

## **CSC 648-03 Fall 2019 Software Engineering**

### **Milestone 1: User Stories & High Level Concepts**

#### **Team 103 - *Fridge Tracker 9000***

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**Due: October 4, 2019**

#### **1) Executive Summary:**

With the ever increasing complications piling onto peoples' lives here in the Bay Area, the level of devotion to simpler every-day tasks is diminishing rapidly. Single parents, married couples with teenagers, startup employees, and college students alike take on incredibly busy weekdays leaving little to no time for healthy home or work living. We believe that the center of the healthy home life is the refrigerator and its contents. The importance of refrigerator management is paramount to the success of healthy habits and easy food organization. Our motivation for this project is to meet the needs of everyday busy-people, who find it tedious to organize their refrigerators, and the financial significance of preventing grocery products from potentially going to waste.

To meet the needs of these people we are creating a mobile web application designed to maintain an inventory of products in a user's refrigerators. With this application a user can hold a log of the multiple refrigerators within their access including examples such as a home and office refrigerator.

*At Home:* All items kept at a person's home refrigerator will be managed by the application allowing our user to easily check up on what items are currently available in the refrigerator from anywhere. From these items, recipes can be recommended based on what's available and new recipes can be found while saving ingredients not currently in the fridge in a grocery list. Frequently purchased items can be saved for monitoring and inclusion in the grocery list when the item is used up. Families can share the fridge which allows kids to request items for the grocery list and parents to manage the items their children are eating. Therefore, no matter what items are within the refrigerator, users can always have a reliable recipe ready to prepare.

*At Work:* Employees sharing a refrigerator can keep track of the owner of items within the refrigerator forever eliminating the devastating "Who ate my food" argument.

In an effort to make refrigerator item tracking as easy as possible we have implemented a few advanced technologies aimed at simplifying the fridge-human relationship. An optical character recognition system, allowing a user to take a picture of their receipt, automatically adds purchased items on said receipt onto the list of fridge items. An easy-to-use interface permits the user to focus on procuring necessary grocery items only instead of purchasing multiple goods. The user is always in control.

## 2) Personas & User Stories:

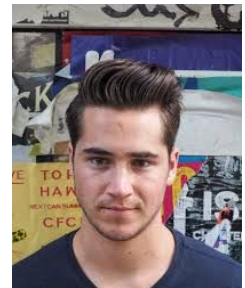
### Story #1 (Written by:Doug):

- Joseph McDonald
- 32 year old who lives by himself in a San Francisco apartment. He is a software engineer at a startup close to where he lives. His family has lived in the Bay Area for many generations now. Sometimes Joe goes to visit his parents for dinner and other times he goes out to restaurants with his coworkers after work. For hobbies, Joe goes backpacking at national forests and plays basketball at his local gym.
- Joe's everyday routine involves waking up early for work. Most of his time is spent at work developing his startup. The company he works for often provides lunches and snacks for their employees. When he can, Joe brings salads from home, or other healthy options.
- Joe usually does not have time for cooking as he is so busy with his work life. When he does want to cook or plan to bring lunches to work, he struggles with remembering what is in his fridge and or what food he needs to buy from the store on his way home.



### Story #2 (Written By:Wilson):

- John Conwell
- Age: 29
- Lives alone with his 10 year old daughter: Sarah
- John Conwell, a single father in his late 20's has a daughter in elementary school. He is very tech-savvy and does everything on his phone when it comes to planning out his day and checking his email.
- He works at a busy new startup in downtown San Francisco. At the end of the day he gets off work at 5 o'clock and picks up his daughter, leaving him without much time to do anything else, but get home and prepare dinner for him and her. His job sometimes requires him to come in on weekends or work longer hours, so he just decides to get groceries once a week, whenever food is running low, right after he picks up his daughter. On the morning of, he inputs all of the food items in his fridge into a word document on his phone, so he can remember what is in the fridge when shopping at Safeway. He finds that he



tends to waste time during grocery shopping, thinking about what to get. John would like an app that would allow him to inventory his items, as well as store his or his daughter's favorite food items and recipes so he doesn't waste time at the end of a long work day wondering what to buy, while his daughter is telling him that she's tired and wants to go home.

**Story #3 (Written By: Gangzhaorige):**

- Family of 4: Parents - Alis and Bob, Children - John and Tom
- Alis and Bob are both 55. John is 26. Tom is 22
- The whole family lives together in the same house
- John is a graduate student. Tom is an undergraduate student. Both of them are enrolled at San Francisco State University. They both have a part time internship during the semester.
- Father Bob works as a full time as a software engineer. Mother Alis is a stay home mom.
- Bob, John, and Tom usually come home around 7 o'clock on work days.
- Alis wants to be a good wife, mother, and chef. Alis is usually forgetful. When getting the groceries she forgets what is inside the fridge. She needs an application to remind her what is missing from the fridge. To cook delicious fresh dishes for her family she also needs to know what to buy during the grocery run. She needs an application that allows her to enter an entire dish recipe that could show all available ingredients in the fridge and their amount and all missing ingredients she needs to buy from the market.



**Story #4 (Written By: Abhi):**

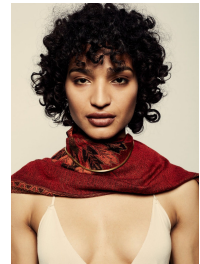
- Doug is a sports player and plays basketball as a way to relieve stress and usually likes to keep a pack of cooled beer and gatorade drinks with him.
- Abhi is a gamer person plays multiple games and spends his time on his laptop. He rarely cooks anything and uses meal alternatives such as soylent drinks for nutrition.
- Wilson plays football, soccer and goes to the gym to do weightlifting. He keeps on strict diet and takes a lot of milk, eggs and protein in his diet.



- Nina likes to create cereal recipes and keeps a lot of coconut, hemp seed, milk in the fridge.
- Gangzhaorige is also a gamer dude and plays a lot of games. Gangzhaorige and Abhi play various games together and he likes to eat fruits and smoothies.
- Joshua is a passionate photographer and a good coder. He spends most of his time clicking pics of creating new dishes, different flavours of ice cream and clicking amazing photos of food and wildlife.
- Students (Nina, Abhi, Doug, Wilson, Joshua, Gangzhaorige) are doing software engineering project together and are sharing an office and also plan to take the project and make it into a startup. Usual foods they store are frozen foods, fruits, Beer and ice cream.

#### **Story #5 (Written By: Nina):**

- Nyla Mir, a senior-level high school student studying for the SAT exam while working a part-time job as a Subway fast-food sandwich artist in the suburbs of Austin lives with her dad. Every other week, Nyla spends the weekends at her mom's house because Nyla gets to play with her mom's 3 golden retriever labradors.
- While Nyla is a vegetarian, none of her parents are vegetarians and actually both oppose Nyla's diet choices and refuse to consider her dietary restrictions when obtaining groceries.
- Nyla loves to make soups and salads for lunch and dinner and healthy oat and milk garnished with nuts, coconut shreds, strawberries and chia seed.
- Nyla needs to know what ingredients are in either of the fridges she has access to. She thinks if both her mom and dad and herself use a fridge app to keep track of their food in the fridge, she will end up spending less money on groceries and could use as many groceries as possible from her parents' fridge at all times. Working at Subway at minimum wage level of State of Texas does not allow for much of any savings or a wasteful lifestyle.
- Nyla and her parents are all technology savvy and use many google products and Amazon Alexa.



#### **Story #6 (Written By: Joshua):**

- Family of 4: Parents - Alex and Jennifer, Teenage Kids - Jenny and Jack



- Alex and Jennifer are both 48 and their kids are 15 for Jenny and 17 for Jack
- Living in their two story home with their dog Skippy
- Jenny and Jack are both enrolled in multiple extracurricular activities which keeps them busy long after school for the day has ended.
- Both parents have rigorous full time jobs often times requiring them to work late into the evening.
- Parents go grocery shopping once per week to keep up with their own and their kids' needs. As they have two kids the family goes through food rather quickly necessitating the need to maintain an organized ledger of the items currently stored in their refrigerator. The family would like to have an application that would allow them to see what items are currently in their fridge, check what is expired, see what recipes they can make, have their kids request items from the market, and have kids see what snacks they have to consume when they get home from school. The parents switch off cooking duties which usually consist of planning meals a day beforehand.

### 3) Data Definitions:

Users	Refrigerators	Items
<ul style="list-style-type: none"> <li>• Name</li> <li>• Username</li> <li>• Password</li> <li>• Email</li> <li>• Owned Fridges</li> <li>• Friended Fridges</li> <li>• Saved Recipes</li> </ul>	<ul style="list-style-type: none"> <li>• Fridge Name</li> <li>• Owner</li> <li>• Friends</li> <li>• Items</li> <li>• Date of Creation</li> <li>• Date of Deletion</li> <li>• Item Add_Date</li> <li>• Item Added_by</li> <li>• Grocery List</li> </ul>	<ul style="list-style-type: none"> <li>• Item Name</li> <li>• Size (If Applicable)</li> <li>• Expiration Age (time from input)</li> <li>• Perishable (Boolean)</li> <li>• Calories</li> </ul>

- Global database of fridge items: A hard-coded database of ~40 items that our app is equipped with including item name, item expiration age, perishable or not and such.
- Fridge Owner: A user that creates a fridge is the owner of a fridge and can add/remove friends to a fridge and delete the fridge.
- Fridge Friend: A fridge owner can add friends to a fridge who could add/remove items. A fridge can have unlimited friends.
- Expiration Age: A default “expiration age” of an item is automatically calculated as the user adds the item to the fridge. This age is based on the estimated expiration age of an item stored in the global database of fridge items. Example

when a user adds milk to the fridge the automatic date of expiration will be set to two weeks from input to the fridge.

- Item Added\_by: The friend or owner who added the item to the refrigerator.
- Item Add\_date: The date on which the item was added, this will be used to calculate the expiration date of the item.
- Grocery List: An auto-generated list of grocery shopping items sent to the fridge owner

#### 4) Initial List of Functional Requirements (With Priorities):

- Create and log into user accounts (P.1)
- Users can own single/multiple fridges (P.1)
- Fridges have one owner and multiple possible “friends” (P.1)
- Owners can add and remove friends to/from fridge(P.1)
- Users can upload photos of receipts, items on that receipt will be recognized and matched to the global item database then added to fridge.(P.1)
- Fridges store items. Items have expirations which are made easily visible to the user and will be notified close to their expiration date (P.1)
- Items can be added and removed at any time by any user who has access to the fridge(P.1)
- Grocery lists automatically generated and modifiable by all users (P.1)
- Recipes will be recommended to users based upon the contents of the fridge (P.2)
- Users can save recipes they’d like to try (P.3)

#### 5) Non-Functional Requirements

- Password encryption
- Application shall be optimized for mobile browsers.
- 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).
- 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.
- Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
- Site security: basic best practices shall be applied
- 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

<i>Feature Comparison</i>	
<i>Fridge Tracker 9000</i>	<i>The Competition</i>
Receipt Text Recognition	Barcode Scanner - <i>Keezeen</i>
Simple, Easy User Interface	Nutritional Information - <i>Grocery Hero</i>
Recipe searching, saving, and ingredient matching	Step by Step Recipe Instructions - <i>Epicurious</i>
Automatic Grocery List Creation	Manual Grocery Lists - <i>Most Apps</i>
Multiple Fridge Access	Single Fridge or By Lists - <i>Most Apps</i>
Notification of Expiring Items	Notification of Expiring Items

Aside from basic item tracking functionality, we believe our grocery tracking application offers a few noteworthy features which help it stand out from the current competition. Our web application will allow the user to store the content of their fridges on the app, just like most other apps on the market; apps like Fridge Pal, Grocery Hero, etc. Some apps use barcode scanning or object recognition of the food items, but we decided for our method of input would be through word recognition on a receipt, which would work in most cases of somebody just getting groceries. The items would only be from our own database, making it limited compared to other apps, but we chose this route because of the difficulty of using another repository of items. We are avoiding using more complicated systems because we want to keep the cost, and time of using and implementing such systems to a minimum. We would give users the ability to look up some recipes in some to be determined recipe repository. Our app will also support recording of expiration dates so users can keep track of their food’s freshness, which should be a competitive feature.

Reference: <https://learn.compactappliance.com/apps-for-your-fridge/>

## 7) High Level System Requirements

- Django - Framework
- Git - Code Management

- Apache - web server
- AWS - server
- MySQL - Database

## 8) Our Team

<b>Joshua Lizak</b> <b>Project Lead</b>	<b>Nina Mir</b> <b>Scrum Master / Front End Developer</b>	<b>Abhishek Mane</b> <b>Back End Lead</b>
<b>Wilson Xie</b> <b>Full Stack Developer</b>	<b>Douglas Hebel</b> <b>Front End Lead</b>	<b>Gangzhaorige Li</b> <b>GitHub Master / Back End Developer</b>

## 9) Checklist

- Meeting Time (Out of Class) - Saturday - 12:00 PM
- GitHub Master Chosen
- Team agreed on software tools and deployment server
- Team ready to use back and front end frameworks
  - Team ready to study unfamiliar technology
- All of team has read this document prior to submission