

CSCI 466 ASSIGNMENT 2 - FALL 2023

ER DIAGRAM B - FITNESS TRACKER (5OPTS)

THE GOAL

The goal of this assignment is to take the ER diagram basics that you developed in the previous assignment, and start to use them to model a practical situation.

THE TASK

You are being employed by a company that offers a fitness tracking service. They are working on a phone app that will allow the user to track what they eat, as well as when/how they work out. Another employee will be designing the user interface, but you are responsible for designing the database. Design an ER diagram to fulfill this goal, making sure to meet all of the requirements. All entities must have an appropriate identifier specified. If a surrogate key is used, explain why a natural key was not appropriate. In the interests of saving space, attributes that are not part of an identifier may be omitted from the diagram, but they should be included and explained in that portion of your submission. (See “What to turn in?” below.)

REQUIREMENTS

- ▶ Every user will have an account, and all of their meals and workouts will be linked to this account. An account is for a single user.
- ▶ The user will update their weight periodically. This data must be retained so that progress can be tracked over time.
- ▶ The serving size will be some number of some unit (grams, ounces, Tbsp, cups, lbs, etc.). There will be information stored for conversion between different unit types.
- ▶ There will need to be a database of foods/beverages. Each of these will have information on serving size, calories per serving, and grams per serving of each of the macronutrients (protein, fat, carbohydrates).
- ▶ It should be possible to store information on the quantities of micronutrients or chemicals (i.e. vitamin D, caffeine) that are present in a given food or beverage in significant amounts. Recommended daily values for any of these should be stored, when applicable.
- ▶ Each time the user eats, a record of who ate how many servings of what and when they ate it is stored.
- ▶ The app needs to allow a user to track their workouts. This includes the type of the workout, its intensity, and its duration.
- ▶ When a user tracks their workout, a record is created of who did what type of workout, when, and for how long.

Note: If you are not sure what needs to be included for foods/drinks/etc., a good place to look for example data would be the nutritional facts on food packaging.

NECESSARY VIEWS

The database needs to be able to store its operational data in such a way that the final app will be able to show the following views (at minimum). You don't need to implement the views, but the database you're designing should store the data that would be needed to generate the views if they were to be implemented.

- ▶ A graph will be generated of how many calories a user consumed each day of the week.
- ▶ A similar graph will be generated that shows how many calories were burnt each day of the week through workout.
- ▶ Show a pie graph of the percentage of the calories coming from each macronutrient during a given time period.
- ▶ Track the consumption of a given micronutrient/chemical over a specified period of time. If there is a recommended daily value, compare their consumption to the recommended amount.
- ▶ Allow the user to search through the food database to find common foods, in order to plan their diets. These are the same foods that the user will choose from when tracking their eating.
- ▶ The user will search through a list of workouts to find the one closest to the one they're going to do, in order to track the activity.
- ▶ A line graph of user weight over time.

WHAT TO TURN IN?

You should turn in, via Blackboard, the following:

- ▶ A PDF file containing the diagram you've drawn. You can draw this in any graphics program. If you must, you may draw it by hand and scan it, but it must be legible. Credit will not be given for portions of the diagram that cannot be read.
- ▶ A text file or another PDF – NO WORD DOCUMENTS – that explains all entities and relationships you've chosen to use, along with a description of each of their attributes. List any assumptions that you will have made when deciding cardinalities that are not specified explicitly by the requirements.