SW Engineering CSC 648/848-05 Fall 2022

The Virtual Farmer's Market

Team 3

Name	Role
Seth Pavlicek spavlicek@sfsu.edu	Team Leader
Alexander Bjeldanes	Database
Armando Partida	Backend
Michael Abolencia	Frontend
Angel Antunez	Github Master
Igor Tsygankov	

History

Version	Date
Version 1	9/22/2022

Index

Executive Summary

The Virtual Farmers' Market (TVFM) is an online grocery shopping service similar to other delivery services like Amazon Fresh or Instacart. However, TVFM can provide produce and other food straight from local farmers' markets. This means that a user can receive the freshest and highest quality ingredients quickly. If they have allergies or strong preferences then TVFM makes it very easy to find the food they like.

Team 3 was inspired to make this project because we all like food. However, everyone wants the highest quality food quickly. How would we solve this problem? We decided that farmers' markets have very high-quality produce. Now how would someone get it quickly? Simple, a service that would deliver it straight to the customer.

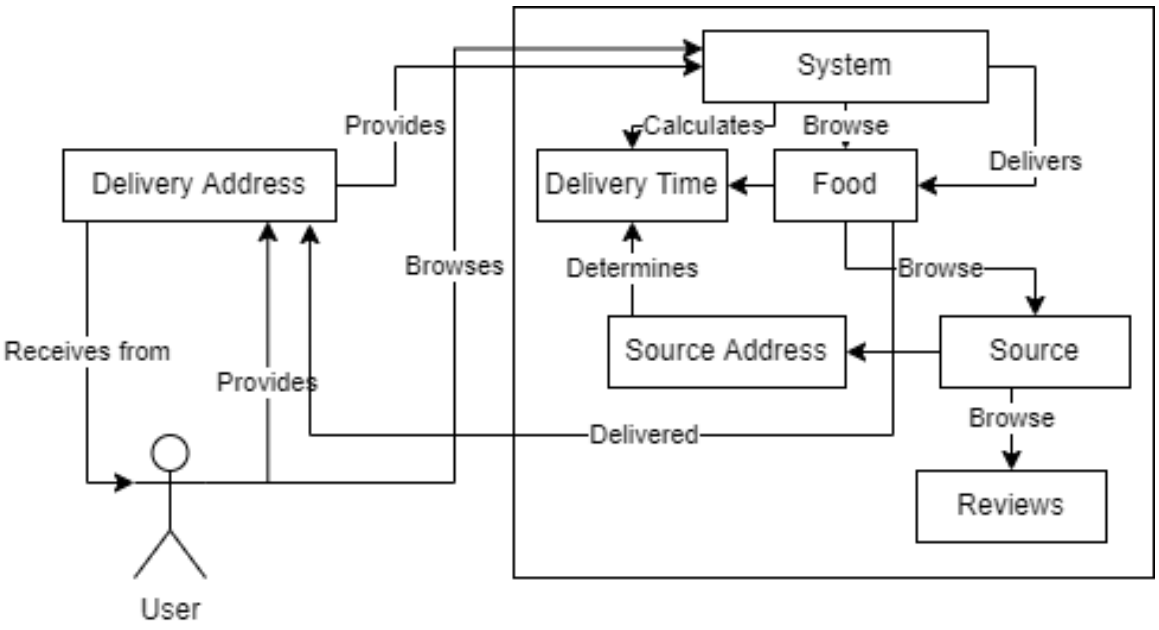
Main Use Cases

Use Case 1: Need Groceries

Actors: Eric (User)

Description: Eric is hungry and wants some groceries. However, he is very busy and cannot make it to the store to get his own groceries. He decides that he should order his food online.

Solution: Eric goes to The Virtual Farmer's Market to order his groceries. From there he can decide when and from which source he wants his food. Eric can decide if he wants a certain food from a certain source based on the price and quality from his own experience or from reviews on that source. Eric can also specify where he wants his groceries to be delivered.

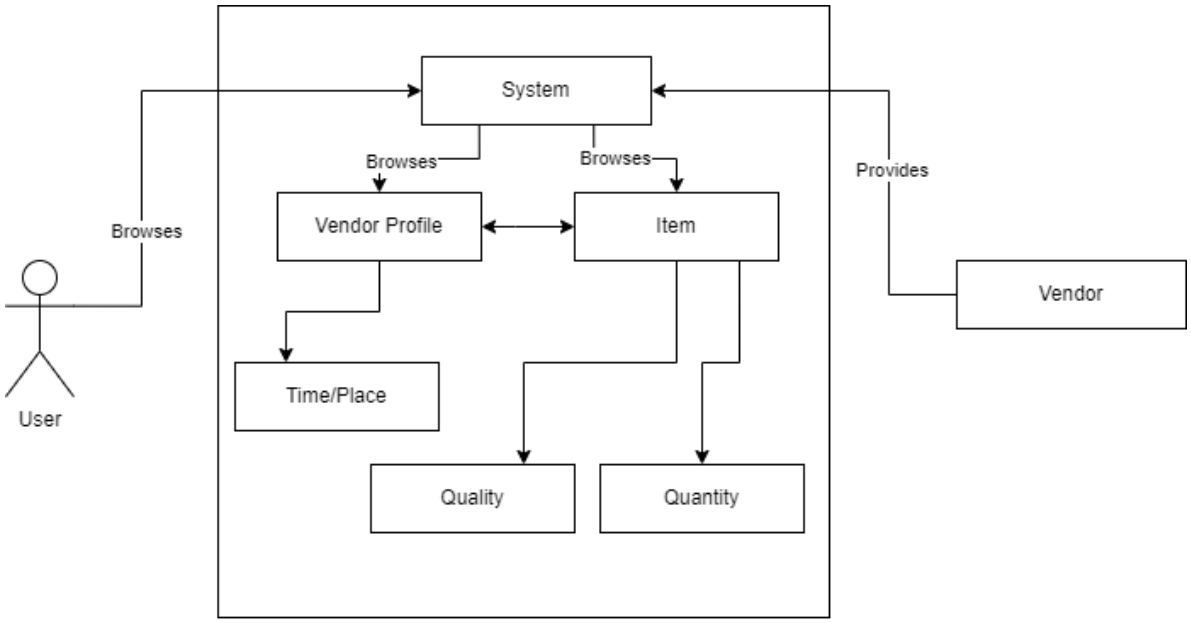


Use Case 2: Vendor Inventory

Actors: Jake (Vendor), Customer (User)

Description: Jake gets many business related messages and phone calls related to inventory at upcoming farmer's markets. Jake's current system for updating customers is by individually replying to each inquiry. Both Jake and the customer seek a more organized solution that is more convenient.

Solution: Jake goes to the Virtual Farmer's Market to update his upcoming inventory. Virtual Farmer's Market Database has a list of inventory that Jake can update and display. The customer can better track what inventory will be for sale in the upcoming farmer's market. This saves Jake and his customers significant amounts of time and energy. Jake can also specify if certain discounts will be applied to items.

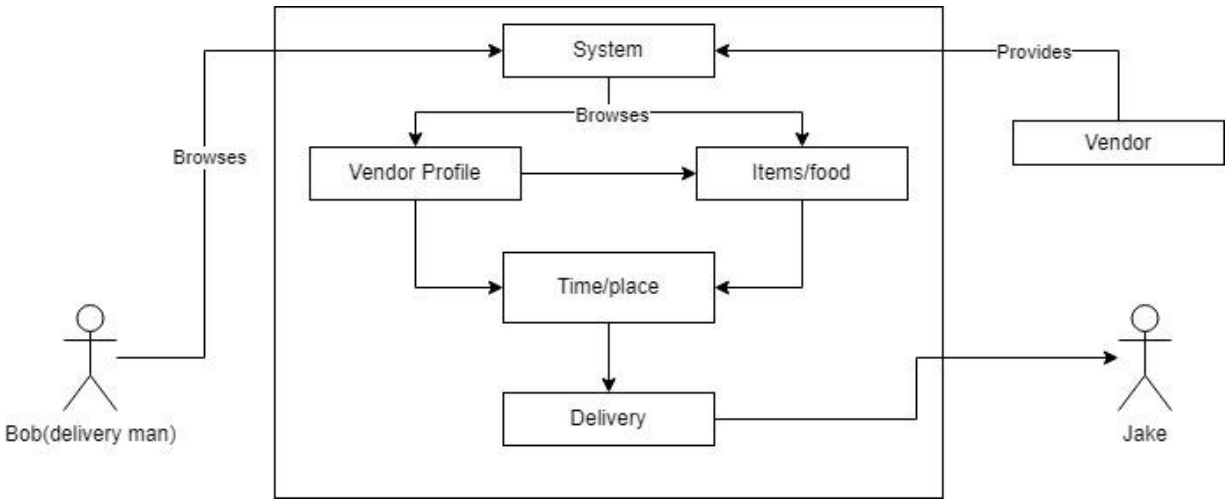


Use Case 3: Delivery Man

Actors: Bob (Delivery Man), Jake (User), Vendor

Description: Bob wants to make extra money during his free time. He decides to become a delivery man because of the flexible hours. He decides to become a delivery man for a certified farmers market.

Solution: As a delivery man, Bob will choose what items he would like to deliver. Bob decides to deliver items that Jake ordered on the farmers market website. He will go to the farmer's markets to meet the vendors. Bob will ask for the items that he has to deliver and be on his way. Bob will earn money by delivering these items to Jake.

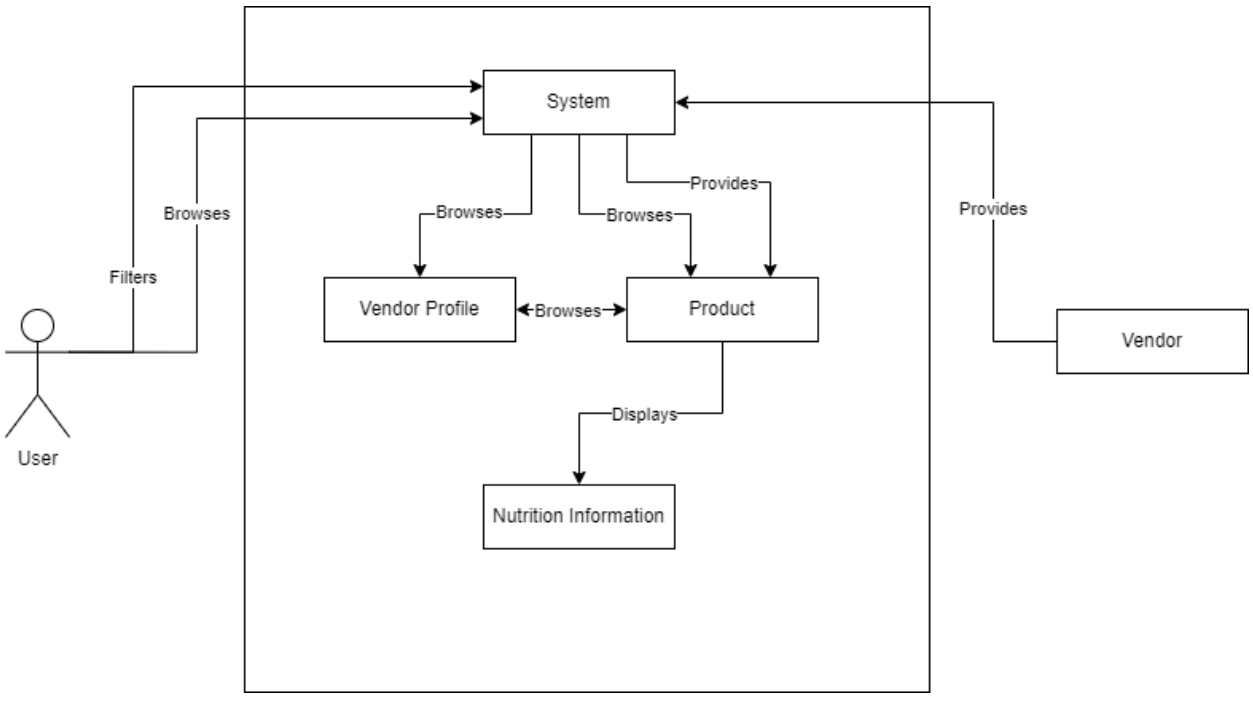


Use Case 4: Health Conscious Individual

Actors: Tom (User), Vendor

Description: Tom wanted to make a change in his life and he decided to start by eating better. Unfortunately, fresh produce is hard to come by in Tom's city. Farmer's Markets are non-existent and the nearest farm is miles away.

Solution: Tom can browse through TVFM's inventory and order fresh produce sourced from reliable farmers delivered to him via TVFM. Tom can filter through TVFM's inventory based on whatever his dietary needs are. In addition, Vendors will provide nutritional information that Tom can access whenever he needs to. Furthermore, TVFM will locate the nearest vendor to Tom's delivery address in order to shorten the delivery time and ensure he can get the freshest products possible.

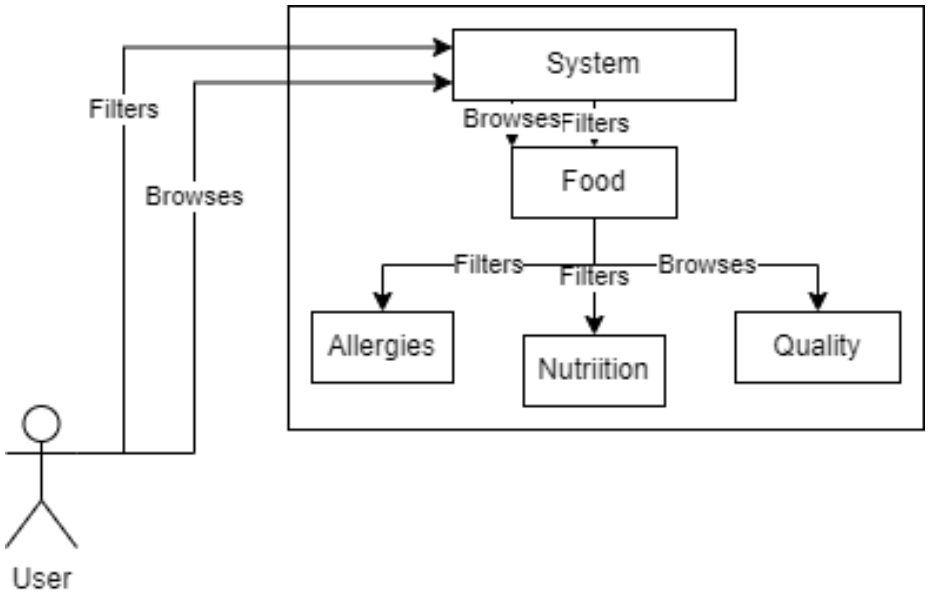


Use Case 5: Dietary Requirements

Actors: Pedro (User)

Description: Pedro has various allergies and dietary restrictions. Pedro also has kids that are very picky about their food. His kids demand nothing but the highest quality ingredients in their food. Pedro wants to ensure that he can buy groceries that fit his diet, allergies, and picky children. He could check the allergens, nutritional facts, and quality reviews from previous customers for each item. However, he would like to avoid this because it would be a very time-consuming process.

Solution: Through TVFM, Pedro can filter out certain products that do not fit his dietary requirements. Similarly, he can filter out certain products by their allergens. To meet his kid's standards Pedro can check the reviews for products that he selects and can quickly find out which ones are reliably high-quality produce.

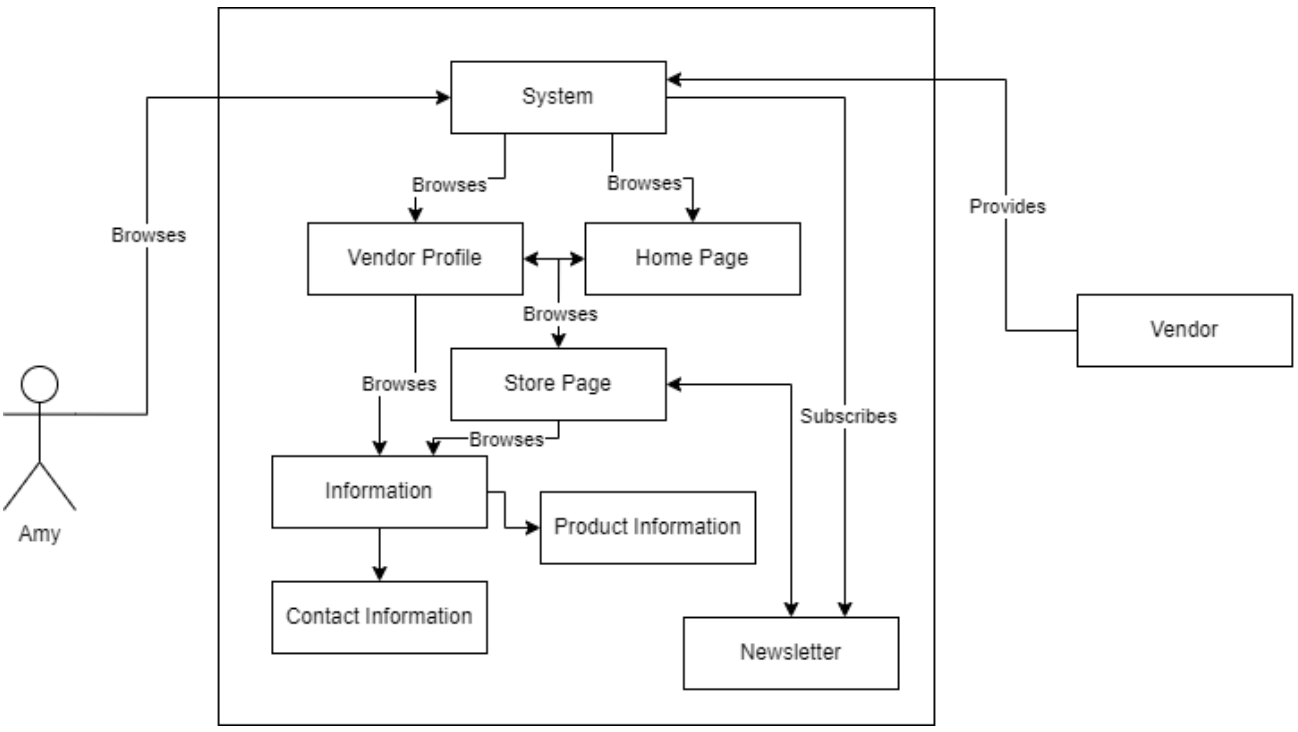


Use Case 6: Small Scale Farmer

Actors: Amy (User), Vendor

Description: Amy runs a small family farm. She wants to help grow her family business and expand her consumer base. She can't afford the same level of marketing that big brands can do.

Solution: TVFM can help Amy grow her business by providing a platform for commerce and giving exposure to her business ventures. Amy can create and manage a store page on our site. We will also feature vendors on the homepage in order to help them attract customers and gain exposure. Lastly, we will send out weekly newsletters that help promote businesses on our site.

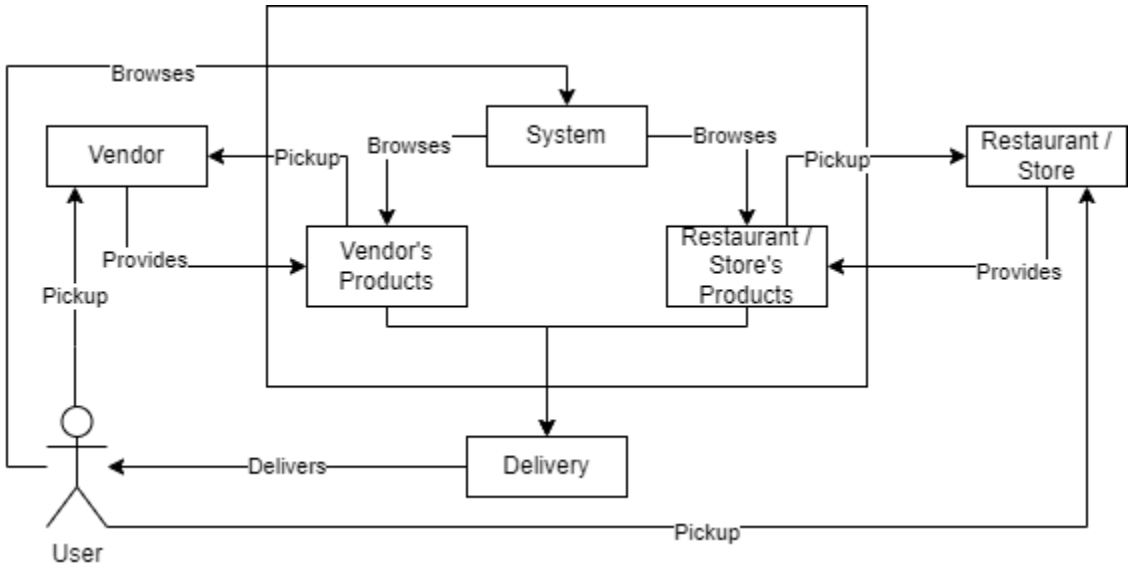


Use Case 7: Quick Lunch

Actors: Bob (User), Vendor

Description: Bob is a busy person that wants to buy a fresh meal. However, because Bob has a busy schedule, he does not have the time to wait for a fresh meal to be prepared.

Solution: Bob can order a fresh meal through The Virtual Farmer's Market. It can be sourced directly from a farmers market vendor, through a store, or restaurant. Bob can select from the variety of fresh meals and place an order in which he will be able to get it delivered or can quickly pick it up at a physical restaurant or store at a specified time.

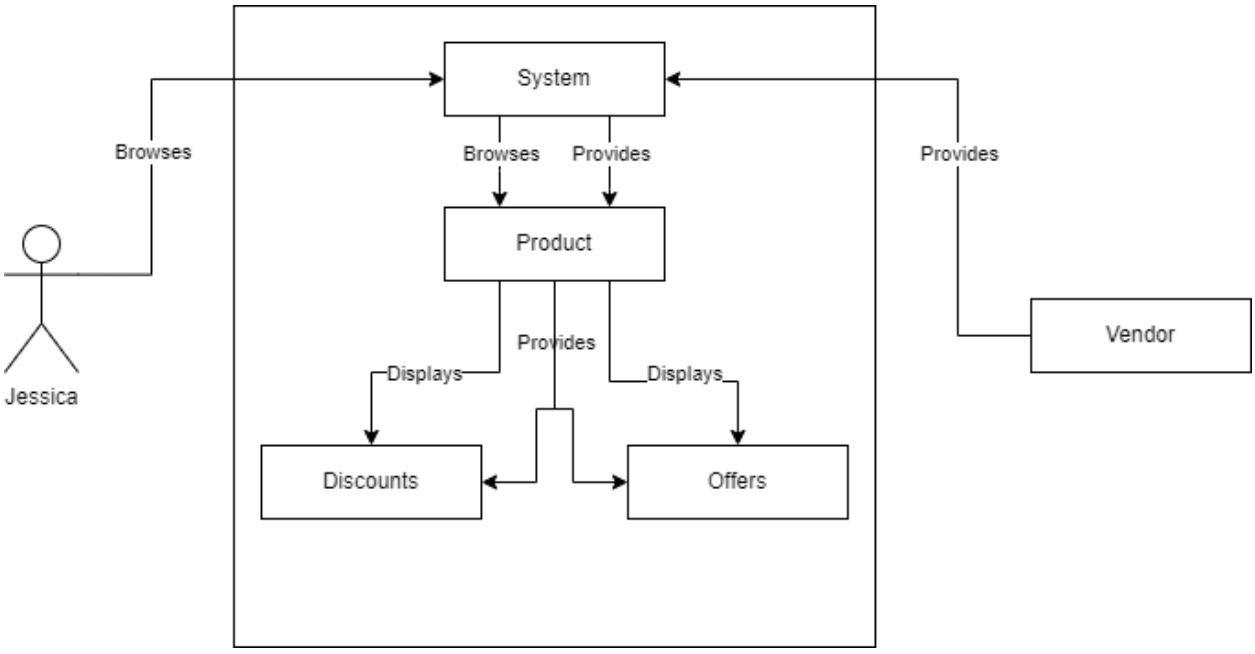


Use Case 8: Affordable Produce

Actors: Jessica (User), TVFM (Store)

Description: Jessica doesn't have a lot of money for her meals and she would also like to buy quality food where she can buy cheap and healthy products. She would like to know if there is any store where she can compare products or where she can find food offers since she would like to buy cheaper ones.

Solution: In TVFM, Jessica can compare products with other stores and can find out how cheap it is to buy on our web page without forgetting the quality of the products. The store also offers a page full of discounts and products that at the moment have a reduced price.

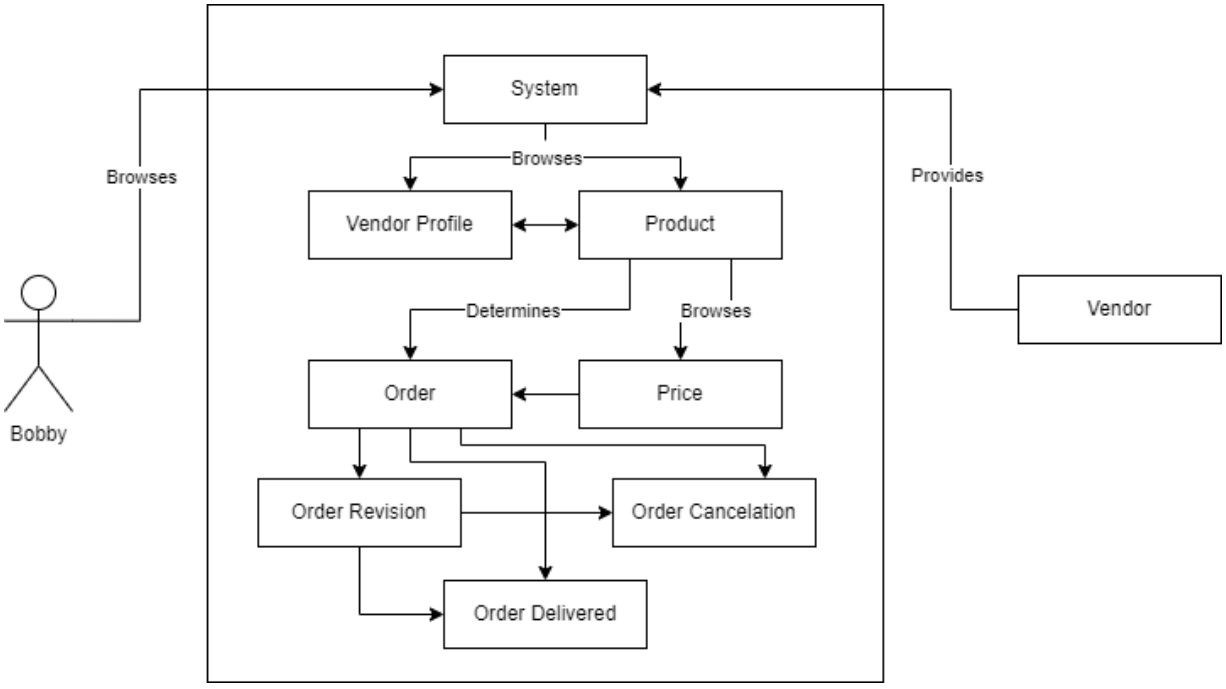


Use Case 9: Revising an Order

Actors: Bobby (User), Vendor

Description: Bobby realizes that he needs to buy groceries because he has run out. Instead of going to buy them at the store, Bobby decides to order his things in the virtual farmers market. After submitting his order, he realizes that he picked some of the wrong items.

Solution: After submitting his order and realizing that he bought the wrong items, he has a limited time to either cancel his order or revise it before the vendor confirms the order and hands it off to the delivery man.

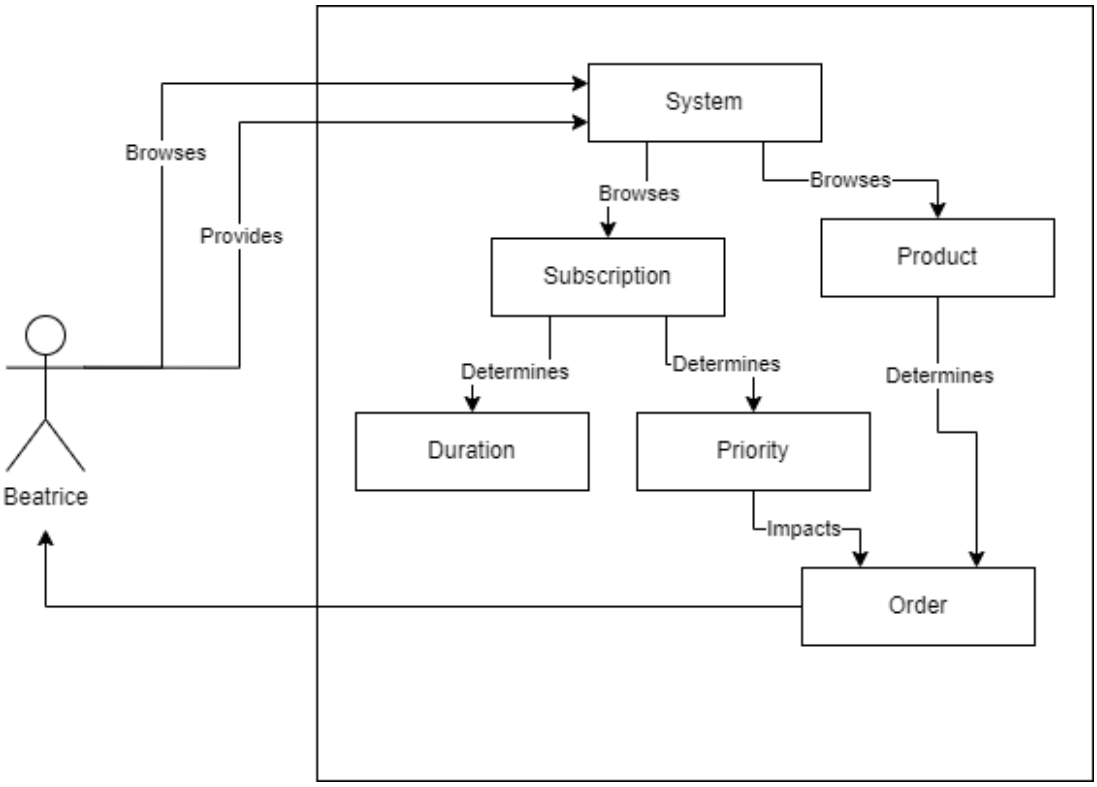


Use Case 10: Catering

Actors: Beatrice (User)

Description: Beatrice owns a restaurant that offers catering services. She needs a vast amount of ingredients on a weekly basis and local grocery stores sometimes have trouble keeping up with her needs.

Solution: TVFM offers subscription services. Beatrice can select products that she wants as well as the length of her subscription. For customers that rely on a constant supply of food such as Beatrice, TVFM also has a premium subscription service that gives both expedited deliveries, as well as priority on all of her deliveries.

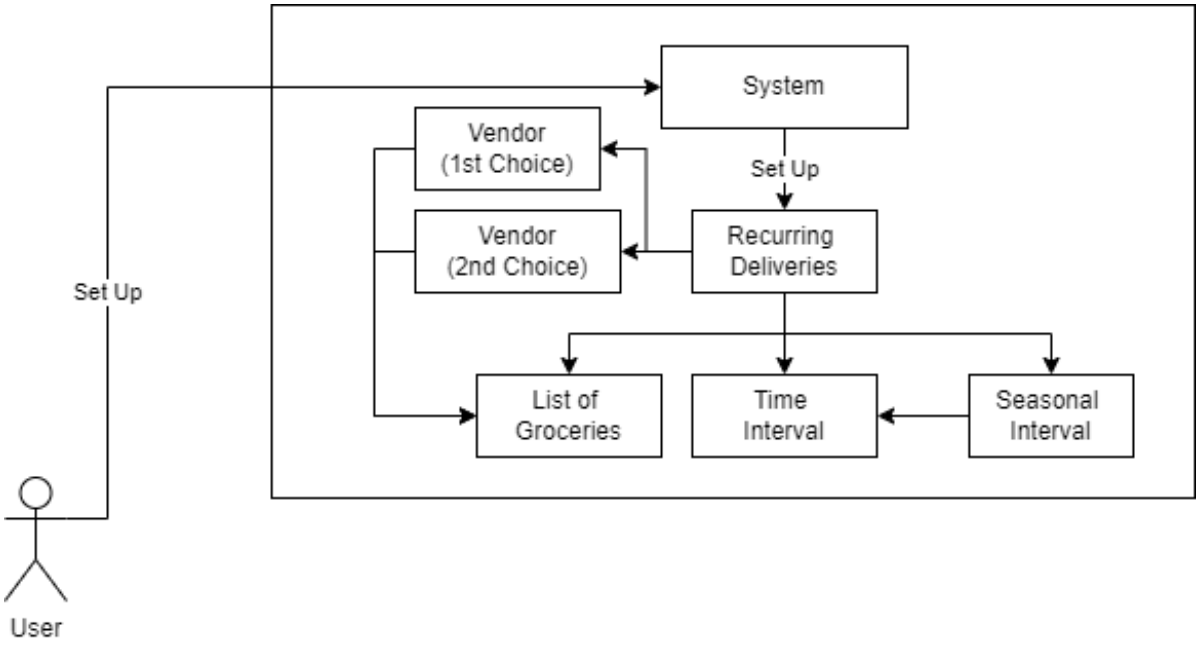


Use Case 11: Meal Planning

Actors: Jasmin (User)

Description: Jasmin likes to plan everything in advance including her meals. Therefore she would like a recurring service that can reliably deliver certain essential groceries to her house.

Solution: Jasmin can set up recurring deliveries through The Virtual Farmer's Market. She can specify which groceries should be delivered at which times and how much. She may also set up seasonal deliveries for certain produce that only grows during certain seasons. She can also specify a second source to choose produce from if the first source is out of stock.

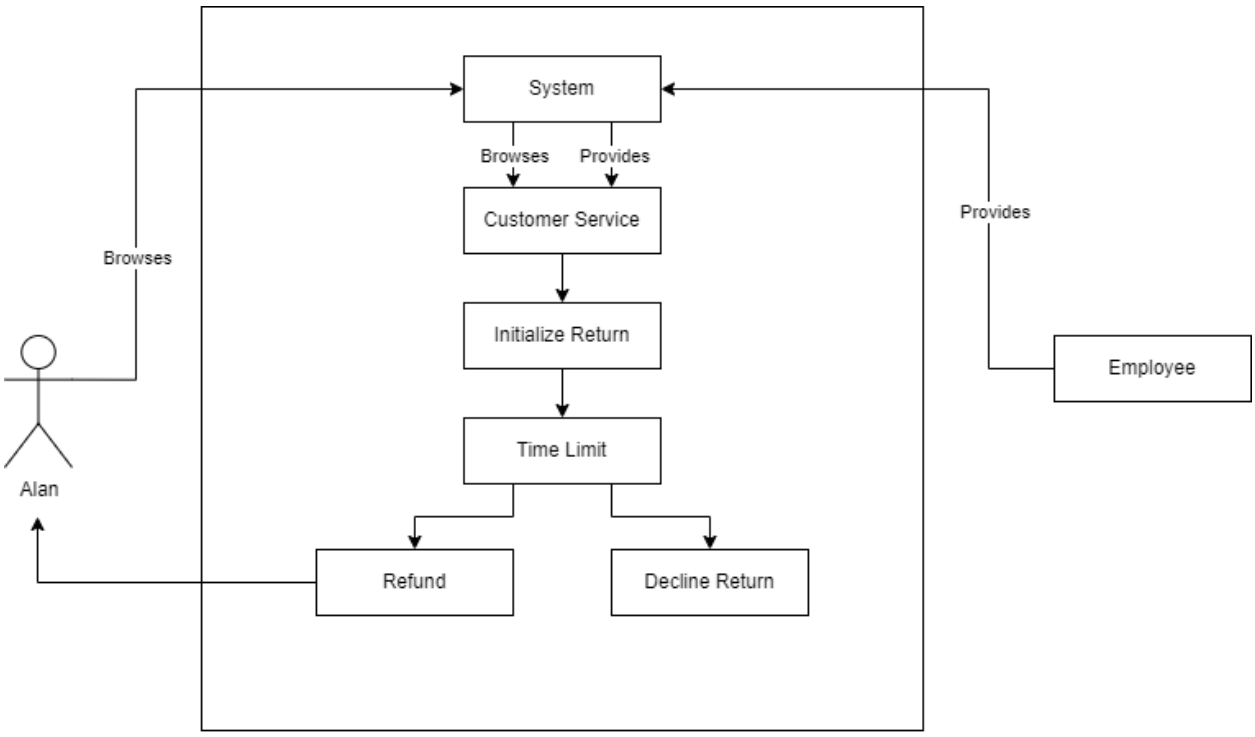


Use Case 12: Returning Items

Actors: Alan (User), Customer Service

Description: Alan is determined to buy food for his best friend. He goes to the virtual farmers market and buys food for his friend. When he arrives home and gives the food to his friend, he sees that he refuses the food because he is allergic to certain products. Alan wants to know if he can return the purchased products.

Solution: Alan has to go to customer service at a nearby store to return the products he bought. The store offers a period of time in which customers can return the purchased products, if Alan returns items within the time limit, Alan must provide the products he bought and the employee takes care of the returning process so that Alan gets his money back and is satisfied with the customer service. Otherwise, the return process is declined.

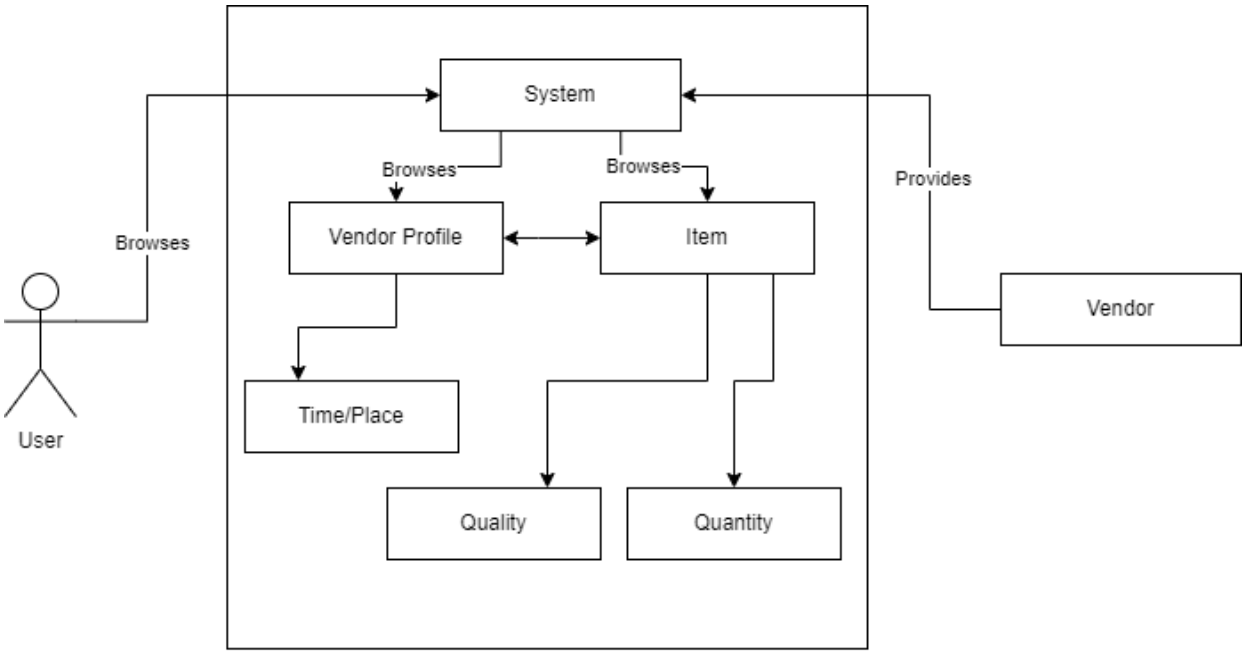


Use Case 13: Contact Information

Actors: Jill (Customer), James (Vendor)

Description: Jill wants to contact James. James doesn't have his business information published in any easily accessible manner. James also wants his business information to be easily found on platforms that are relevant to farmer’s markets. Both the customer and vendor want a system that is both convenient and simple to use.

Solution: James has his business contact information listed on TVFM. His information is listed on his profile. James has the option to update or remove that information whenever. Jill can easily find this information, as well as look at other vendors.



Main data items and entities

1. User

1.1 A user shall be able to browse food.

1.2 A user shall be able to purchase food.

1.3 A user shall be able to have their food delivered at a specified location.

1.4 A user shall be able to browse for food using filters.

2. Vendor

2.1 A vendor shall be able to sell food.

2.2 A vendor shall provide the nutritional facts and allergens for their food.

2.3 A vendor shall provide their contact information.

2.4 A vendor shall be able to deliver to at least one location.

3. Food

3.1 Food shall be either an ingredient or a meal.

3.2 Food shall contain 0 or more allergens.

3.3 Food shall have nutritional facts.

4. Filters

4.1 A filter shall describe an allergen or nutritional fact.

5. Recurring Delivery

5.1 A recurring delivery shall be delivered to one location.

5.2 A recurring delivery shall source its food from one or more vendors.

Initial list of functional requirements

1. Registration
    a. Users shall be able to enter their data and sign up for our services.
2. Vendor Accounts
    a. Users shall be able to set up vendor accounts that allow them to sell their products on our site.
3. Search
    a. Users shall be able to use a search function to help them browse the selection of products hosted on our site.
    b. Users shall be able to use a search function to find vendors hosted on our site.
4. Filtering
    a. Users shall be able to filter out products when they browse our site to help them narrow down select items. In addition, this shall help users with dietary restrictions avoid food that they shouldn't be consuming.
5. Reviews
    a. Users shall be able to post reviews for products and vendors.
6. Purchase
    a. Users shall be able to purchase items from our site.
7. Returns
    a. Users shall be able to return items within a given time frame.
8. Subscription
    a. Users shall be able to create a subscription in order to receive recurring deliveries at given intervals.
    b. Users with premium accounts can get higher priority on their subscriptions.
    c. A user shall be able to cancel their subscription whenever they want.
9. Revising an Order
    a. A user shall have a window of time to revise their order after they have completed it.
10. Contacting Vendors
    a. A user shall be able to access a vendor's contact information to make inquiries about products, services, etc.

11. Newsletter
    a. A user shall receive a newsletter notifying them about deals, new products, notable vendors, and other information they may need. They are free to opt-out of this newsletter if they want.
12. Nutrition Information
    a. A user shall be able to view the nutrition information of a product whenever they want to do so.
13. Discounts
    a. A user shall be able to view which products are discounted.
14. Price Comparison
    a. A user shall be able to see how prices of products hosted on our site compare to nearby products.
15. Vendor Proximity
    a. A user shall be able to search for the vendors closest to a given address.
16. Vendor Pricing
    a. A vendor shall be able to set the prices for their products. Suggestions will be given to the vendor regarding pricing.
17. Uploading Images
    a. A vendor shall be able to upload images of their product to their store page.
18. Previous Purchases
    a. A user shall be able to view any previous transactions they have made on our site.
19. Alternatives
    a. If a vendor's supply of a product were to run out, a user will be recommended alternative vendors that sell similar products.
20. Recommended Products
    a. A user shall be recommended products based on their previous transactions.
21. Following a Vendor
    a. A user shall be able to follow a vendor in order to receive updates about a vendor's inventory.
22. Editing Information

    a. A user shall be able to edit their billing information and address whenever they need to.

23. Total Price
    a. A user shall receive the total price of all the items in their shopping cart prior to finalizing their transaction.
24. Discounting Bulk Purchases
    a. A user shall receive a discount if the total price of items in their cart exceeds a certain amount.
25. Sort
    a. A user shall be able to sort their search results based on given criteria.
26. Tracking ID
    a. A user shall be given a tracking ID for their orders.
27. Help & Support
    a. A user shall be able to contact user support via email.
    b. A user shall receive a reply within 2 - 3 business days.
28. Careers
    a. A user shall be able to apply to needed positions.
29. Social Media
    a. A user shall be able to see offers, features, discounts, events on the social media of the store.
    b. A user shall share what they think of the store posts.
30. Customer Service
    a. A user shall be able to go to the store for customer service.
31. Main page
    a. A user shall be able to see the featured products, some offers. and events on the main page.
32. Cart
    a. A user shall be able to see the products they added to the cart.
    b. A user shall be able to modify the cart.
    c. A user shall be able to add more items to the cart.
33. Departments
    a. A user shall see the page organized in departments.

34. Delivery/Pickup
    a. A user shall be asked if they want delivery or pick up.
35. Services
    a. A user shall be able to see the services that the store provides.
36. Rewards
    a. A user shall be able to see the rewards page.
    b. A user shall receive rewards for every purchase.
37. Product Description
    a. A user shall be able to read a clear description of the product.
38. Advertisement
    a. A user shall be able to see ads about related products.
39. Mobile Adaptability
    a. A user shall use the store's app for easy access to view the products.
40. Login
    a. A user shall be able to login the store's page for preferences.
41. Account settings
    a. A user shall be able to change the preferences of their account
42. Select a near store
    a. A user shall be able to choose the nearest store for preferences.

List of non-functional requirements

Coding Standards:

1. All variables shall use camelCase.
2. Space between ‘if’ and the condition i.e if (condition).
3. Space between parentheses and the curly brace i.e () {}.
4. Space before and after “=”.
5. Comment above each function describing its purpose.

Performance:

1. The home page shall load in at least 500 ms.

Compatibility:

1. Current and previous version of Google Chrome.
2. Current and previous version of Mozilla FireFox.
3. Current and previous version of Microsoft Bing.
4. Current and previous version of Safari by Apple.

Scalability:

1. Application will be able to accommodate multiple users.
2. Application will be able to scale up and down depending on device.

Portability:

1. Website will function properly on different devices.

Reliability:

1. Application will consistently perform without failure.

Security:

1. User’s personal information to be kept confidential and not distributed.
2. User’s passwords to be encrypted.

3. Users may not be granted access till a strong password is created.
4. System will lock the user out after a specific number of login attempts.

Usability:

1. Interface is easy to use, user-friendly.

Availability:

1. Support during business hours.
2. Common question solutions will be available for non-business hours

Efficiency:

Capacity:

Regulatory:

1. Application will comply with all regulations and laws.

Localization:

Reusability:

Correctness:

Data Integrity:

1. System shall have backups of all updates to the database for every transaction.

Cost:

1. Developmental costs will be kept at a min by using free services provided online.

Manageability:

Testability:

1. Application will have a suitable testing approach for each feature.

Organization:

1. Company name and logo on the top-left corner of each web page.
2. Files and folders will be easily accessible and not confusing.

Competitive analysis

	Instacart	**Walmart**	**Farm fresh to you**	**Safeway**	**Amazon Fresh**
Strengths	-12 stores to choose from - Estimated delivery time/ same day delivery - Can give specific instructions to the person picking up your food - Easy partnership	- Wide Selection - Affordable for everyone - Worldwide organization - Reward system	- Appealing to the public - Customizable options - Third parties can associate easily with the company	- Large organic and non-organic selection - Unlimited free delivery over order of $30 - Reward system	- Large selection of products - Same day Delivery - Great prices
Weaknesses	- Dependency on third parties - Sustainability, decrease of workforce due to pandemic - Mismatch on items delivered and customer choice	- It is significantly disadvantaged against premium retailers - Expensive if the service is not in use	- Limited to bay area - Mixed reviews about delivery	- Prices are above average - Constantly out of stock - Delivery issues - Not financially viable for families below 3-4 people	- Must have Amazon Prime Subscription -Not appealing to the public -Delivery fee for orders under $35
Pricing	Various fees per order + Original Cost of food	$12.95/Month $98/year	Various fees per order + Original Cost of food	$12.99/Month $99/year	Must be Amazon prime member (14.99/month)
User Experience	Good organization of products (Mostly) Not easy to understand at first since the page contains a lot of options.	Decent Great to find what you are looking for. But you can be overwhelmed by a lot of products and poor descriptions.	Moderate. Great number of steps. You can easily lose what you are looking for due to the great number of options.	Decent Easy to find products. Appealing to the user. But, you can feel overwhelmed by all the information.	Moderate There is a lot going on in the home page and you can feel overwhelmed by all the products. - Not that appealing to the user
Social Media	-Instagram -Facebook -Twitter	-Facebook -Twitter -Instagram	-Facebook, -Twitter, -Instagram, -Youtube	-Instagram, -Facebook, -Twitter	-Facebook, -Twitter, -Instagram

Features	**InstaCart**	**Walmart**	**Farm fresh to you**	**Safeway**	**Amazon Fresh**	**The Virtual Farmers' Market**
Shopping Cart	(+)	(++)	(+)	(++)	(+)	(+)
Searching	(+)	(+)	(+)	(+)	(+)	(+)
Vendors	(+)	(+)	(++)	(+)	(++)	(+)
Payment System	(+)	(+)	(+)	(+)	(+)	(+)
Functionality (easy to use?)	(+)	(+)	(+)	(+)	(+)	(++)
Contact Info/ Social Media	(+)	(+)	(+)	(++)	(+)	(+)
Filters	(-)	(++)	(-)	(+)	(+)	(+)
Product descriptions/ distribution of content	(+)	(+)	(+)	(+)	(+)	(++)
Reward System	(+)	(+)	(-)	(+)	(+)	(++)

Competitive Analysis Summary

On our site we are trying to make it appealing to the public so that users can find the highest quality food at the lowest price. We seek to compete with our competitors' delivery times. Similarly, we want our page to be much easier to use than our competitors so that users can quickly navigate and locate the products they want. We also want our customers to feel safe with their purchases. Therefore, we offer filters that make it easier to search for products for people with allergies, illnesses, or simply people who are looking for something specific from the nutritional facts. This is something that none of our competitors offer since the information about it is contained in the description of the products. Finally, we want to promote the rewards system and our social networks, so that users can see the weekly promotions and earn points for their next purchase.

High-level system architecture and technologies used

Server Host: AWS

Operating System: Ubuntu 22.04

Server Database: MySql 8.0

Web Server: Apache 2.4

- Server-Side Framework: Spring Boot 2.7.3
- Language: Java 17

Web Framework: React

IDE: IntelliJ, Visual Studio

Checklist

To Do	Done/ On Track/ Issues
Team found a time slot to meet outside of the class	Done
Github master chosen	Done
Team decided and agreed together on using the listed SW tools and deployment server	Done
Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing	Done
Team lead ensured that all team members read the final M1 and agree/ understand it before submission	On Track
Github is organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	On Track

List of team contributions

Seth Pavlicek:

- Setup backend and frontend servers locally
- Executive Summary
- Coding Standards in non-functional requirements
- Use Case 1, 5, 11
- Researched Instacart

Alex Bjeldanes:

- Finalized and reviewed use cases
- Formatted milestone 1 document
- Researched Safeway
- Use Case 2, 13

Armando Partida:

- Combined research into competitive analysis
- Researched Instacart
- Use Case 8, 12

Angel Antunez:

- Non-Functional requirements and Functional requirements
- Researched Farm Fresh to You
- Use Case 3, 9

Igor Tsygankov:

- Setup backend and frontend on AWS
- Researched Amazon Fresh and Walmart
- Use Case 7

Michael Abolencia:

- Functional requirements
- Researched Misfits
- Use Case 4, 6, 10