“SW Engineering CSC 648/848 Fall 2019”

TEAM 104

CERES

Milestone 1

Member Name	Member Role
U Khyoi Nu (unu@mail.sfsu.edu)	Team Lead
Srushti Buddhadev	Backend Lead
David Fang	Frontend Lead
Darnell Kenebrew	Github Master/Backend
Brian Lopez	Scrum Master/Frontend
Jonathan Munoz	Frontend/Backend

October 3, 2019

History Table
October 3, 2019, Version 1
December 16, 2019, Version 2

1) Executive Summary:

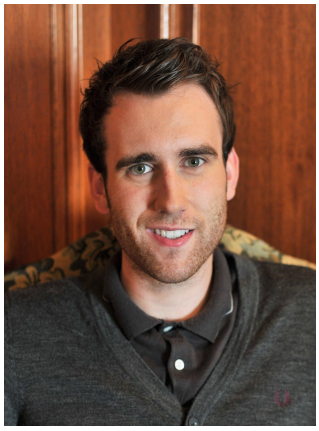
Ceres is an online application that helps users minimize food waste by informing users on expiration dates, the amount of food they possess, and many other features such as enabling users to create a shopping list, search for recipes, which makes Ceres a one-stop shop for its users. With Ceres, we aim to make grocery store visits easier, by providing users with helpful recipes, the ability to create a shareable shopping list, and an interface that shows their current items and expiration dates. Ceres will notify the user upon nearing expiration dates, track nutrition details on foods, and allow its users to share a grocery list with all allowed users. Users will have their own login credentials with unique ids and passwords along with an option to add a user photo. Ceres also allows users in a particular group to share a "household pantry", which lists all the items in the fridge and can be labeled to eliminate confusion between who owns what item when multiple users share a fridge. All shopping lists created by users will have the option to be shared by allowing users to be added via usernames or email, and they can be given permissions whether to add or remove items from said list. Lastly, we want to include a new feature, that will allow every user the ability to make a consumption chart to keep track of their eating habits if they choose to do so.

This application is an improvement of current applications in the market, while also setting itself apart as a superior product. We have included features that everyone currently loves and plan to include more that will be loved; such as the ability to create a grocery list away from home, keeping track of the items in your fridge, having the ability to share your lists with other people that are using the same refrigerator space as a user, and preloaded recipes that are easy to follow. With features like reading receipts and formatting them into a list that gives users information on quantity, name, among other fields that can be added via user discretion, we aim for our application to be centered around this level of ease of use, and minimizing users from doing most of the grunt work. We give users access to the data they need, lists, features, alerts, and more that are easy to access and manage; we've ultimately tried to minimize clutter by giving users the ability to remove information they don't want or need. We aim for it to be easy to use, read, and overall be informative.

Our team was inspired to build this application because as students with multiple roommates, or individuals living with family, one thing is fairly certain, food is almost always never fully used up and many perishables are often thrown away. In an age where food is purchased in large quantities and items are purchased cheaper in bulk there is now an excess amount of food being thrown out every year and we aim to stop this unnecessary purchasing from happening with Ceres. We also felt that sometimes food in a given shared space, be it a pantry or refrigerator, food would sometimes be wrongfully claimed and in other cases rotten food would never be claimed. By allowing users to label what's theirs, this eliminates that confusion. Our inspiration was to create something new, exciting, innovative, useful and by doing this indirectly saving money in everyone's pockets while also helping the environment by decreasing unnecessary food waste all at the same time. In addition, we have found ourselves multiple times in a grocery store thinking to ourselves that we have to remember everything we need to buy, however as soon as we get to the store we quickly realize how many things we ultimately forgot to purchase, as individuals who take all of our groceries in one trip, going back to the store for less than a handful of items is usually upsetting, at best. With Ceres we wanted users to feel confident with never forgetting what they were meant to buy in the first place, but also buying in moderation to prevent excessive spending due to being

able to track how many items are in their fridge and what items go in and out of the fridge as well. This premise of minimizing waste and the importance of being aware has driven us to create something that can positively impact all of our users.

2) Personas and User Stories:



1. Richard is a 21 year old college student. He is a Philosophy major at San Diego State University. He stays off campus, about a 20 minute walk from school and a 10 minute bus ride from the campus as well. Richard has three roommates and they all share a single fridge. Richard also works full time as a server for a restaurant. He has no time to go grocery shopping, but some of his roommates do. When his roommates go grocery shopping they usually buy the stuff they want and don't know what Richard would like. This is when he found out about our online application that would allow him to see what is inside of his fridge and what he would like to add to his grocery list for his roommates to see whenever they are out shopping for groceries. Richard needs a way to make his needs heard when it comes to grocery shopping. His roommates should be able to see the list that he provided as well as the list they have created for themselves all merged into one list for all of the individuals living together.

2. Jenny, a 46 years old mom, and her son Triston, 12 years old; they live in an apartment together. Jenny works at an office firm from 8 am to 5 pm and comes home to take care of Triston. Usually, Jenny takes care of her son Triston, but at times Triston will lend a hand by overwatching the apartment. Triston teaches himself how to cook and clean around the apartment, but is unable to buy groceries unless it is planned beforehand. Triston needs an easy way to communicate with his mother on what type of ingredients they want to buy. He wishes for an app that makes notifications of what should be bought by his mom and an easy way to rearrange what goes in and out of the fridge. His wishes were answered once he ran into Ceres.

3. John is a 29 year old software engineer at a renowned company. He lives alone in a one-bedroom apartment near his workplace. He works 10 hours a day for 5 days a week. He has breakfast and lunch at work on weekdays. On weekends he likes to go on hikes or do some other outdoor activities. So, the only meal he has at home is dinner. He wants to build a habit of eating healthy at home. He buys his groceries for the week on weekends. But most of the days when John looks into the fridge, he cannot figure out what to cook in a short time and ends up ordering his dinner from a restaurant. As a result, his groceries expire and his eating habits have become unhealthy. He needs a way to get suggestions for quick recipes based on the items in his fridge that are going to expire soon and a shopping list suggestion based on recipes he would like to try later. Since he is a very busy person, it would be great to have a way to quickly add items to his inventory. That's where Ceres comes in.

4. Adam is a 38 year old man with a wife and two kids. Adam is the manager at a Grocery Store and oversees the store's daily operations. In order to get to work, Adam drives there and back home. After suffering from a mid-life crisis that caused his eating habits to become unhealthy he wants to rebuild his life, starting with an improved diet. What better way than to have an online application to help track his eating habits, give him information on recipes that will provide for better food choices, and keep track of the items in his fridge. A way to set a target for food consumption and visualize his progress would be great for him to rebuild the habit of healthy eating.

5. Jensen, who is 30 years old, is working at a restaurant in San Francisco, he is in charge of overseeing the supplies that are needed at the establishment. The staff consists of 8 members in total. The restaurant regularly requires a sufficient supply of food ingredients for at least a week. His work is to look after those supplies, keep track of their quantities, and buy the ones that are running low on quantity. He mostly does the shopping for the week on the weekends. In order to avoid backlogging of food and then gradually wasting, he can use an application that helps him simplify and record his tasks. Also if in the future, they expand their restaurant, there will be a few people working under his supervision and they may need a group platform to coordinate and check ingredients at all the places of that restaurant. An application to help him handle his task and supply enough and proper ingredients to the chefs of the restaurant would be very desirable.

3) Data Definitions:

Users: All registered users. Attributes include unique id, username, password and other details such as age, photo, address etc.
Fridge: A group of registered users who share a household space and grocery list. Attributes include user_id which is a foreign key pointing to the id of user table.
Inventory: Current items in the fridge or current stock. Inventory belongs to each group. Items are added, deleted and edited continuously. Attributes include quantity, date of purchase, expiration date and users can add sub-categories that they feel pertains to the product.
Food details: Item ID, Average expiration days, nutrition details for each food item (External database)
Recipes: Recipe ID, Recipes from external database. The attributes include ingredients, preparation time, procedure, calories, serving size etc.
Shopping List: A list of items to be purchased, shared by a group of allowed users, items will contain quantity of items and name of item.
Consumption Progress: Includes a target for calorie consumption, the current state of progress by a family(or individual), start date, end date etc.
Refrigerator: Keeps track of the inventory space available in the fridge while making sure that it is not overstuffed with excess items that will no longer fit.
Repetition List: A list that is compared to a shopping list that another group member may have already created that will warn the user that someone else is planning on buying that same item.

4) Initial list of functional requirements:

- Input information about adding an item to the refrigerator or removing an item from the refrigerator (Read input from receipt)
- Ability to add items manually (Items not in the shopping list)
- Keep an inventory of what they have
- Users notified before items expire or depleted
- Suggest recipe based on available items
- Search for recipes based on current items with time for preparation (all/selective items)
- Make a shopping list based on recipes user want to try
- Things to purchase, new items independent of current items
- Users can add into a shareable grocery list (Grocery List for a household)
- View consumption report regularly on their history of inventory (chart/graph)
- Set goal for food consumption (calorie - limit, target)
- Chart/point meter to show how close to the target/limit (maybe some reward on completion)
- Display a warning when Refrigerator space is nearly full
- Display a warning when duplicate items are found on multiple shopping lists

5) List of non-functional requirements:

- Application shall be developed, tested and deployed using tools and servers reviewed by Class TA (Nicholas Olegovich Stepanov) in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be reviewed by class TA).
- Application shall be optimized for mobile browsers.
- Data shall be stored in the team's chosen database technology on the team's deployment server.
- Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.
- Application shall be very easy to use and intuitive.
- Pay functionality, if any (e.g. paying for goods and services) shall not be implemented.
- Site security: basic best practices shall be applied
- Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
- Standard desktop use optimized
- The website shall prominently display the following exact text on all pages *"SFSU Software Engineering Project CSC 648-848, Fall 2019. For Demonstration Only"* at the top of the WWW page. (Important so as to not confuse this with a real application).

6) Competitive Analysis:

Features	FreshBox	Fridge Pal	Epicurious	Smarter Assist	CERES
Food Tracker	+	+	-	++	++
Integrated Shopping List	-	-	-	+	++
Alerts	+	+	+	+	+
Expiration	+	+	-	+	+
Recipe	-	+	++	-	++
Market Price	+	+	+	++	+
Calorie Counter	-	-	-	-	+

\+ = average
++ = high
\- = N/A

With Ceres we improved upon the current competitor features, including but not limited to: informing users on expiration, giving users informative alerts, and allowing an integrated “household” shopping list. In addition, our goal is to provide ease of use to our users and eliminate the need for multiple apps and have our application contain all these features in one. While other competitors contain some key features in their app that ours does, none of our competitors contain all the features our application will. In addition, with an integrated shopping list that can be shared throughout the household, as well as “household” labeling on items, if pantry or refrigerator space is shared, items can be named to a specific user, to eliminate any future confusion.

7) High-Level system requirements:

Server Host: AWS (1 vCPU 1 GiB RAM)
Operating System: Ubuntu 16.04 LTS (HVM)
Database: MySQL Ver 14.14 Distrib 5.7.27, for Linux (x86_64) using EditLine wrapper
Web Server: NGINX 1.10.3
Server-Side Language: Python 3.5.2
Web Application Framework: Django 2.2.5
IDE: Pycharm
OCR API: PyTesseract
Supported Browser: Google Chrome
Additional Technologies: Sublime Text, Sequel Pro

8) Team:

Member Name	**Member Role**
U Khyoi Nu	Team Lead
Srushti Buddhadev	Backend Lead
David Fang	Frontend Lead
Darnell Kenebrew	Github Master/Backend
Brian Lopez	Scrum Master/Frontend
Jonathan Munoz	Frontend/Backend

9) Checklist:

- Team found a time slot to meet outside of class - **DONE**
- Github master chosen - **DONE**
- Team decided and agreed together on using the listed SW tools and deployment server - **DONE**

- Team ready and able to use the chosen back and front end frameworks and those who need to learn and working on it, along with study schedule - **DONE**
- Team lead ensured that all team members read the final M1 and agree/understand it before submission - **DONE**