MealMaker

Description:

The main goal of our website is to allow our users to better follow budget restrictions, and nutritional goals for groceries. The website will accomplish this by calculating the cost of a certain meal the user is interested in, and by being able to calculate the cost and nutritions of all recipes and recommending certain recipes to the user according to criteria the user puts forward. Factoring in portion size will also allow users to take advantage of buying in bulk and find recipes that are more cost effective in larger sizes. Users will be able to easily find recipes that fit their budget or calculate the cost of a certain meal and modify their plans or their budget accordingly. Essentially, this website will function as a cookbook, nutrition tracker and financial planner all in one.

Creative/Challenging Component:

One of the main challenges our team face is in data preprocessing. A lot of our data sources are in an inconvenient format for the project. For example, the recipe data has a mix of quantities, units and ingredients that is difficult to directly join with our nutritions dataset and prices dataset. Before doing joins, we must be able to match all these data forms to be consistent (most likely with some basic NLP) so that the application can be built smoothly. In addition to this we were not able to find a single data source for grocery food prices in the United States while data for many other countries existed. This led us to decide on scraping some major retail or wholesale stores for up-to-date grocery pricing information.

Another challenging and creative component of our application is in meal plan recommendation. Given the constraints proposed by the user and the range of menu options, the recommendation engine needs to decide which recipes to recommend. It should also balance cost and effectively plan out how to portion those planned meals.

Usefulness:

With regards to already-existing similar websites, there are of course dozens of websites that provide recipes or budget planning help. However, there are few websites that calculate the cost of a recipe for their users, and most of these websites are targeted toward food service business owners and do not find the cost of ingredients automatically. Our website will offer unique services, but these services will of course be limited to the geographic areas that we can collect price data for and the time in which data was collected, likely the reason why no other websites offer this service.

Data sources:

Nutritions Dataset (Cardinality: 7409, Degree: 48):
https://www.kaggle.com/datasets/shrutisaxena/food-nutrition-dataset
Dataset for nutrition per each food ingredient sourced from https://ndb.nal.usda.gov/

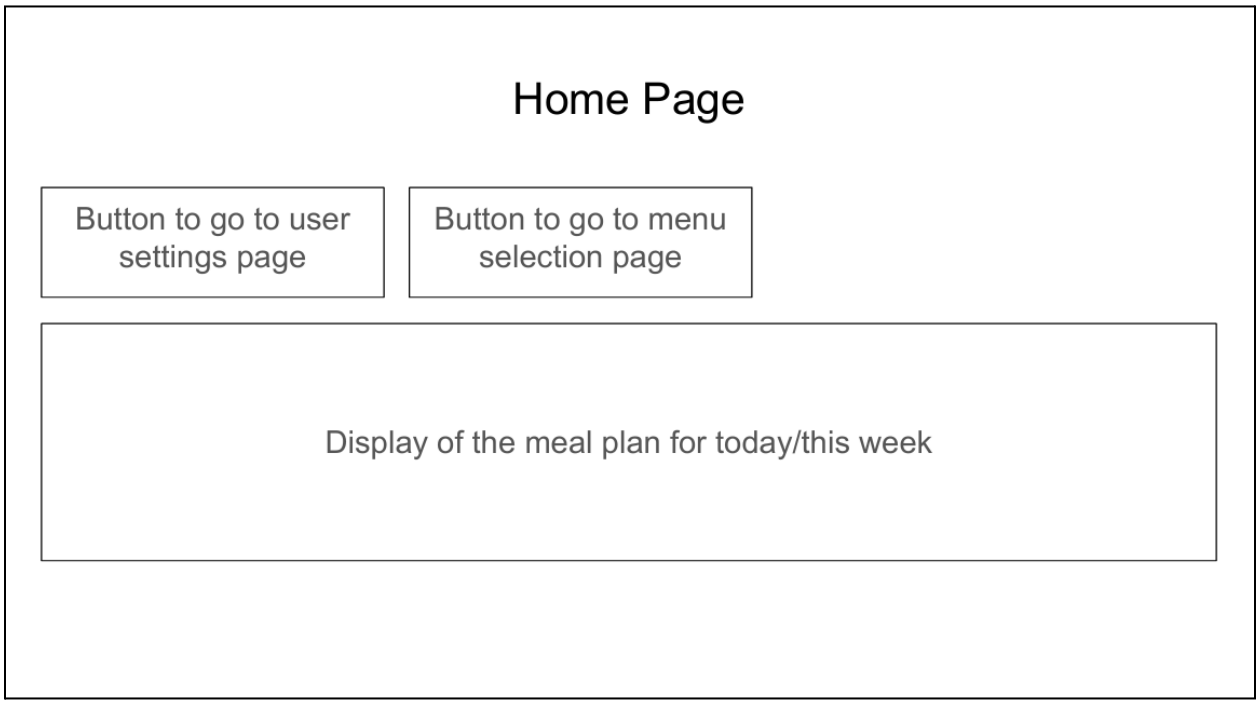
Food Recipes Dataset (Cardinality: 13,582, Degree: 5):
https://www.kaggle.com/datasets/pes12017000148/food-ingredients-and-recipe-dataset-with-images
Recipe data parsed from https://www.epicurious.com/.

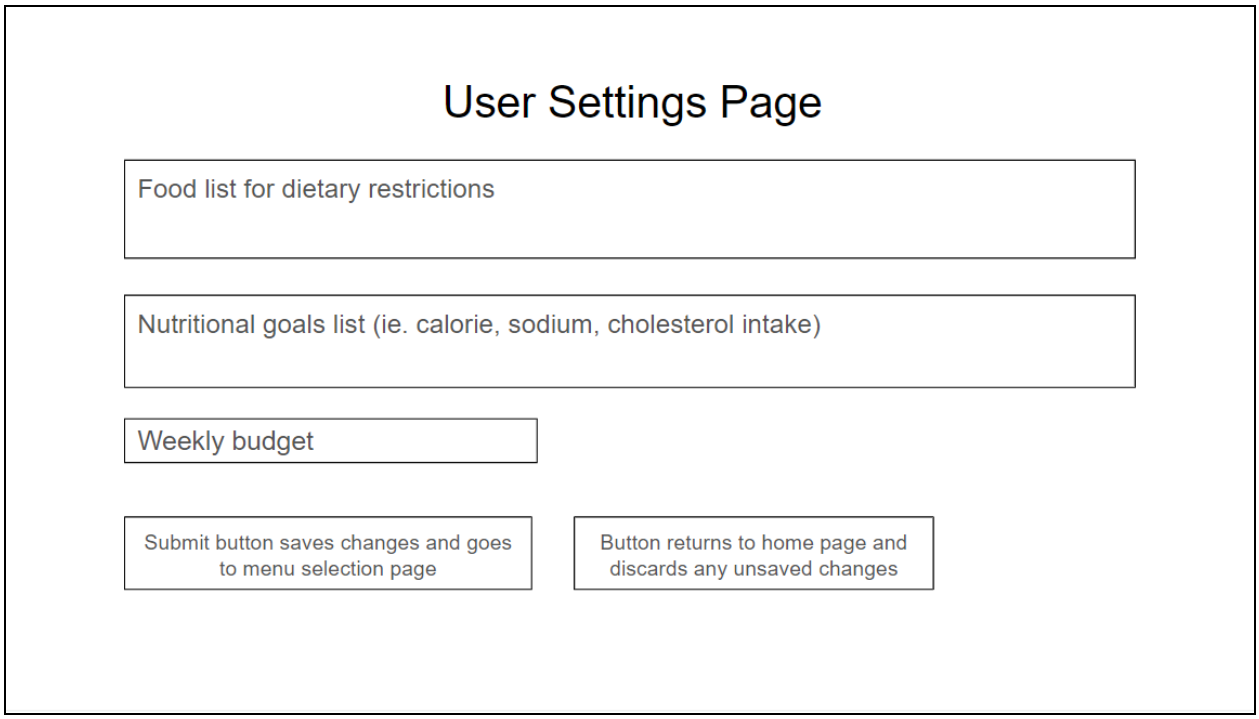
Prices Dataset (Up-to-date data was near non-existent):
Will be scraped from large grocery websites like Costco. We will be sticking to one source of truth as our app generates estimates. Cardinality and degree unknown.

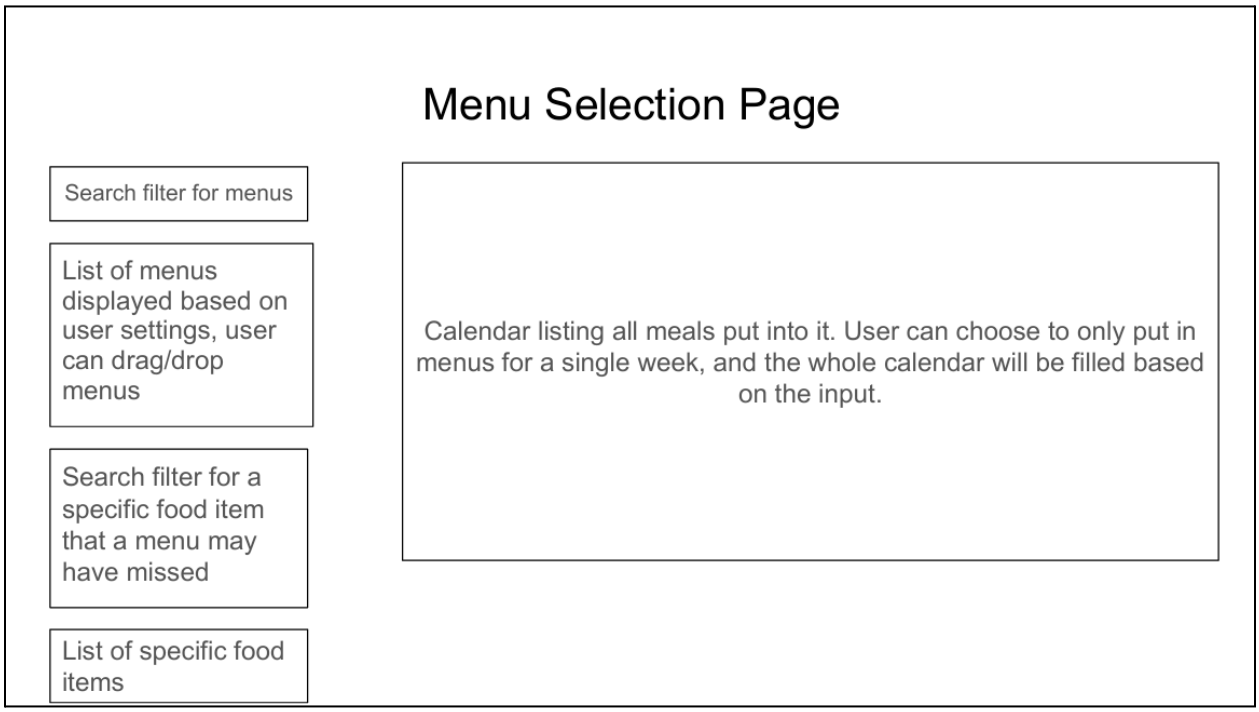
Functionality:

- **User Settings Page:**
  - User is able to indicate dietary restrictions, nutritional goals, and weekly budget
- **Home Page:**
  - Meal plans for day (and/or week) are displayed based on user selections
- **Menu Selection:**
  - User can select menu suggested based on their nutritional goals and weekly budget and add them to their weekly meal plan. Calendar view format.
  - User can search for specific menus or categories of menus

Low-fidelity UI mockup:







Project work distribution:

- Data Scraping/Preprocessing:
    - Scrape Retail provider website for grocery price data and parse into a table which has product name, price, quantity, units: Evan
    - Parse recipe data source for easy joins with price table: Brian
- UI Formalization: Joshua

- Front-end Components:
    - Meal-plan creator: Joshua
    - Menu/User Page: Evan
- User Settings: Gary
- Menu recommendation engine: Brian
- Meal-plan creator backend: Gary