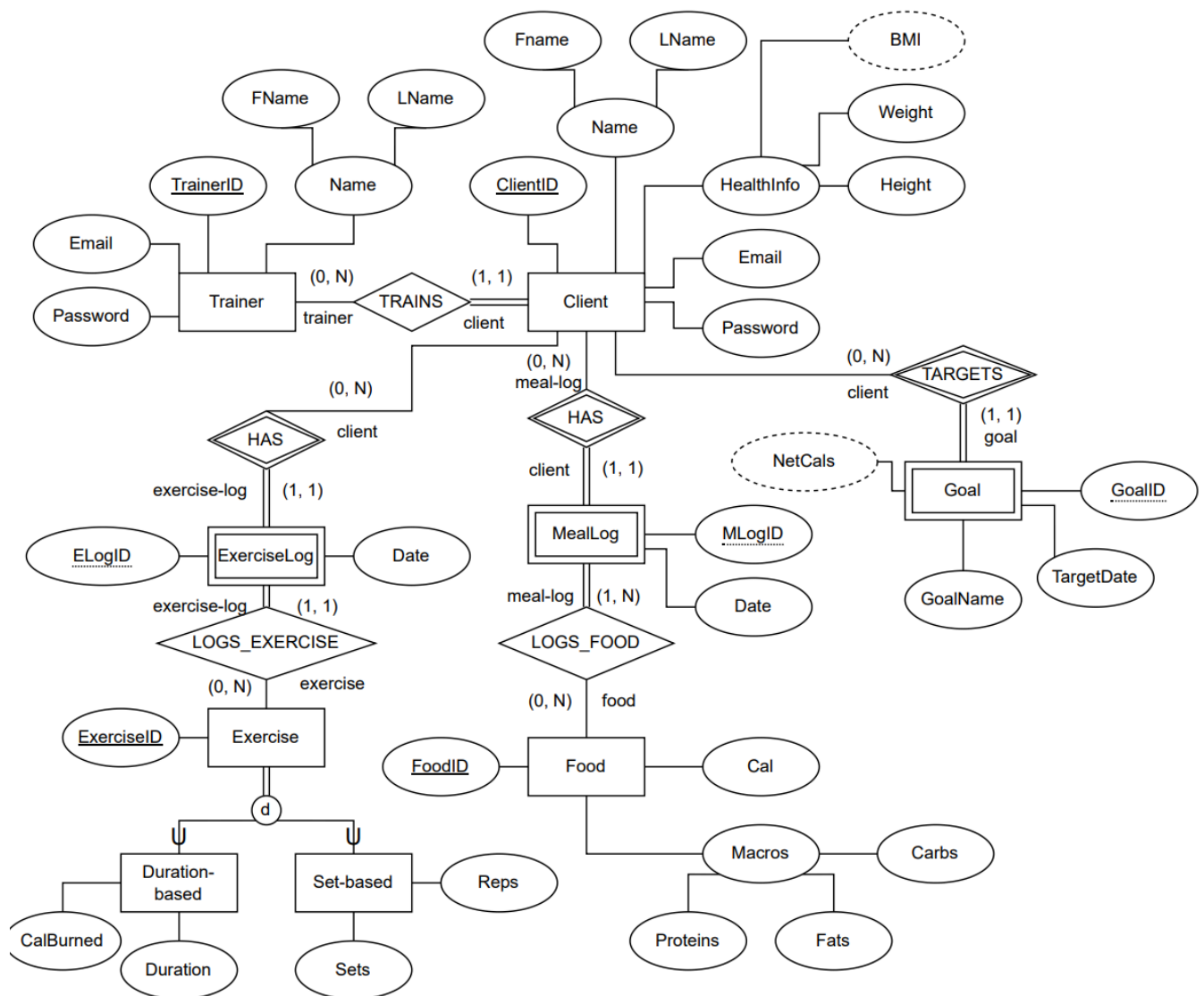Project Name: FitQuest
Team Name: SQL Samurais
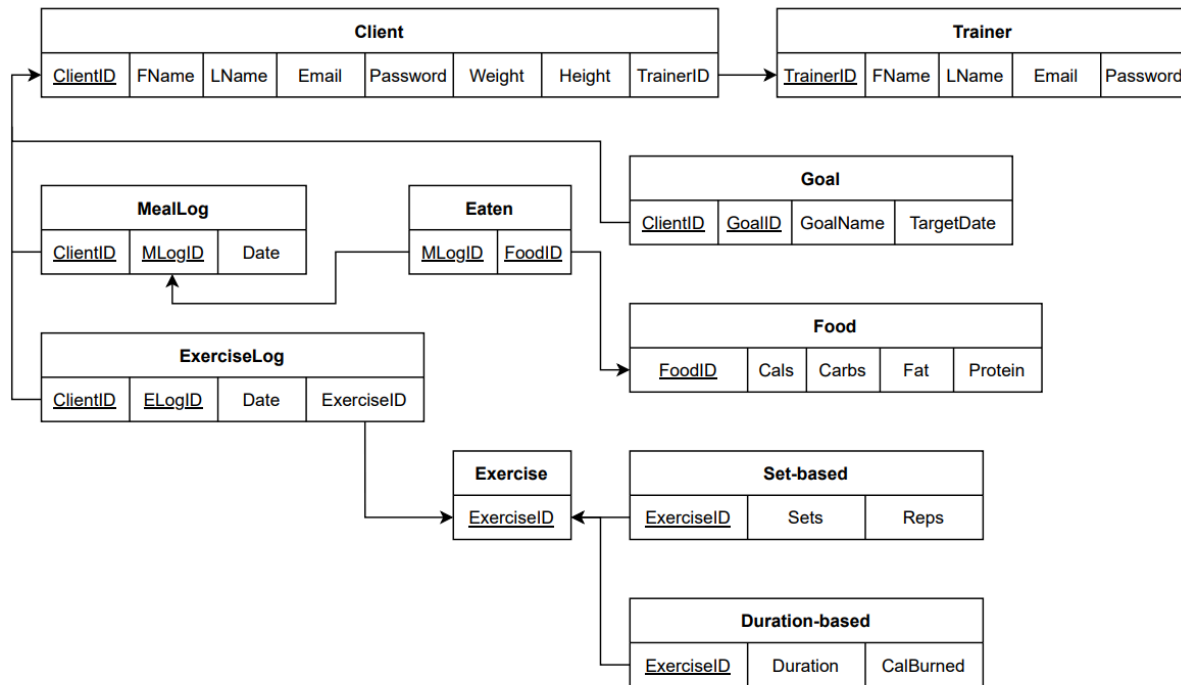Members: Logan Cheng, Luke Liu, Harsh Paswan, Amogha Pokkulandra, Sneha Shrinivas, Jennifer Zhang

Task A:

ER Diagram

Relational Database Schema

Task B:
1. List of relations and their attributes:

Trainer
- TrainerID (Primary Key)
- FName
- LName
- Email
- Password

Client
- ClientID (Primary Key)

- FName
- LName
- Email
- Password
- Weight
- Height
- TrainerID (Foreign Key referencing Trainer.TrainerID)

Goal
- ClientID (Foreign Key referencing Client.ClientID, Part of Composite Primary Key)
- GoalID (Part of Composite Primary Key)
- GoalName
- TargetDate

MealLog
- ClientID (Foreign Key referencing Client.ClientID, Part of Composite Primary Key)
- MLogID (Part of Composite Primary Key)
- Date

ExerciseLog
- ClientID (Foreign Key referencing Client.ClientID, Part of Composite Primary Key)
- ELogID (Part of Composite Primary Key)
- Date
- ExerciseID (Foreign Key referencing Exercise.ExerciseID)

Food
- FoodID (Primary Key)
- Cals
- Carbs
- Fat
- Protein

Eaten
- MLogID (Foreign Key referencing MealLog.MLogID, Part of Composite Primary Key)
- FoodID (Foreign Key referencing Food.FoodID, Part of Composite Primary Key)

Exercise
- ExerciseID (Primary Key)

Set-based
- ExerciseID (Foreign Key referencing Exercise.ExerciseID, Part of Composite Primary Key)
- Sets
- Reps

Duration-based
- ExerciseID (Foreign Key referencing Exercise.ExerciseID, Part of Composite Primary Key)
- Duration
- CalBurned

2. Detailed description of each attribute, its purpose, and data type:

Trainer:
- TrainerID: Unique identifier for each trainer. Primary Key. Integer.
- FName: First name of the trainer. Varchar.
- LName: Last name of the trainer. Varchar.
- Email: Email address of the trainer. Varchar.
- Password: Password for the trainer's account. Varchar.

Client:
- ClientID: Unique identifier for each client. Primary Key. Integer.
- FName: First name of the client. Varchar.
- LName: Last name of the client. Varchar.
- Email: Email address of the client. Varchar.
- Password: Password for the client's account. Varchar.
- Weight: Weight of the client. Float.
- Height: Height of the client. Float.
- TrainerID: Unique identifier of the trainer assigned to the client. Foreign Key referencing Trainer.TrainerID. Integer.

Goal:
- ClientID: Unique identifier of the client associated with the goal. Foreign Key referencing Client.ClientID. Integer. Part of Composite Primary Key.
- GoalID: Unique identifier for each goal set by the client. Integer. Part of Composite Primary Key.
- GoalName: Name or description of the goal. Varchar.
- TargetDate: Target date for achieving the goal. Date.

MealLog:
- ClientID: Unique identifier of the client associated with the meal log. Foreign Key referencing Client.ClientID. Integer. Part of Composite Primary Key.
- MLogID: Unique identifier for each meal log entry. Integer. Part of Composite Primary Key.
- Date: Date of the meal log entry. Date.

ExerciseLog:
- ClientID: Unique identifier of the client associated with the exercise log. Foreign Key referencing Client.ClientID. Integer. Part of Composite Primary Key.
- ELogID: Unique identifier for each exercise log entry. Integer. Part of Composite Primary Key.
- Date: Date of the exercise log entry. Date.

- ExerciseID: Unique identifier of the exercise performed. Foreign Key referencing Exercise.ExerciseID. Integer.

Food:
- FoodID: Unique identifier for each food item. Primary Key. Integer.
- Cals: Calorie count of the food item. Integer.
- Carbs: Carbohydrate content of the food item. Float.
- Fat: Fat content of the food item. Float.
- Protein: Protein content of the food item. Float.

Eaten:
- MLogID: Unique identifier of the meal log associated with the food item. Foreign Key referencing MealLog.MLogID. Integer. Part of Composite Primary Key.
- FoodID: Unique identifier of the food item consumed. Foreign Key referencing Food.FoodID. Integer. Part of Composite Primary Key.

Exercise:
- ExerciseID: Unique identifier for each exercise. Primary Key. Integer.

Set-based:
- ExerciseID: Unique identifier of the exercise associated with the set-based exercise details. Foreign Key referencing Exercise.ExerciseID. Integer. Part of Composite Primary Key.
- Sets: Number of sets performed for the exercise. Integer.
- Reps: Number of repetitions per set. Integer.

Duration-based:
- ExerciseID: Unique identifier of the exercise associated with the duration-based exercise details. Foreign Key referencing Exercise.ExerciseID. Integer. Part of Composite Primary Key.
- Duration: Duration of the exercise in minutes. Integer.
- CalBurned: Estimated number of calories burned during the exercise. Integer.

3. Default values or null attributes:

Trainer:
- TrainerID: No default value, cannot be null.
- FName: No default value, cannot be null.
- LName: No default value, cannot be null.
- Email: No default value, cannot be null.
- Password: No default value, cannot be null.

Client:
- ClientID: No default value, cannot be null.
- FName: No default value, cannot be null.
- LName: No default value, cannot be null.

- Email: No default value, cannot be null.
- Password: No default value, cannot be null.
- Weight: No default value, can be null.
- Height: No default value, can be null.
- TrainerID: No default value, can be null.

Goal:
- ClientID: No default value, cannot be null.
- GoalID: No default value, cannot be null.
- GoalName: No default value, cannot be null.
- TargetDate: No default value, can be null.

MealLog:
- ClientID: No default value, cannot be null.
- MLogID: No default value, cannot be null.
- Date: No default value, cannot be null.

ExerciseLog:
- ClientID: No default value, cannot be null.
- ELogID: No default value, cannot be null.
- Date: No default value, cannot be null.
- ExerciseID: No default value, can be null.

Food:
- FoodID: No default value, cannot be null.
- Cals: No default value, cannot be null.
- Carbs: No default value, cannot be null.
- Fat: No default value, cannot be null.
- Protein: No default value, cannot be null.

Eaten:
- MLogID: No default value, cannot be null.
- FoodID: No default value, cannot be null.

Exercise:
- ExerciseID: No default value, cannot be null.

Set-based:
- ExerciseID: No default value, cannot be null.
- Sets: No default value, cannot be null.
- Reps: No default value, cannot be null.

Duration-based:
- ExerciseID: No default value, cannot be null.

- Duration: No default value, cannot be null.
- CalBurned: No default value, cannot be null.

4. Actions taken on foreign keys when the primary key (that the foreign key refers to) is deleted:

- Client.TrainerID (referencing Trainer.TrainerID): When a trainer is deleted, the TrainerID in the Client table should be set to null (set null action).
- Goal.ClientID (referencing Client.ClientID): When a client is deleted, all associated goals should also be deleted (delete cascade action).
- MealLog.ClientID (referencing Client.ClientID): When a client is deleted, all associated meal logs should also be deleted (delete cascade action).
- ExerciseLog.ClientID (referencing Client.ClientID): When a client is deleted, all associated exercise logs should also be deleted (delete cascade action).
- ExerciseLog.ExerciseID (referencing Exercise.ExerciseID): When an exercise is deleted, the associated exercise log entries should be set to null (set null action).
- Eaten.MLogID (referencing MealLog.MLogID): When a meal log is deleted, all associated food entries should also be deleted (delete cascade action).
- Eaten.FoodID (referencing Food.FoodID): When a food item is deleted, the associated entries in the Eaten table should also be deleted (delete cascade action).
- Set-based.ExerciseID (referencing Exercise.ExerciseID): When an exercise is deleted, all associated set-based exercise details should also be deleted (delete cascade action).
- Duration-based.ExerciseID (referencing Exercise.ExerciseID): When an exercise is deleted, all associated duration-based exercise details should also be deleted (delete cascade action).