

# Workshop in Databases: Project Handout

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## 1 Application Idea — Meal Nutrition Helper

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- The subject is nutrition: the user can use the app to select various meals and get the nutrition content of them in general, and by ingredient.
- The user enters their age group and gender, and then the meals eaten during the day.
- The application will calculate nutritional info per-nutrient, per-meal and overall, and output a “health-score”, based on the FDA’s recommended intake amount per nutrient.

## 2 Data

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### 2.1 Details and References

The datasets were taken from the US Department of Agriculture (USDA), and the US Food and Drug Administration (FDA) — which is a US federal agency of the Department of Health.

- FNDDS — <https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/fndds-download-databases/>
  - Food and Beverages
  - Portions and Weights
  - FNDDS Ingredients
  - Ingredient Nutrient Values
  - FNDDS Nutrient Values
- FDA RDIs – Nutrients
  - <https://www.fda.gov/media/99069/download>
- FDA RDIs – Food Components
  - <https://www.fda.gov/media/99059/download>

## 2.2 Selected Parts of the Dataset

### 2.2.1 Food and Beverages

Variable	Description
Food code	Unique 8-digit identification number
Main food description	Primary description for a food code
Additional food description	Description(s) associated with a food code/main description
WWEIA Category number	Unique 4-digit identification number
WWEIA Category description	Description for a WWEIA category

Table 2.1: Part of the columns from the Food and Beverages dataset

### 2.2.2 Portions and Weights

Variable	Description
Food code	Unique 8-digit identification number
WWEIA Category number	Unique 4-digit identification number
Portion description	Unit of measure
Portion weight	Edible portion in grams (g)

Table 2.2: Part of the columns from the Portions and Weights dataset

**2.2.3 FNDDS Ingredients**

<b>Variable</b>	<b>Description</b>
Food code	Unique 8-digit identification number
Main food description	Primary description for a food code
WWEIA Category number	Unique 4-digit identification number
Ingredient code	NDB number or FNDDS food code
Ingredient description	Description of NDB number or FNDDS food code
Ingredient weight	Edible portion in grams (g)

Table 2.3: Part of the columns from the FNDDS Ingredients dataset

**2.2.4 Ingredient Nutrient Values**

<b>Variable</b>	<b>Description</b>
Ingredient code	NDB number or FNDDS food code
Ingredient description	Description of NDB number or FNDDS food code
Nutrient value	Amount per 100g edible portion for energy and 64 nutrients
FDC ID	Identifier of food in FoodData Central

Table 2.4: Part of the columns from the Ingredient Nutrient Values dataset

### 2.2.5 FNDDS Nutrient Values

Variable	Description
Food code	Unique 8-digit identification number
WWEIA Category number	Unique 4-digit identification number
WWEIA Category description	Description for a WWEIA category
<i>Value for each nutrient</i>	Amount per 100g edible portion for energy and 64 nutrients

Table 2.5: Part of the columns from the FNDDS Nutrient Values dataset

## 2.3 Database Schema

### 2.3.1 WWEIA-Category

- ID
- Description

### 2.3.2 Food-and-Beverages

- ID
- Description
- Additional\_Description
- WWEIA\_ID

### 2.3.3 Portions-and-Weights

- *FoodAndBeverages\_ID*
- Description
- Weight

### 2.3.4 Nutrients

- ID
- Description
- Units

**2.3.5 Ingredients**

- ID
- FDC\_ID
- Description

**2.3.6 Ingredients-Values**

- *Ingredient\_ID*
- Nutrients\_ID
- Nutrients\_Value

**2.3.7 Food-and-Beverages-Values**

- *FoodAndBeverages\_ID*
- {Nutrient\_ID}\_ID (VALUE FOR EACH NUTRIENT, there are many to include: e.g. Energy, Protein, etc..)

### 2.3.8 Complete Diagram

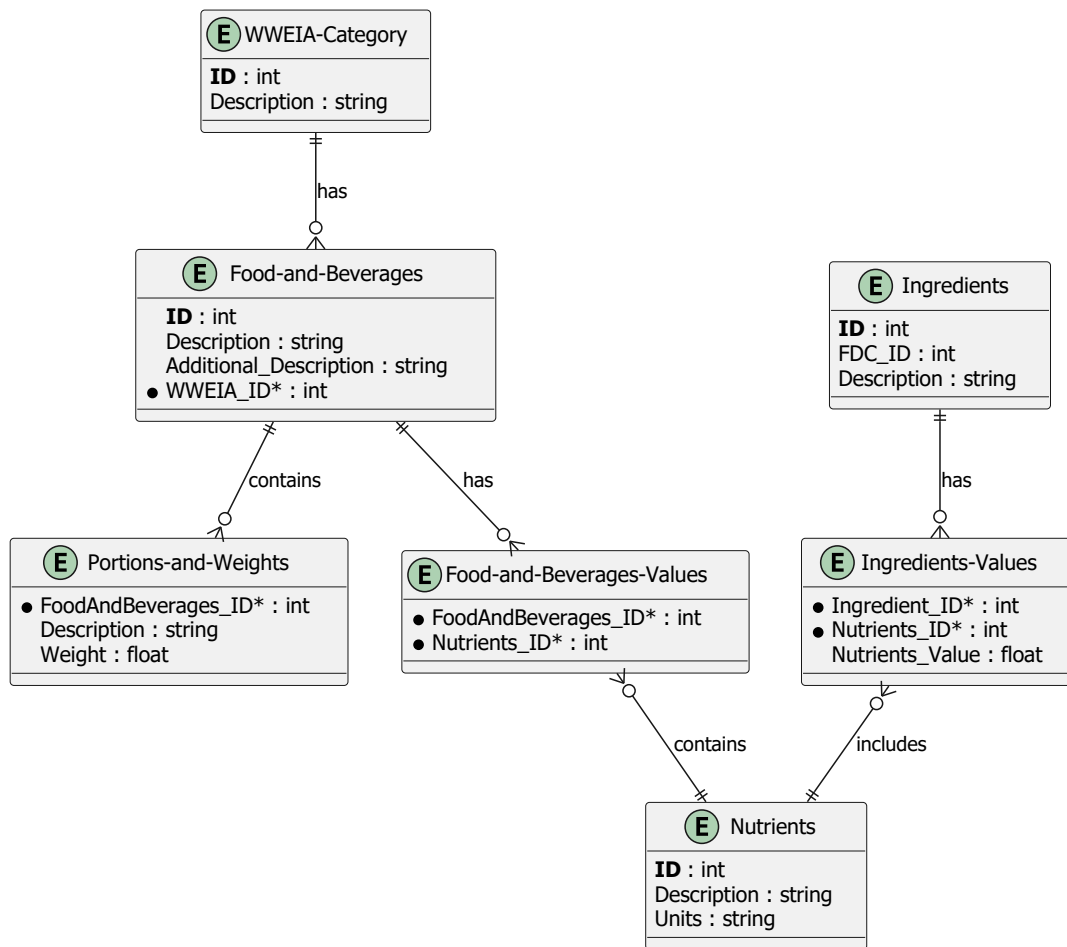


Figure 2.1: Complete diagram

## 3 Milestones and Work Plan

*Note.* The majority of the work will be performed together by the two partners, with some parts to be split when necessary (TBD).

- I. Schema design and migration from obtained dataset
  - (a) Design DB schema, as described
  - (b) Populate the DB from the obtained dataset
- II. Design minimal working logic for the application
  - (a) Connect to the DB using Python
  - (b) Develop backend for application
- III. Develop a UI and modify current code
  - (a) Design a web UI
  - (b) Interface with the developed backend