

TASK 1 — Project Domain:

The user will interact with a personal health app by inputting their personal information and the program will output specific health analysis or suggestions given the input.

Personal Health app with data analysis:

- User input their personal health data (ie. height, weight, age, gender)
- User indicates which functionality they would like to use:
 - Generating Workout moves, Generating Meal plan, DiseaseRiskFactor
- Depending on the functionality they chose, the program outputs prompts the user to a list of questions they need to provide answers to
- Use the inputs provided to provide suggestions on exercise/meals or comments on health
- Access a local database on nutritional facts, Exercise moves, and Diseases
 - Process the food data by reading in each food item as a Food Entity Object and assign the food object different instance attributes based on the information given in the dataset
 - Process the exercise data by reading in each workout moves as a Exercise Entity Object and assign the Exercise object different instance attributes based on the information given in the dataset
 - Process the disease data by reading in each disease moves as a Disease Entity Object and assign the Disease object different instance attributes based on the information given in the dataset

TASK 2 — Writing the specification:

Given a user and their corresponding personal health data, this application can perform three main functionalities based on the given data: generate a Meal Plan, generate a list of workout moves, and predict if the user has a high risk of a certain disease.

The user will interact with the application in a Console. First, the user will enter some of their personal information, such as their name, age, and their gender. Next, the user will enter their health data such as their height and weight. The program then takes these data and contacts the Controller which stores them in a User Object.

After the profile for the user has been created, the program will prompt the user to do one of the following: Analyze BMI, Analyze EER, Analyze Workout, Analyze Disease, Create Meal Plan, or Quit. Each functionality will require some additional user input such as Food preferences and Exercising preferences, and they will return different String outputs to the user.

1. The “Analyze BMI” function calculates the BMI of the user using the user’s height and weight, then returns the user’s BMI and classify it as underweight, healthy, overweight, or obese. .
2. The “Analyze EER” function uses the user’s height, weight, gender, age, and activity levels, then calculates the Energy Requirement per day, and returns the value to the user.
3. The “Analyze Workout” function prompts the user to enter the body part they want to work on, the types of exercises they like, and the equipment they have and returns a list of exercises recommended for the user, as well as a brief description for each of the exercises.
4. The “Analyze Disease” function prompts a list of common symptoms for the user to check the ones they have, and return a list of possible diseases that they might have based on the symptoms selected.
5. The “Create Meal Plan” function prompts the user to enter their food preferences. The user will also choose whether they want to lose, gain, or maintain their current weight. Then it will use the EER of the user and their food preferences and body type goal to generate a suitable meal plan for them using combinations of their preferred food and other food objects whose calories add up to the EER suggest to achieve their body type goal. The output meal plan will have a few combinations of different foods, and looks something like: “1) Apple + Cooked Lettuce + Fried Chicken Breasts + some nuts. 2) “Tomato and egg + Grapefruit + Steak”

The program uses three different databases to accomplish the functionality outlined above, a Food and Nutrition Database, an Exercise Database, and a Diseases Database. The program contains APIs that access those dataset and create corresponding Objects such as Disease, Exercise, and Food.

- Exercise Dataset: <https://airtable.com/shrKZ9lPpw7EvjZ3X/tblvscpkbagqlWKkH>
- Disease Dataset: <https://www.kaggle.com/itachi9604/disease-symptom-description-dataset>
- Food Dataset: <https://tools.myfooddata.com/nutrition-facts-database-spreadsheet.php>