SW Engineering CSC648/848 Fall 2019
Milestone 2

Team 106
“Cloud Fridge”

George Butler: gbutler@mail.sfsu.edu - Team Lead, Github Master

Sydni Starling - Scrum Master
James Day - Back-End Lead
Tommy Nguyen - Back-End Developer
Aung Hein - Front-End Lead
Raymond Gee - Front-End Developer
Jian Xin Qi- Developer

Date	Version	Description
9/19/2019	1.0	First Draft

1. Data Definitions V2

Unregistered Users

An Unregistered User is a user that has not registered for a User Account and will not be able to access any functionality of the site except for being able to register. They will not be able to log in, add a Food Item, or access their Food List. Since they are not registered, they do not have any saved data in the database.

Functionality

- Can register for a User Account to begin adding a Food Item to create a viewable Food List
- Cannot log in, view Food List, or add a Food Item

Registered Users

A Registered User is a user that has registered for a User Account. They can login to the site (though they will be automatically logged in if they have logged in previously in that machine), create a Food List, and add a Food Item to an existing Food List. In order to become a Registered User, the user must sign up with their Name, Email, and a Password. After they sign up, they are automatically assigned an Id, as well as the date when their account was created and when it was last updated. They may also add a goal afterwards to keep track of their food goal.

Functionality

- Can login using User Account information, view and create Food List(s), and add Food Item(s) to said list.
- Automatically assigned an Id, and tracks when the User Account was created and last modified
- Can create a goal after signing up, in order to keep track of their food goal

Attributes

- Name (String)
- Id (Integer)
- Password (String)
- Email (String)
- createdAt (Date)

- updatedAt (Date)
- Goals (String)

Food List

A Food List is a list that a Registered User may create to keep track of Food Item(s). Currently it can be modified by the Registered User by adding a Food Item, deleting a Food Item, or deleting the Food List all together.

Functionality

- Can hold Food Item(s) that a Registered User adds

Food Item

A Food Item is an item in which a Registered User may create and add to a Food List. Currently, a Registered User can create and add a Food Item to a Food List that holds the name of an item, the price, the quantity, an important nutritional value worth tagging or filtering by, the expiration date, an automatically generated id, an automatically generated date it was created and last updated.

Functionality

- Food Item(s) takes input from Registered User for name, price, quantity, expiration date, and a nutritional fact that attributes to a Tag & Filter system
- Automatically creates an Id for the item, as well as when it was created and last updated

Attributes

- Name (String)
- Price (Float)
- Quantity (Integer)
- Nutrition (String)
- Expiration Date (Date)
- Id (Integer)
- createdAt (Date)
- updatedAt (Date)

List Management

List Management refers to the options that a Registered User has to modify their Food List. It does not exist in the database as a stored entity or attribute, rather, what the

Registered User can do with the data. They can manage their Food List by adding Food Item(s) to it via manually input or uploading a picture of a receipt, can delete an item from the Food List by pressing the X button (that represents a removal button).

Functionality

- Describes the functional options modify the Food List
- Modifies the Food List by either adding more Food Items (via manual entry or with upload of receipt image), or removing Food Items (via the tap of the X button next to each Food Item, signifying the ability to delete)

Tags & Filters

Tags & Filters refers to the category in which the Food Item falls under. Some example Tags & Filters would be the type of food it is (meat, vegetables, snacks), and could be used to provide a monthly summary of what the Registered User(s) food habits are (if they eat a lot of meat, the summary would tell just that). Future features may include Food Item Tags & Filters based on their nutritional value (high sugar content, low sugar content, etc).

Functionality

- Tag Food Item(s) with a nutritional feature, and utilize information to create a summary of the Registered User(s) food habits for the month

2. Functional Requirements V2

Priority 1

1. **Inventory**
    - 1.1. Add food items mainly through receipt upload while also allowing for individual item additions through text/barcode input.
    - 1.2. Delete items manually or automatically when quantity reaches 0.
    - 1.3. View item information (quantity, brand, nutrition, RFID).
    - 1.4. Search for items by name or brand.
    - 1.5. Notify user of food expiration.
2. **Recipe Suggestions**
    - 2.1. Offer recipes based on ingredients you already have in your fridge.
    - 2.2. User can search for recipes that use specific ingredients
3. **Shopping List**
    - 3.1. Ability to create a shopping list for regular grocery shopping.
    - 3.2. Create a shopping list based off recipe suggestion.
    - 3.3. Allow user to simply add shopping list items to inventory instead of needing receipt input.
4. **Food Report**
    - 4.1. Display report on user's food consumption for the month.
5. **Unregistered User**
    - 5.1. Can register for a new account.
    - 5.2. Cannot use functions of the application, such as adding food items, until registered.
6. **Registered User**
    - 6.1. Can login and change settings in their account, such as password, email, etc.
    - 6.2. Has full access to all functionalities of the application.

Priority 2

1. **Inventory**
    1.6. Extend search functionality by allowing user to add tags/filters to items that act as search terms.
    1.7. Can order list of inventory based on attributes such as expiration date, quantity, etc.
    1.8. User can set text color of items to more easily identify and categorize items.
4. **Food Report**
    4.3. Food report shows nutritional intake.
    4.4. Give suggestions on what to eat more or less of based off average daily recommended intake.
    4.5. Customize report by allowing user to select what they want and do not want shown on the report (nutrition, calories, food suggestions).
5. **Unregistered User**
    5.3. Can “demo” the application using a temporary fridge that allows adding items and customization.
    5.4. Must register if they want to save the temporary fridge contents and customization.
7. **Item Presets**
    7.1. Have item presets for commonly bought food items to reduce the need for manual input from user.

3. UI Mockups and Storyboards (high level only)

User Case - Paul

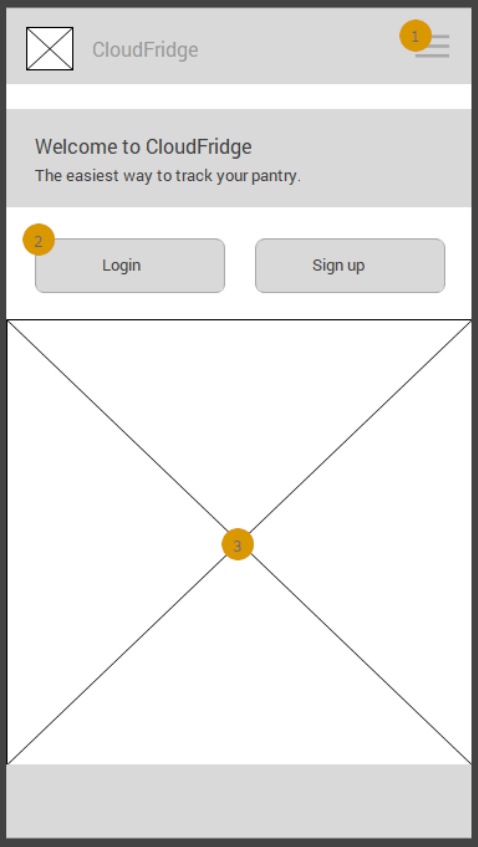
Paul (54, M) is married to Margaret (52, F), and they have two kids; Jason (16, M) and William (20, M). William and Jason live with their parents still, as they both attend school. Jason goes to a local high school called Balboa High School, while William is preparing to transfer to San Francisco State University from the community college he is currently attending (City College of San Francisco). Margret works as a dentist in downtown, and Paul works in construction.

Paul is an all around family man; he loves to tinker with cars in his free time, but prioritizes spending time with his kids and wife whenever he can. When Jason and William were a little younger, he was always busy working to support the family. Margret was still not a full time dentist, so he worked to support the family and her until she was able to succeed with her dreams. Being away from his family was hard, and made him appreciate how important family time is.

He tries to take an interest in what his kids are up to, as he feels that he has grown out of touch with what is “hip”. Though he does not care about what is trending, he does care about what his kids are interested in, and always tries to get involved. For his daily routine, he prepares lunch for him and his wife to bring to work to save some money, talks to his kids over breakfast before its time to go to work, goes to work, comes back home, and pokes his head in their rooms to figure out what they are up to. Paul does his best to give them space, but he has a hard time holding himself back from spending time with them. Recently, Paul notices that Jason and William have been buying more food to put in the fridge. They used to just eat whatever was in the fridge and buy junk food to bring home on their way back from school, but now they bought ingredients such as eggs, ground beef, and more. Paul asked his kids why they bought food when there was still food in the fridge, and sometimes even the things that were already in the fridge.

Jason and William explained that they wanted to learn how to make their own meals, and were grocery shopping for the ingredients. However, they discovered that when they went shopping, they didn’t know what exactly they had to buy. They knew what ingredients they needed for the recipe, but they didn’t know if the fridge had the ingredients they needed, or if it did, if it had enough of what they needed. Jason and William never had to keep track of these things before, as they never cooked.

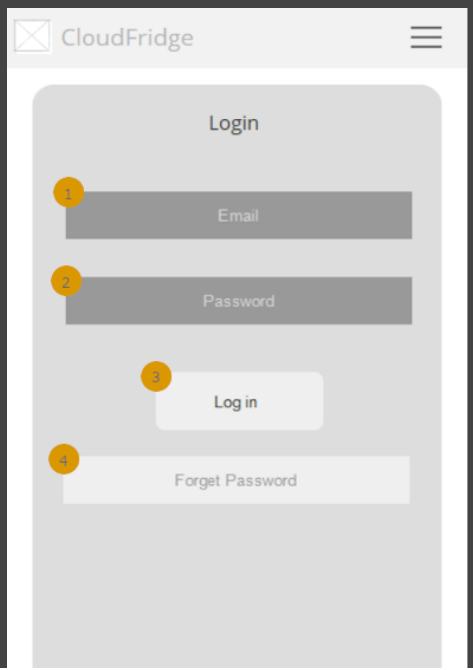
Paul fully supports this notion; he likes the idea of his kids growing more independent, even though it makes him sad to think they will rely on him less. Paul thinks this problem can be solved temporarily by texting him and Margret and asking them what is in the fridge, but this will not always work as even they do not remember everything that is in there. Paul needs a way to keep a list of food items that are in the fridge and share it with his family easily. He does not want to waste time with making a list and adding food items one by one every time he buys food, but to still have that option in case technology fails him.



1) a menu for the user to navigate for signing in or go to account setting

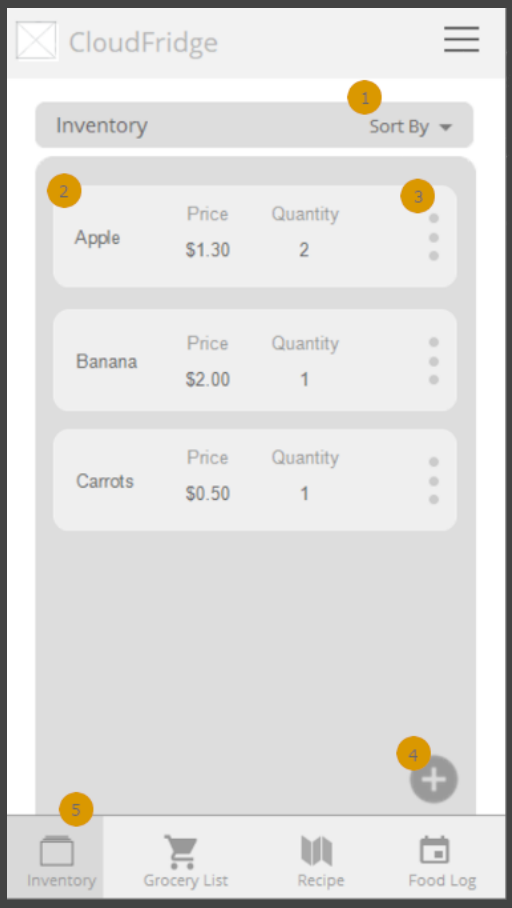
2) Login and Sign up Button which will show up if it's the first time for the user

3) a pleasing image to complement and welcome new users



If they have an account they will use this login page with appropriate account passwords and email

4) If they forget their password, a simple forget password option



1) Sorting option for easier trackign of the items in the inventory instead of shifting through the one by one. You can sort by price, quantity, alphabetical and type

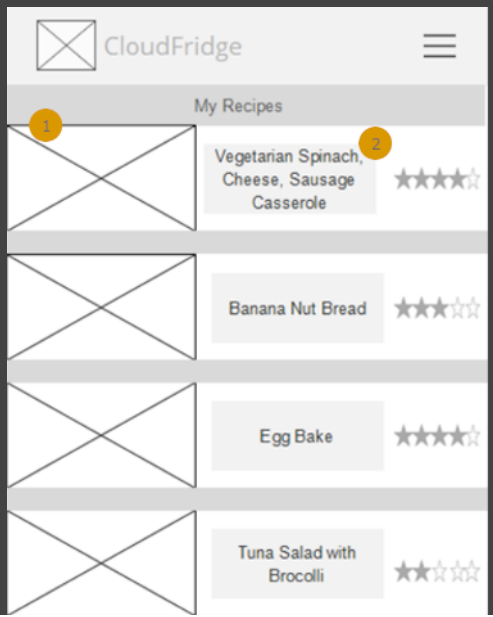
2)The information sheet of each item which includes the price and quantity. The values change be changed once tapped on.

3) an option to remove item or move to a different tab.

4) a button to add more items which is easily accessible and doesn't get in the way of displaying the item information

5) A menu bar which the user can navigate through without additional screens

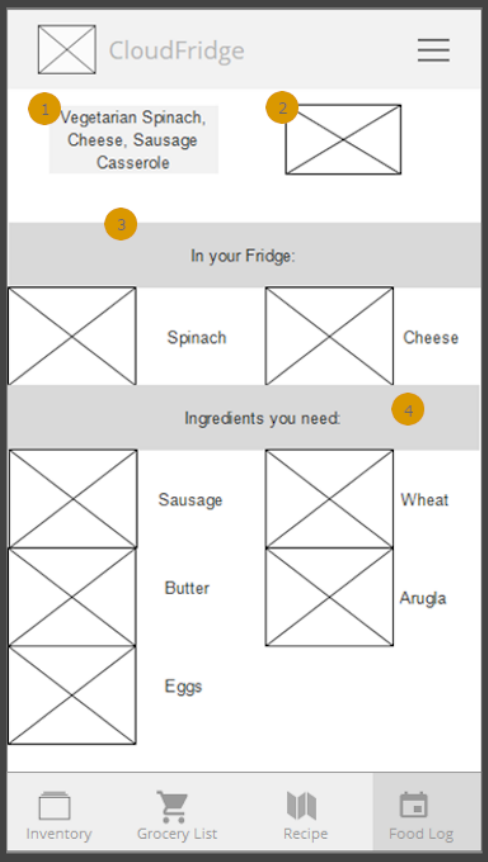
.



1) An image which will show what the food looks like so the user has a good idea of what he/she will be making.

2) Name of the food and a rating which can be from a specific community depending on what source we will use.

3) The recipe tab is highlighted to display that the user is in the recipe section.



2) image of the food the user will make

3) Shows what ingredients you have in the fridge

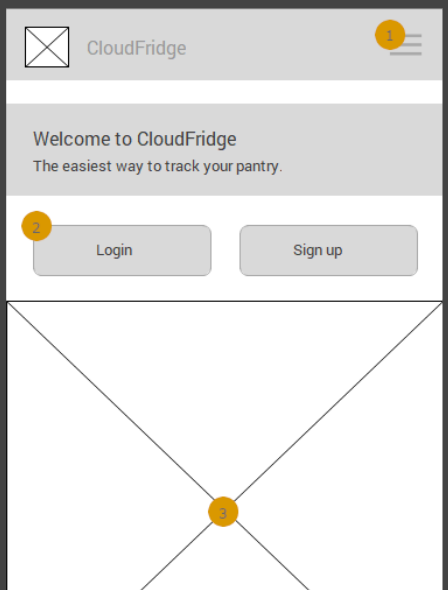
4) Ingredients that isn't in the fridge and required to make the dish

User Case - Sarah

Sarah (24) is a college student who has recently become a full-time personal trainer at her school gym. Sarah has always been into fitness and knows how important it is to eat healthy and nutritious meals to fuel her body. As an athlete Sarah has always been active and burns an excessive amount of calories. Sarah is always on the go and lives a non-stop lifestyle. She wants an app that is user friendly and is easy for her to keep track of items/food she has at home all while counting her calories throughout her busy weeks. Sarah recently struggled with losing a lot of weight due to her not eating enough with her busy lifestyle. Sarah wants a way to have access to logging her food and trying to maintain her caloric intake goal each day so she can maintain her weight and muscle.

Sarah's roommates don't eat as much as her due to their different lifestyles, often times Sarah forgets she needs to be eating more than her roommates for as much as she is working out and burning calories as a personal trainer. Sarah is hoping by logging her calories and having a way to quickly check how much she has eaten it will keep her on track with her food intake, all while also meeting her goals.

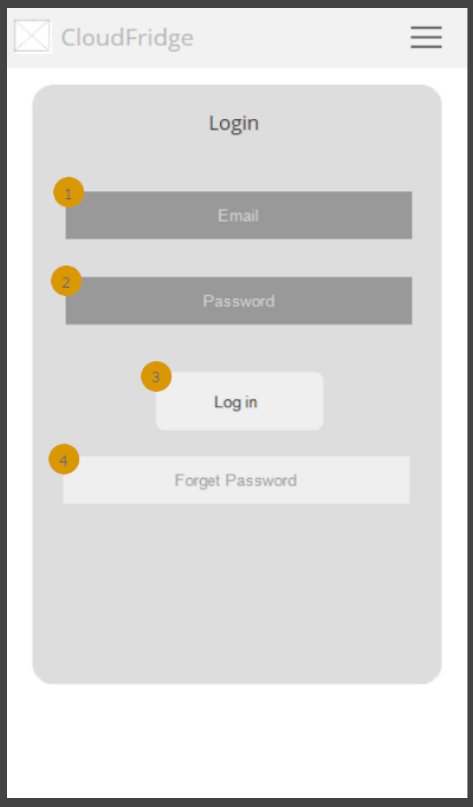
Sarah also only has time to go to the grocery store once every two weeks and needs a way to check what items she already has at home in the fridge while she's at the grocery store. She doesn't want to have to remember what she's eaten and what meals she needs. Sarah is a full-time college student and personal trainer who has a very active life. Sarah needs a way to help her make sure she is eating enough calories to keep her body happy, healthy and full so she is able to perform to the best of her ability.



1) a menu for the user to navigate for signing in or go to account setting

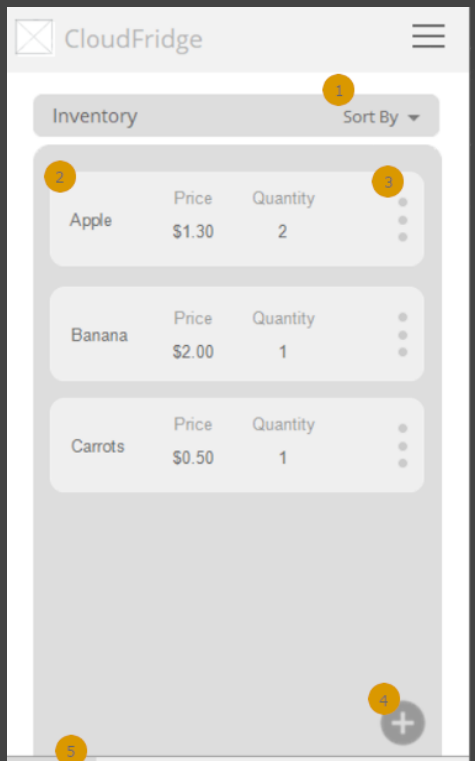
2) Login and Sign up Button which will show up if it's the first time for the user

3) a pleasing image to complement and welcome new users



If they have an account they will use this login page with appropriate account passwords and email

4) If they forget their password, a simple forget password option



1) Sorting option for easier trackign of the items in the inventory instead of shifting through the one by one. You can sort by price, quantity, alphabetical and type

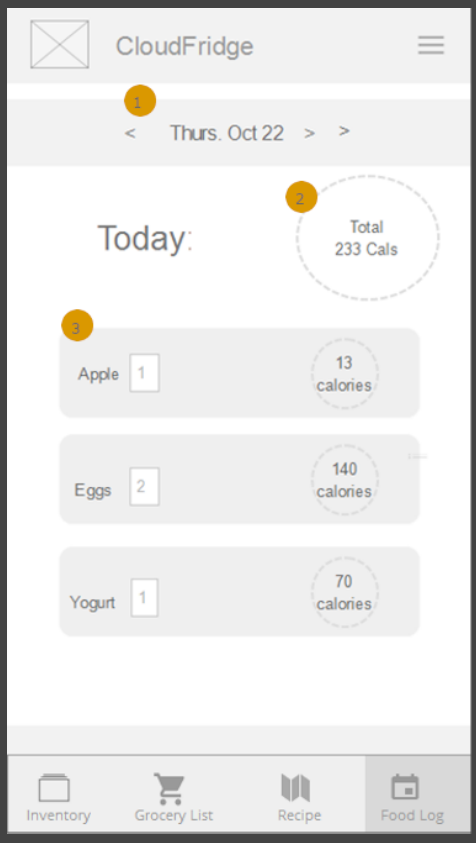
2)The information sheet of each item which includes the price and quantity. The values change be changed once tapped on.

3) an option to remove item or move to a different tab.

4) a button to add more items which is easily accessible and doesn't get in the way of displaying the item information

5) A menu bar which the user can navigate through without additional screens

.



1) User can scroll through different days. The food log tracks whatever the user ate daily and shows the calorie count.

2) Display today's calorie count

3) Food consumed today listed with amount and name as well as the respective calorie count

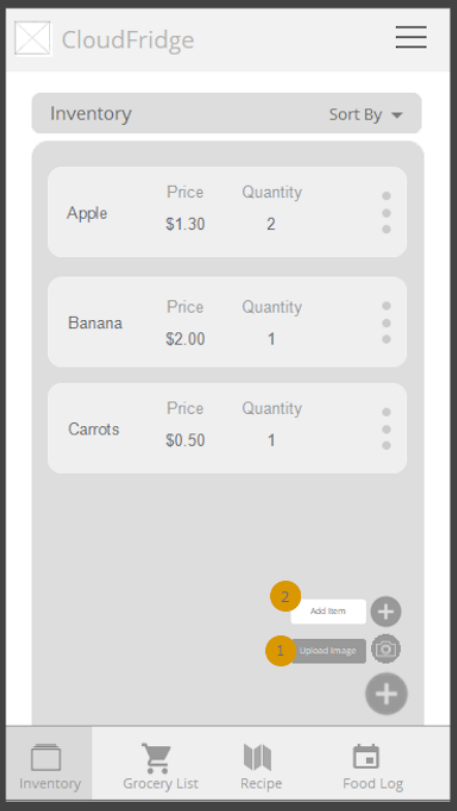
User Case Mary

Mary (32, F) is a mother of a 5-year-old child. She lives in an apartment with her son and spends most of her time either doing household chores or taking her son. Her sons name is David, named after her own father who she loved dearly. Her father did everything he could to make sure Mary had a good life by spending as much time as he could with her, and now Mary wishes the same for her son. Between being a mother and a full-time employee, Mary does not have much time or energy to spare.

Every weekday, Mary drops her kid off at elementary school, goes to work, picks her kid back up, goes home to make them food, and then begins to do chores. After that, it is bedtime and the beginning of another day of much of the same thing. As much as Mary would love to spend some time on the weekends for herself, perhaps watching her favorite shows on Netflix (particularly Brooklyn 99), she must go grocery shopping and

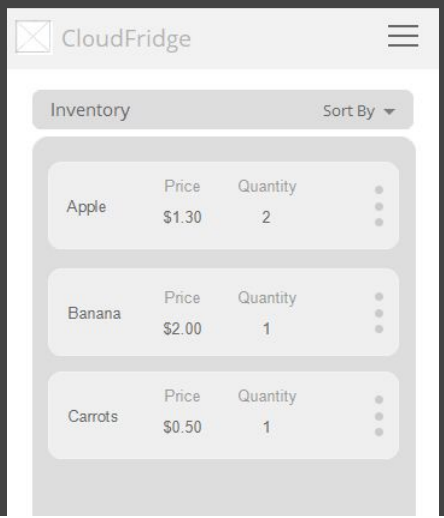
make sure they have enough food to survive the week. Mary likes to stay on top of things and is great at multitasking, but between juggling a job and a child, sometimes her memory fails her.

With how little time Mary has, Mary needs to know if she has enough ingredients in the fridge to make dinner without standing in front of it. She does not want to waste money on buying ingredients she already has. Currently, she solves the issue by trying to remember or write a list before she goes out to shop. But at the end of the day, she does not want to have to try to remember or update a list of items she has in the fridge. Mary just wants a fast and simple way to make a list and access it through her mobile device.

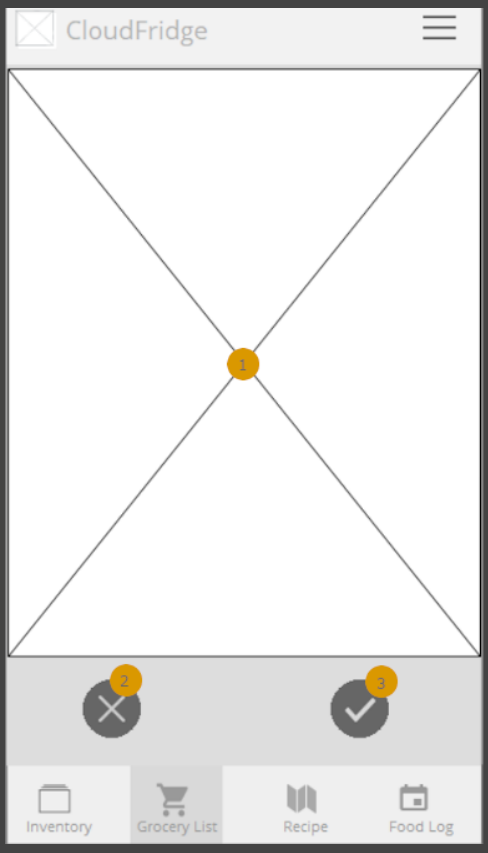


1) Option to Upload an image when tapped it'll prompt the gallery on phone

2) Option to add the item Manually



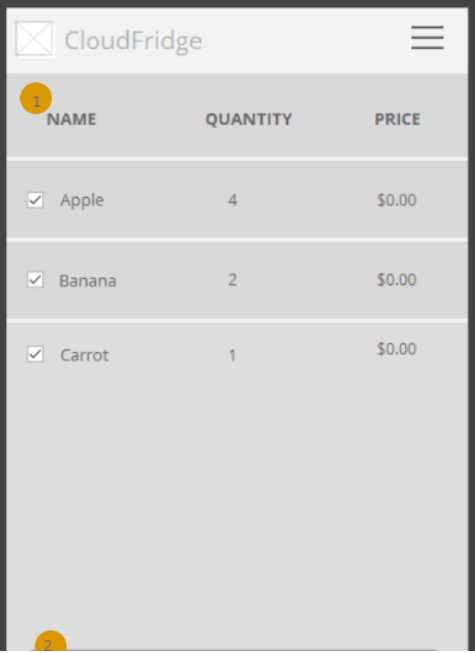
The phone gallery screen pops up for the user to choose.



1) Image of the receipt

2) Delete the current receipt and try again

3) Confirm that recipe is the correct one



1) After uploading the image, this screen will list out the items parsed by the receipt sorted by name, quantity, and price. The items comes prechecked so if the user wises to remove any item, they can do so by unchecking. The properties of the item can also be edited by tapping on them.

2) Confirm the items

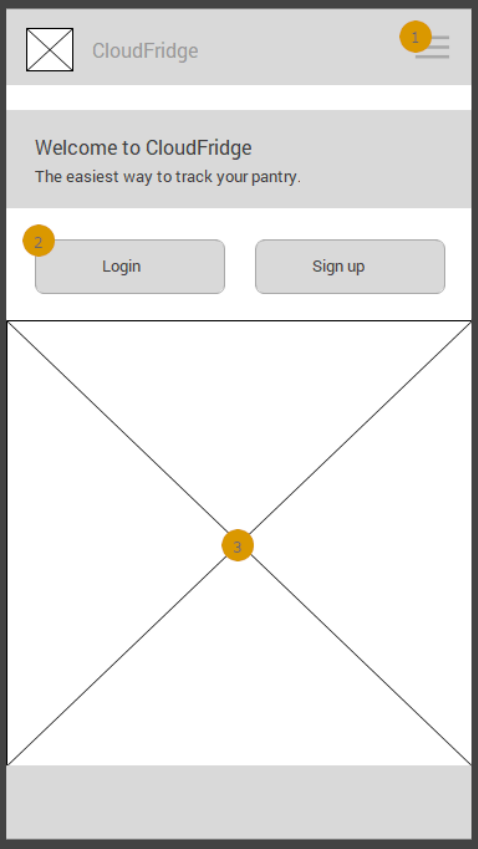
User Case Max

Max (23, M) is fresh out of college working his first job at a tech company in San Francisco. He lives in a modest apartment in South San Francisco, as it is close to his workplace, but much cheaper than an apartment in San Francisco. He likes to learn and try new things in his free time.

Max loves new technology, so instead of furnishing his place, it is littered with the next generation tech. In particular, he loves the convenience it brings and tries to use new technology in every chance he gets. When he has to pay for something, he always tries to use the mobile payment function on his Samsung phone before resorting to his credit card. Max commutes to work by riding his electric skateboard to the Bart, and takes the train all the way to Montgomery, where his workplace is a few blocks away from. Max loves socializing with his coworkers, so when lunchtime comes around, he buys food with his coworkers from a nearby food truck and goes back to chat with them. After work, his coworkers tend to go out for dinner. Max wants to go with them but knows that if he buys food twice a day, he would go over his budget. He needs to save some money for emergencies, but also for when the latest technology drops.

As time goes on, Max notices one of his coworkers, John, has started to bring in his own lunch. Max asks him about his food, and John replies that he has discovered technology that has changed his life: a timed crockpot. John explains that he has been having trouble saving money and decided to make his own food. That way, he has food for lunch at a cheaper price, and can still socialize with his coworkers.

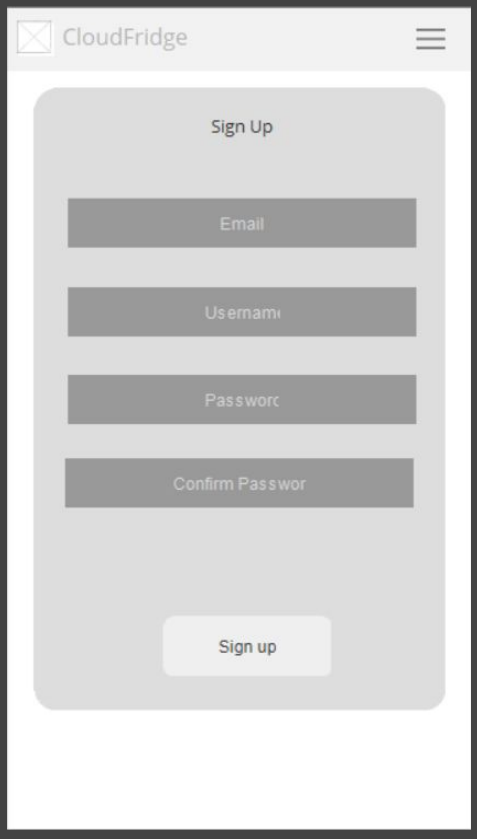
Max think this is a great idea. Currently Max solves the problem by compromising and not going out for dinner with his coworkers. But by following in John's footsteps, he can not only hang out with them during work, but after work as well. Without hesitation, Max goes home that night and orders the latest crockpot that allows him to cook with minimal effort, while letting him try out some new technology. Now he just needs a way to keep track of ingredients he buys in order to make the most of his money. Max knows that he can make a list on his phone by manually adding things he buys one by one, but he thinks it is a hassle. With all the new technology floating around, Max thinks there must be a better way to keep track of things he buys to store in the fridge.



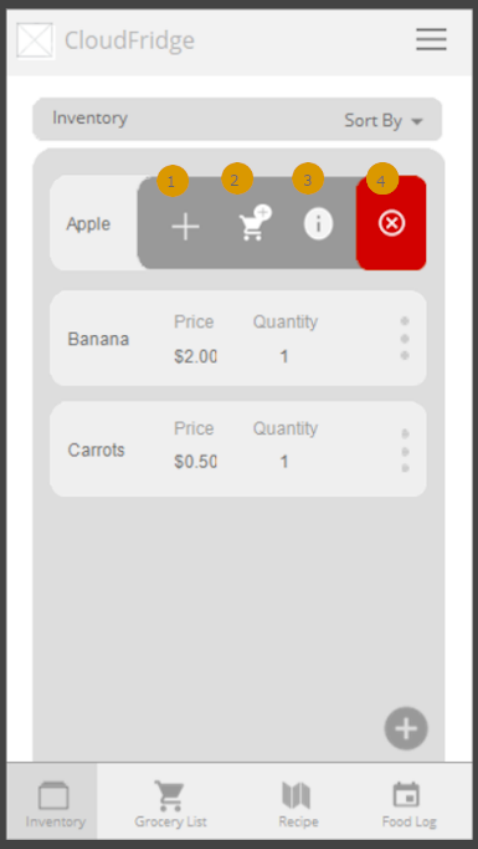
1) a menu for the user to navigate for signing in or go to account setting

2) Login and Sign up Button which will show up if it's the first time for the user

3) a pleasing image to complement and welcome new users



Sign up option if the user doesn't have an account. Provides simple information such as username, email and password. At least for now, this is the primary info that the sign up page will have.

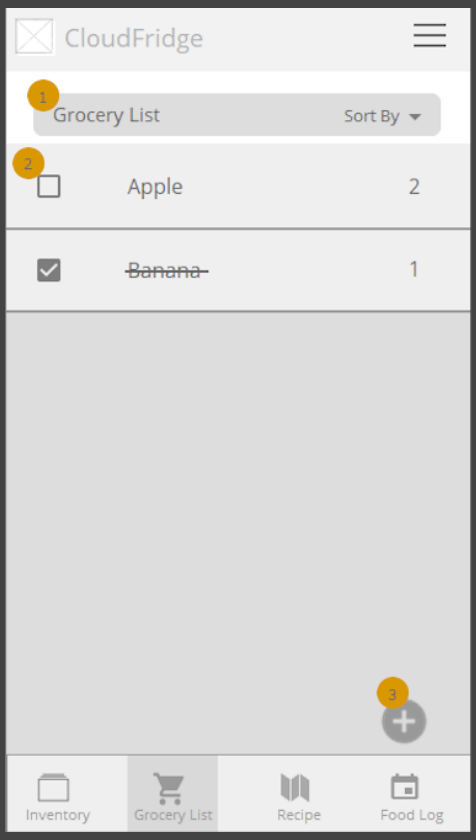


1) Adds current item to food log

2) Adds current item to the grocery list for ease of access without the need to manually add it again

3) Information of Item such as expiration date, price, nutrition information

4) Delete item



1) The same type of header with name of tab and sortable option

2) Shows added items which can be used to track what items the user want to buy. If checked off, the items get crossed out

3) Option to add item manually

4. High level Architecture, Database Organization

DB Organization

Our database has the following entities and their attributes:

- **Entity: User**
- **Attributes: Name(String), Id (Integer), Email (String), Password (String), createdAt (Date), updatedAt (Date)**
- **Entity: Item**
- **Attributes: Id (Integer), Name (String), createdAt (Date), updatedAt (Date)**

Media Storage

Our application allows the Registered User to upload an image of a receipt for processing. The image is sent to the server where it is then scanned by OCR API, the results are sent back to the client and the image is then deleted from the server.

Search/Filter Architecture and Implementation:

The way our application will search is by using SQL to select data from the database. The Registered User will be able to search if a Food Item is currently on their Food List. They will do this by filling out a search textbox with the specific Food Item name, and completing the search request by hitting a button labeled “search”.

Then, the application will take what is in the search textbox field, and create an SQL query that will search the Name attribute in the Food Item entity in the database that matches.

Your Own APIs (if any)

Non-Trivial Algorithms

We plan on implementing a Tags & Filters system that allows Food Item(s) to be marked with their food type or a nutritional value that the Registered User would care about (calorie, sugar, fat). With this information, we plan on creating an end of the month summary, in which we can conclude if the Registered User had a month filled with a lot of Food Item(s) that are meat type, or a lot of calories.

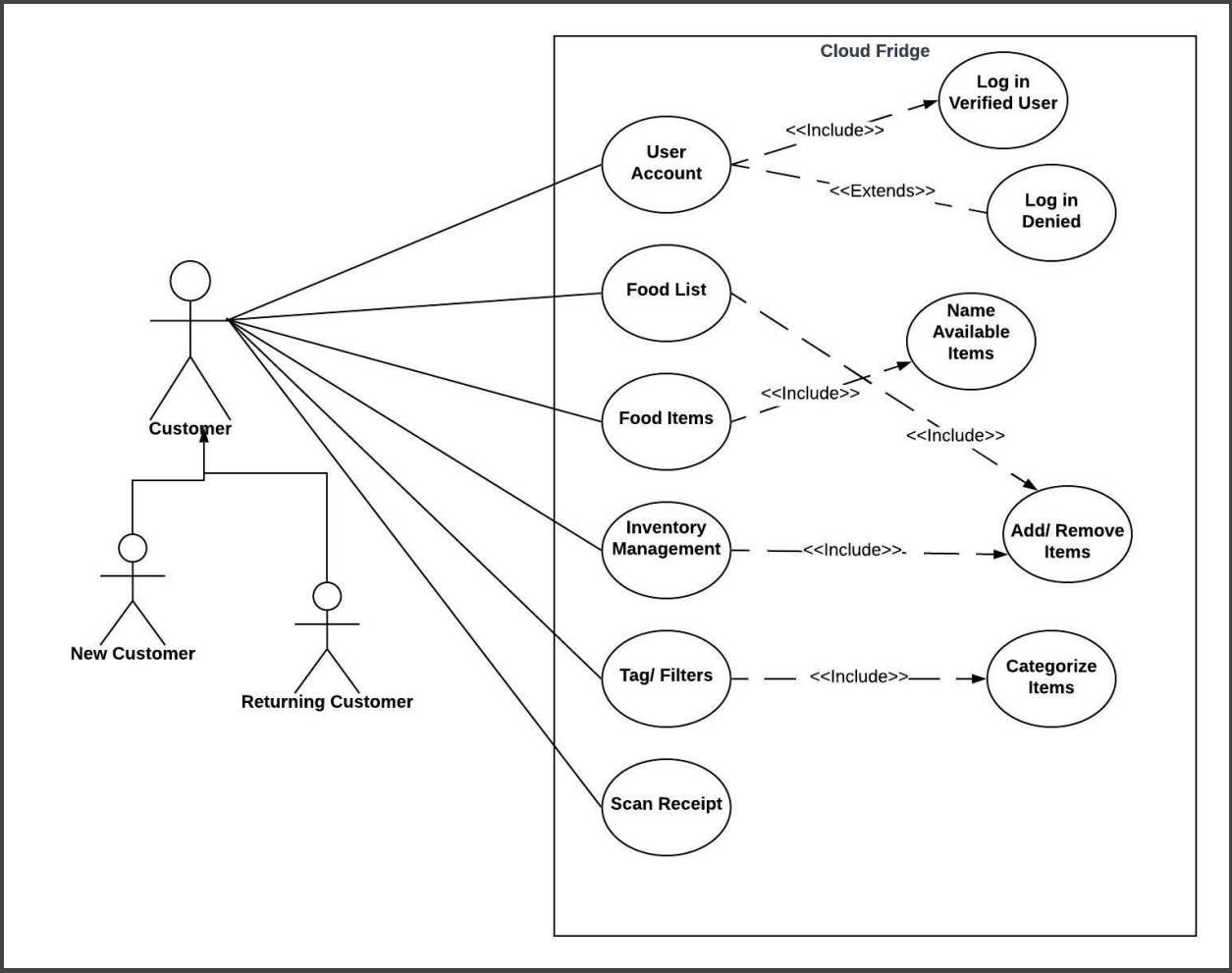
Any Changes in Software

We changed our framework to Laravel because we were having trouble getting the environment working for each individual team member. With this change, each team

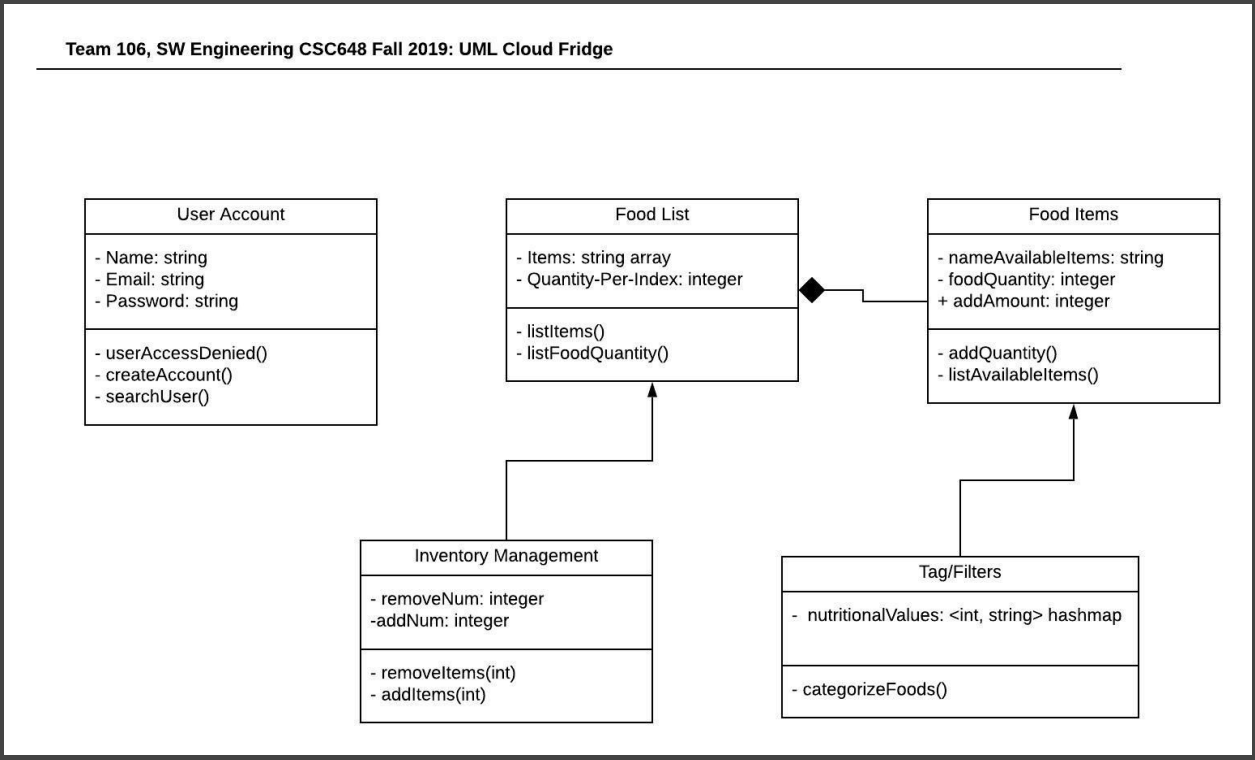
member will be able to setup the environment more easily, regardless of tech specification that each member has access to.

5. High Level UML Diagrams

a. UML Use Case Diagram



b. UML Class Diagram



6. Identify actual key risks for your project at this time

- **Skill Risks (do you have the right skills)**
    - **The main skills risk for this project is the team's ability to learn the framework, Laravel. Laravel is a web application framework which uses the coding language, PHP. Most members of the team have little experience with PHP. The solution for this is for every member to learn the basics of PHP and grow from there as the project requires.**
- **Schedule Risks (can you make it given what you committed and the resources)**
    - **The schedule risk in our team is fairly low. Having both the ability to meet physically and online allows constant communication.**
- **Technical Risks (any technical unknowns to solve)**
    - **o**
- **Teamwork Risks (any issues related to teamwork)**
    - **Teamwork has been strong since the beginning of the project. If there were issues then either the scrum master or team leader would be able to sort through and resolve them.**
- **Legal/Content Risks (can you obtain content/SW you need legally with proper licensing, copyright)**
    - **Everything generated in this project will mainly be created with in our team. Api/libraries or even photos and data used during the project will be properly credited for their uses.**

7. Project Management

For milestone 2, we separated each section to different team members so that it was easier and more efficient. For the UI Mockups the two front end developers worked together to plan out the structure of how the website should look. We used Justinmind Prototyper for making the mockup. It has a good chunk of easily accessible and usable resources that anyone can pick it up right off the bat. The front end created the Home pages, log in and sign in page, as well as other necessary pages for the user to flow through.

The data definitions and functional requirements were pretty straight forward since we already have a good idea of what will be going into our application. Backend wise, we decided to switch to another framework because we were having trouble setting up the right environment on everyone's local machines. So we switched to Laravel. a free open source PHP web framework because it has all the necessary tools embedded without the need to look for external libraries or frameworks for our application. And because of this, it was easier for everyone to get set up on their respective machines.

After we get the Milestone 2 approved. We'll be moving forward with implementing the UI designs and looking at what will work and what won't.