

# EatWell: Know your Allergens!

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## Abstract

In the abstract, provide a summary overview of your project, its goals and accomplishments. For the mid-project status report, I don't expect this report to be complete, but I do want, at minimum, the sections on System Architecture and Database Design to be completed so that the TAs and I can begin to offer you technical feedback. **<TO BE COMPLETED>**

## Introduction

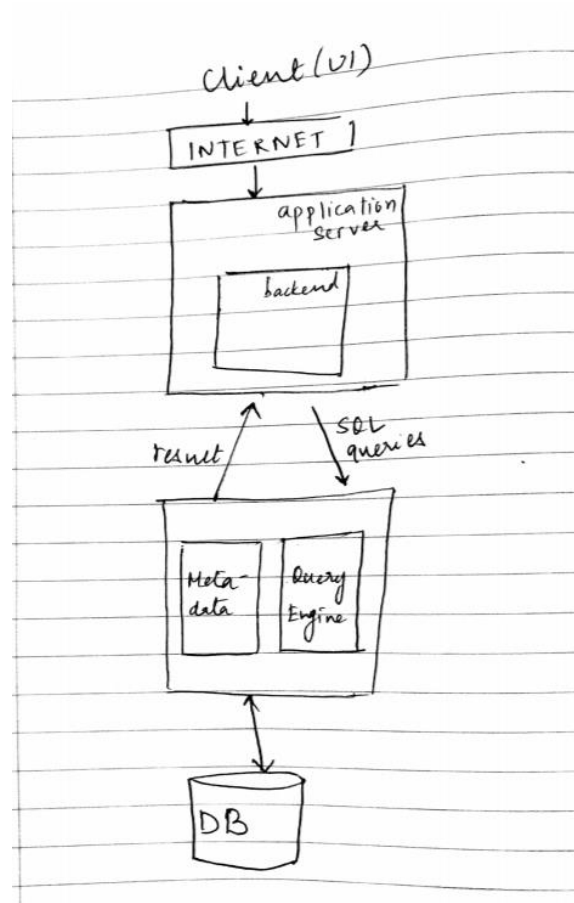
There is no cure for food allergy in modern medical science. Food allergies are managed by avoiding the foods that contains the allergens and learning to recognize/treat the symptoms of the reactions. Even though there is a ton of information about food allergy present on the internet, they all are present in the form of complex paragraphs with a chunk of medical terms spread across it. It proves as a challenge for a common person to read and understand the relationship between the allergen and the foods that he/she must avoid while consuming. Similarly, the food products of the major brands consist of warnings related to only the top 8 allergens (Milk, Tree nut, Egg, Wheat, Shellfish, Soy, Sesame, fish, peanut) and miss to address the minority group. Moreover, all the information is spread across various sites and there is an absence for a single point of access to retrieve the desired information.

The aim of this project is to build a database which acts as a single point of contact for bridging the information regarding the ingredients present in the major food products and the allergic reactions associated with all the known allergens. In addition, the database will also consist of the first aid treatments that need to be carried in the event of emergencies. Apart from the database, the project aims at building an easy to access web application prototype which can help a consumer having food allergy to decide whether it is safe to purchase the product while shopping. In the event where the person already consumed a food product and experiencing allergic reactions, the application will give the first aid instructions that should be carried out before the emergency response team arrives. The first aid instructions that are suggested will be tailored based on the combination of food consumed and the type of symptoms experienced by the person.

## System Architecture

We are making a web application using Django. We will have a client (a website UI) where the user can register and provide information about his allergies.

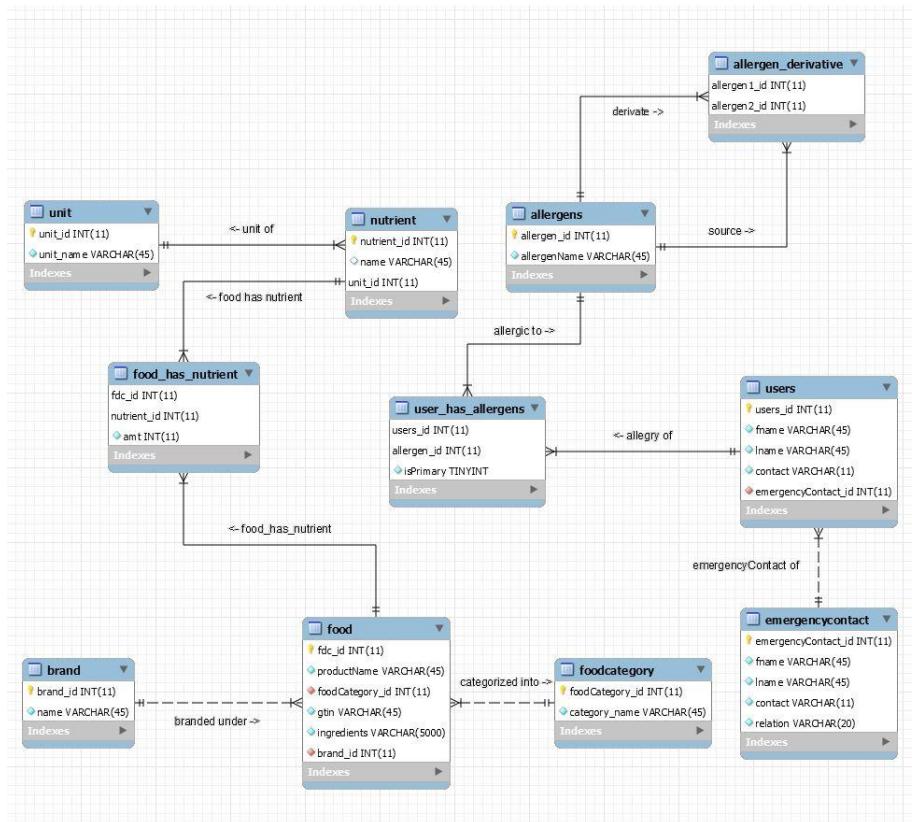
In our application server, we will have a backend process running in background. This backend will have HTTP endpoints that will store the user information, product information and informs the user whether he/she should be eating the given product or not. The application server will interact with our data source, which is MySQL.



The sample application workflow:

1. User creates a profile in the website. The allergens to which the user is allergic to are gathered during the sign-up process.
2. The major allergens provided by the user is matched against a pre-computed allergen database to identify all the allergens in addition to the major allergen to which the user might be allergic.
3. Once the profile is created, the user will be prompted with a text box to enter the food he/she intends to purchase.
4. The application pulls the corresponding ingredients present in the food and verifies it against the list of allergens to which the user is allergic.
5. The user will be suggested based on the computation performed.
6. In the event where the person already consumed a food product and experiencing allergic reactions, the application will give the first aid instructions that should be carried out before the emergency response team arrives.

# Database Design



The database schema for the project can be split into two major parts.

1. User Profile and allergens
2. Food composition

The user profile and allergens consist of the following entities,

a. Users Table:

It is used to store the information regarding the user while creating a user profile in the website.

b. Emergency Contact Table:

The emergency contact of the users is stored in this entity. It will be used in the case of an emergency.

c. Allergens Table:

It stores the information of all the allergens present in the food products.

d. Allergen Derivative Table:

It stores the information of all the derivative products associated with the major food allergens. It helps to identify all the possible allergens to which a user might be allergic in addition to the major food allergens.

e. "User\_has\_allergen" Table:

All the user specific allergens identified using the allergen derivative table is stored in this table.

The food composition consists of the following entities,

a. Food Table:

It consists of all the information associated with the food product. The ingredients list will be used to verify whether any allergy causing allergens are present in the food.

b. Nutrient and “Food has nutrient” Table:

It stores all the information related to nutrients present in the food.

c. Brand Table:

It stores all the information related to brands under which the food is sold.

d. Unit Table:

The information related to the units using which the nutrients are represented is stored.

## Data Acquisition

Explain step-by-step how you acquired your data including all data sources. Use numbered citations like this [1] or like this [2, 3] and list any references at the end of your report following a consistent style. Describe any work you did to modify or clean the data prior to being loaded into the database. If you made up your data as part of an application prototype document any assumptions that may have been built into the data-generation process. Provide sufficient detail to enable the reader to reproduce your results. **<TO BE COMPLETED>**

## User Interface

First, the user will register and create his profile.

The sketch shows a registration form with the following elements:

- Header: "EAT WELL" with a leaf icon on either side.
- Form fields: "First Name:", "Last Name:", and "Contact Number:", each followed by a rectangular input box.
- Allergy selection: "Choose your allergy:" followed by a dropdown menu showing "Soy" and "Milk" as options.
- Emergency info section: "Emergency Info:" followed by three fields: "Contact name:", "Contact number:", and "Contact relation:", each with an input box.
- Navigation: ">> Skip for now" and a button labeled "CREATE MY PROFILE!".

Now, we have a simple login page for the user to identify his session. (we won't be doing any kind of authentication since it is out of scope of the project).

User Login Page

EAT WELL

LOGIN!

Page after logging in

EAT WELL

Should I eat this?  
  
ASK

The user can then search for a product and know If he can eat it.

Options with searched keyword:

EAT WELL

Matches to your search 'lays'

Lays Barbeque

Lays jalapeno

Lays salted

Based on his allergy and the product's ingredients, we show him either of these two pages.



## Analysis and Results

Those of you doing a data-analytics-type project should present the results of your analysis here. Include charts, graphs, and other visualizations that demonstrate key insights. **<TO BE COMPLETED>**

## Conclusions

Summarize your results. Be concrete about your accomplishments as well as what perhaps didn't go so well. **<TO BE COMPLETED>**

## Author Contributions

Describe how each member of your group contributed to the success of your project. There are many ways to make meaningful contributions to a project. I don't expect each person to contribute to each aspect of the project. Some of you are more experienced web-developers, others make tackle the database design, or you may be primarily responsible for creating the class presentations and the writing of this report. **<TO BE COMPLETED>**

## References **<TO BE COMPLETED>**

1. Adibuzzaman, M., et al., *Big data in healthcare - the promises, challenges and opportunities from a research perspective: A case study with a model database*. AMIA Annu Symp Proc, 2017. **2017**: p. 384-392.
2. Murthy S., A.R., Goodwin R., Keskinocak P. Rachlin J., Wu F., Yeh J., Fuhrer R., Kumaran S., Aggarwal A., Sturzenbecker M., Jayaraman R., Daigle R., *Cooperative*

*Multiobjective Decision Support for the Paper Industry*. Interfaces, 1999. **29**(5): p. 5-30.

3. Rachlin, J., et al., *Biological context networks: a mosaic view of the interactome*. Mol Syst Biol, 2006. **2**: p. 66.