MealID 6);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 6, NutrientID 6, Quantity 100);

-- PERSON 7
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'David Carter', Age 45, Gender 'Male', Weight 85.0, Height 177.0,
         ActivityLevel 'Active', DietaryPreferences '[{"Vegan", "High-Protein"}]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Muscle Gain', TargetWeight 88.0, StartDate '2024-10-01',
         EndDate '2025-01-01', UserID 7);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-23', TotalCalories 3000, MealCount 3, UserID 7);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Vegan Protein Shake', MealType 'Snack', PrepTime 5, Rating 5);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Avocado', Calories 160, Protein 2, Carbs 9, Fat 15, Vitamins 'Vitamin K');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 7, MealID 7);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 7, NutrientID 7, Quantity 100);

```

```
-- PERSON 8
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Sophia Martinez', Age 27, Gender 'Female', Weight 60.0,
         Height 162.0, ActivityLevel 'Light', DietaryPreferences '["Gluten-Free"]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Maintain', TargetWeight 60.0, StartDate '2024-10-01',
         EndDate '2025-01-01', UserID 8);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-24', TotalCalories 1800, MealCount 3, UserID 8);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Gluten-Free Pasta', MealType 'Dinner', PrepTime 25, Rating 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Carrot', Calories 41, Protein 1.0, Carbs 10, Fat 0.2, Vitamins 'Vitamin A');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 8, MealID 8);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 8, NutrientID 8, Quantity 100);

-- PERSON 9
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Chris Lee', Age 29, Gender 'Male', Weight 78.0,
         Height 175.0, ActivityLevel 'Sedentary', DietaryPreferences '["Paleo"]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Weight Loss', TargetWeight 72.0, StartDate '2024-10-01',
         EndDate '2025-01-01', UserID 9);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-25', TotalCalories 1900, MealCount 2, UserID 9);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Paleo Steak', MealType 'Dinner', PrepTime 30, Rating 4);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Blueberries', Calories 57, Protein 0.7, Carbs 14, Fat 0.3, Vitamins 'Vitamin C');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 9, MealID 9);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 9, NutrientID 9, Quantity 100);
```

```
-- PERSON 10
INSERT INTO User (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Olivia Johnson', Age 31, Gender 'Female', Weight 62.0,
        Height 168.0, ActivityLevel 'Active', DietaryPreferences '[{"Low-Carb", "Vegan"}]');

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Maintain', TargetWeight 62.0, StartDate '2024-10-01', EndDate '2025-01-01', UserID 10);

INSERT INTO MealPlan (PlanDate, TotalCalories, MealCount, UserID)
VALUES ( PlanDate '2024-10-26', TotalCalories 1700, MealCount 3, UserID 10);

INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ( MealName 'Vegan Wrap', MealType 'Lunch', PrepTime 10, Rating 5);

INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Broccoli', Calories 55, Protein 3.7, Carbs 11, Fat 0.6, Vitamins 'Vitamin C');

INSERT INTO MealPlan_Meals (PlanID, MealID) VALUES ( PlanID 10, MealID 10);
INSERT INTO Meal_NutritionalInfo (MealID, NutrientID, Quantity)
VALUES ( MealID 10, NutrientID 10, Quantity 100);
```

## Populated Tables:

### DietaryGoal:

	GoalID	GoalType	TargetWeight	StartDate	EndDate	UserID
1	1	Weight Loss		70 2024-10-01	2025-01-01	1
2	2	Muscle Gain		68 2024-10-01	2025-01-01	2
3	3	Weight Loss		75 2024-10-01	2025-01-01	3
4	4	Maintain		55 2024-10-01	2025-01-01	4
5	5	Weight Maintenance		90 2024-10-01	2025-01-01	5
6	6	Muscle Gain		72 2024-10-01	2025-01-01	6
7	7	Muscle Gain		88 2024-10-01	2025-01-01	7
8	8	Maintain		60 2024-10-01	2025-01-01	8
9	9	Weight Loss		72 2024-10-01	2025-01-01	9
10	10	Maintain		62 2024-10-01	2025-01-01	10

### Meal:

	MealID	MealName	MealType	PrepTime	Rating
1	1	Vegan Salad	Lunch	10	4
2	2	Quinoa Salad	Lunch	15	5
3	3	Chicken Salad	Dinner	20	4
4	4	Egg Scramble	Breakfast	10	4
5	5	Keto Omelette	Breakfast	15	5
6	6	Vegetarian Stir-Fry	Dinner	20	4
7	7	Vegan Protein Shake	Snack	5	5
8	8	Gluten-Free Pasta	Dinner	25	4
9	9	Paleo Steak	Dinner	30	4
10	10	Vegan Wrap	Lunch	10	5

### Meal\_NutritionalInfo:

	MealID	NutrientID	Quantity
1	1	1	100
2	2	2	100
3	3	3	150
4	4	4	120
5	5	5	100
6	6	6	100
7	7	7	100
8	8	8	100
9	9	9	100
10	10	10	100

### MealPlan:

	PlanID	PlanDate	TotalCalories	MealCount	UserID
1	1	2024-10-17	2000	3	1
2	2	2024-10-18	2200	3	2
3	3	2024-10-19	1800	3	3
4	4	2024-10-20	1600	2	4
5	5	2024-10-21	2500	3	5
6	6	2024-10-22	2100	3	6
7	7	2024-10-23	3000	3	7
8	8	2024-10-24	1800	3	8
9	9	2024-10-25	1900	2	9
10	10	2024-10-26	1700	3	10

### MealPlan\_Meals:

	PlanID	MealID
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10

### NutritionalInfo:

	NutrientID	FoodItem	Calories	Protein	Carbs	Fat	Vitamins
1		1 Apple	52	0.3	14	0.2	Vitamin C
2		2 Banana	89	1.1	23	0.3	Vitamin B6
3		3 Orange	62	1.2	15	0.2	Vitamin C
4		4 Strawberry	33	0.7	8	0.3	Vitamin C
5		5 Almonds	575	21	22	50	Vitamin E
6		6 Spinach	23	2.9	3.6	0.4	Vitamin K
7		7 Avocado	160	2	9	15	Vitamin K
8		8 Carrot	41	1	10	0.2	Vitamin A
9		9 Blueberries	57	0.7	14	0.3	Vitamin C
10		10 Broccoli	55	3.7	11	0.6	Vitamin C

User:

	UserID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
1		1 John Doe	30	Male	75	180	Moderate	["Vegan", "Low-Carb"]
2		2 Jane Smith	28	Female	65	165	Active	["Vegetarian"]
3		3 Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4		4 Emily Davis	22	Female	55	160	Light	["Paleo"]
5		5 Michael Brown	40	Male	90	182	Active	["Keto"]
6		6 Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7		7 David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]
8		8 Sophia Martinez	27	Female	60	162	Light	["Gluten-Free"]
9		9 Chris Lee	29	Male	78	175	Sedentary	["Paleo"]
10		10 Olivia Johnson	31	Female	62	168	Active	["Low-Carb", "Vegan"]

- **3.4. Database Query Execution (from inside your SQL client):** Use an SQL platform to provide sample executions for each of the following operations on each table of your database:

- **Query** – to perform operations such as list employees earning more than 150K per year
- **Insert** – to add new tuple(s), and/or field(s) to your table(s)
- **Delete** - to remove tuple(s), and/or field(s) from your table(s)
- **Update** - to modify tuple(s), and/or field(s) from your table(s)

Provide a screenshot of each operation and each resulting table in your report exactly in this section.

After Query Execution 1:

```
SELECT Name, Age, Gender, ActivityLevel
FROM [User]
WHERE Age > 30;
```

```

mysql> SELECT Name, Age, Gender, ActivityLevel
-> FROM user
-> WHERE Age > 30;
+-----+-----+-----+-----+
| Name | Age | Gender | ActivityLevel |
+-----+-----+-----+-----+
| Sam Wilson | 35 | Male | Sedentary |
| Michael Brown | 40 | Male | Active |
| Laura Green | 32 | Female | Moderate |
| David Carter | 45 | Male | Active |
| Olivia Johnson | 31 | Female | Active |
| Anna Taylor | 34 | Female | Moderate |
+-----+-----+-----+-----+
6 rows in set (0.00 sec)

```

After Query Execution 2:

```

SELECT PlanID, PlanDate, Calories, NutritionalBreakdown, UserID
FROM MealPlan
WHERE Calories > 2000;

```

```

mysql> SELECT PlanID, PlanDate, Calories, NutritionalBreakdown, UserID
-> FROM MealPlan
-> WHERE Calories > 2000;
+-----+-----+-----+-----+-----+
| PlanID | PlanDate | Calories | NutritionalBreakdown | UserID |
+-----+-----+-----+-----+-----+
| 2 | 2024-10-18 | 2200 | {"Protein": 180, "Carbs": 200, "Fat": 60} | 2 |
| 5 | 2024-10-21 | 2500 | {"Protein": 200, "Carbs": 50, "Fat": 180} | 5 |
| 6 | 2024-10-22 | 2100 | {"Protein": 160, "Carbs": 150, "Fat": 70} | 6 |
| 7 | 2024-10-23 | 3000 | {"Protein": 220, "Carbs": 250, "Fat": 100} | 7 |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

After Query Execution 3:

```

INSERT INTO [User] (Name, Age, Gender, Weight, Height, ActivityLevel,
DietaryPreferences)

VALUES ('Anna Taylor', 34, 'Female', 70.0, 172.0, 'Moderate',
['Gluten-Free', "Vegan"]);

```

```

mysql> Select * FROM user
-> ;
+-----+-----+-----+-----+-----+-----+-----+-----+
| UserID | Name   | Age  | Gender | Weight | Height | ActivityLevel | DietaryPreferences |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1     | John Doe | 30   | Male   | 75    | 180   | Moderate      | ["Vegan", "Low-Carb"] |
| 2     | Jane Smith | 28   | Female | 65    | 165   | Active        | ["Vegetarian"]       |
| 3     | Sam Wilson | 35   | Male   | 80    | 175   | Sedentary     | ["Low-Sugar", "Gluten-Free"] |
| 4     | Emily Davis | 22   | Female | 55    | 160   | Light         | ["Paleo"]           |
| 5     | Michael Brown | 40   | Male   | 90    | 182   | Active        | ["Keto", "Gluten-Free"] |
| 6     | Laura Green | 32   | Female | 68    | 170   | Moderate      | ["Vegetarian", "Low-Carb"] |
| 7     | David Carter | 45   | Male   | 85    | 177   | Active        | ["Vegan", "High-Protein"] |
| 8     | Sophia Martinez | 27   | Female | 60    | 162   | Light         | ["Gluten-Free"]       |
| 9     | Chris Lee | 29   | Male   | 78    | 175   | Sedentary     | ["Paleo"]           |
| 10    | Olivia Johnson | 31   | Female | 62    | 168   | Active        | ["Low-Carb", "Vegan"]    |
| 11    | Anna Taylor | 34   | Female | 70    | 172   | Moderate      | ["Gluten-Free", "Vegan"]  |
+-----+-----+-----+-----+-----+-----+-----+-----+
11 rows in set (0.00 sec)

```

After Query Execution 4:

```

INSERT INTO DietaryGoal (GoalType, TargetWeight, UserID)
VALUES ('Weight Loss', 65.0, 11);

```

```

mysql> Select * FROM DietaryGoal
-> ;
+-----+-----+-----+-----+
| GoalID | GoalType | TargetWeight | UserID |
+-----+-----+-----+-----+
| 1     | Weight Loss | 70 | 1 |
| 2     | Muscle Gain | 68 | 2 |
| 3     | Weight Loss | 75 | 3 |
| 4     | Maintain | 55 | 4 |
| 5     | Weight Maintenance | 90 | 5 |
| 6     | Maintain Weight | 72 | 6 |
| 7     | Muscle Gain | 88 | 7 |
| 8     | Maintain | 60 | 8 |
| 9     | Weight Loss | 72 | 9 |
| 10    | Maintain | 62 | 10 |
| 11    | Weight Loss | 65 | 11 |
+-----+-----+-----+-----+
11 rows in set (0.00 sec)

```

After Query Execution 5:

```

DELETE FROM MealPlan
WHERE UserID = 9;

```

```
mysql> Select * FROM MealPlan;
+-----+-----+-----+-----+-----+
| PlanID | PlanDate | Calories | NutritionalBreakdown | UserID |
+-----+-----+-----+-----+-----+
| 1 | 2024-10-17 | 2000 | {"Protein": 150, "Carbs": 250, "Fat": 50} | 1 |
| 2 | 2024-10-18 | 2200 | {"Protein": 180, "Carbs": 200, "Fat": 60} | 2 |
| 3 | 2024-10-19 | 1800 | {"Protein": 120, "Carbs": 150, "Fat": 50} | 3 |
| 4 | 2024-10-20 | 1600 | {"Protein": 100, "Carbs": 130, "Fat": 40} | 4 |
| 5 | 2024-10-21 | 2500 | {"Protein": 200, "Carbs": 50, "Fat": 180} | 5 |
| 6 | 2024-10-22 | 2100 | {"Protein": 160, "Carbs": 150, "Fat": 70} | 6 |
| 7 | 2024-10-23 | 3000 | {"Protein": 220, "Carbs": 250, "Fat": 100} | 7 |
| 8 | 2024-10-24 | 1800 | {"Protein": 100, "Carbs": 200, "Fat": 50} | 8 |
| 10 | 2024-10-26 | 1700 | {"Protein": 120, "Carbs": 100, "Fat": 60} | 10 |
+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

After Query Execution 6:

```
UPDATE [User]
SET DietaryPreferences = '[ "Keto", "Gluten-Free"]'
WHERE UserID = 5;
```

After Query Execution 7:

```
SELECT Meal.MealName, NutritionalInfo.FoodItem, NutritionalInfo.Calories,
NutritionalInfo.Protein, NutritionalInfo.Carbs, NutritionalInfo.Fat,
NutritionalInfo.Vitamins
FROM Meal
JOIN NutritionalInfo ON Meal.MealName = NutritionalInfo.FoodItem
WHERE Meal.MealType = 'Lunch';
```

```
mysql> Select * from meal
-> ;
+-----+-----+-----+-----+
| MealID | MealName | Ingredients | MealType |
+-----+-----+-----+-----+
| 1 | Vegan Salad | {"Lettuce": 50, "Tomato": 30, "Cucumber": 20} | Lunch |
| 2 | Quinoa Salad | {"Quinoa": 100, "Avocado": 50, "Spinach": 40} | Lunch |
| 3 | Chicken Salad | {"Chicken": 150, "Lettuce": 30, "Olives": 20} | Dinner |
| 4 | Egg Scramble | {"Eggs": 120, "Spinach": 30, "Mushrooms": 20} | Breakfast |
| 5 | Keto Omelette | {"Eggs": 120, "Cheese": 50, "Butter": 30} | Breakfast |
| 6 | Vegetarian Stir-Fry | {"Tofu": 100, "Broccoli": 50, "Bell Peppers": 40} | Dinner |
| 7 | Vegan Protein Shake | {"Almond Milk": 200, "Protein Powder": 50, "Banana": 50} | Snack |
| 8 | Gluten-Free Pasta | {"Rice Pasta": 200, "Tomato Sauce": 50, "Basil": 10} | Dinner |
| 9 | Paleo Steak | {"Beef": 200, "Olive Oil": 30, "Garlic": 10} | Dinner |
| 10 | Vegan Wrap | {"Whole Wheat Wrap": 70, "Hummus": 30, "Cucumber": 20} | Lunch |
| 11 | Tofu Stir-Fry | {"Tofu": 100, "Vegetables": 150, "Soy Sauce": 20} | Dinner |
| 12 | Tofu Stir-Fry | {"Tofu": 100, "Vegetables": 150, "Soy Sauce": 20} | Dinner |
| 13 | Tofu Stir-Fry | {"Tofu": 100, "Vegetables": 150, "Soy Sauce": 20} | Dinner |
+-----+-----+-----+-----+
13 rows in set (0.00 sec)
```

After Query Execution 8:

```
SELECT DietaryGoal.GoalID, DietaryGoal.GoalType, DietaryGoal.TargetWeight,
[User].Name

FROM DietaryGoal

JOIN [User] ON DietaryGoal.UserID = [User].UserID;
```

```
mysql> SELECT DietaryGoal.GoalID, DietaryGoal.GoalType, DietaryGoal.TargetWeight, user.Name
-> FROM DietaryGoal
-> JOIN user ON DietaryGoal.UserID = user.UserID;
```

GoalID	GoalType	TargetWeight	Name
1	Weight Loss	70	John Doe
2	Muscle Gain	68	Jane Smith
3	Weight Loss	75	Sam Wilson
4	Maintain	55	Emily Davis
5	Weight Maintenance	90	Michael Brown
6	Maintain Weight	72	Laura Green
7	Muscle Gain	88	David Carter
8	Maintain	60	Sophia Martinez
9	Weight Loss	72	Chris Lee
10	Maintain	62	Olivia Johnson
12	Weight Loss	65	Anna Taylor

11 rows in set (0.00 sec)

After Query Execution 9:

```
INSERT INTO Meal (MealName, Ingredients, MealType)

VALUES ('Tofu Stir-Fry', '{"Tofu": 100, "Vegetables": 150, "Soy Sauce": 20}', 'Dinner');
```

```
mysql> Select * from meal
-> ;
```

MealID	MealName	Ingredients	MealType
1	Vegan Salad	{"Lettuce": 50, "Tomato": 30, "Cucumber": 20}	Lunch
2	Quinoa Salad	{"Quinoa": 100, "Avocado": 50, "Spinach": 40}	Lunch
3	Chicken Salad	{"Chicken": 150, "Lettuce": 30, "Olives": 20}	Dinner
4	Egg Scramble	{"Eggs": 120, "Spinach": 30, "Mushrooms": 20}	Breakfast
5	Keto Omelette	{"Eggs": 120, "Cheese": 50, "Butter": 30}	Breakfast
6	Vegetarian Stir-Fry	{"Tofu": 100, "Broccoli": 50, "Bell Peppers": 40}	Dinner
7	Vegan Protein Shake	{"Almond Milk": 200, "Protein Powder": 50, "Banana": 50}	Snack
8	Gluten-Free Pasta	{"Rice Pasta": 200, "Tomato Sauce": 50, "Basil": 10}	Dinner
9	Paleo Steak	{"Beef": 200, "Olive Oil": 30, "Garlic": 10}	Dinner
10	Vegan Wrap	{"Whole Wheat Wrap": 70, "Hummus": 30, "Cucumber": 20}	Lunch
11	Tofu Stir-Fry	{"Tofu": 100, "Vegetables": 150, "Soy Sauce": 20}	Dinner

11 rows in set (0.00 sec)

After Query Execution 10:

```
INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat,
Vitamins)
VALUES ('Tofu Stir-Fry', 400, 20, 50, 15, 'Vitamin B12');
```

```
mysql> select * from NutritionalInfo;
+-----+-----+-----+-----+-----+-----+-----+
| NutrientID | FoodItem | Calories | Protein | Carbs | Fat | Vitamins |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Apple | 52 | 0.3 | 14 | 0.2 | Vitamin C |
| 2 | Banana | 89 | 1.1 | 23 | 0.3 | Vitamin B6 |
| 3 | Orange | 62 | 1.2 | 15 | 0.2 | Vitamin C |
| 4 | Strawberry | 33 | 0.7 | 8 | 0.3 | Vitamin C |
| 5 | Almonds | 575 | 21 | 22 | 50 | Vitamin E |
| 6 | Spinach | 23 | 2.9 | 3.6 | 0.4 | Vitamin K |
| 7 | Avocado | 160 | 2 | 9 | 15 | Vitamin K |
| 8 | Carrot | 41 | 1 | 10 | 0.2 | Vitamin A |
| 9 | Blueberries | 57 | 0.7 | 14 | 0.3 | Vitamin C |
| 10 | Broccoli | 55 | 3.7 | 11 | 0.6 | Vitamin C |
| 14 | Tofu Stir-Fry | 400 | 20 | 50 | 15 | Vitamin B12 |
+-----+-----+-----+-----+-----+-----+-----+
11 rows in set (0.00 sec)
```

After Query Execution 11:

```
DELETE FROM [User]
WHERE UserID = 7;
```

```
mysql> select * from nutritionalinfo;
+-----+-----+-----+-----+-----+-----+-----+
| NutrientID | FoodItem | Calories | Protein | Carbs | Fat | Vitamins |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Apple | 52 | 0.3 | 14 | 0.2 | Vitamin C |
| 2 | Banana | 89 | 1.1 | 23 | 0.3 | Vitamin B6 |
| 3 | Orange | 62 | 1.2 | 15 | 0.2 | Vitamin C |
| 4 | Strawberry | 33 | 0.7 | 8 | 0.3 | Vitamin C |
| 5 | Almonds | 575 | 21 | 22 | 50 | Vitamin E |
| 6 | Spinach | 23 | 2.9 | 3.6 | 0.4 | Vitamin K |
| 7 | Avocado | 160 | 2 | 9 | 15 | Vitamin K |
| 8 | Carrot | 41 | 1 | 10 | 0.2 | Vitamin A |
| 9 | Blueberries | 57 | 0.7 | 14 | 0.3 | Vitamin C |
| 10 | Broccoli | 55 | 3.7 | 11 | 0.6 | Vitamin C |
+-----+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

After Query Execution 12:

```
UPDATE DietaryGoal
SET GoalType = 'Maintain Weight'
WHERE UserID = 6;
```

```
mysql> select * from DietaryGoal;
+----+-----+-----+-----+
| GoalID | GoalType | TargetWeight | UserID |
+----+-----+-----+-----+
| 1 | Weight Loss | 70 | 1 |
| 2 | Muscle Gain | 68 | 2 |
| 3 | Weight Loss | 75 | 3 |
| 4 | Maintain | 55 | 4 |
| 5 | Weight Maintenance | 90 | 5 |
| 6 | Maintain Weight | 72 | 6 |
| 7 | Muscle Gain | 88 | 7 |
| 8 | Maintain | 60 | 8 |
| 9 | Weight Loss | 72 | 9 |
| 10 | Maintain | 62 | 10 |
| 12 | Weight Loss | 65 | 11 |
+----+-----+-----+-----+
11 rows in set (0.00 sec)
```

## Database Query Execution on your Normalized Database:

Query Execution 1:

```
-- QUERY: List all users who are older than 30
SELECT Name, Age, Gender, ActivityLevel
FROM user
WHERE Age > 30;
```

	Name	Age	Gender	ActivityLevel
1	Sam Wilson	35	Male	Sedentary
2	Michael Brown	40	Male	Active
3	Laura Green	32	Female	Moderate
4	David Carter	45	Male	Active
5	Olivia Johnson	31	Female	Active

Query Execution 2:

```
SELECT PlanID, PlanDate, TotalCalories, MealCount, UserID
FROM MealPlan
WHERE TotalCalories > 2000;
```

	PlanID	PlanDate	TotalCalories	MealCount	UserID
1	2	2024-10-18	2200	3	2
2	5	2024-10-21	2500	3	5
3	6	2024-10-22	2100	3	6
4	7	2024-10-23	3000	3	7

Insert Execution 1:

```

INSERT INTO user (Name, Age, Gender, Weight, Height, ActivityLevel, DietaryPreferences)
VALUES ( Name 'Anna Taylor', Age 34, Gender 'Female', Weight 70.0, Height 172.0,
ActivityLevel 'Moderate', DietaryPreferences ['"Gluten-Free", "Vegan"]');

```

	User ID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
1	1	John Doe	30	Male	75	180	Moderate	["Vegan", "Low-Carb"]
2	2	Jane Smith	28	Female	65	165	Active	["Vegetarian"]
3	3	Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4	4	Emily Davis	22	Female	55	160	Light	["Paleo"]
5	5	Michael Brown	40	Male	90	182	Active	["Keto"]
6	6	Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7	7	David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]
8	8	Sophia Martinez	27	Female	60	162	Light	["Gluten-Free"]
9	9	Chris Lee	29	Male	78	175	Sedentary	["Paleo"]
10	10	Olivia Johnson	31	Female	62	168	Active	["Low-Carb", "Vegan"]
11	11	Anna Taylor	34	Female	70	172	Moderate	["Gluten-Free", "Vegan"]

### Insert Execution 2:

```

INSERT INTO DietaryGoal (GoalType, TargetWeight, StartDate, EndDate, UserID)
VALUES ( GoalType 'Weight Loss', TargetWeight 65.0, StartDate '2024-12-01',
EndDate '2025-06-01', UserID 11);

```

	GoalID	GoalType	TargetWeight	StartDate	EndDate	UserID
1	1	Weight Loss	70	2024-10-01	2025-01-01	1
2	2	Muscle Gain	68	2024-10-01	2025-01-01	2
3	3	Weight Loss	75	2024-10-01	2025-01-01	3
4	4	Maintain	55	2024-10-01	2025-01-01	4
5	5	Weight Maintenance	90	2024-10-01	2025-01-01	5
6	6	Muscle Gain	72	2024-10-01	2025-01-01	6
7	7	Muscle Gain	88	2024-10-01	2025-01-01	7
8	8	Maintain	60	2024-10-01	2025-01-01	8
9	9	Weight Loss	72	2024-10-01	2025-01-01	9
10	10	Maintain	62	2024-10-01	2025-01-01	10
11	12	Weight Loss	65	2024-12-01	2025-06-01	11

### Update Execution:

```

UPDATE User
SET DietaryPreferences = '["Keto", "Gluten-Free"]'
WHERE UserID = 5;

```

	User ID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
3	3	Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4	4	Emily Davis	22	Female	55	160	Light	["Paleo"]
5	5	Michael Brown	40	Male	90	182	Active	["Keto", "Gluten-Free"]
6	6	Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7	7	David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]
8	8	Sophia Martinez	27	Female	60	162	Light	["Gluten-Free"]
9	9	Chris Lee	29	Male	78	175	Sedentary	["Paleo"]
10	10	Olivia Johnson	31	Female	62	168	Active	["Low-Carb", "Vegan"]
11	11	Anna Taylor	34	Female	70	172	Moderate	["Gluten-Free", "Vegan"]

### Query Execution 3:

```
SELECT Meal.MealName, NutritionalInfo.FoodItem, NutritionalInfo.Calories, NutritionalInfo.Protein,
       NutritionalInfo.Carbs, NutritionalInfo.Fat, NutritionalInfo.Vitamins
FROM Meal
JOIN Meal_NutritionalInfo ON Meal.MealID = Meal_NutritionalInfo.MealID
JOIN NutritionalInfo ON Meal_NutritionalInfo.NutrientID = NutritionalInfo.NutrientID
WHERE Meal.MealType = 'Lunch';
```

	MealName	FoodItem	Calories	Protein	Carbs	Fat	Vitamins
1	Vegan Salad	Apple	52	0.3	14	0.2	Vitamin C
2	Quinoa Salad	Banana	89	1.1	23	0.3	Vitamin B6
3	Vegan Wrap	Broccoli	55	3.7	11	0.6	Vitamin C

### Query Execution 4:

```
SELECT DietaryGoal.GoalID, DietaryGoal.GoalType, DietaryGoal.TargetWeight, User.Name
FROM DietaryGoal
JOIN User ON DietaryGoal.UserID = User.UserID;
```

	GoalID	GoalType	TargetWeight	Name
1	1	Weight Loss	70	John Doe
2	2	Muscle Gain	68	Jane Smith
3	3	Weight Loss	75	Sam Wilson
4	4	Maintain	55	Emily Davis
5	5	Weight Maintenance	90	Michael Brown
6	6	Muscle Gain	72	Laura Green
7	7	Muscle Gain	88	David Carter
8	8	Maintain	60	Sophia Martinez
9	9	Weight Loss	72	Chris Lee
10	10	Maintain	62	Olivia Johnson
11	11	Weight Loss	65	Anna Taylor

### Insert Execution 3:

```
-- Adding a new meal 'Tofu Stir-Fry'
INSERT INTO Meal (MealName, MealType, PrepTime, Rating)
VALUES ('Tofu Stir-Fry', 'Dinner', 25, 5);
```

	MealID	MealName	MealType	PrepTime	Rating
1		1 Vegan Salad	Lunch	10	4
2		2 Quinoa Salad	Lunch	15	5
3		3 Chicken Salad	Dinner	20	4
4		4 Egg Scramble	Breakfast	10	4
5		5 Keto Omelette	Breakfast	15	5
6		6 Vegetarian Stir-Fry	Dinner	20	4
7		7 Vegan Protein Shake	Snack	5	5
8		8 Gluten-Free Pasta	Dinner	25	4
9		9 Paleo Steak	Dinner	30	4
10		10 Vegan Wrap	Lunch	10	5
11		11 Tofu Stir-Fry	Dinner	25	5

#### Insert Execution 4:

```
-- Adding nutritional information for 'Tofu Stir-Fry'
INSERT INTO NutritionalInfo (FoodItem, Calories, Protein, Carbs, Fat, Vitamins)
VALUES ( FoodItem 'Tofu Stir-Fry', Calories 400, Protein 20, Carbs 50, Fat 15, Vitamins 'Vitamin B12');
```

	NutrientID	FoodItem	Calories	Protein	Carbs	Fat	Vitamins
1		1 Apple	52	0.3	14	0.2	Vitamin C
2		2 Banana	89	1.1	23	0.3	Vitamin B6
3		3 Orange	62	1.2	15	0.2	Vitamin C
4		4 Strawberry	33	0.7	8	0.3	Vitamin C
5		5 Almonds	575	21	22	50	Vitamin E
6		6 Spinach	23	2.9	3.6	0.4	Vitamin K
7		7 Avocado	160	2	9	15	Vitamin K
8		8 Carrot	41	1	10	0.2	Vitamin A
9		9 Blueberries	57	0.7	14	0.3	Vitamin C
10		10 Broccoli	55	3.7	11	0.6	Vitamin C
11		11 Tofu Stir-Fry	400	20	50	15	Vitamin B12

#### Delete Execution:

```
-- DELETE: Remove a specific food item from NutritionalInfo
DELETE FROM NutritionalInfo
WHERE FoodItem = 'Tofu Stir-Fry';
```

	NutrientID	FoodItem	Calories	Protein	Carbs	Fat	Vitamins
1		1 Apple	52	0.3	14	0.2	Vitamin C
2		2 Banana	89	1.1	23	0.3	Vitamin B6
3		3 Orange	62	1.2	15	0.2	Vitamin C
4		4 Strawberry	33	0.7	8	0.3	Vitamin C
5		5 Almonds	575	21	22	50	Vitamin E
6		6 Spinach	23	2.9	3.6	0.4	Vitamin K
7		7 Avocado	160	2	9	15	Vitamin K
8		8 Carrot	41	1	10	0.2	Vitamin A
9		9 Blueberries	57	0.7	14	0.3	Vitamin C
10		10 Broccoli	55	3.7	11	0.6	Vitamin C

Update Execution:

```
-- UPDATE: Change the goal type of a dietary goal (for UserID = 6)
UPDATE DietaryGoal
SET GoalType = 'Maintain Weight'
WHERE UserID = 6;
```

	GoalID	GoalType	TargetWeight	StartDate	EndDate	UserID
1	1	Weight Loss	70	2024-10-01	2025-01-01	1
2	2	Muscle Gain	68	2024-10-01	2025-01-01	2
3	3	Weight Loss	75	2024-10-01	2025-01-01	3
4	4	Maintain	55	2024-10-01	2025-01-01	4
5	5	Weight Maintenance	90	2024-10-01	2025-01-01	5
6	6	Maintain Weight	72	2024-10-01	2025-01-01	6
7	7	Muscle Gain	88	2024-10-01	2025-01-01	7
8	8	Maintain	60	2024-10-01	2025-01-01	8
9	9	Weight Loss	72	2024-10-01	2025-01-01	9
10	10	Maintain	62	2024-10-01	2025-01-01	10
11	11	Weight Loss	65	2024-12-01	2025-06-01	11

**3.5. Create View:** Use minimum one CREATE VIEW statement in your normalized database to implement a view based on your specific database design. Please indicate what this view is for. Provide a screenshot of your view(s), as well as each resulting table in your report exactly in this section.

The Create View created is a User meal plan summary that combines the data from various tables providing a broad view of the user's meal plans and nutritional breakdown. This makes it easier to generate reports and to analyze user dietary data.

	User ID	Name	Age	Gender	Activity Level	Dietary Preferences	Goal Type	Target Weight
1	1	John Doe	30	Male	Moderate	["Vegan", "Low-Carb"]	Weight Loss	70
2	2	Jane Smith	28	Female	Active	["Vegetarian"]	Muscle Gain	68
3	3	Sam Wilson	35	Male	Sedentary	["Low-Sugar", "Gluten-Free"]	Weight Loss	75
4	4	Emily Davis	22	Female	Light	["Paleo"]	Maintain	55
5	5	Michael Brown	40	Male	Active	["Keto", "Gluten-Free"]	Weight Maintenance	90
6	6	Laura Green	32	Female	Moderate	["Vegetarian", "Low-Carb"]	Maintain Weight	72
7	7	David Carter	45	Male	Active	["Vegan", "High-Protein"]	Muscle Gain	88
8	8	Sophia Martinez	27	Female	Light	["Gluten-Free"]	Maintain	60
9	9	Chris Lee	29	Male	Sedentary	["Paleo"]	Weight Loss	72
10	10	Olivia Johnson	31	Female	Active	["Low-Carb", "Vegan"]	Maintain	62

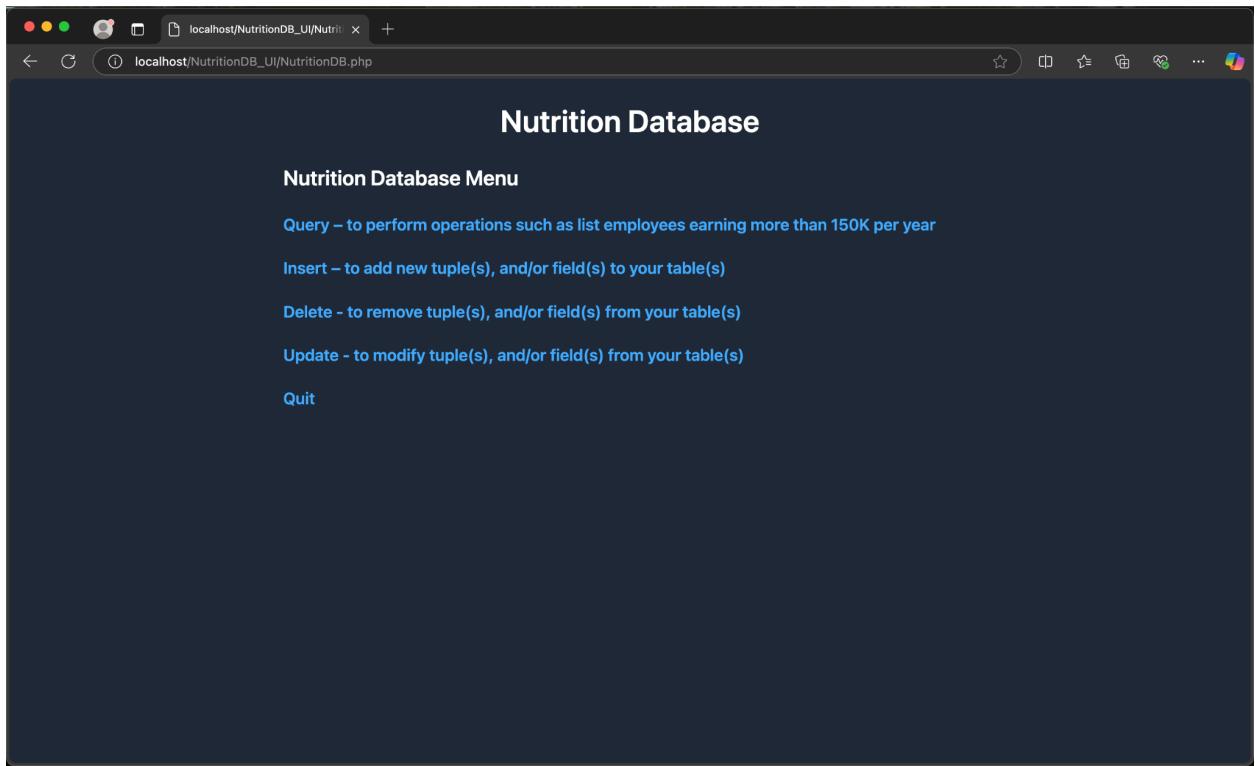
Plan Date	Total Calories	Meal Name	Meal Type	Food Item	Calories	Protein	Carbs	Fat	Vitamins
2024-10-17	2000	Vegan Salad	Lunch	Apple	52	0.3	14	0.2	Vitamin C
2024-10-18	2200	Quinoa Salad	Lunch	Banana	89	1.1	23	0.3	Vitamin B6
2024-10-19	1800	Chicken Salad	Dinner	Orange	62	1.2	15	0.2	Vitamin C
2024-10-20	1600	Egg Scramble	Breakfast	Strawberry	33	0.7	8	0.3	Vitamin C
2024-10-21	2500	Keto Omelette	Breakfast	Almonds	575	21	22	50	Vitamin E
2024-10-22	2100	Vegetarian Stir-Fry	Dinner	Spinach	23	2.9	3.6	0.4	Vitamin K
2024-10-23	3000	Vegan Protein Shake	Snack	Avocado	160	2	9	15	Vitamin K
2024-10-24	1800	Gluten-Free Pasta	Dinner	Carrot	41	1	10	0.2	Vitamin A
2024-10-25	1900	Paleo Steak	Dinner	Blueberries	57	0.7	14	0.3	Vitamin C
2024-10-26	1700	Vegan Wrap	Lunch	Broccoli	55	3.7	11	0.6	Vitamin C

**4. Front End User Interface:** In this part of your project, you are required to use a programming platform to present a front end that will communicate with your normalized backend database you already created earlier.

1. **Query** - to perform operations such as list employees earning more than 150K per year
2. **Insert** - to add new tuple(s), and/or field(s) to your table(s)
3. **Delete** - to remove tuple(s), and/or field(s) from your table(s)
4. **Update** - to modify tuple(s), and/or field(s) from your table(s)
5. **Quit**

Provide a screenshot of each of the above 5 menu options, as well as the resulting output displayed by your program in your report exactly in this section.

## Menu Options



## Query

Query 1 Input

localhost/NutritionDB\_UI/UIPages/query.php

## Nutrition Database

Query – to perform operations such as list employees earning more than 150K per year

Create Query

What table would you like to query?

NutritionalInfo

Add Table to Query

**NutritionalInfo Table Query:**

**NutritionalInfo Table Fields:**

**Query Field 1**

Query Field 1:

Calories

Query Field 1 Aggregate Function:

AVG()

**Query Field 2**

Query Field 2:

Protein

Query Field 2 Aggregate Function:

localhost/NutritionDB\_UI/UIPages/query.php

Query Field 1

Query Field 1:

Calories

Query Field 1 Aggregate Function:

AVG()

**Query Field 2**

Query Field 2:

Protein

Query Field 2 Aggregate Function:

AVG()

**Query Field 3**

Query Field 3:

Calories

Query Field 3 Aggregate Function:

MIN()

**Query Field 4**

Query Field 4:

Calories

Query Field 4 Aggregate Function:

MAX()

Add Field

The screenshot shows a web-based application for querying a nutrition database. The interface is dark-themed with light-colored input fields.

**Query Field 3:**

- Field Type: Calories
- Aggregate Function: MIN()

**Query Field 4:**

- Field Type: Calories
- Aggregate Function: MAX()

**Add Field** button

**NutritionalInfo Table Query Filter(s):**

**Query Filter 1:**

- Filter 1 Table: Fat
- Filter 1 Type: Less than (<)
- Filter Data: 1

**Add Filter** and **Submit Query** buttons

## Query 1 Output

The screenshot shows the results of the query execution. The title is "Nutrition Database".

**Query – to perform operations such as list employees earning more than 150K per year**

**Create Query**

What table would you like to query?

-- select an option --

**Add Table to Query**

**Query Statement Table**

AVG(Calories)	AVG(Protein)	MIN(Calories)	MAX(Calories)
51.5	1.450000025331974	23	89

## Query 2 Input

The screenshot shows the 'Nutrition Database' application's query creation interface. At the top, a title bar displays the URL `localhost/NutritionDB_UI/UIPages/query.php`. The main heading is 'Nutrition Database'. Below it, a sub-heading reads: 'Query – to perform operations such as list employees earning more than 150K per year'. A section titled 'Create Query' asks 'What table would you like to query?' with a dropdown menu set to 'User'. A button labeled 'Add Table to Query' is present. The next section, 'User Table Query:', contains 'User Table Fields:' and two 'Query Field' sections. The first field is 'Name' with an aggregate function of 'None'. The second field is 'Age' with an aggregate function of 'None'. A large 'Add Field' button is located at the bottom of this section.

This screenshot continues the query setup from the previous one. It shows the addition of a third query field, 'Gender', with an aggregate function of 'None'. Below this, there is a section for 'User Table Query Filter(s)'. The first filter is defined for 'UserID' with a type of 'Greater than (>)' and a value of '5'. A 'Query Filter 2' button is visible at the bottom of this section.

The screenshot shows a web application interface for querying a database. At the top, there is a dropdown menu set to "None" and a "Add Field" button. Below this, the heading "User Table Query Filter(s):" is displayed. Under "Query Filter 1", the "Filter 1 Table:" dropdown is set to "UserID", "Filter 1 Type:" is "Greater than (>)", and "Filter Data:" contains the value "5". Under "Query Filter 2", the "Filter 2 Table:" dropdown is set to "Height", "Filter 2 Type:" is "Less than (<)", and "Filter Data:" contains the value "180". There are also "Add Filter" and "Submit Query" buttons at the bottom.

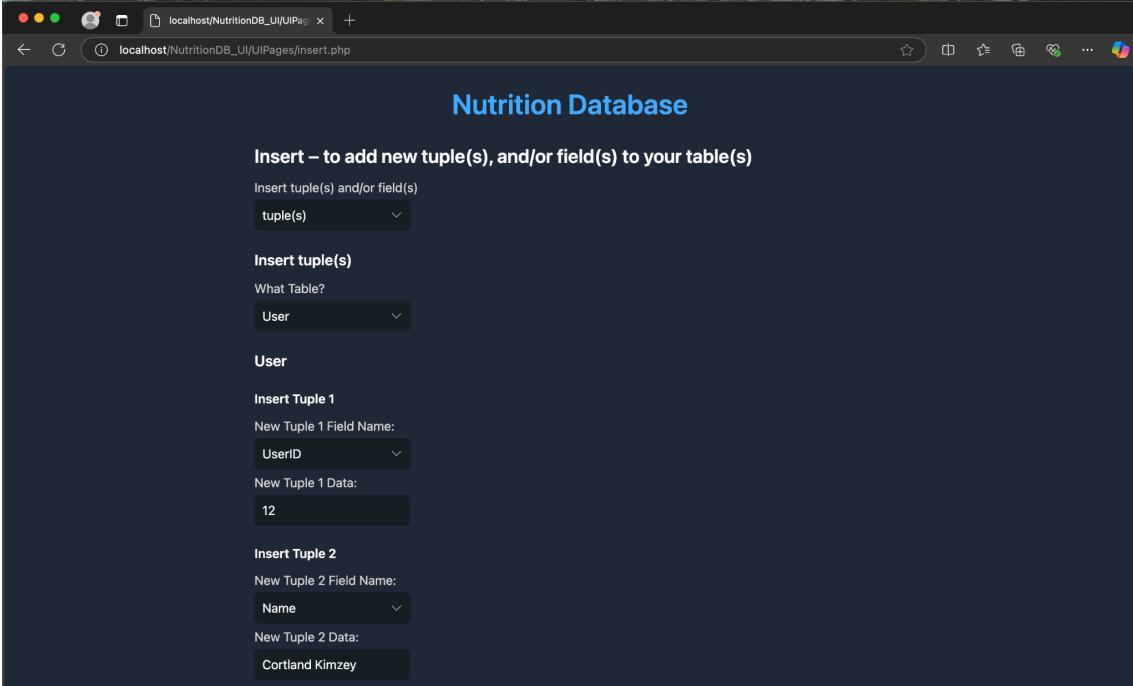
## Query 2 Output

The screenshot shows the results of a query titled "Nutrition Database". The heading states: "Query – to perform operations such as list employees earning more than 150K per year". Below this, there is a "Create Query" section with a dropdown menu set to "-- select an option --" and an "Add Table to Query" button. The "Query Statement Table" section displays a table with the following data:

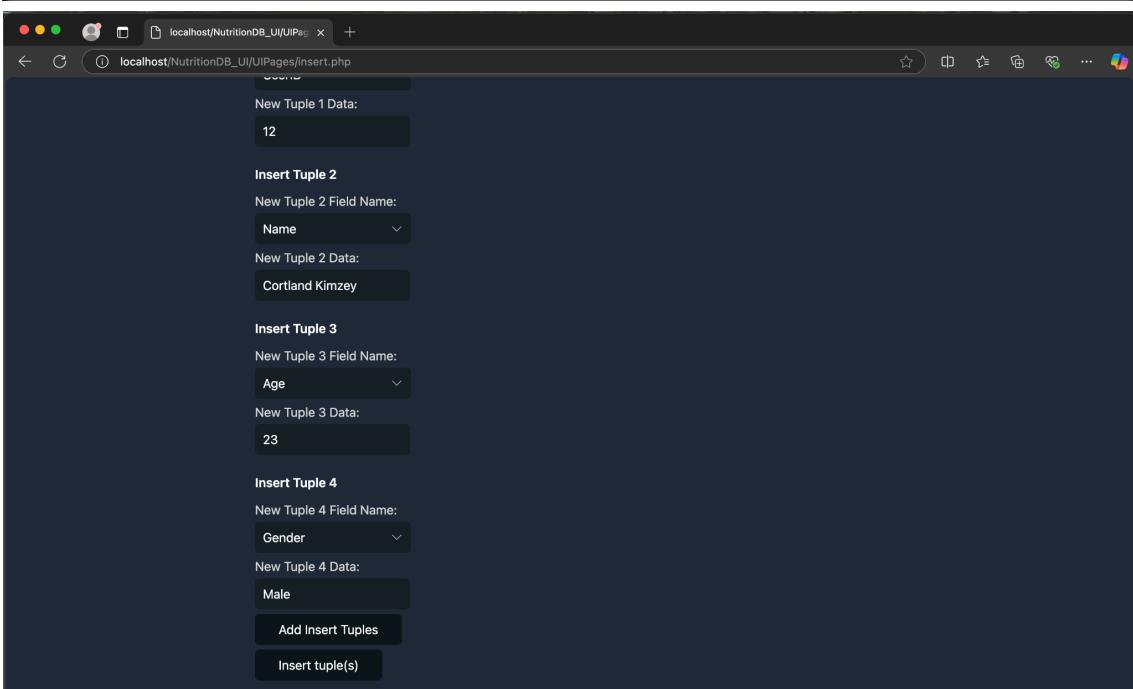
Name	Age	Gender
Laura Green	32	Female
David Carter	45	Male
Sophia Martinez	27	Female
Chris Lee	29	Male
Olivia Johnson	31	Female

## Insert page

### Insert Tuple(s) Input

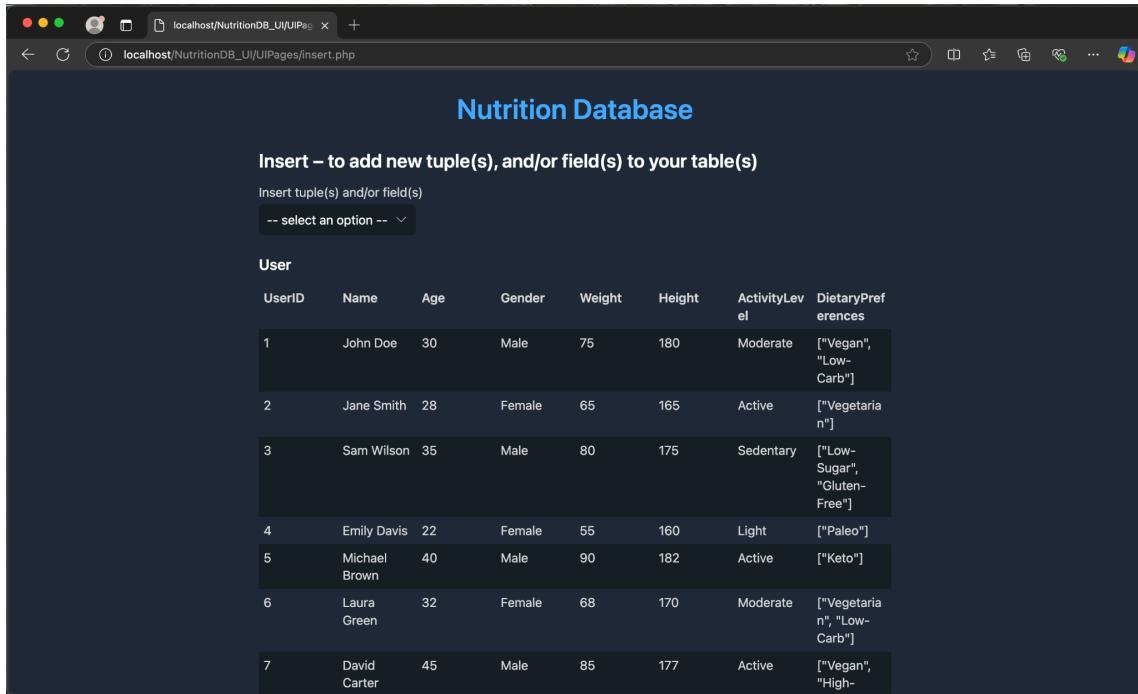


The screenshot shows the 'Insert' page of the Nutrition Database application. The title 'Nutrition Database' is at the top. Below it, the heading 'Insert – to add new tuple(s), and/or field(s) to your table(s)' is displayed. A dropdown menu labeled 'tuple(s)' is open. The 'Insert tuple(s)' section asks 'What Table?' and has 'User' selected. The 'User' section contains two entries: 'Insert Tuple 1' with 'UserID' as the field name and '12' as the data, and 'Insert Tuple 2' with 'Name' as the field name and 'Cortland Kimzey' as the data.

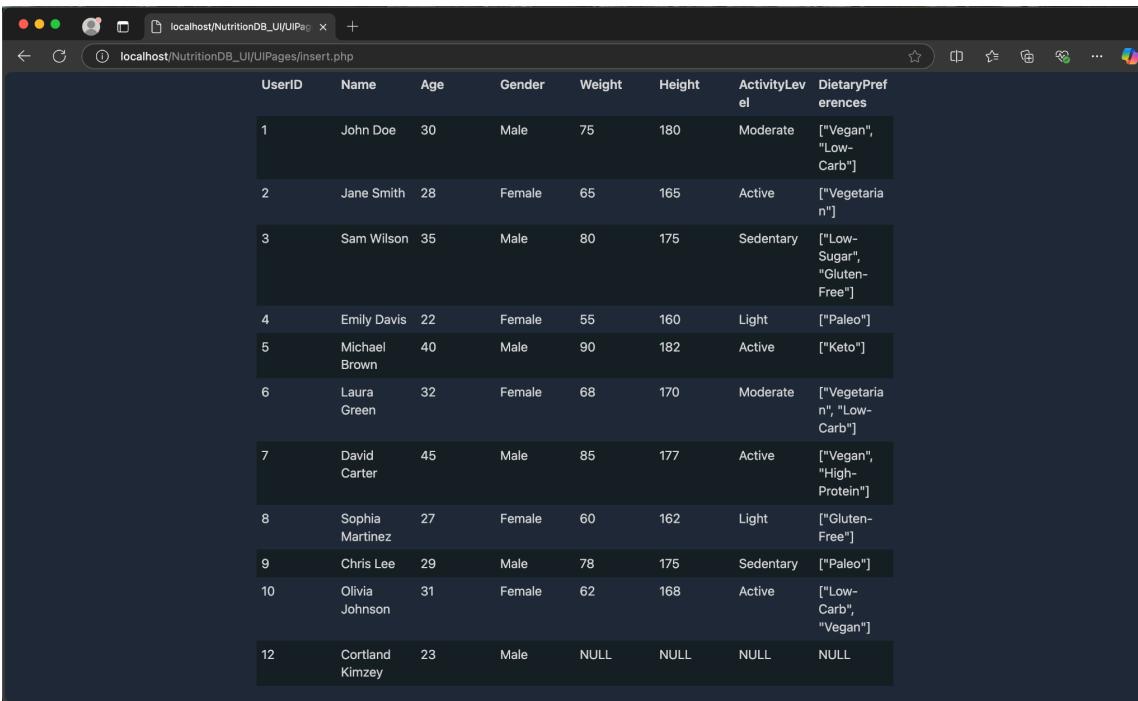
  


The second screenshot shows the continuation of the 'Insert' page. It displays four more tuple entries under the 'User' table. 'Insert Tuple 1' has '12' as data. 'Insert Tuple 2' has 'Name' as the field name and 'Cortland Kimzey' as the data. 'Insert Tuple 3' has 'Age' as the field name and '23' as the data. 'Insert Tuple 4' has 'Gender' as the field name and 'Male' as the data. At the bottom of the form are two buttons: 'Add Insert Tuples' and 'Insert tuple(s)'.

## Insert Tuple(s) Output



User	UserID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
	1	John Doe	30	Male	75	180	Moderate	[{"Vegan", "Low-Carb"}]
	2	Jane Smith	28	Female	65	165	Active	[{"Vegetarian"}]
	3	Sam Wilson	35	Male	80	175	Sedentary	[{"Low-Sugar", "Gluten-Free"}]
	4	Emily Davis	22	Female	55	160	Light	[{"Paleo"}]
	5	Michael Brown	40	Male	90	182	Active	[{"Keto"}]
	6	Laura Green	32	Female	68	170	Moderate	[{"Vegetarian", "Low-Carb"}]
	7	David Carter	45	Male	85	177	Active	[{"Vegan", "High-Protein"}]



User	UserID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
	1	John Doe	30	Male	75	180	Moderate	[{"Vegan", "Low-Carb"}]
	2	Jane Smith	28	Female	65	165	Active	[{"Vegetarian"}]
	3	Sam Wilson	35	Male	80	175	Sedentary	[{"Low-Sugar", "Gluten-Free"}]
	4	Emily Davis	22	Female	55	160	Light	[{"Paleo"}]
	5	Michael Brown	40	Male	90	182	Active	[{"Keto"}]
	6	Laura Green	32	Female	68	170	Moderate	[{"Vegetarian", "Low-Carb"}]
	7	David Carter	45	Male	85	177	Active	[{"Vegan", "High-Protein"}]
	8	Sophia Martinez	27	Female	60	162	Light	[{"Gluten-Free"}]
	9	Chris Lee	29	Male	78	175	Sedentary	[{"Paleo"}]
	10	Olivia Johnson	31	Female	62	168	Active	[{"Low-Carb", "Vegan"}]
	12	Cortland Kimzey	23	Male	NULL	NULL	NULL	NULL

## Insert Field(s) Input

The screenshot shows a web browser window titled "localhost/NutritionDB\_UI/UIPages/insert.php". The main title is "Nutrition Database" and the sub-section is "Insert – to add new tuple(s), and/or field(s) to your table(s)". A dropdown menu labeled "Insert tuple(s) and/or field(s)" has "field(s)" selected. Below it, a section titled "Insert fields(s)" asks "What Table?" with "MealPlan" selected. Under "MealPlan", there are two sections: "Insert Field 1" and "Insert Field 2". In "Insert Field 1", "New Field 1 Name" is set to "PlanName" and "New Field 1 Data Type" is "varchar(30)". In "Insert Field 2", "New Field 2 Name" is set to "User\_Name".

This screenshot shows the same "insert.php" page after adding another field. The "Insert Field 2" section now includes "New Field 2 Data Type" as "varchar(25)" and "Insert New Field 2 After What Field?" as "UserID". The "Add Insert Fields" and "Insert field(s)" buttons are visible at the bottom.

Insert field(s) Output

**Nutrition Database**

**Insert – to add new tuple(s), and/or field(s) to your table(s)**

Insert tuple(s) and/or field(s)

-- select an option --

**MealPlan**

PlanID	PlanDate	PlanName	TotalCalories	MealCount	UserID	User_Name
1	2024-10-17	NULL	2000	3	1	NULL
2	2024-10-18	NULL	2200	3	2	NULL
3	2024-10-19	NULL	1800	3	3	NULL
4	2024-10-20	NULL	1600	2	4	NULL
5	2024-10-21	NULL	2500	3	5	NULL
6	2024-10-22	NULL	2100	3	6	NULL
7	2024-10-23	NULL	3000	3	7	NULL
8	2024-10-24	NULL	1800	3	8	NULL
9	2024-10-25	NULL	1900	2	9	NULL
10	2024-10-26	NULL	1700	3	10	NULL

### Insert Tuple(s) and Field(s) Input

**Nutrition Database**

**Insert – to add new tuple(s), and/or field(s) to your table(s)**

Insert tuple(s) and field(s)

tuple(s) and field(s)

**Insert tuple(s)**

What Table?

NutritionalInfo

**NutritionalInfo**

**Insert Tuple 1**

New Tuple 1 Field Name:

NutrientID

New Tuple 1 Data:

11

**Insert Tuple 2**

New Tuple 2 Field Name:

Fooditem

New Tuple 2 Data:

Peanut

**Insert Tuple 3**

New Tuple 3 Field Name:  
Calories

New Tuple 3 Data:  
5.9

Add Insert Tuples

**Insert fields(s)**

What Table?  
NutritionalInfo

**NutritionalInfo**

Insert Field 1

New Field 1 Name:  
Sodium

New Field 1 Data Type:  
float

Insert New Field 1 After What Field?  
Fat

Add Insert Fields

Insert tuple(s) and field(s)

## Insert Tuple(s) and Field(s) Output

### Nutrition Database

Insert – to add new tuple(s), and/or field(s) to your table(s)

Insert tuple(s) and/or field(s)  
-- select an option --

**NutritionalInfo**

NutrientID	FoodItem	Calories	Protein	Carbs	Fat	Sodium	Vitamins
1	Apple	52	0.3	14	0.2	NULL	Vitamin C
2	Banana	89	1.1	23	0.3	NULL	Vitamin B6
3	Orange	62	1.2	15	0.2	NULL	Vitamin C
4	Strawberry	33	0.7	8	0.3	NULL	Vitamin C
5	Almonds	575	21	22	50	NULL	Vitamin E
6	Spinach	23	2.9	3.6	0.4	NULL	Vitamin K
7	Avocado	160	2	9	15	NULL	Vitamin K
8	Carrot	41	1	10	0.2	NULL	Vitamin A
9	Blueberries	57	0.7	14	0.3	NULL	Vitamin C
10	Broccoli	55	3.7	11	0.6	NULL	Vitamin C
11	Peanut	5.9	NULL	NULL	NULL	NULL	NULL

## Delete Page

## Delete Tuple(s) Input

The screenshot shows a web browser window with the URL `localhost/NutritionDB_UI/UIPages/delete.php`. The page title is "Delete - to remove tuple(s), and/or field(s) from your table(s)". A dropdown menu labeled "Delete tuple(s) and/or field(s)" has "tuple(s)" selected. Below it, another dropdown labeled "Delete tuple(s)" has "DietaryGoal" selected. The main section is titled "DietaryGoal". It contains two sections: "Delete Tuple 1" and "Delete Tuple 2". In "Delete Tuple 1", the "Delete Tuple 1 Field Name:" dropdown is set to "GoalID" and the "Delete Tuple 1 Data:" input field contains the value "2". In "Delete Tuple 2", the "Delete Tuple 2 Field Name:" dropdown is set to "TargetWeight" and the "Delete Tuple 2 Data:" input field contains the value "72". At the bottom are two buttons: "Add Delete Tuple" and "Delete tuple(s)".

## Delete Tuple(s) Output

The screenshot shows a web browser window with the URL `localhost/NutritionDB_UI/UIPages/delete.php`. The page title is "Nutrition Database". The main content is the same as the input page: "Delete - to remove tuple(s), and/or field(s) from your table(s)". The dropdown "Delete tuple(s) and/or field(s)" is set to "-- select an option --". Below it, the "DietaryGoal" section is displayed as a table:

GoalID	GoalType	TargetWeight	StartDate	EndDate	UserID
1	Weight Loss	70	2024-10-01	2025-01-01	1
3	Weight Loss	75	2024-10-01	2025-01-01	3
4	Maintain	55	2024-10-01	2025-01-01	4
5	Weight Maintenance	90	2024-10-01	2025-01-01	5
7	Muscle Gain	88	2024-10-01	2025-01-01	7
8	Maintain	60	2024-10-01	2025-01-01	8
10	Maintain	62	2024-10-01	2025-01-01	10

## Delete field(s) Input

**Nutrition Database**

**Delete - to remove tuple(s), and/or field(s) from your table(s)**

Delete tuple(s) and/or field(s)

field(s)

**Delete field(s)**

What Table?

MealPlan

**MealPlan**

**Delete Field 1**

Delete Field 1 Name:

PlanName

**Delete Field 1**

Delete Field 2 Name:

User\_Name

### Delete Field(s) Output

**Nutrition Database**

**Delete - to remove tuple(s), and/or field(s) from your table(s)**

Delete tuple(s) and/or field(s)

-- select an option --

**MealPlan**

PlanID	PlanDate	TotalCalories	MealCount	UserID
1	2024-10-17	2000	3	1
2	2024-10-18	2200	3	2
3	2024-10-19	1800	3	3
4	2024-10-20	1600	2	4
5	2024-10-21	2500	3	5
6	2024-10-22	2100	3	6
7	2024-10-23	3000	3	7
8	2024-10-24	1800	3	8
9	2024-10-25	1900	2	9
10	2024-10-26	1700	3	10

### Delete Tuple(s) and Field(s) Input

Nutrition Database

Delete - to remove tuple(s), and/or field(s) from your table(s)

Delete tuple(s) and/or field(s)

tuple(s) and field(s) ▾

Delete tuple(s)

What Table?

Meal\_NutritionalInfo ▾

**Meal\_NutritionalInfo**

Delete Tuple 1

Delete Tuple 1 Field Name:

MealID ▾

Delete Tuple 1 Data:

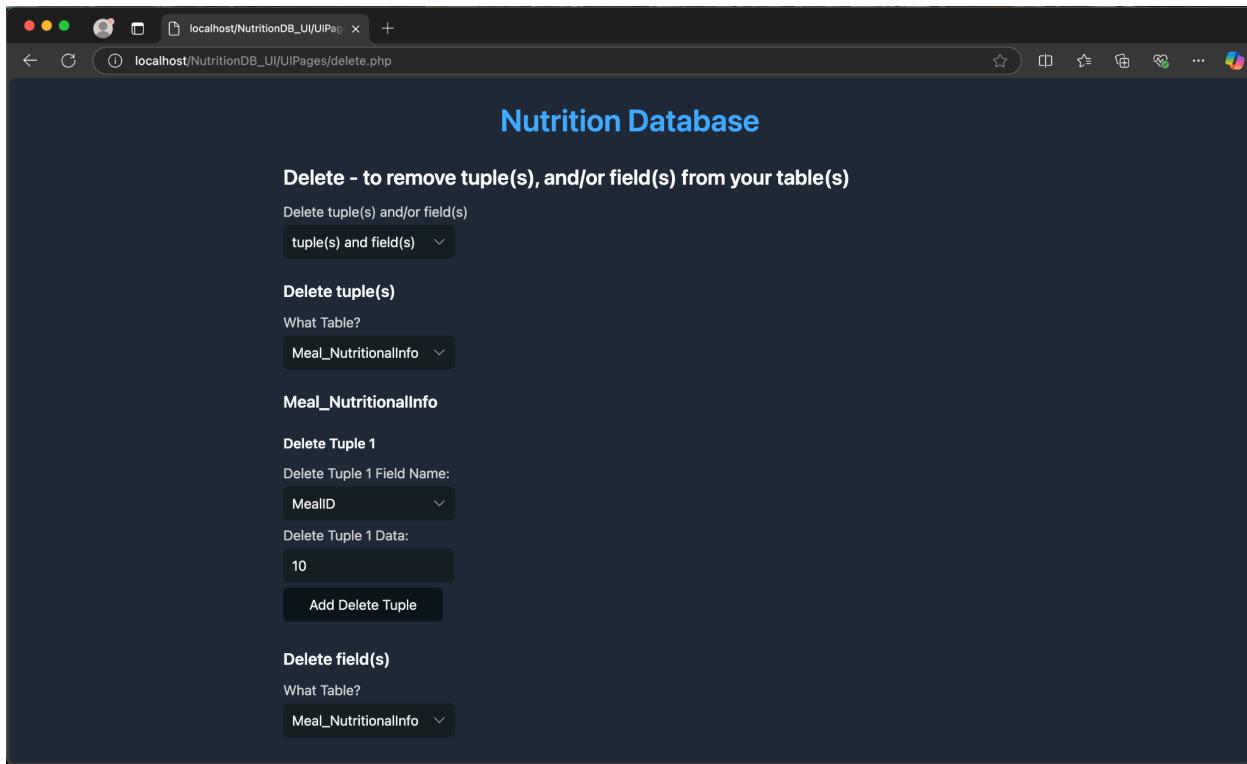
10

Add Delete Tuple

Delete field(s)

What Table?

Meal\_NutritionalInfo ▾



What Table?

Meal\_NutritionalInfo ▾

**Meal\_NutritionalInfo**

Delete Tuple 1

Delete Tuple 1 Field Name:

MealID ▾

Delete Tuple 1 Data:

10

Add Delete Tuple

Delete field(s)

What Table?

Meal\_NutritionalInfo ▾

**Meal\_NutritionalInfo**

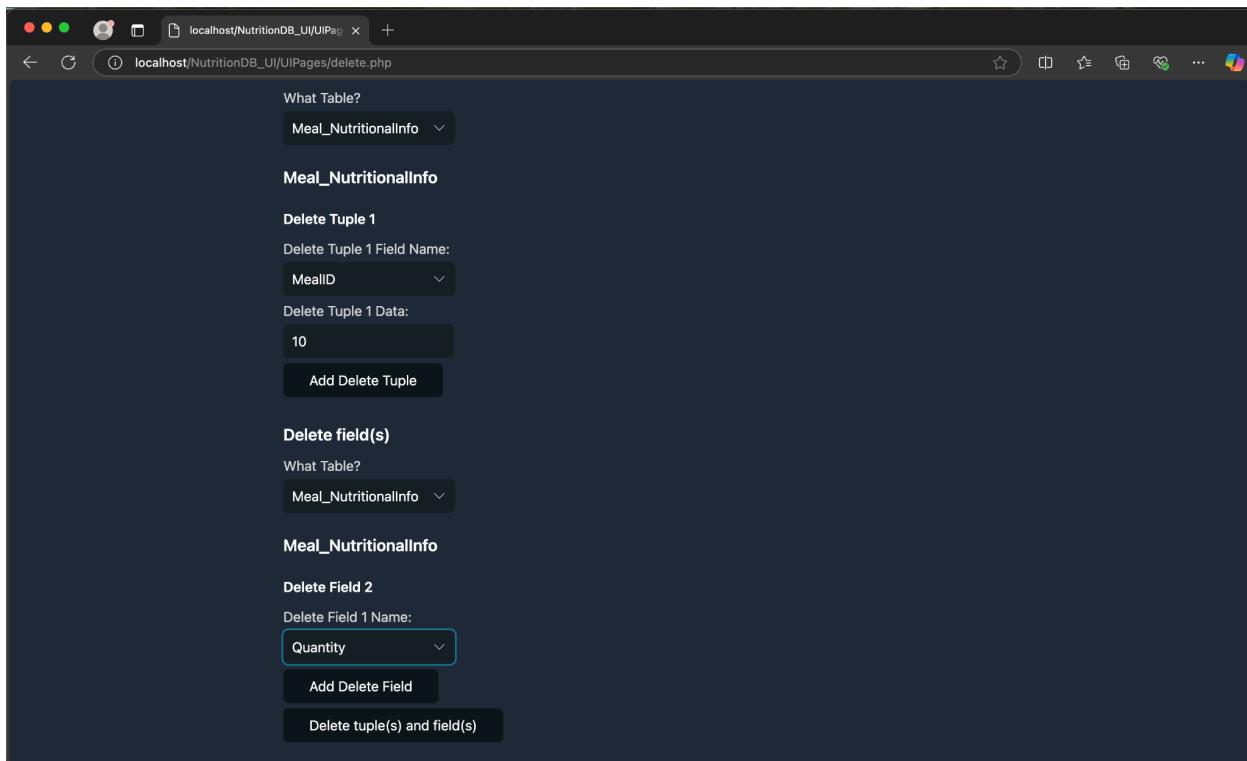
Delete Field 2

Delete Field 1 Name:

Quantity ▾

Add Delete Field

Delete tuple(s) and field(s)



Delete Tuple(s) and Field(s) Output

The screenshot shows a web browser window with the URL `localhost/NutritionDB_UI/UIPages/delete.php`. The title bar reads "Nutrition Database". The main content area has a dark blue header with the text "Delete - to remove tuple(s), and/or field(s) from your table(s)". Below this, a sub-header says "Delete tuple(s) and/or field(s)" followed by a dropdown menu with the placeholder "select an option". A table titled "Meal\_NutritionalInfo" is displayed, showing two columns: "MealID" and "NutrientID". The data in the table is as follows:

MealID	NutrientID
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

## Update Page

Update Tuple(s) Input

localhost/NutritionDB\_UI/UIPages/update.php

## Nutrition Database

**Update - to modify tuple(s), and/or field(s) from your table(s)**

Update tuple(s) and/or field(s)

tuple(s)

**Update tuple(s)**

What Table?

User

**User**

**Update Tuple 1**

Update Tuple 1 New Field Name:

Weight

Update Tuple 1 New Tuple Data:

130

Update Tuple 1 Filter Field Name:

UserID

Update Tuple 1 Filter Tuple Data:

12

**Update Tuple 2**

localhost/NutritionDB\_UI/UIPages/update.php

**Update Tuple 2**

Update Tuple 2 New Field Name:

Height

Update Tuple 2 New Tuple Data:

180

Update Tuple 2 Filter Field Name:

Name

Update Tuple 2 Filter Tuple Data:

Cortland Kimzey

**Update Tuple 3**

Update Tuple 3 New Field Name:

ActivityLevel

Update Tuple 3 New Tuple Data:

Active

Update Tuple 3 Filter Field Name:

UserID

Update Tuple 3 Filter Tuple Data:

12

Add Update Tuples

Update tuple(s)

Update Tuple(s) Output

Nutrition Database

Update - to modify tuple(s), and/or field(s) from your table(s)

Update tuple(s) and/or field(s)

-- select an option --

**User**

UserID	Name	Age	Gender	Weight	Height	ActivityLevel	DietaryPreferences
1	John Doe	30	Male	75	180	Moderate	["Vegan", "Low-Carb"]
2	Jane Smith	28	Female	65	165	Active	["Vegetarian"]
3	Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4	Emily Davis	22	Female	55	160	Light	["Paleo"]
5	Michael Brown	40	Male	90	182	Active	["Keto"]
6	Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7	David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]

localhost/NutritionDB\_UI/UIPages/update.php

UserID Name Age Gender Weight Height ActivityLevel DietaryPreferences

1	John Doe	30	Male	75	180	Moderate	["Vegan", "Low-Carb"]
2	Jane Smith	28	Female	65	165	Active	["Vegetarian"]
3	Sam Wilson	35	Male	80	175	Sedentary	["Low-Sugar", "Gluten-Free"]
4	Emily Davis	22	Female	55	160	Light	["Paleo"]
5	Michael Brown	40	Male	90	182	Active	["Keto"]
6	Laura Green	32	Female	68	170	Moderate	["Vegetarian", "Low-Carb"]
7	David Carter	45	Male	85	177	Active	["Vegan", "High-Protein"]
8	Sophia Martinez	27	Female	60	162	Light	["Gluten-Free"]
9	Chris Lee	29	Male	78	175	Sedentary	["Paleo"]
10	Olivia Johnson	31	Female	62	168	Active	["Low-Carb", "Vegan"]
12	Cortland Kimzey	23	Male	130	180	Active	NULL

Update Field(s) Input

localhost/NutritionDB\_UI/UIPages/update.php

## Nutrition Database

**Update - to modify tuple(s), and/or field(s) from your table(s)**

Update tuple(s) and/or field(s)

field(s) ▾

**Update field(s)**

What Table?

NutritionalInfo ▾

**NutritionalInfo**

**Update Field 1**

Update Field 1 Old Field Name:

FoodItem ▾

Update Field 1 New Field Name:

FoodName ▾

Update Field 1 New Field Data Type:

varchar(50) ▾

**Update Field 2**

Update Field 2 Old Field Name:

Carbs ▾

localhost/NutritionDB\_UI/UIPages/update.php

**Update field(s)**

What Table?

NutritionalInfo ▾

**NutritionalInfo**

**Update Field 1**

Update Field 1 Old Field Name:

FoodItem ▾

Update Field 1 New Field Name:

FoodName ▾

Update Field 1 New Field Data Type:

varchar(50) ▾

**Update Field 2**

Update Field 2 Old Field Name:

Carbs ▾

Update Field 2 New Field Name:

Carbohydrates ▾

Update Field 2 New Field Data Type:

float ▾

Add Update Fields

Update field(s)

Update Field(s) Output

localhost/NutritionDB\_UI/UIPages/update.php

## Nutrition Database

**Update - to modify tuple(s), and/or field(s) from your table(s)**

Update tuple(s) and/or field(s)

-- select an option --

**NutritionalInfo**

NutrientID	FoodName	Calories	Protein	Carbohydrates	Fat	Vitamins
1	Apple	52	0.3	14	0.2	Vitamin C
2	Banana	89	1.1	23	0.3	Vitamin B6
3	Orange	62	1.2	15	0.2	Vitamin C
4	Strawberry	33	0.7	8	0.3	Vitamin C
5	Almonds	575	21	22	50	Vitamin E
6	Spinach	23	2.9	3.6	0.4	Vitamin K
7	Avocado	160	2	9	15	Vitamin K
8	Carrot	41	1	10	0.2	Vitamin A
9	Blueberries	57	0.7	14	0.3	Vitamin C
10	Broccoli	55	3.7	11	0.6	Vitamin C

### Update Tuple(s) and Field(s) Input

localhost/NutritionDB\_UI/UIPages/update.php

## Nutrition Database

**Update - to modify tuple(s), and/or field(s) from your table(s)**

Update tuple(s) and/or field(s)

tuple(s) and field(s) --

**Update tuple(s)**

What Table?

MealPlan

**MealPlan**

**Update Tuple 1**

Update Tuple 1 New Field Name:

PlanDate

Update Tuple 1 New Tuple Data:

2024-10-26

Update Tuple 1 Filter Field Name:

PlanID

Update Tuple 1 Filter Tuple Data:

1

**Update Tuple 2**

localhost/NutritionDB\_UI/UIPages/update.php

**Update Tuple 2**

Update Tuple 2 New Field Name:  
PlanDate

Update Tuple 2 New Tuple Data:  
2024-10-17

Update Tuple 2 Filter Field Name:  
PlanID

Update Tuple 2 Filter Tuple Data:  
10

Add Update Tuples

**Update field(s)**

What Table?  
MealPlan

**MealPlan**

**Update Field 1**

Update Field 1 Old Field Name:  
TotalCalories

Update Field 1 New Field Name:  
TotalCal

Update Field 1 New Field Data Type:  
float

localhost/NutritionDB\_UI/UIPages/update.php

**Update tuple(s)**

What Table?  
MealPlan

**MealPlan**

**Update Field 1**

Update Field 1 Old Field Name:  
TotalCalories

Update Field 1 New Field Name:  
TotalCal

Update Field 1 New Field Data Type:  
float

**Update Field 2**

Update Field 2 Old Field Name:  
UserID

Update Field 2 New Field Name:  
User

Update Field 2 New Field Data Type:  
int

Add Update Fields

Update tuple(s) and field(s)

Update Tuple(s) and Field(s) Output

**Nutrition Database**

**Update - to modify tuple(s), and/or field(s) from your table(s)**

Update tuple(s) and/or field(s)

-- select an option --

MealPlan	PlanID	PlanDate	TotalCal	MealCount	User
1	1	2024-10-26	2000	3	1
2	2	2024-10-18	2200	3	2
3	3	2024-10-19	1800	3	3
4	4	2024-10-20	1600	2	4
5	5	2024-10-21	2500	3	5
6	6	2024-10-22	2100	3	6
7	7	2024-10-23	3000	3	7
8	8	2024-10-24	1800	3	8
9	9	2024-10-25	1900	2	9
10	10	2024-10-17	1700	3	10

Quit

**Nutrition Database**

Connection to Nutrition Database Closed

## 5. Conclusion and Future Work:

The Personalized Diet Planner project successfully demonstrates a comprehensive approach to managing and tracking individual dietary needs. By combining an intuitive relational database with a user-friendly interface, this project provides a scalable solution for personalized meal planning. The emphasis on free access and customization sets this tool apart from similar

applications. Despite some limitations, the project fulfills its primary goal: creating a functional database-driven system to enhance users' nutritional awareness and help them achieve health goals. Through iterative design and development, the project team has built a solid foundation for future enhancements and user engagement.

#### Future Work:

While the Personalized Diet Planner is functional, there are several avenues for improvement and expansion:

##### 1. Enhanced User Personalization:

- Incorporate machine learning algorithms to suggest meal plans tailored to user habits and preferences.
- Use AI to analyze user trends and provide actionable insights for better dietary decisions.

##### 2. Database Expansion:

- Increase the database's scope by integrating more diverse cuisines and dietary options.
- Partner with external APIs (e.g., USDA FoodData Central) for real-time nutritional data updates.

##### 3. Mobile Application Development:

- Develop mobile apps for iOS and Android platforms to make the planner accessible on the go.
- Add push notifications to remind users of meals and track adherence to their meal plans.

##### 4. Gamification:

- Introduce a points or rewards system to motivate users to meet their dietary goals.

##### 5. Integration with Wearables:

- Link the planner with fitness trackers and smartwatches to include activity levels and caloric expenditure in meal planning.

##### 6. Advanced Analytics:

- Provide users with detailed analytics and trends, including macro/micro-nutrient consumption and progress towards goals.

##### 7. Social Features:

- Enable users to share meal plans and recipes with a community, fostering engagement and motivation.

##### 8. Dietary Recommendations for Specific Conditions:

- Add modules to suggest meal plans tailored to medical conditions like diabetes, hypertension, or food allergies.

These enhancements would promote the project's long-term validity, user retention, and societal impact by addressing a growing need for accessible and personalized nutrition management.



## **6. References:**

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