

Recipe Database

Proposal

The proposed project is a database for cooking recipes. The recipes will be structured in a way that makes them searchable, interlinked, and flexible.

When the user interacts with recipes they should be able to change the number of servings, change the units of measurement, find alternative ingredients, and identify other recipes with similar ingredients. The recipes will link to public resources for ingredients, and will optionally have images attached. Users will also be able to upload images to request recipes that most closely match.

Entity-Relationship Design

The principal independent entities are **Recipe**, **Ingredient**, and **Unit**.

Recipe

Each **Recipe** has multiple **Recipe_Ingredients** which describe an **Ingredient**, and a quantity of a **Unit**, along with the user interface information of which order the ingredient should appear in.

Recipes also contain multiple **Steps**, which contain a description of what the cook should do, an order that the step should appear in, and an optional URL for an image associated with the step.

Recipes may also have optional **Images**, which contain a URL for an appropriate picture of the dish, and a vector encoding to make the images searchable.

Ingredient

Ingredients contain their description, and an optional URL to link to external information about the ingredient, such as a Wikipedia page.

Ingredients also reference the primary **Unit** they are measured in.

Finally, an **Ingredient** may possibly have **Substitutions**, which describe a connection to other ingredients, along with notes about how substitutions may be made.

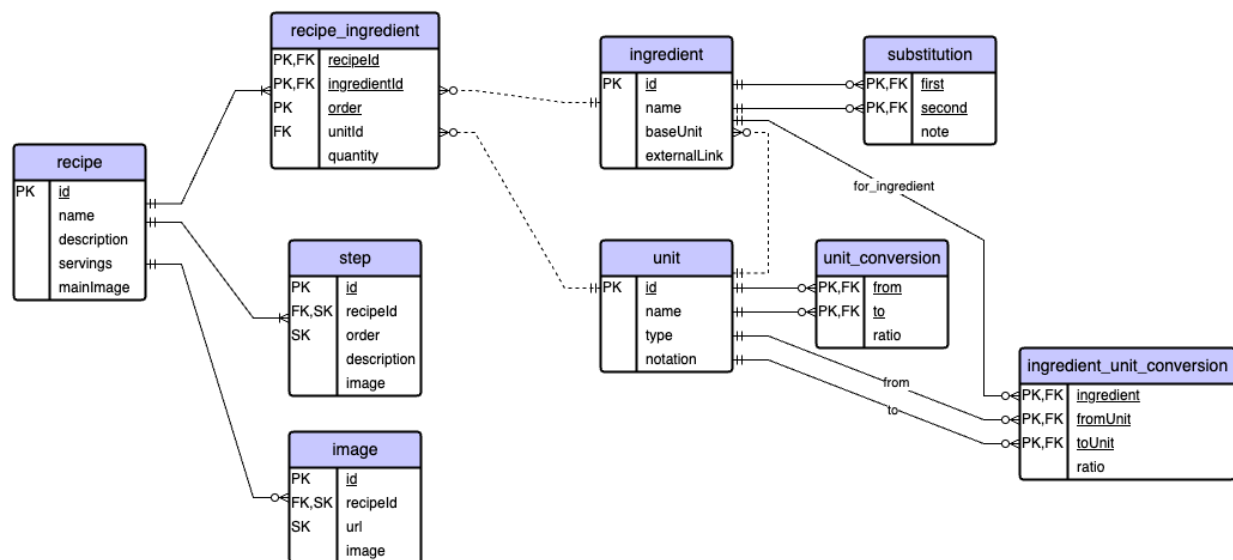
Unit

A **Unit** represents a unit of measurement by name, the type of unit (e.g. mass, volume, count), and the common notation for the unit. **Units** may also have multiple **Unit_Conversions** which describes how to convert from one **Unit** to another by a given ratio. (e.g. 1tsp = 5ml).

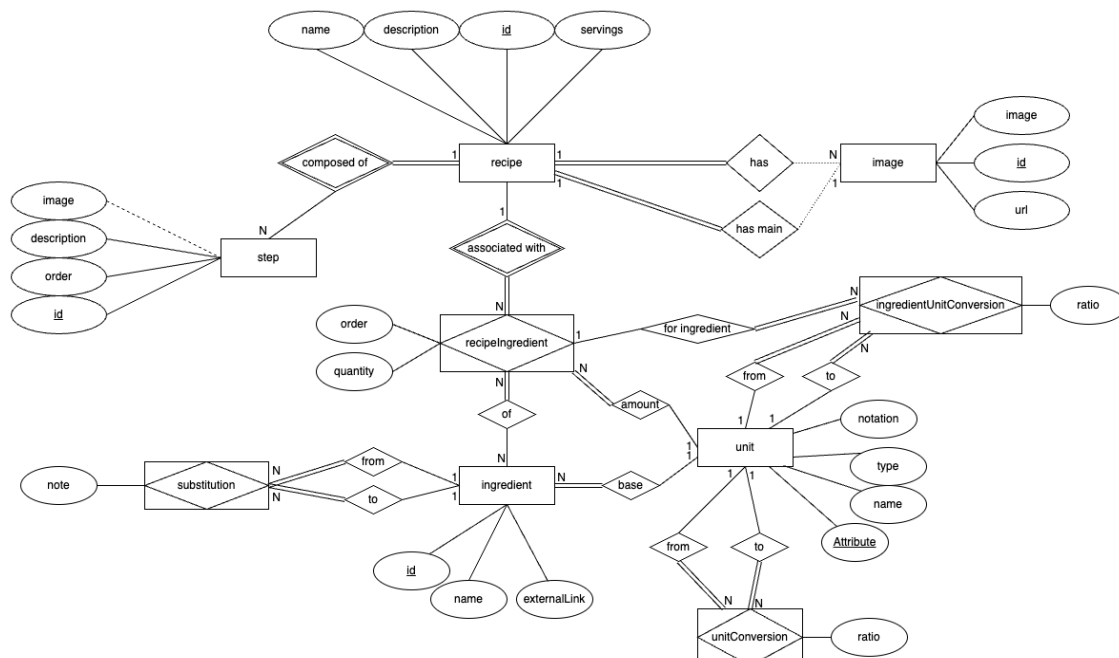
There is also the possibility of **Ingredient_Unit_Conversions** which provide a ratio of one unit to another for a given ingredient (e.g. 1 cup flour = 120g flour).

Diagram

The Crow's Foot ER Diagram for this is shown here



This has an associated Chen ER diagram:



Implementation

The proposed RDBMS is PostgreSQL. This meets all the relevant standards, and supports the vector representations of images via the *pgvector* extension.

The front end will be built in web pages using the React framework.