Criterion A: Planning

Defining the problem

The Client, Mr. Hooria is a trainer and gym instructor who specializes in TRX workouts (TRX stands for Total Resistance Exercises). He conducts group workout sessions and deals with many athletes daily. On the side, the Client also offers nutritional plans to his athletes.

Currently, like many trainers, Mr. Hooria devises his nutritional plans manually. The Client first surveys the athlete and, using data from the survey, figures out the athlete's caloric and macronutrient needs. Based on this information, he creates a suitable nutritional plan for the athlete. However, after some discussion (interview 1 in Appendix), the Client explained to me that this manual process can be very time consuming, especially when considering each athlete's food preferences.

I offered to make a desktop GUI program that would take in some basic information about the athlete and generate an appropriate nutritional plan automatically, as my CS project. The Client really liked this idea and pointed out that with an automatic system, the nutritional plan could have more variety as well. I proposed this idea to my Computer Science teacher, and he approved.

Rationale for proposed solution

Evidently, the manual approach to making nutritional plans is very inefficient for the client; Creating a program to automatically generate diets, without compromising quality, seems like the most efficient solution. The client, however, should be able to modify the generated diet. Given the complexity of the project and the various components which will be working with each other, I decided to use an OOP approach for this project. Since Java is an OOP language and it is a platform independent language, I concluded that it would be a suitable language to use. For the GUI I will be using JavaFX; I find it is more convenient to use than alternative GUI frameworks.

Along with Java, I will be creating a datafile to store different aliments along with their nutritional values. The program will make the nutritional plans based on data from this file. I will also use Apache PDFBox to print the generated diet as a PDF.

Words: 338

Stating success criteria

    I.   An input that allows the user to choose food preferences (likes, dislikes) from a list of possible of foods.

II. When choosing foods from the list, there should be search and filter options. User should be able to search for desired food or filter undesirable ones.

III. An input to manually enter calorie target or to use a built-in calculator to automatically calculate calorie target.

IV. An input for Macronutrient amounts in grams. The calories of the specified macronutrients must add up to the calorie target[1].

V. An option which allows the user to create new aliments and add them to the datafile (if they don't already exist)

VI. An option to remove aliments from the datafile.

VII. An output that shows 5 meal options for each breakfast, lunch, snacks, and dinner.

VIII. The ability to manually add and remove foods in the generated nutritional plan

IX. The ability to view a food's nutritional data by clicking on it.

X. Possibility to save generated nutritional plans for future use

XI. possibility to access previously saved diets

XII. Possibility to generate nutritional plans as PDFs

XIII. Diet should contain user preferences

XIV. Diet calories and macronutrients should be close to the input amount

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[1] Each gram of protein has 4 calories, carbohydrate has 4 calories, fat has 9 calories.