**Database Project Proposal**

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**Abstract**

For this project, the team will be constructing a fitness tracking database application. This application will not only provide sample workouts to the user, but it will also allow the user to create their own workouts. Additionally, the application will provide nutrition guidance to the user in the form of sample menus, with functionality to create new foods, and generate shopping lists for a selected set of meals. Finally, the application will generate weekly, monthly, and yearly reports, in order to inform the user of their progress over that time period.

**Description**

A common problem faced by people today is physical fitness. The hardest part for the average person is not actually starting to work out, or even starting to eat healthy, but rather maintaining the habit, and knowing how to keep a variety so that their training and diet do not become monotonous. In the day and age of instant gratification in everything from entertainment to shopping, people look for the same in fitness, and when they do not find it, without some reliable method of keeping up their progress, they quickly lose interest.

This intent of this product is to be used by the person looking to improve their physical fitness, but maybe without a clear idea of where to start, or even worse, that have problems with maintaining a fit lifestyle. As a full product, this will ideally be a full-service fitness tool, for tracking different meals and meal plans for different diet types (vegan, gluten free, keto), along with providing and tracking workouts and weightlifting programs for people with different personal goals. Eventually (probably not within the course of the semester), fitness and diet advice will be added in to the auto-generated reports in order to ensure the user gets the most out of the application. While this project is intended to be used by people that have a serious interest in their physical fitness, it can be used in its most basic functionality as a simple grocery list generator.

This functionality will be accomplished through the use of different web forms, through which users can select pre-programmed meals and meal plans and enter their own meals, in addition to separate forms for tracking weight, as well as pre-planned or user entered workouts. The application will also generate weekly, monthly, and yearly summaries of key information such as average caloric intake, fitness activity over time, and user weight over time.

**Design**

One of the entities to be represented in the database will be a meal. A meal will include such attributes as name, calories, and a representation of the macronutrient breakdown. Meals will be linked in a many-to-many relationship with the ingredients which make them up. Ingredients will have attributes such as a name and price per unit. These two entities will be linked together by another entity that is a recipe, which will give information about how much of each ingredient each meal contains, which will allow for grocery list creation. Another entity, the nutrition plan entity, will allow for the aggregation of a week’s worth of meals, as a sort of guide for meal planning.

Another key entity will be the workout entity. Each workout will have a name, a type (cardio, weights, interval training), and a relationship with another entity, which is exercise. Each exercise will have a name and a description. The workouts and exercises will be linked by another entity which is the session entity, which will contain information pertaining to the amounts of each exercise to be done. A workout plan entity will allow for aggregation of sessions into weekly batches, to allow for easy weekly training planning. The final entity to tie all the others together will be the program entity. Each program will have a name, an author, its own nutrition plan, and a workout plan.

All of these entities (program, both types of plans, workout, exercise, meal, recipe, and ingredient) will allow for user editing, so that the user can customize their foods and workouts past the baselines provided. A report will be generated weekly, monthly, and yearly with summary information about the user’s use over the course of that time frame. They will also be able to generate shopping lists, weekly menus, and weekly-monthly workout plans. The representative data will come largely from the teams’ own knowledge, with some data being taken from freely available exercise and nutrition guides available on the internet.