



Refill.Me

No Waste, No Haste - Package-Free

Prototype Demo #1

By Team Iron
Old Dominion University
CS 411W
02/11/2023
Spring 2023

Image source:

<https://www.pexels.com/photo/person-holding-orange-fruits-in-white-net-3737624/>





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Image source:
<https://piximo.com/food-and-drink/ingredients-market-boxes-colours-foodfruit-vegetable-grocery#>

Meet the Team



Judit Chang
Project Manager /
Database Developer



Abdullah Pathan
Front end developer /
Webmaster



Katelynn Hull
Database developer /
Document specialist



Gavin Rios
Front end developer



Michael Colombini
Back end developer



Kira Maximova
Back end developer / Tester



John Wasikye
Back end developer



Andrew Miller
Mentor

Sprint Breakdown

*Each sprint represent 2 weeks

01/07 - 02/01

Sprint 0: Setup & Configure

- Setup the development environment
- Configure Trello board
- Setup GitHub
- Automated Database Backup

02/17 - 03/03

Sprint 2: User Interfaces

- UI basic functionality
- Integrate frontend and backend
 - User profiles/logins
 - Define user roles

02/01 - 02/17

Sprint 1: Framework

- Build Container Guide (mock data)
- Build Advocacy and Petition site
- Automated Frontend and Backend Backup

03/03 - 03/17

Sprint 3: Major Features

- Store search Functionality
- Product search Functionality
 - Enter product's name
- Customized container recommendation

Sprint Breakdown

*Each sprint represent 2 weeks

03/17 - 03/31

Sprint 4: Feature Expansion I.

- Shopping List Functionality
- Product and Price dashboard

04/14 - 04/28

Sprint 6: Wrap up Features

- Reward Point Conversion dashboard (if time permits)
- Improve/polish UI
- Performance testing

03/31 - 04/14

Sprint 5: Feature Expansion II.

- Reward System
 - Collecting reward points
- Integrate data analytics

Optional

Sprint 7: Polish and Release

- Automated recovery
- Automated Unit / System tests
- Automated CI/CD pipelines

Development Tools

	Web App (Front End)	Server (Backend)
Language	HTML/CSS/JavaScript	Python
Architecture	React Native	Django
IDE	Visual Studio	Visual Studio
UI/UX	Mockup design tool	
Database		MySQL
Build Manager/ Issue Tracking/ Testing	Gitlab CI/CD (Continuous Integration/Delivery/Deployment)	

Software / Hardware Tools

UI/UX (Front End)

- React Native + Expo
- Languages:
 - HTML
 - CSS
 - Javascript

Middleware (Back-End)

- API server (server for REST APIs)
- Application services
- Services for data management
- Django

Databases (Back-End)

- MySQL

Testing

- Jest
- Mocha
- Jenkins
- Gitlab CI/CD

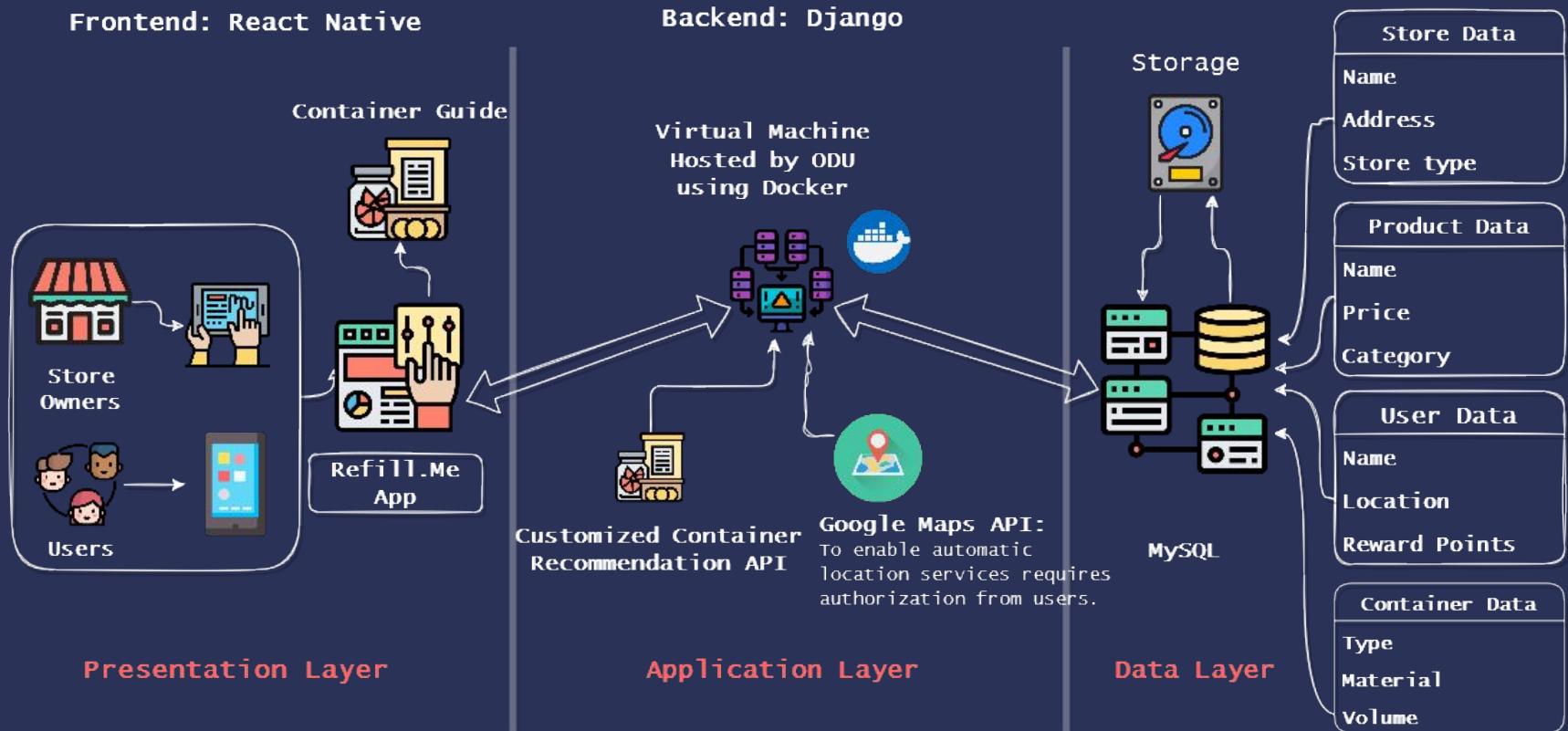
Third Party Software

- Google Maps API
- Data Analytics Services

Hardware

- Smartphone
- Tablet

Prototype Major Functional Component Diagram



Real World Product vs Prototype

Features for Shoppers

Feature	Real World Product	CS411W Prototype
Account Creation	Fully implemented	Fully implemented
Store Search	Fully implemented	Fully implemented
Product Search		
Search by Icon	Fully implemented	Partially implemented
Scan product's barcode	Fully implemented	
Enter product's name	Fully implemented	Fully implemented
Container Guide	Fully implemented	Fully implemented
Container Recommendation	Fully implemented	Fully implemented

Real World Product vs Prototype Features for Shoppers (contd.)

Feature	Real World Product	CS411W Prototype
Shopping List	Fully implemented	Fully implemented
Reward.Me		
Collect reward points	Fully implemented	Fully implemented
Receive coupons	Fully implemented	
Crowdsourcing		
Suggested edits for products and prices	Fully implemented	Fully implemented
Store rating	Fully implemented	Partially implemented
Connect shoppers to advocacy and petition sites	Fully implemented	Fully implemented

Real World Product vs Prototype

Features for Store owners

Feature	Real World Product	CS411W Prototype
Product and Price Dashboard	Fully implemented	Fully implemented
Reward Point Conversion Dashboard	Fully implemented	Fully implemented
Coupon Dashboard	Fully implemented	
Store Rating Dashboard	Fully implemented	Partially implemented
Search Information Dashboard	Fully implemented	Partially implemented

Legend

Fully addressed
Partially addressed

User Stories - Shoppers

As a package-free shopper, I want to...

- ❖ be able to sign in to my account so that I can use the app.
- ❖ be able to create an account or delete my account so that I can use or stop using the app.
- ❖ avoid purchasing products with wasteful product packaging so that I can help the environment.
- ❖ be able to decide whether I would like to share my location data so that I can find nearby stores.
- ❖ find nearby package-free stores so that I can do package-free shopping.
- ❖ learn about containers that I could use for package-free shopping so that I will know about the containers that I can use for package-free shopping.
- ❖ know what type of containers I will need to bring with me so that I will know what kind of containers I should bring with me when doing package-free shopping.
- ❖ know how many containers I will need to bring with me so that I can do package-free shopping.
- ❖ search for specific package-free products near me in a quick and efficient way so that I will know what products are available package-free in my area.
- ❖ scan the barcode of a product so that I can find package-free alternatives for it.
- ❖ type in a product's name and search for it so that I will know what products are available package-free in my area.
- ❖ know the unit prices of products so that I will have information about the prices of products in advance.
- ❖ create a shopping list so that I will not forget anything that I would like to buy.
- ❖ have an overview of my reward points, and coupons I received, and their expiration date so that I can use them in time.
- ❖ redeem my reward points at the stores so that I can get some benefits.
- ❖ upload my receipts so that I can receive reward points for them.
- ❖ report new / closed stores, new products, or products that are not available anymore, or prices that changed so that I can help others with up-to-date information.
- ❖ rate stores so that I can provide some feedback about their services.
- ❖ provide feedback about the functionalities and the usage of the app so that the app will be optimized according to my needs.
- ❖ get information about advocacy and petition sites so that I can take action in case there are only limited package-free options in my area.

Legend

Fully addressed
Partially addressed

User Stories - Stores

As a store owner/employee, I want to...

- ❖ be able to sign in to my account so that I can use all features of the app.
- ❖ be able to create an account or delete my account so that I can use or stop using the app.
- ❖ efficiently edit / add / delete my store information, product listing, and prices so that the shoppers will see only up-to-date information regarding my store and products.
- ❖ see a preview of the data that I entered so that I can see what the shoppers will see in the app.
- ❖ see the store's site in the app from the user's view so that I can see what the shopper will see in the app.
- ❖ be able to search for stores so that I can check the offerings and prices of other stores.
- ❖ be able to decide whether I would like to share my location data so that I can find nearby stores.
- ❖ decide what products or services the users will get for a certain amount of reward points so that the shoppers can use their reward points.
- ❖ issue coupons to the shoppers for their reward points so that they will come to the store, and eventually buy other items, not just the one that the coupon is valid for.
- ❖ be able to accept the reward points and coupons earned by the shoppers so that they will come to my store and eventually buy other products too.
- ❖ receive reminders to update my information in the app so that I can provide up-to-date information to the shoppers.
- ❖ be notified in case any information is missing so that shoppers will find everything they need.
- ❖ be contacted when information about my store, my products, or my prices are reported by a user of the app so that I can verify it.
- ❖ be able to see the rating that my store got.
- ❖ be able to respond to store ratings so that I can provide my feedback regarding any comments or questions.
- ❖ receive information from the app regarding what products the users in my vicinity are searching for so that I can adjust my product offerings.

User Stories - Administrators

Legend
Fully addressed
Partially addressed

As an administrator, I want to...

- ❖ be able to sign in to my account so that I can use the app.
- ❖ have access to all dashboards and user profiles so that I can make changes if needed.
- ❖ be able to add / update / delete accounts so that I can make changes if needed.
- ❖ have access to logs related to the app so that I can perform troubleshooting if needed.
- ❖ have data analytics tools so that I can see how the users of my app (both shoppers, and store owners) behave, what functionalities they use, etc.
- ❖ set up automatic notifications for the stores regarding updating their information and verifying crowdsourced data so that the app will always provide up-to-date information
- ❖ review information from the 'Contact Us' forms so that I can provide feedback regarding comments.
- ❖ respond to any questions posed in 'Contact Us' forms so that I can provide answers.
- ❖ perform necessary fixes and updates to the system so that the app will function as intended.
- ❖ use the best possible third party APIs, and if needed switch to a different API so that I can improve the app's performance.
- ❖ regularly do database data clean up so that I can improve efficiency and performance.
- ❖ be able to identify vulnerabilities in the app (for example, using DAST) so that I can improve the security of the app.

User Stories - Testers

As an tester, I want to...

- ❖ be able to create an account for a registered shopper or store owner so that I can check whether the account is properly created.
- ❖ search for stores so that I can test whether the search is working.
- ❖ search for product so that I can test whether products are listed properly.
- ❖ create a shopping list so that I can test whether store names and products are shown accurately.
- ❖ get the list of recommended containers so that I can test whether the app returns the needed number and types of containers.
- ❖ be able to add / modify / delete products in the Product & Price Dashboard so that I can test whether store owners will be able to add / modify / delete items.
- ❖ be able to add / modify / delete entries in the Reward Point Conversion Dashboard so that I can test whether store owners will be able to add / modify / delete entries.
- ❖ be able to run unit test so that I can make sure that all functionalities work as intended.
- ❖ be able to run integration tests so that I can make sure that all functionalities work as intended.
- ❖ be able to run security tests so that I can make sure that all functionalities work as intended.

User Stories to Features

Feature	User Story	User Type
Login / Authentication	I want to be able to sign in to my account so that I can use all features of the app.	Shopper Store owner Administrator
Location usage	I want to be able to decide whether I would like to share my location data so that I can find nearby stores.	Shopper Store owner
Account Creation / Deletion	I want to be able to create an account or delete my account so that I can use or stop using the app.	Shopper Store owner
	I want to be able to create an account for a registered shopper or store owner so that I can check whether the account is properly created.	Tester
Search by Store	I want to find nearby package-free stores so that I can do package-free shopping.	Shopper
	I want to be able to search for stores so that I can check the offerings and prices of other stores.	Store owner
	I want to search for stores so that I can test whether the search is working.	Tester
Search by Product	I want to search for specific package-free products near me in a quick and efficient way so that I will know what products are available package-free in my area.	Shopper
	I want to type in a product's name and search for it so that I will know what products are available package-free in my area.	Store owner
	I want to search for products so that I can test whether products are listed properly.	Tester

User Stories to Features

Feature	User Story	User Type
Container Guide	I want to learn about containers that I could use for package-free shopping so that I will know about the containers that I can use for package-free shopping.	Shopper
Container Recommendation	I want to know what type of containers I will need to bring with me so that I will know what kind of containers I should bring with me when doing package-free shopping.	Shopper
	I want to know how many containers I will need to bring with me so that I can do package-free shopping.	Shopper
	I want to get the list of recommended containers so that I can test whether the app returns the needed number and types of containers.	Tester
Shopping List	I want to create a shopping list so that I will not forget anything that I would like to buy.	Shopper
	I want to create a shopping list so that I can test whether store names and products are shown accurately.	Tester
Reward.Me	I want to have an overview of my reward points.	Shopper
Suggested Edits	I want to report new / closed stores, new products, or products that are not available anymore, or prices that changed so that I can help others with up-to-date information.	Shopper
Store rating	I want to rate stores so that I can provide some feedback about their services.	Shopper
Connect to advocacy and petition sites	I want to get information about advocacy and petition sites so that I can take action in case there are only limited package-free options in my area.	Shopper

User Stories to Features

Feature	User Story	User Type
Product and Price Dashboard	I want to efficiently edit / add / delete my store information, product listing, and prices so that the shoppers will see only up-to-date information regarding my store and products.	Store owner
	I want to see a preview of the data that I entered so that I can see what the shoppers will see in the app.	Store owner
	I want to see the store's site in the app from the user's view so that I can see what the shopper will see in the app.	Store owner
	I want to be able to add / modify / delete products in the Product & Price Dashboard so that I can test whether store owners will be able to add / modify / delete items.	Tester
Reward Point Conversion Dashboard	I want to decide what products or services the users will get for a certain amount of reward points so that the shoppers can use their reward points.	Store owner
	I want to be able to add / modify / delete entries in the Reward Point Conversion Dashboard so that I can test whether store owners will be able to add / modify / delete entries.	Tester
Store Rating Dashboard	I want to be able to see the rating that my store got.	Store owner
	I want to be able to respond to store ratings so that I can provide my feedback regarding any comments or questions.	Store owner
Control User Accounts	I want to be able to add / update / delete accounts so that I can make changes if needed.	Administrator
Dashboards	I want to have access to all dashboards and user profiles so that I can make changes if needed.	Administrator

User Stories to Tasks

Login/Sign up		
Task	User Story	User Type
Implement Sign Up/Register user interface design	As a guest, I shall be able to see the Sign Up/Register screen to create an account.	Shopper Store owner
Ensure that Sign Up/Register page is dynamically responsive	As a guest and a registered user, I shall be able to access this page on smartphone and tablet (dynamically responsive).	Shopper
Implement Sign Up/Register functionality	I shall be able to successfully create an account to use the app.	Shopper Store owner
Implement Sign Up/Register form	I shall be able to access the appropriate registration form.	Shopper Store owner
Implement login process	I shall be able to log in into the Refill.Me application.	Shopper Store owner
Implement password recovery process	I shall be able to recover the account credentials by recovering the lost password.	Shopper Store owner
Design Login Page form	I shall see the Login screen display two text fields with prefilled text: 'Email' and 'Password'	Shopper Store owner
Develop user authentication error process	Upon entering the wrong user credentials, I shall see an error message that propels me to try again.	Shopper Store owner
Design Shopper Menu component	The menu shall have: Home, Store Search, Product Search, Shopping List, Profile	Shopper
Design Store Owner Menu component	The menu shall have: Home, Product & Prices, Rewards Points Conversion, Store Analytics, Profile	Store Owner

User Stories to Tasks

Home		
Task	User Story	User Type
Implement mobile responsive Home Menu	I shall be able to access the Home menu key on both smartphone and tablet devices.	Shopper Store Owner
Implement Shopper Home Menu interface	I shall see 6 selectable sub categories, upon selecting the following would open: Store Search, Product Search, Container Guide, Shopping List, Reward.Me, Contact Us	Shopper
Implement Store Owner Home Menu interface	I shall see 6 selectable sub categories, upon selecting the following would open: Product & Prices, Reward Point Conversion, Store Rating, Store Search, Product Search, Profile	Store owner

User Stories to Tasks

Store Search		
Task	User Story	User Type
Implement Store Search feature as mobile responsive	<p>As a guest and as a registered user, I shall be able to access Store Search page on smartphone and tablet</p> <ul style="list-style-type: none"> - Shopper, Store owner: using Home menu key - Shopper: using Store Search menu key 	Shopper Store Owner
Integrate Google Maps API with Store Search functionality	As a guest and as a registered user, I shall see a map with nearby stores if I enabled location services.	Shopper Store Owner
Implement Nearby Store functionality with Store Search feature	<p>As a guest and as a registered user,</p> <ul style="list-style-type: none"> - I shall see a list of five (5) nearby stores (with the exception of remote areas) - I shall see a list of nearby stores with information regarding the name of the store, address, and a button for further information (store hours, contact information) 	Shopper Store Owner
Design store listing form for Store Search feature	<p>As a guest and as a registered user, I shall see nearby stores on the map listing:</p> <ul style="list-style-type: none"> - Name of the store - Full address, selecting the address will give an option to copy - 'Details' button, selecting on it (store hours, contact information) 	Shopper Store Owner
Implement Zip Code search functionality for Store Search feature	As a guest and as a registered user, I shall be prompted to enter a ZIP code if I did not allow location sharing.	Shopper Store Owner
Implement the user interface where the message "No store found" is displayed	I shall be able to see a message stating that no nearby store was found.	Shopper Store owner
Implement the button for the 'Advocacy and Petition sites'	I shall be able to see a button for 'Advocacy and Petition sites'.	Shopper
Implement the user interface for the 'Advocacy and Petition sites'	I shall be able to get information about advocacy and petition websites.	Shopper

User Stories to Tasks

Product Search		
Task	User Story	User Type
Implement 'Product Search' user interface design	I shall have an option to select the Product Search functionality.	Shopper Store owner
Implement the design of the two 'Product Search' actions: 'Search by Icon' and 'Enter Product Name'	I shall see two selectable actions after choosing the Product Search functionality: 'Search by Icon' and 'Enter Product Name'	Shopper Store owner
Implement the 'Product Search' functionality	I shall be able to enter the product's name for which I am looking for.	Shopper Store owner
Implement the user interface for the product listing	<p>I shall be able to see a product listing if the product is available in nearby stores.</p> <p>I shall see the store information (name of the store, location (city + 2 letters for the state)) for each listed product.</p> <p>I shall be able to see the unit prices of products.</p> <p>I shall be able to have access to container recommendations for a specific product.</p> <p>I shall be able to get information about the recommended container for a specific product upon selecting the container icon.</p>	Shopper Store owner
Implement the user interface where the message "No product found" is displayed	I shall be able to see a message stating that no product was found if the product is not available in nearby stores.	Shopper Store owner
Implement the button for the 'Advocacy and Petition sites'	I shall be able to see a button for 'Advocacy and Petition sites'.	Shopper
Implement the user interface for the 'Advocacy and Petition sites'	I shall be able to get information about advocacy and petition websites.	Shopper

User Stories to Tasks

Container Guide		
Task	User Story	User Type
Implement button for Container Guide in the Home menu key	I shall have the ability to navigate to the Container Guide from the Home menu key.	Shopper
Implement Container Guide user interface	I shall see a list of five (5) different container types, possible materials that they are made of, and products that can be stored in them. These container types are: Tote bags, Produce bags, Jars, Bottles, Boxes	Shopper

User Stories to Tasks

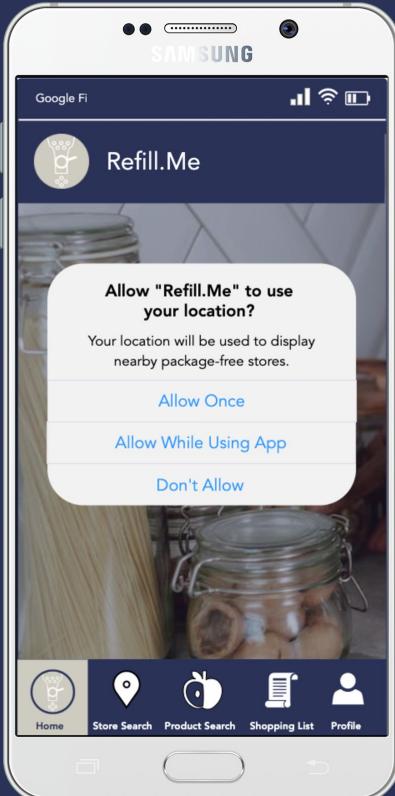
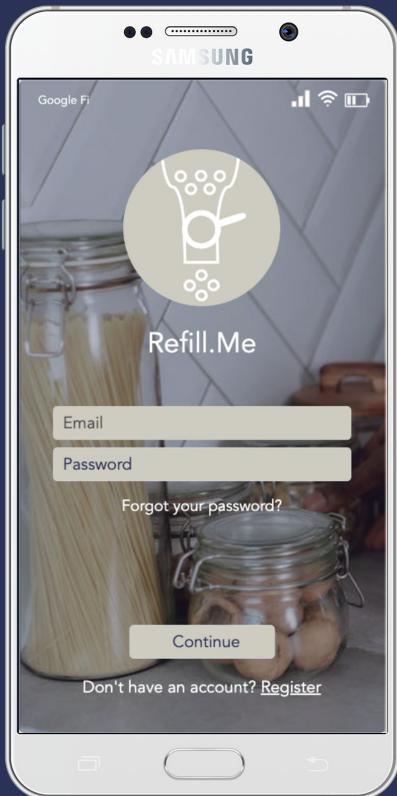
Shopping List / Customized Container Recommendation		
Task	User Story	User Type
Implement button for Shopping List in the Home menu key	I shall be able to navigate to Shopping List (empty or with products in it)	Shopper
Ensure that Shopping List page is dynamically responsive	I shall be able to access Shopping List on smartphone and tablet devices (dynamically responsive).	Shopper
Ensure that products from the product listing can be added to the Shopping List	I shall be able to create a shopping list to plan my shopping by adding products to it using the '+' sign on the product listing.	Shopper
Ensure that products are grouped by store in the Shopping List	I shall see each item in the Shopping List grouped by store for which the city and state is listed.	Shopper
Implement buttons for increasing/decreasing the quantity of products in the Shopping List	I shall have the ability to modify the quantity of a product or to remove the product from the Shopping List.	Shopper
Implement a button for item removal from the Shopping List	I shall have the ability to remove products from the Shopping List.	Shopper
Create a 'Container Recommendation' button in the Shopping List	Once I finish adding products to the Shopping List, I shall be able to select the 'Container Recommendation' button to see a customized container recommendation.	Shopper
Implement the Customized Container Recommendation user interface	I shall find information about the types of containers that I need for my shopping. I shall find information about how many of each container type I need for my shopping.	Shopper

User Stories to Tasks

Profile		
Task	User Story	User Type
Implement button for Profile in the Home menu key	I shall be able to navigate to the Profile menu key.	Shopper Store owner
Implement the log out functionality	I shall see a 'Log out' button to log out of my account.	Shopper Store owner
Implement the delete account functionality	I shall see a 'Delete' button to delete my account.	Shopper Store owner
Create name and user icon on the top of the Profile page	I shall see my name under a user icon.	Shopper Store owner
Implement the 'Saved Stores' functionality for shoppers	I shall have the ability to access my saved stores.	Shopper
Implement the 'Share with friends' functionality for shopper	I shall have the ability to share the app with friends using email or social media tools.	Shopper
Implement the 'Profile settings' functionality for shoppers	I shall have the ability to access my profile settings to modify my settings.	Shopper
Implement the 'Profile settings' functionality for store owners	I shall have the ability to access my profile settings to modify my settings.	Store owner
Implement the 'Notification settings' functionality for store owners	I shall have the ability to access my notification settings to modify my these settings.	Store owner
Implement the 'Roles & Privileges' functionality for store owners	I shall have the ability to create roles and set permission after choosing the 'Roles & Permissions' button.	Store owner

Prototype for Shoppers

Customized for Smartphone



Home tab
for accessing every
functionality of the app

Store Search tab
for automatically searching for stores
based on current location data
or ZIP code provided



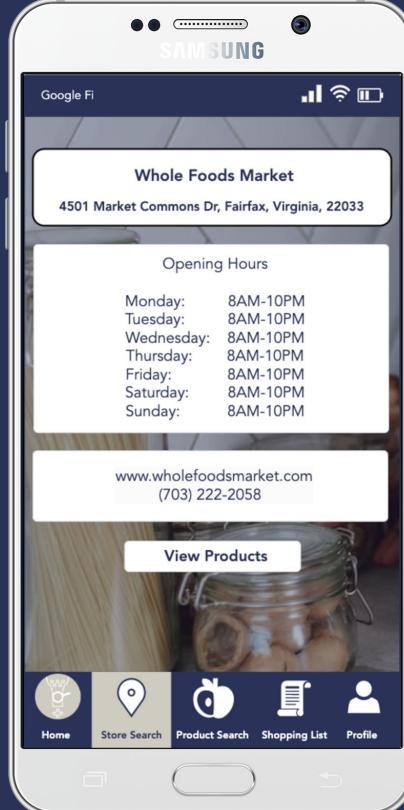
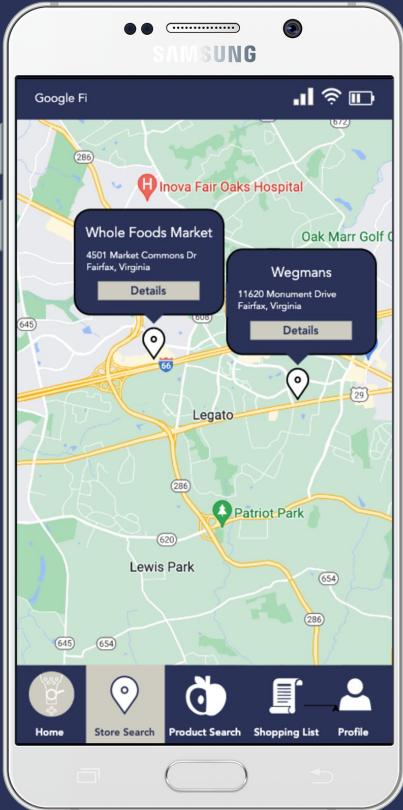
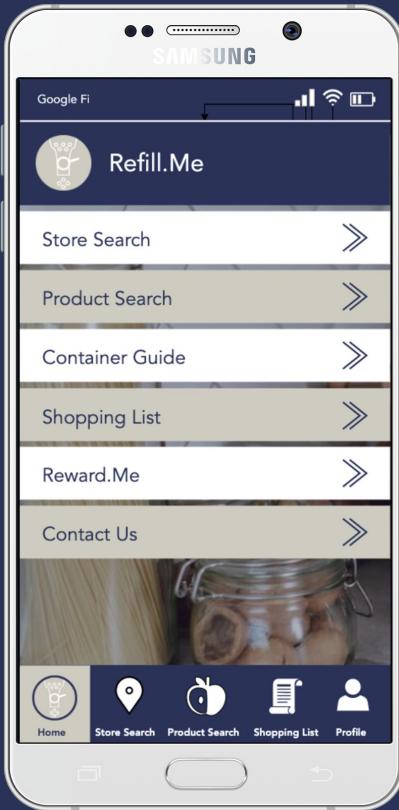
Product Search tab
for accessing the three different
product search options

Profile tab
for accessing account
information and settings

Shopping List tab
for accessing the shopping list
with products added

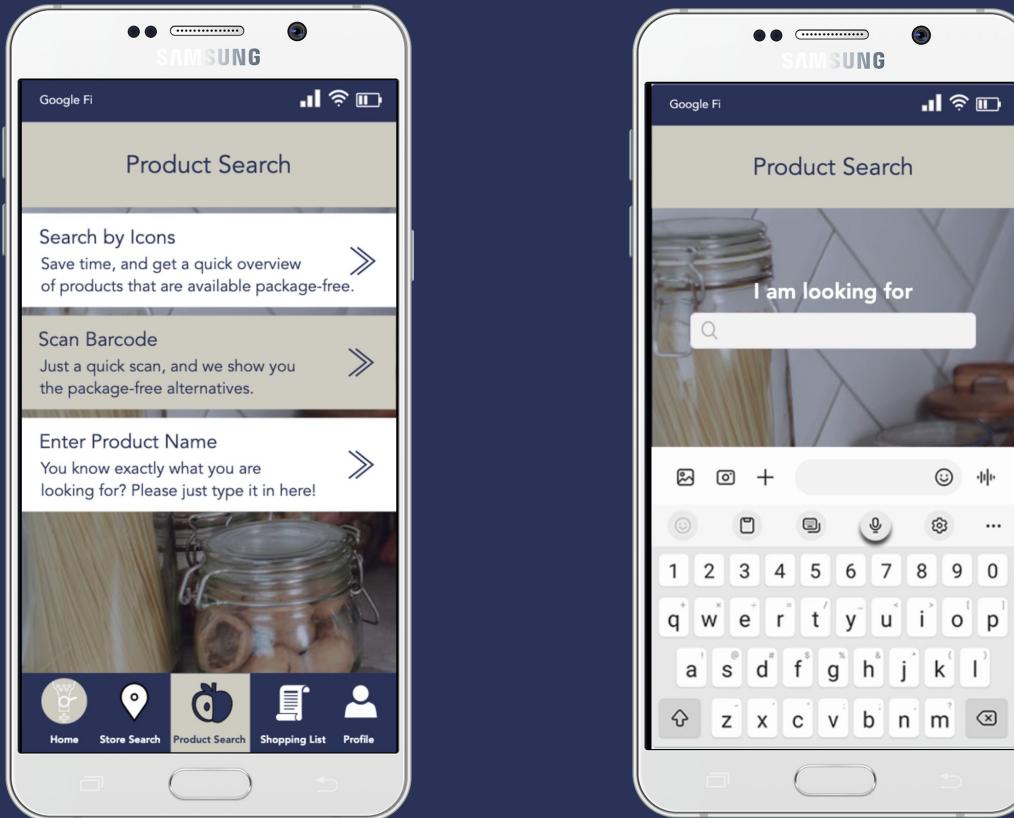
Prototype for Shoppers

Customized for Smartphone



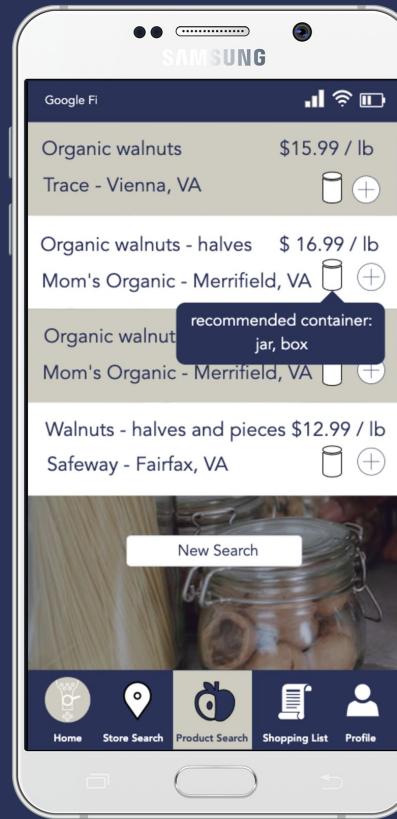
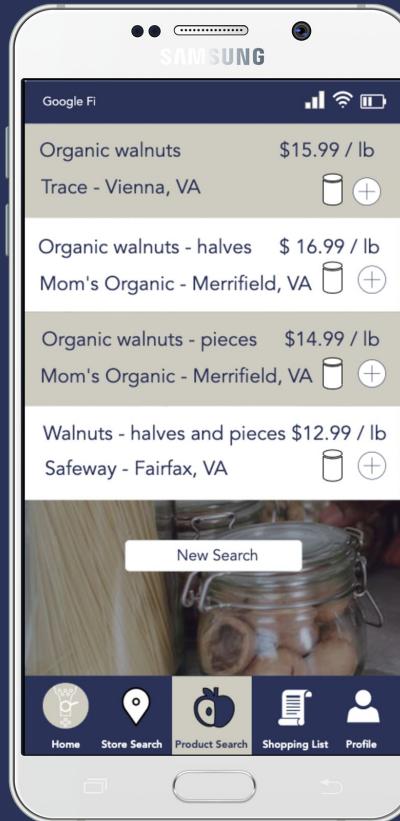
Prototype for Shoppers

Customized for Smartphone



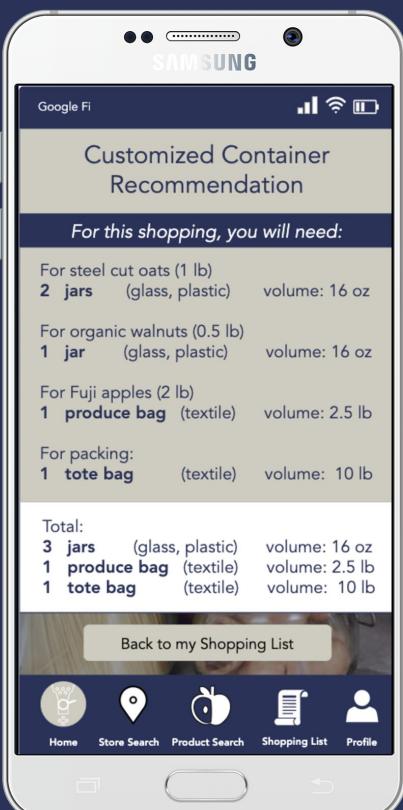
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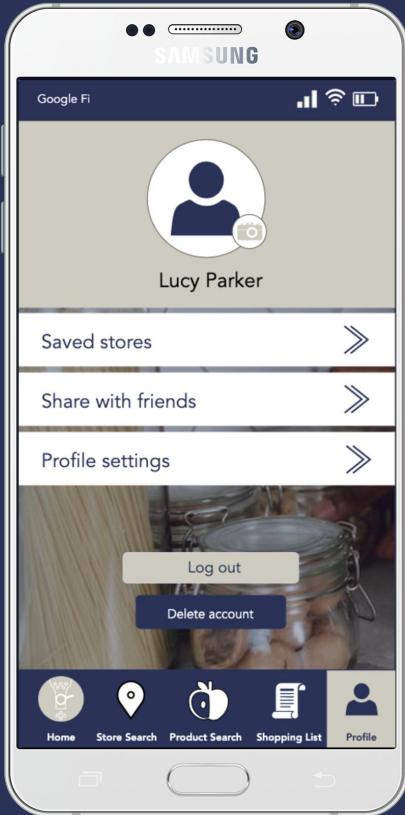
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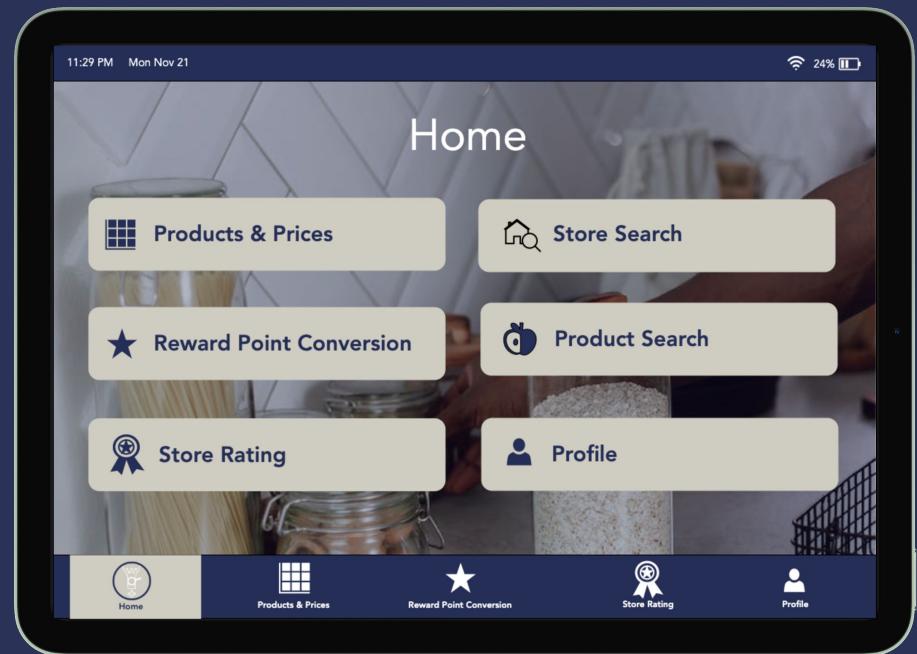
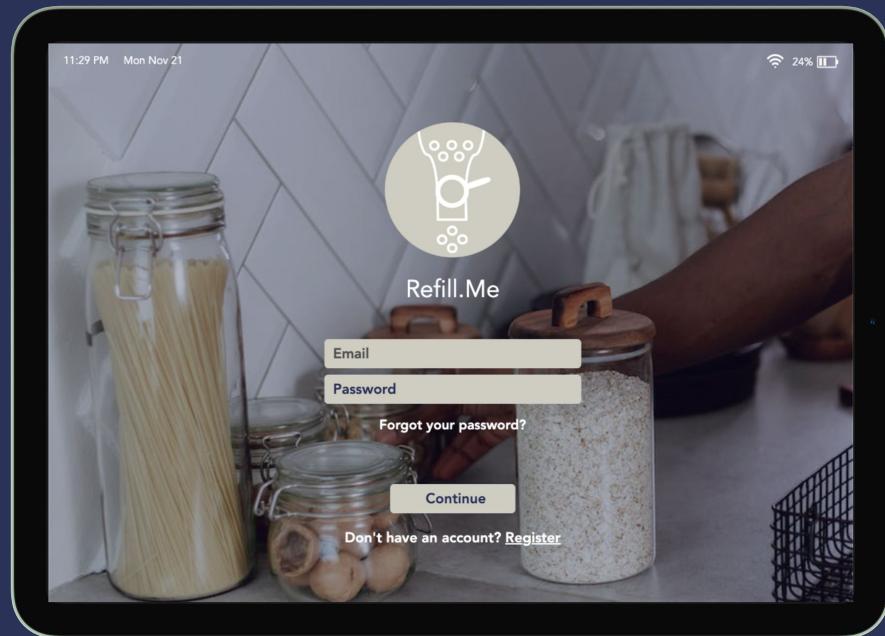
Prototype for Shoppers

Customized for Smartphone



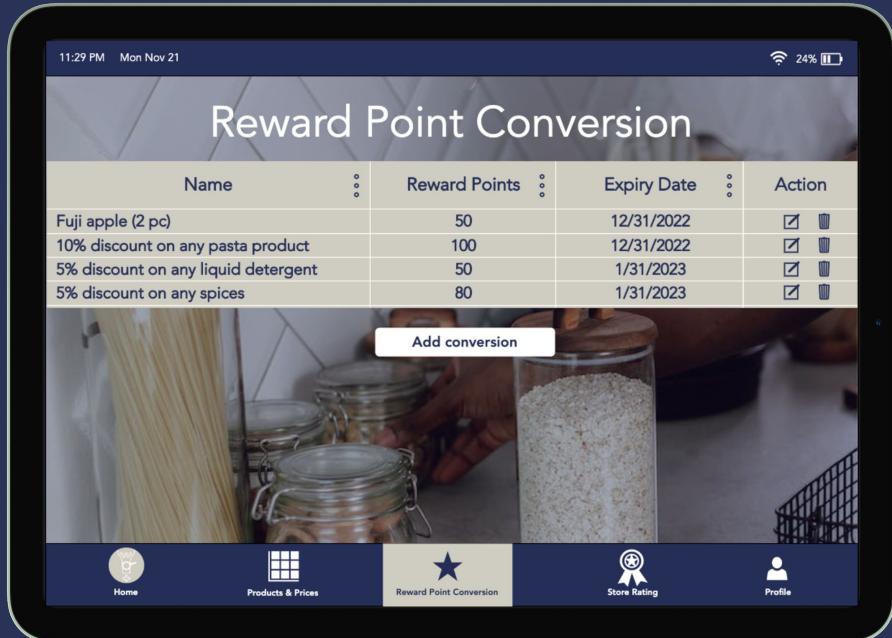
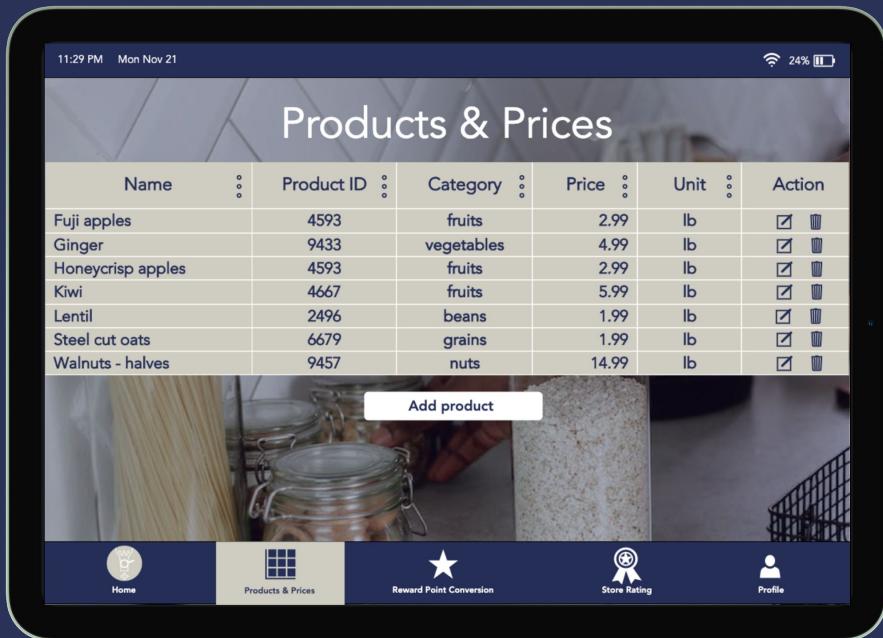
Prototype for Store owners

Customized for Tablet



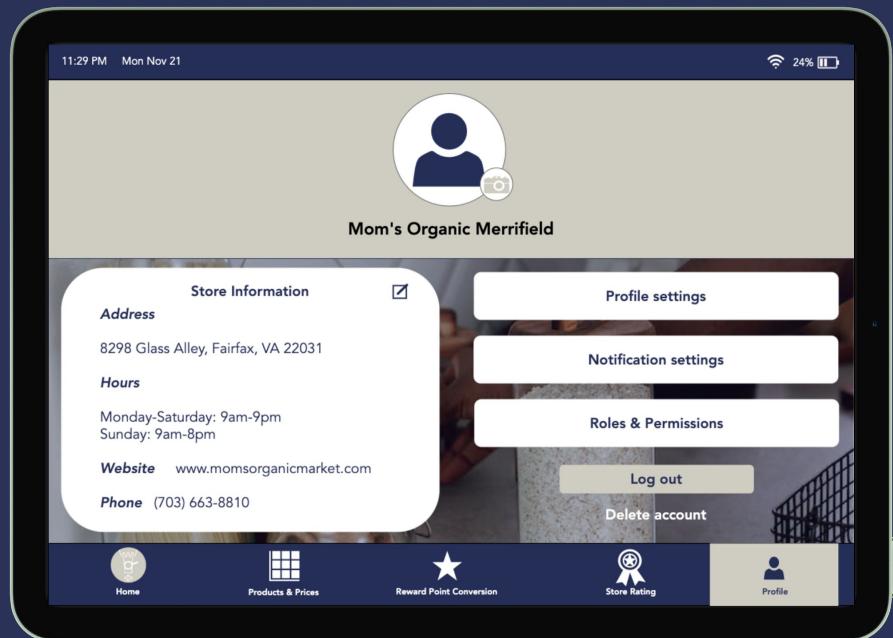
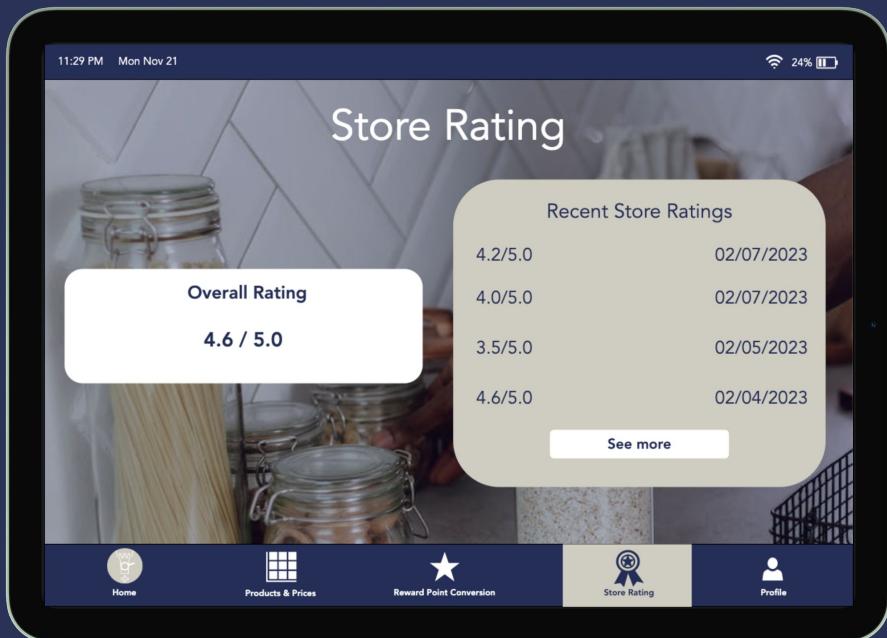
Prototype for Store owners

Customized for Tablet



Prototype for Store owners

Customized for Tablet



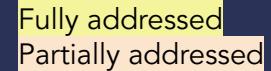
Issues / Challenges

- ❖ Steep learning curve
 - Limited developer experience
 - Usage of Docker Containers
 - Integration of front end, back end, and database
 - Usage of web application framework
- ❖ Time constraints
 - Task delegation
 - Large workloads

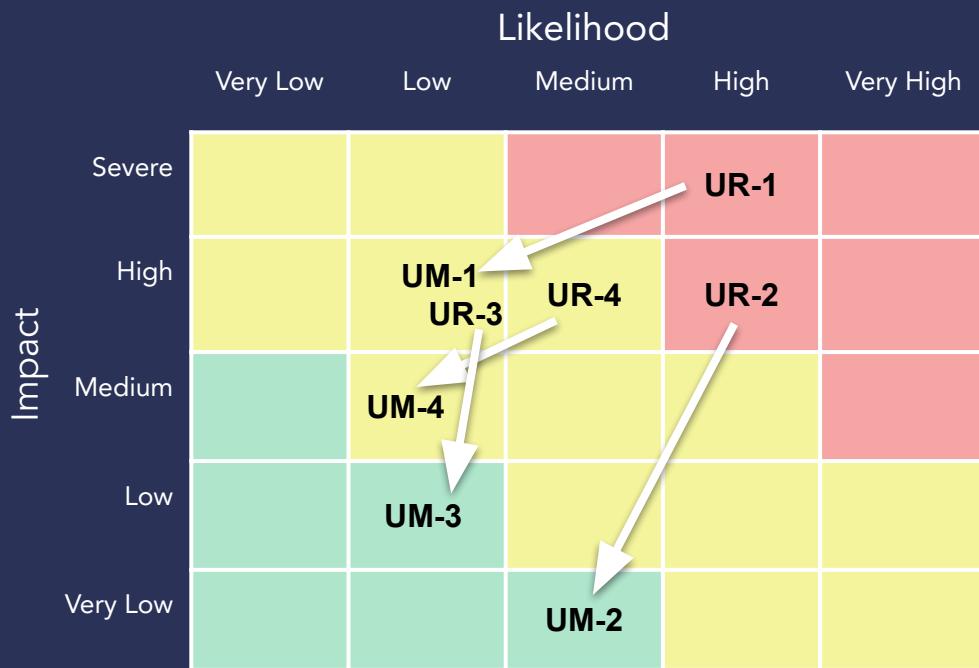
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User Risk Matrix



Risks

- UR-1: Shopper has no package-free stores in their area
- UR-2: Shoppers are not familiar with needed containers
- UR-3: Shopper loses interest in the app
- UR-4: Shopper types in product name and app returns no product available

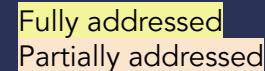
Mitigation

- UM-1: App connects shoppers to advocacy and petition sites
- UM-2: App provides 'Container Guide'
- UM-3: Product and price listing is constantly updated, reward system keeps shoppers engaged
- UM-4: App lists related products

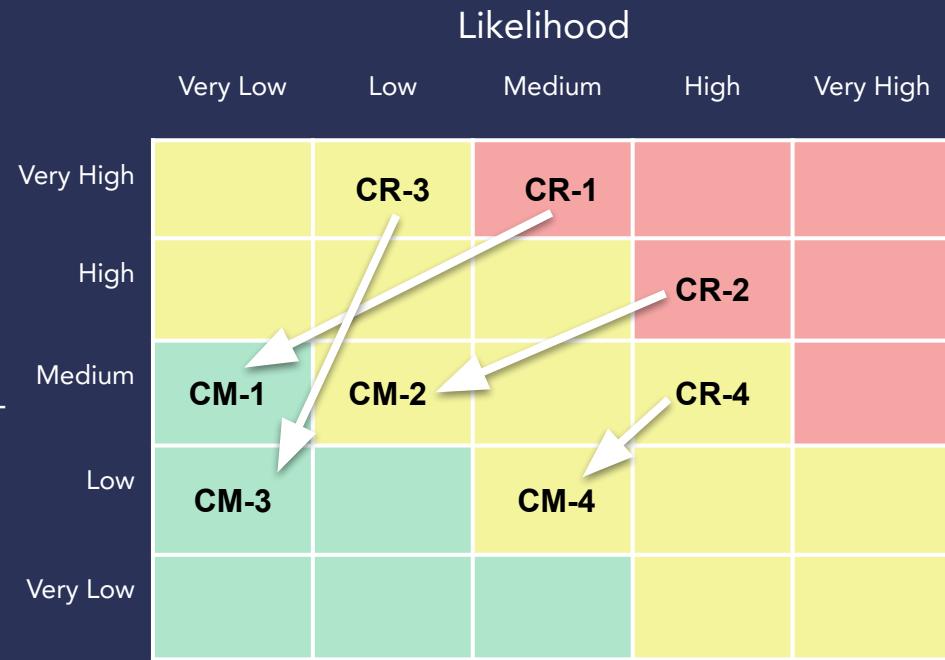
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Customer Risk Matrix



Risks

CR-1: Stores cannot keep product/price information up-to-date

CR-2: Stores submit partial information

CR-3: Stores are unable to scan the barcode provided for the reward points for the user

CR-4: Holiday hours are not updated

Mitigation

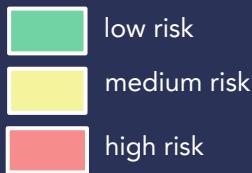
CM-1: Remind stores weekly to update product/price information

CM-2: Provide a template/form for store owners to follow

CM-3: Generate new barcode for the shopper

CM-4: Automated reminder for stores to update their holiday hours

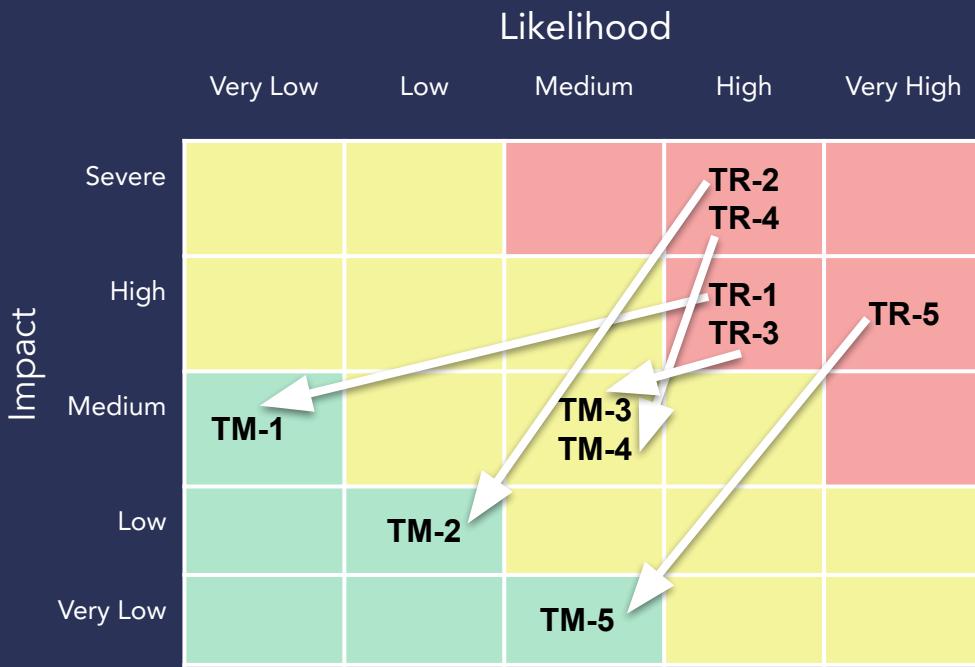
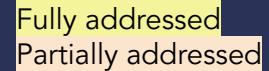
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Technical Risk Matrix

Risks

Legend





Thank you

Image source:

https://commons.wikimedia.org/wiki/File:USDA_is_working_hard_to_expand_access_to_farmers_markets_for_those_participating_in_the_Supplemental_Nutrition_Assistance_Program_%28SNAP%29.jpg



Q & A

Any questions?

Image source:

https://commons.wikimedia.org/wiki/File:USDA_is_working_hard_to_expand_access_to_farmers_%E2%80%99_markets_for_those_participating_in_the_Supplemental_Nutrition_Assistance_Program_%28SNAP%29.jpg

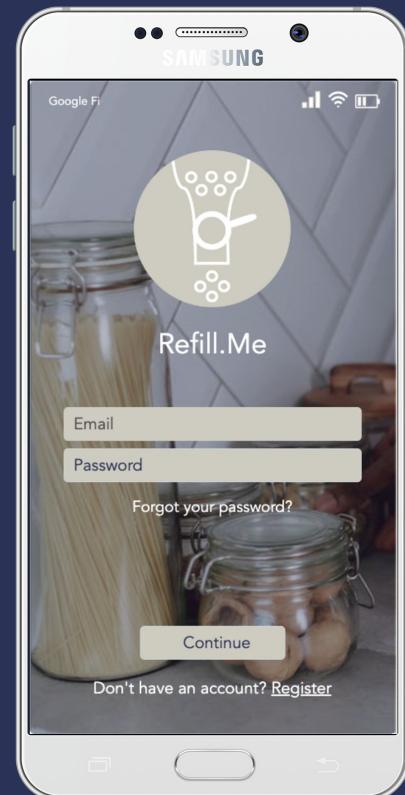
Appendix A: User Stories - Login/Sign-Up

As a Refill.Me user, I shall ...

- ❖ As a guest, I shall be able to see the Sign Up/Register screen to create an account
- ❖ As a guest, Shopper, Store owner I shall be able to access this page on smartphone and tablet (dynamically responsive)
- ❖ As a Shopper, Store owner I shall be able to successfully create an account to use the app
- ❖ Registration page dynamically changes the field to fill out as part of account creation for: Store' owner to Shopper
- ❖ As a tester, app' developer, I shall be able to validate end-to-end coverage for the user creation process

- ❖ As a Shopper, Store owner, I shall be able to Login into Refill.Me application
- ❖ As a Shopper, Store owner, I shall be able to recover the account credentials by recovering the lost password
- ❖ The Login screen shall display two text fields with prefilled text: 'Email', 'Password'
- ❖ Upon entering wrong combination: Email + Password an error message to propel the user to try again
- ❖ Information for the login / sign up pages shall be stored in User DB table

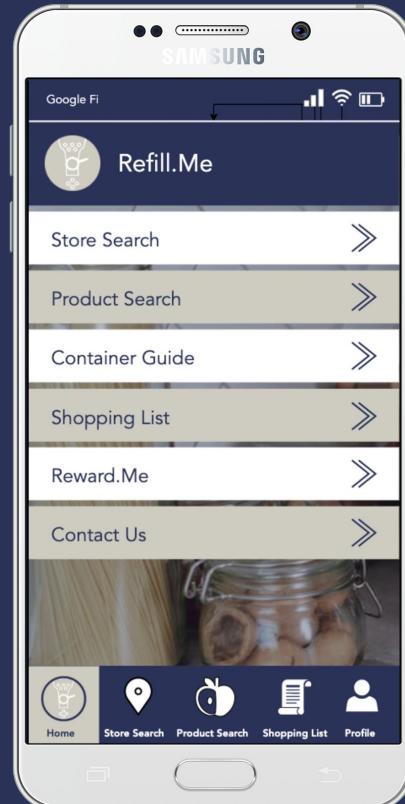
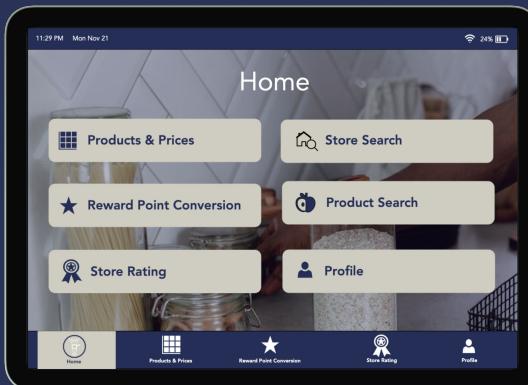
- ❖ Upon selecting 'Continue' the logged user shall automatically redirect to Home menu
- ❖ The menu shall be located at the bottom of the screen
- ❖ As a shopper the menu shall have: Home, Store Search, Product Search, Shopping List, Profile
- ❖ As a store' owner the menu shall have: Home, Product & Prices, Rewards Points Conversion, Store Analytics, Profile
- ❖ As a Tester/Administrator, I shall be able to access to Login/Register/Forgot Password? screens



Appendix A: User Stories - Home

As a Refill.Me user, I shall ...

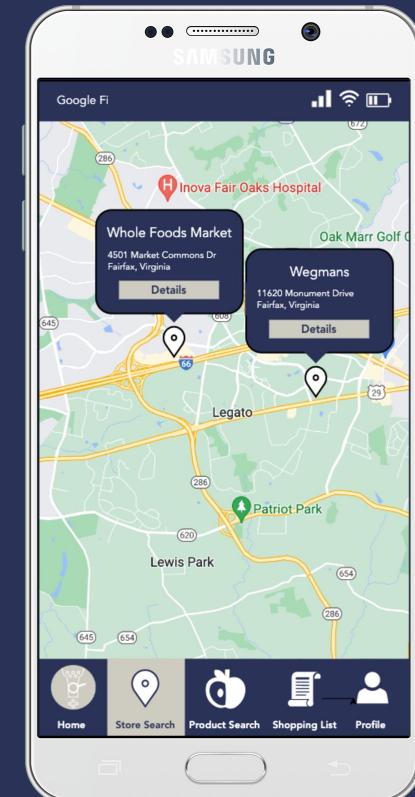
- ❖ As a Shopper, Store owner I shall be able to navigate to Home:
- ❖ As a Shopper, Store owner I shall be able to access Home menu key on both smartphone and tablet devices
- As a Shopper, I shall see 6 selectable sub categories, upon selecting would open following:
 - Store Search - *open a map where user will be able to search package-free stores in their neighborhoods*
 - Product Search - *allows to search nearby stores for a particular item*
 - Container Guide - *a static page to give general information about possible shopping containers*
 - Shopping List - *list of items that the shopper plans to buy*
 - Reward.Me - *a feature that will shall reward Shoppers for their package-free shopping experiences*
 - Contact Us - *a feature to provide the feedback as well as resolve any issues that Shopper or Store' owners might have*
- As a Store owner, I shall see 6 selectable sub categories, upon selecting would open following:
 - Product & Prices - *editable list of products and prices*
 - Reward Point Conversion
 - Coupons
 - Store Rating
 - Store Analysis
 - Store Search
 - Product Search
 - Profile
- As a Tester/Administrator, I shall have an ability to access to all sub categories:
 - Shoppers
 - Store owners



Appendix A: User Stories - Store Search

As a Refill.Me user, I shall ...

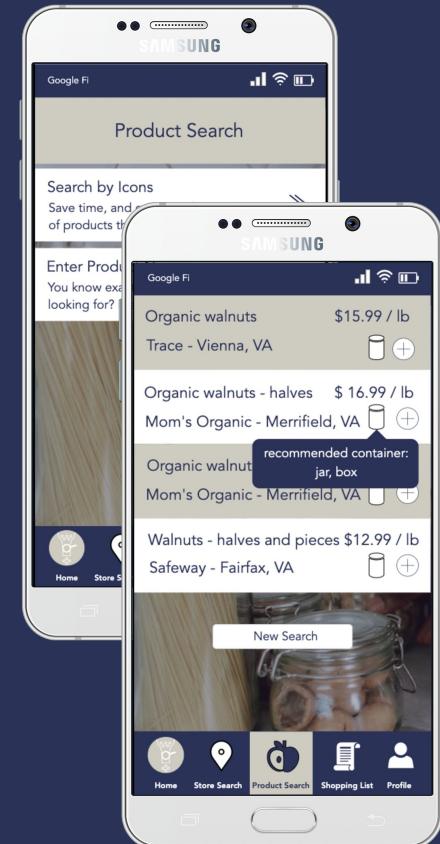
- ❖ As a Shopper, Store owner, I shall have an option to select/access Store Search functionality.
- ❖ As a Shopper, Store owner I shall be able to access Store Search page on smartphone and tablet
 - Using Home menu key (*both tablet and smartphone devices*)
 - Using Store Search menu key (*only on smartphone devices*)
- ❖ As a Shopper, Store owner, I shall see a map with nearby stores if I enabled location services.
- ❖ As a Shopper, Store owner, I shall see a list of five (5) nearby stores (with the exception of remote areas)
- ❖ As a Shopper, Store owner, I shall see nearby stores on the map listing:
 - Name of the store
 - Full address, *selecting the address will give an option to copy*
 - 'Details' button, selecting on it (store hours, contact information)
- ❖ As a Shopper, Store owner, I shall see be prompted to enter a ZIP code if I did not allow location sharing.
- ❖ As a Shopper, Store owner, I shall see a list of nearby stores with information regarding the name of the store, address, and a button for further information (store hours, contact information)
- ❖ As a Tester/Administrator, I shall have a full access to Store Search functionality for functional, regression, as well as troubleshooting testing



Appendix A: User Stories - Product Search

As a Refill.Me user, I shall ...

- ❖ As a Shopper, Store' owner, I shall have an option to select and access Product Search functionality
 - Using Home menu key (*both tablet and smartphone devices*)
 - Using Product Search menu key (*only on smartphone devices*)
- ❖ As a Shopper, Store' owner, I shall see two selectable sub categories, upon selecting would open following:
 - Search by Icon
 - *an image based category' list where the user can select a particular group and search or a product within the selected category*
 - Enter Product Name
 - *allows user to search produce using text field for a specific key term*
- ❖ As a Shopper, Store' owner, I shall be able to enter the product's name for which I am looking for.
- ❖ As a Shopper, Store' owner, I shall be able to see a product listing if the product is available in nearby stores.
- ❖ As a Shopper, Store' owner, I shall be able to see a message stating that no product was found if the product is not available in nearby stores.
- ❖ As a Shopper, Store' owner, I shall see the store information (name of the store, location (city + 2 letters for the state)) for each listed product.
- ❖ As a Shopper, Store' owner, I shall be able to preview the unit price of products.
- ❖ As a Shopper, Store' owner,I shall be able to have access to container recommendations for a specific product.
- ❖ As a Shopper, Store' owner, I shall be able get information about the recommended container for a specific product upon selecting container icon.
- ❖ As a Tester/Administrator, I shall have a full access to Product Search functionality.



Appendix A: User Stories - Container Guide

As a Refill.Me user, I shall ...

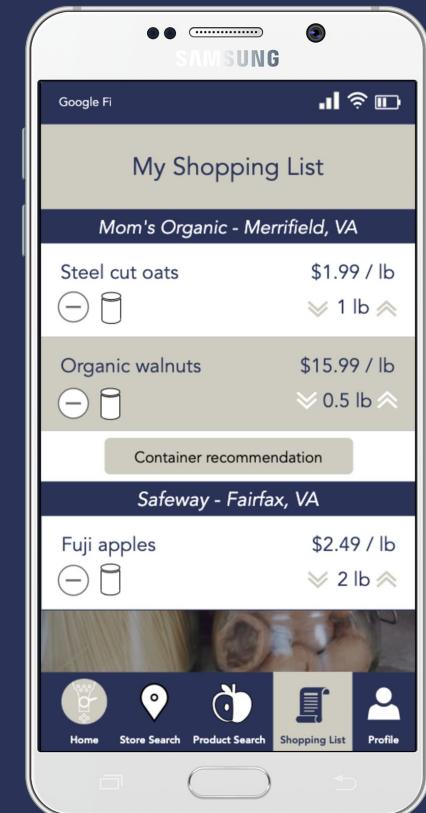
- ❖ As a Shopper, I shall have the ability to navigate to the Container Guide from Home menu key *(for smartphone devices only)*
- ❖ As a Shopper, I shall see a list of five (5) different container types, possible materials that they are made of, and products that can be stored in them.
 - These container types are:
 - Tote bags
 - Produce bags
 - Jars
 - Bottles
 - Boxes
- ❖ Container Guide page shall be a static page.
- ❖ As a Tester/Administrator, I shall have an access to Container Guide.



Appendix A: User Stories: Shopping List / Customized Container Recommendation

As a Refill.Me user, I shall ...

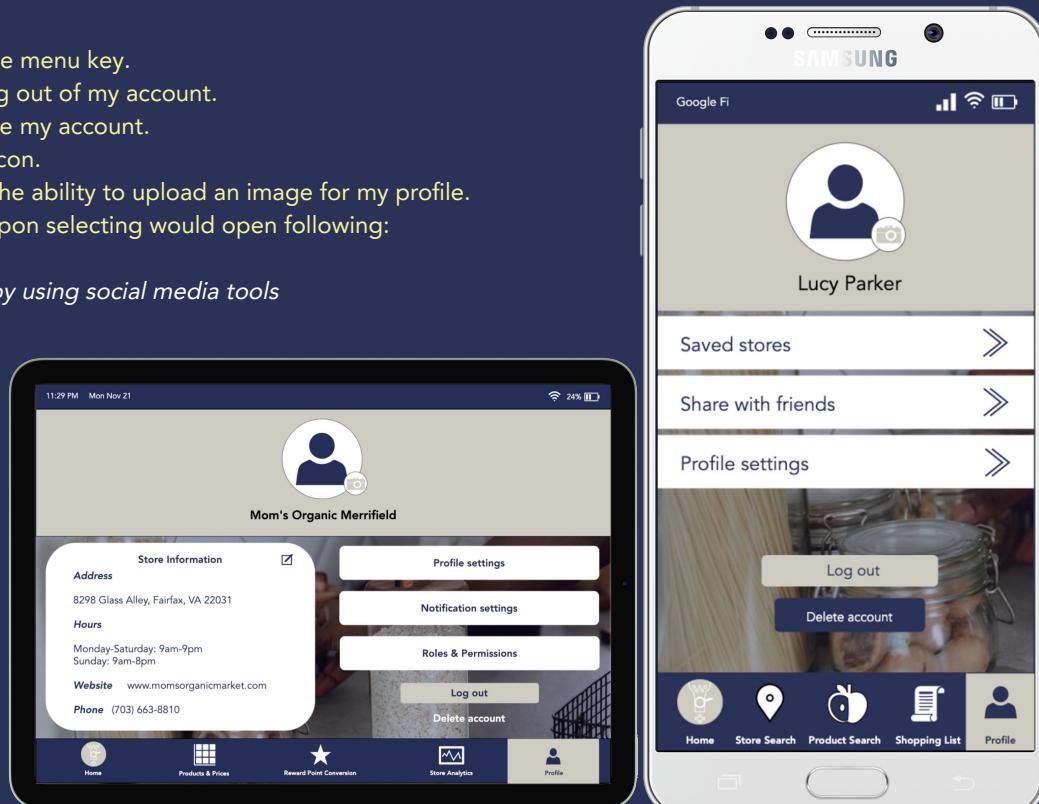
- ❖ As a Shopper, I shall be able to navigate to Shopping List (empty or with products in it)
- ❖ As a Shopper, I shall be able to access Shopping List on smartphone and tablet devices (dynamically responsive).
- ❖ As a Shopper, I shall be able to create a shopping list to plan my shopping by adding products to it using the '+' sign on the product listing.
- ❖ As a Shopper, I shall see each item in the Shopping List grouped by store for which the city and state is listed.
- ❖ As a Shopper, I shall have the ability to modify the quantity of a product in the Shopping List.
- ❖ As a Shopper, I shall have the ability to remove products from the Shopping List.
- ❖ As a Shopper, once I finish adding products to the Shopping List, I shall be able to select the 'Container Recommendation' button to see a customized container recommendation.
- ❖ As a Shopper, I shall find information about the types of containers that I need for my shopping.
- ❖ As a Shopper, I shall find information about how many of each container type I need for my shopping.
- ❖ As a Tester/Administrator, I shall have a full access to the Shopping List and the Customized Container Recommendation features



Appendix A: User Stories - Profile

As a Refill.Me user, I shall ...

- ❖ As a Shopper, Store owner, I shall be able to navigate to Profile menu key.
- ❖ As a Shopper, Store owner, I shall see a 'Log out' button to log out of my account.
- ❖ As a Shopper, Store owner, I shall see 'Delete' button to delete my account.
- ❖ As a Shopper, Store owner, I shall see my name under a user icon.
- ❖ As a Shopper, Store owner, Tester/Administrator, I shall have the ability to upload an image for my profile.
- ❖ As a Shopper, I shall see three (3) selectable sub categories, upon selecting would open following:
 - Saved Stores - *a list of stores that the user saved*
 - Share with friend - *recommending the app via email or by using social media tools*
 - Profile settings
- ❖ As a Store owner, I shall see three (3) selectable sub categories, upon selecting would open following:
 - Profile settings
 - Notification settings
 - Roles & Permissions
- ❖ As a Tester/Administrator, I shall see inactive/active users continue to appear in the DB 'User' table with Tag '1' (tag '0' for active)
- ❖ As a Tester/Administrator, I shall have access to Profile menu key
- ❖ As an Administrator, I shall be able to add / update / delete accounts if needed
- ❖ As an Administrator, I shall have access to all dashboards and user profiles so that I can make changes if needed



	Legend
	Fully addressed
	Partially addressed

Appendix B: Shopper Tasks & Responsibilities:

As a package-free shopper, I want to...

- ❖ avoid purchasing products with wasteful product packaging so that I can help the environment.
- ❖ scan the barcode of a product so that I can find package-free alternatives for it.
- ❖ have an overview of my reward points, and coupons I received, and their expiration date so that I can use them in time.
- ❖ redeem my reward points at the stores so that I can get some benefits.
- ❖ upload my receipts so that I can receive reward points for them.
- ❖ report new / closed stores, new products, or products that are not available anymore, or prices that changed so that I can help others with up-to-date information.
- ❖ rate stores so that I can provide some feedback about their services.
- ❖ provide feedback about the functionalities and the usage of the app so that the app will be optimized according to my needs.
- ❖ get information about advocacy and petition sites so that I can take action in case there are only limited package-free options in my area.

Appendix B: Store Owner Tasks & Responsibilities:

Legend
Fully addressed
Partially addressed

As a store owner/employee, I want to...

- ❖ efficiently edit / add / delete my store information, product listing, and prices so that the shoppers will see only up-to-date information regarding my store and products.
- ❖ see a preview of the data that I entered so that I can see what the shoppers will see in the app.
- ❖ see the store's site in the app from the user's view so that I can see what the shopper will see in the app.
- ❖ be able to search for stores so that I can check the offerings and prices of other stores.
- ❖ decide what products or services the users will get for a certain amount of reward points so that the shoppers can use their reward points.
- ❖ issue coupons to the shoppers for their reward points so that they will come to the store, and eventually buy other items, not just the one that the coupon is valid for.
- ❖ be able to accept the reward points and coupons earned by the shoppers so that they will come to my store and eventually buy other products too.
- ❖ receive reminders to update my information in the app so that I can provide up-to-date information to the shoppers.
- ❖ be notified in case any information is missing so that shoppers will find everything they need.
- ❖ be contacted when information about my store, my products, or my prices are reported by a user of the app so that I can verify it.
- ❖ be able to see the rating that my store got.
- ❖ be able to respond to store ratings so that I can provide my feedback regarding any comments or questions.
- ❖ receive information from the app regarding what products the users in my vicinity are searching for so that I can adjust my product offerings.

	Legend
	Fully addressed
	Partially addressed

Appendix B: Tester/SysAdmin Tasks & Responsibilities:

As an administrator, I want to...

- ❖ have access to logs related to the app so that I can perform troubleshooting if needed.
- ❖ have data analytics tools so that I can see how the users of my app (both shoppers, and store owners) behave, what functionalities they use, etc.
- ❖ set up automatic notifications for the stores regarding updating their information and verifying crowdsourced data so that the app will always provide up-to-date information
- ❖ review information from the 'Contact Us' forms so that I can provide feedback regarding comments.
- ❖ respond to any questions posed in 'Contact Us' forms so that I can provide answers.
- ❖ perform necessary fixes and updates to the system so that the app will function as intended.
- ❖ use the best possible third party APIs, and if needed switch to a different API so that I can improve the app's performance.
- ❖ regularly do database data clean up so that I can improve efficiency and performance.
- ❖ be able to identify vulnerabilities in the app (for example, using DAST) so that I can improve the security of the app.