Problem Definition

- The wages that people spend to meet their daily nutritional values can be a problem.

- We obtained the minimum and maximum values from the categories in the data set. We have set minimum and maximum limits in our algorithm in a way that can provide these values. We aimed to provide the nutritional values in the cheapest way by comparing the values of the foods in our data set with the prices of the foods. Here we used Guroibi for optimization.

- We assumed that the nutritional values in our data set were the daily required nutritional values.

- We have produced a solution that can provide the nutritional values that should be taken daily for the lowest cost.

Data Set Description

- Our data set consists of 3 main titles. These:

    • Categoriess

    • Foods

    • Nutrition Quantities

  Categories: Consists of 3 values. These are category names, minimum and maximum values.

  Category names are protein, calories, fat and sodium.

  Foods: Includes food names and prices. It contains 19 different foods.

  Nutrition Quantities: Contains names, categories and values of foods.

Approaches

- It is obtained by multiplying the value of each food in the specified category with the price of that food. In this way, the cost of meeting the value in the specified category is obtained from each nutrient. A cost was calculated with Gurobi that this cost would be minimal. As a result, it tells us how much of which food we should buy, its cost, and the nutritional values it covers.

- We aimed to provide minimum cost and daily nutritional values in our algorithm. We took the parameters from the data set.

Results

- The result we got is as follows:

```
Cost: 4.022289156626506

Buy:
chocolate 1.4457831325301205
chickpeas 2.879518072289157

Nutrition:
protein 67.6987951807229
calories 1800.0
```

- It can meet the needs with a cost of 4.0222. Quantities of chocolate and chickpeas was mentioned. Finally, the nutritional values are stated.

- After obtaining our dataset from the internet, we expanded it by making additions ourselves.