Project Name: Get a Balanced Meal with Minimized Cost
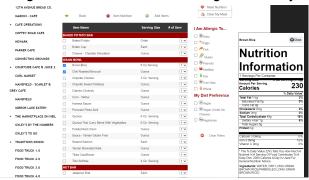
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Problem description:
Having a balanced amount of macro and micro nutrients intake is essential for our health. As college students, however, it might be hard for us to eat a healthy and balanced diet on campus within our budget. We want to propose a linear programming model to help with this college diet problem. To make the problem simple, we will only consider macronutrients – carbohydrates, proteins, and fats. We will only use the grain bowl (priced by weight) at Union Market on the OSU campus as an example of where the student can eat from. We get our data about the grain bowl station macronutrients on the website Net Nutrition. Given a student's gender, height, weight, and age, we can calculate the recommended calories and macronutrients they need to take each day from the website Macro Calculator. Since our college students have limited budgets, our objective is to minimize the cost of the meal.

Objective:
We will develop a program to meet the three macronutrient intakes with the minimum cost for the grain bowl section in Union Market, given the student's gender, weight, height, and age.

Method:
Assume that this meal is for lunch. We first calculate the daily recommended calories based on gender, weight, height, and age. Then we get the proper calories by multiplying the suggested percentage of calories for lunch (40%). In addition, in order to provide a healthy meal, we need to meet the requirement of three macronutrients: carbohydrates, proteins, and fats. We achieve this by calculating the suggested serving for each macronutrient and make sure that the lunch we recommend can meet the requirement based on the nutrient data from the OSU Net Nutrition website. We will form this question as a LP problem and find the best solution in Python using Gurobi solver.

To summarize, our contributions are three-fold:
1. We propose a novel study of the best dining combinations/options optimized toward the best nutrient intake and minimized cost.
2. We form this question as a linear programming problem and solve for the best parameters using Python/Grubi
3. We perform an analysis of our result and form a dinning-advisory for the current student while suggesting future study directions