

Label Fresh Final Paper

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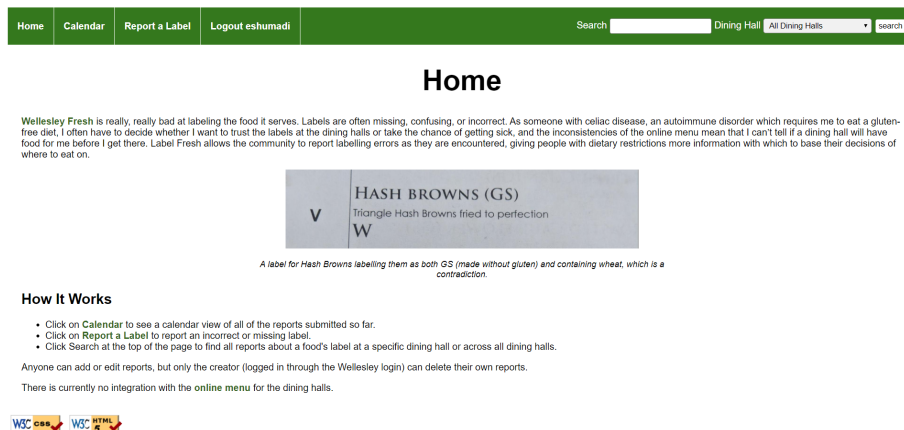
1 Motivation

I have celiac disease. This means that I can't eat gluten, which is often found in bread, cakes, and a lot of other things you might not expect to find it in (ex. Twizzlers? For some reason?). Eating in Wellesley College's dining halls has continually been a struggle for me as a student of the college, and the problems that I have had are not specific to gluten, but are structural issues affecting anyone eating at the dining halls with a dietary restriction. One of the biggest roadblocks to eating in Wellesley dining halls with a food allergy is the insufficient, incorrect, and inconsistent labeling. Cheese and meat have been labelled as vegan and vegetarian, the ingredient lists are incomplete, so an allergen might be present but unlisted, and ice cream, the delis, and the salad bars lack allergen labelling altogether.

In response to this, I have created Label Fresh. Label Fresh is a database-backed website that allows anyone eating at the dining halls to report missing or incorrect labels for others to see. The idea behind this is to create a place where people with dietary restrictions can look at the historical consistency of labels for certain foods at certain dining halls, empowering them to make more informed decisions about where they eat. I also hope that such a record of missing and incorrect labels at the dining hall will finally convince Wellesley Fresh that this is a real and persistent issue.

2 Features

Label Fresh offers users the ability to create a report of an incorrect or missing label, view existing reports, search for a report on a certain food at a specific dining hall or all dining halls, browse all reports in reverse chronological order, update a report, and delete a report. Logins are integrated with the Wellesley central authentication service. Anyone (even guests) can create a report, but only the logged in user who created the report can update or delete it. This is to allow visitors to the dining halls to use the service without allowing everyone to change or delete everyone else's reports. Error messages, when they occur, are flashed.



The homepage.

2.1 Create a Report

The create a report page.

The create a report page uses a web form with some backend validation for correct inputs for the allergens and diets, since there is no native browser support for requiring at least one checkbox to be selected. The information supplied to the form by the user is as follows:

- the date the food was served,
- the name of the food,
- the dining hall the food was served at (options are Tower, Bates, Stone Davis, Pomeroy, and Bae Pow Lu Chow AKA Lulu),

- the mealtime the food was served during (breakfast, lunch, or dinner),
- the diets listed on the label (code definitions appear in the legend on the right hand side of the page),
- the diets that are actually followed,
- the allergens listed on the label,
- the allergens present in the food,
- an optional picture of the food or the label,
- optional notes.

Any images uploaded through this form are checked for the correct MIME type (ex. png, jpg, etc.), and the filename is changed to prevent insertion of files into other folders on the server. Images are stored on the server and served separately through the Flask route `/image/<reportID>/`. The name, date served, dining hall, and mealtime of the report constitute a unique identifier for the report. Since this is a rather long collection of attributes, this identifier is only used to ensure that duplicates are not being created when updating an existing report or creating a new one. To keep the backend and URLs more concise, the primary key of the SQL database for reports is an auto-incremented int. Creating a report can be done without logging in, though no one will be able to update or delete the report once created.

2.2 View a Report

Mac and Cheese

DELETE UPDATE

Served on 2019-12-02 for Dinner at Bae Pow Lu Chow.

Listed Allergens	Allergens Present
W	W
M	M

Listed Diets	Diets Followed
V	None
GS	

Notes

None

View a report that you are the owner of.

Viewing a report shows all of the information provided by the user in the create a report page. A table shows labelling information, the food name is the

[Home](#)
[Calendar](#)
[Report a Label](#)
[Logout eshumadi](#)

Search
Dining Hall

All Dining Halls

search

Turkey Enchilada

Served on 2019-12-11 for Lunch at Tower.

Listed Allergens	Allergens Present
W	W
Listed Diets	Diets Followed
VE	VE
V	V

V

VEGETARIAN

CS

GLUTEN SENSITIVE

Ve

VEGAN

H

HALAL

Diet symbols used on dining hall labels.

P

PEANUTS

W

WHEAT

TN

TREE NUTS

E

EGGS

M

MILK

S

SOY

SF

SHELLFISH

F

FISH

Allergen symbols used on dining hall labels.

Notes

None

WSC

CSA

WSC

ETHS

View a report that you are not the owner of.

title of the page, and the other identifying information is included directly above the table. Notes are at the bottom of the page, followed by the image if present. The allergen and diet label legends from the form are also present. If the user is logged in as the creator of the report, two extra buttons are present that are missing if the user is not logged in as the creator of the report. These are for updating and deleting. Clicking the delete button prompts a confirmation popup, which deletes the report and redirects to the homepage if confirmed, and does nothing if cancelled. The delete and update routes also make the ownership check to make sure that users are actually logged in when updating or deleting.

2.3 Update

The screenshot shows the 'Update | Mac and Cheese' form. At the top is a green navigation bar with links: Home, Calendar, Report a Label, Logout eShumadi, a search bar, and a Dining Hall dropdown set to 'All Dining Halls'. The form title is 'Update | Mac and Cheese'. Below it, a note states: 'Items marked with an asterisk (*) are required.' The form contains several input fields: *Date (12/02/2019), *Food name (Mac and Cheese), *Dining Hall (Bae Pow Lu Chow (Lulu)), and *Mealtime (Dinner). There are two sections for dietary restrictions: 'Diets' and 'Allergens'. The 'Diets' section has 'Listed Diets' (Vegan, Vegetarian, Gluten Sensitive, Halal, None) and 'Diets Followed' (Vegan, Vegetarian, Gluten Sensitive, Halal, None, Unknown). The 'Allergens' section has 'Listed Allergens' (Wheat, Milk, Eggs, Soy, Peanuts, Tree Nuts, Fish, Shellfish, None) and 'Allergens Present' (Wheat, Milk, Eggs, Soy, Peanuts, Tree Nuts, Fish, Shellfish, None, Unknown). To the right of these sections are icons for diet symbols (Vegetarian, Vegan, Gluten Sensitive, Halal) and allergen symbols (Peanuts, Wheat, Tree Nuts, Eggs, Milk, Soy, Shellfish, Fish). Below the form is a section for 'Upload a picture' and 'Notes (max. 300 characters)'.

Update a report.

The update form is almost identical to the creation form, but with pre-populated fields. Any change to the four identifying fields (name, date, dining hall, and mealtime) initiates a check to ensure that such a report doesn't already exist.

2.4 Search

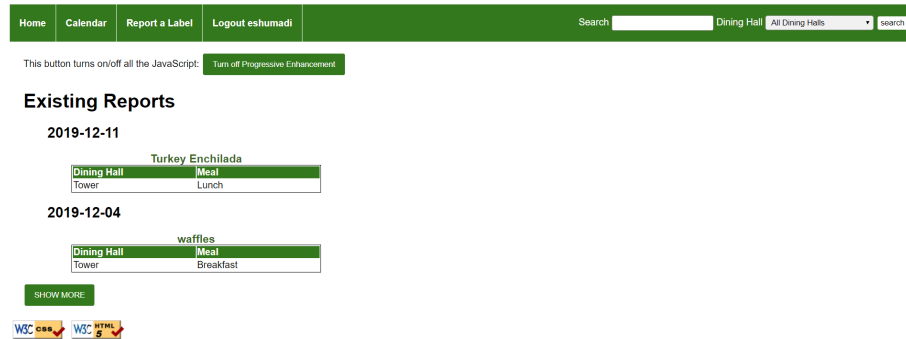
The screenshot shows the 'Search Results' page. At the top is the same green navigation bar as in the previous screenshot. The page title is 'Search Results'. Below it, the search criteria are displayed: 'Searching for a at All Dining Halls'. The results section shows '5 results'. The first result is 'Hash Browns' with a table showing Date (2019-11-05), Dining Hall (Bates), and Meal (Dinner). The second result is 'waffles' with a table showing Date (2019-12-04), Dining Hall (Tower), and Meal (Breakfast). The third result is 'Graham Central Station' with a table showing Date (2019-12-03), Dining Hall (Bae Pow Lu Chow), and Meal (Lunch). The fourth result is 'Turkey Enchilada' with a table showing Date (2019-12-11), Dining Hall (Tower), and Meal (Lunch). The fifth result is 'Mac and Cheese' with a table showing Date (2019-12-02), Dining Hall (Bae Pow Lu Chow), and Meal (Dinner). At the bottom of the page are logos for WSC, CBS, and WSC.

Searching for "a" at all dining halls.

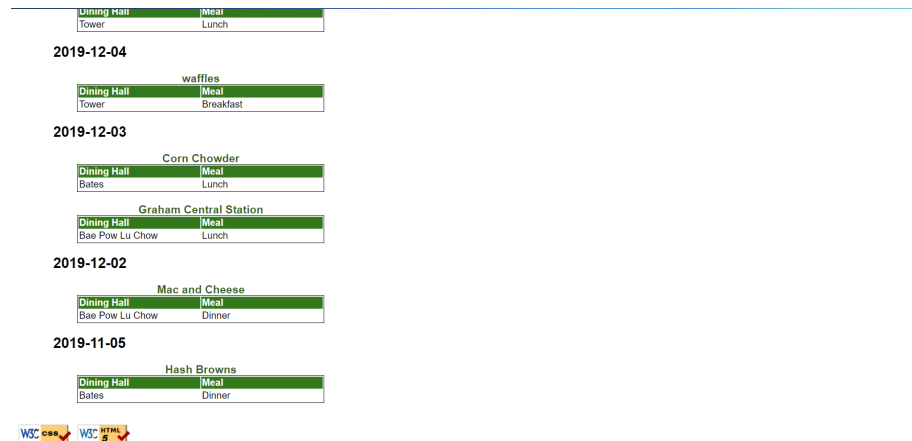
Search is available on all pages through the navigation bar at the top of the screen. The search query matches any food name that contains the searched string, case-insensitive. The resulting page displays the search query,

the number of reports found, and an overview of each report. The overview contains the name of the food, which is also a link to that reports individual page, the date it was served, and the dining hall and mealtime it was served at.

2.5 Browse



Initial reverse chronological view.



Reverse chronological view after Ajax update.

Reachable through the link labelled "Calendar" on the home screen and the navigation bar at the top of every page, the browse screen shows a limited number of existing reports in reverse chronological order. Currently, since there aren't many entries in the database, the initial number of reports shown is only two. Clicking "Show more" with progressive enhancement on (default for the page)

uses Ajax to update the page with more reports. With JavaScript/progressive enhancement disabled, clicking "Show more" will take the user to a new page containing the next group of reports.

3 Database Design

```

1 DROP TABLE IF EXISTS label;
2 DROP TABLE IF EXISTS report;
3
4 CREATE TABLE report (
5     id int auto-increment NOT NULL PRIMARY KEY,
6     name varchar(50) NOT NULL,
7     served date NOT NULL,
8     meal enum('Breakfast', 'Lunch', 'Dinner') NOT NULL,
9     hall enum('Bates', 'Tower', 'Stone Davis', 'Pomeroy', 'Bae
    Pow Lu Chow') NOT NULL,
10    notes varchar(300),
11    imagefile varchar(50),
12    owner varchar(8)
13 ) ENGINE = InnoDB;
14
15 CREATE TABLE label (
16     id int NOT NULL,
17     code enum('W', 'M', 'E', 'S', 'P', 'TN', 'F', 'SF', 'VE', '
    V', 'GS', 'H', 'None', 'Unknown') NOT NULL,
18     labeled enum('listed', 'actual') NOT NULL,
19     kind enum('allergen', 'diet') NOT NULL,
20     PRIMARY KEY (id, code, labeled, kind),
21     INDEX (id),
22     FOREIGN KEY (id) REFERENCES report(id)
23         ON DELETE CASCADE
24         ON UPDATE CASCADE
25 ) ENGINE = InnoDB;

```

The database backing Label Fresh consists of two tables; one for reports and one for allergens and diets. The report table contains the primary int id for the report, the name, date served, dining hall, mealtime, image filename (or NULL), the username of the user who created the report (or NULL if they weren't logged in) and the notes (max 300 characters, can be NULL). The allergen and diet table consists of a foreign key id that corresponds to the report table's int id, and the one- or two-letter code for the allergen or diet. Codes are unique among all allergens and all diets, so this is represented as a single enum, with another attribute determining whether the code is for a diet or an allergen, and a final attribute indicating whether the code was listed or actually present for the food. Since inserting and updating a report involves inconsistent database states, and the status of whether or not a report is a duplicate could change during insertion or update, both functions utilize locking to ensure that the database stays consistent during the whole operation.

4 Accessibility

All of the webpages comprising Label Fresh have valid HTML and CSS, and have passed the WAVE accessibility tester. The only images without alt text are the user-uploaded ones for each report, since the image is different for every report and there is no way to know beforehand what the image is of. JavaScript is not required to use the website (though the delete button will have no confirmation), and there is the ability to turn Ajax off.

5 Conclusion

Navigating Wellesley fresh with a dietary restriction may never be easy, but I am hoping that Label Fresh will help to make it more bearable and give people on campus more independence to make decisions about where they eat. I do know that asking the chefs about the accuracy of a label is always an option, but asking only for myself is not as motivating as asking so that the information can be shared with other people. Widespread use of Label Fresh would enable people to find answers without having to ask the chefs every single time, perhaps freeing the chefs from having to answer the same question many times a day. Though Wellesley Fresh seems designed to take away independence in food choices, my aim with Label Fresh is to restore that independence.