SW Engineering CSC648-848 Spring 2023

Milestone 1: Use cases, High-Level Requirements and Architecture

Food Feast

Team 01

Elahe Bashiri (Ebashiri@sfsu.edu): Team lead

Abbas Mahdavi: Back end lead

Megan Lew: Front end lead

Nathan Rennacker: Github master

Jed Graves: Developer

Alexander Diaz: Developer

Revision History

Date Submitted	Date Revised
3/13/2023	3/18/2023

1. Executive Summary:

Our team is developing a web application for restaurant search, order, and pickup called Food Feast. We are looking to address the issue of hungry SFSU students, staff, and faculty while supporting nearby local businesses. Our application is developed for exclusive use for the SFSU community. Many students and faculty usually have busy schedules and a limited amount of time to leave campus to search for food. It is important to have daily nutritious meals, but it may be difficult to find meals or have them delivered in time before the next class.

Food Feast will help users simplify the process of finding meals and having them delivered on campus or to their dorms. Our application will feature search/reviews of local restaurants, the ability of restaurants to register/advertise menus, the ability of restaurants to manage orders/delivery, and order meals. The delivery service will have access to a campus map for faster delivery times to classrooms and campus facilities. This makes our service unique because food delivery services usually deliver on a nearby street. Food delivery services are usually costly, our app will have a student verification system and offer students a 20% discount. We will also aim to provide a secure, fast payment system. Students can purchase their meals by linking their Gator passes.

Our team consists of six members, and we are a student startup team at SFSU.

2. Personae and main Use Cases:

Faculty

Dr. Richard Demir

Bio
Dr. Richard Demir is a cognitive psychology expert and professor at the university. He earned his Ph.D. in psychology from the University of Heidelberg in Germany and later moved to San Francisco to continue his research and teaching.

Goals
- Balance lecturing, research, and meetings
- Eat a quick lunch during dynamic breaks in his schedule
- Often stays late at the office and needs to eat dinner there as well

Frustrations
- Limited opportunities to eat with his busy schedule
- Long delivery times
- Inability to order directly to his office

Tech Usage
Cell phone

Social Media

Work-related software

Online Shopping

Influences
Family

Friends

Co-Workers

Social media trends

Advertisements

"Being very task-driven, it can be hard to find time to eat during the day!"

Age: 52
Job: **Professor of Psychology**
Family: **Single**

Staff

Steven Morales

Bio
Steven is a 34-year-old facilities maintenance manager at the university. He was born and raised in Southern California, but has been living in San Francisco for the past 10 years. He is married with two young children and enjoys spending his free time with his family and playing soccer with his friends.

Goals
- Lead team to successfully complete maintenance tasks
- Needs to know when the food will arrive
- Wants his team members to be able to relax during their lunch breaks
- Wants quality food during his lunch break

Frustrations
- Limited on campus delivery locations
- Long delivery times
- Confusion with campus delivery

Tech Usage
Cell phone

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Work-related software

Online Shopping

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Family

Friends

Co-Workers

Social media trends

Advertisements

"I never compromise when it comes to good food."

Age: **34**
Job: **Facilities Maintenance Manager**
Family: **Married, two children**

Student

Farah Ahmadi

Bio
Farah is a 28-year-old Iranian-American pursuing her master's degree in computer science at San Francisco State University. Born and raised locally, she developed a love for tech and coding from a young age. Farah is a dedicated and hardworking student, with a passion for using technology to solve real-world problems. In her free time, she enjoys exploring the city and trying the wide variety of cultural food.

"With today's technology, there is no excuse for food delivery to be so difficult."

Age: **28**
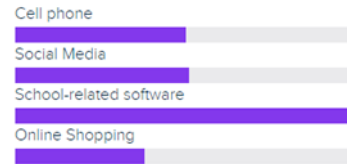Job: **Graduate Student**
Family: **Single**

Goals
- Finish her master's degree
- Be as productive as possible during study time
- Have a hassle-free way to order food to her dorm room
- Be able to order late at night

Frustrations
- Limited on-campus delivery locations
- Limited options for Middle Eastern food near her dorm
- High delivery fees

Tech Usage
Cell phone

Social Media

School-related software

Online Shopping

Influences
Relatives

Friends

Social media trends

Advertisements

Driver

Kylie Baker

Bio
Kylie is a 20-year-old undergraduate student at the university. She is a social butterfly and enjoys spending time with her friends and boyfriend. Kylie grew up in Arizona but moved to San Francisco in her teens and fell in love with the city's vibrant culture and diverse community. She is majoring in Communications and hopes to pursue a career in public relations or marketing. In her free time, Kylie enjoys exploring the city's restaurants, attending music festivals, and hiking in the nearby mountains.

"I love being able to share with my friends. Food makes everyone happy!"

Age: 20
Job: **Undergraduate Student**
Family: Dating

Goals
- Have a great college experience
- Be able to order food for herself and her friends so they don't have to drive somewhere
- Feed everyone without breaking the bank
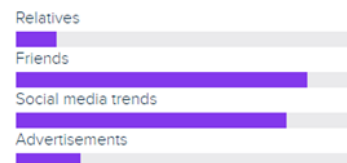
Frustrations
- Expensive food delivery
- Few group discounts
- Long delivery times

Tech Usage
Cell phone

Social Media

School-related software

Online Shopping

Influences
Relatives

Friends

Social media trends

Advertisements

Admin

Sarah Miller

Bio
Sarah is a 30-year-old system admin from San Francisco. She graduated from SFSU and now works for a startup food delivery company. She loves technology and spends much of her time reading and researching new tech advancements. She can often be found hanging out in local coffee shops and eateries.

Goals
- Successfully maintain software for the campus food app
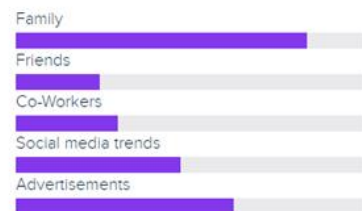- Connect restaurants to the app
- Keep the app secure

Frustrations
- Buggy software
- Managing confusing database schema
- Lack of communication from management

"Education doesn't run on an empty stomach!"

Age: **30**
Job: **System Admin**
Family: **Married**

Tech Usage
Cell phone
Social Media
Work-related software
Online Shopping

Influences
Family
Friends
Co-Workers
Social media trends
Advertisements

Restaurant Owner

Haru Yamamoto

Bio
Haru is a Japanese restaurant owner. He spent most of his life in Japan, but recently moved to the United States and open a restaurant in San Francisco near the state university. The restaurant currently takes up most of his time, and he doesn't like to waste time on things he doesn't consider to be important or beneficial to the business

Goals
- Increase the profitability of his restaurant
- Market his restaurant to the university students, staff, and faculty
- Add his restaurant to food apps without an excessive amount of effort

Frustrations
- Confusing software
- Long signup processes
- Food apps not delivering to a good portion of campus

"I'm bringing real Japanese cuisine to the bay area at affordable prices"

Age: **57**
Job: **Restaurant Owner**
Family: **Married, one child**

Tech Usage
Cell phone
Social Media
Work-related software
Online Shopping

Influences
Family
Friends
Employees
Social media
Advertisements
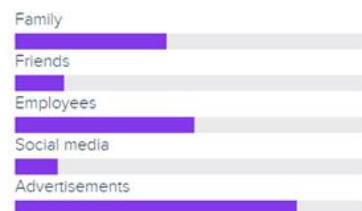
Use Cases:

1. Ordering Food:

   Dr. Demir is a Professor of Psychology at San Francisco State University. He has an extremely busy schedule, combining meetings, lectures, and research sessions. After his morning class, he has a meeting with the department head and only a short break in between. He knows that he will not be at his peak performance for the meeting and afternoon class if he doesn't eat, the break is not long enough to go off campus for food, and being lunchtime, it is also a busy time for most delivery apps. He knows, however, that the campus food delivery app delivers only from nearby restaurants using drivers that are in the immediate area. He also knows he can have the food delivered directly to his office. He opens the app and is immediately greeted with the home page. He sees a lot of options and promotions but doesn't want anything really heavy, like pasta or pizza, because that might make him tired. He sees the option for sandwiches and immediately selects it. He is presented with several local, high-rated options and selects one that looks good. Being pressed for time, he decides to select the featured sandwich and a coffee. Tapping the checkout button, he is directed to the login page. Now that he is logged in, his payment information is saved in the app, so checkout is a breeze. It arrives at his door shortly after he returns to his office. This will keep him alert and his blood sugar up through the afternoon.

2. Searching and sorting:

   Farah is a graduate student at San Francisco State University studying computer science. This is one of the most demanding degrees, and she spends long hours studying and researching for her thesis. She enjoys her studies, but they are time-consuming, and she often finds that she has forgotten to eat dinner until she becomes extremely hungry around 9 p.m. On this particular night, as with many, she is at a critical place in her research and doesn't want to break her concentration for too long by leaving her dorm room or dealing with a long, annoying delivery app process. She opens the campus food delivery app and searches for Middle Eastern food.There are several options, so she selects the option to sort by highest rated restaurant. Since she has never used the service before, she is prompted to create an account. Filling out the form, she finds she can use her Gator card to pay. Convenient. A short time later, her food has arrived at her door, and she doesn't have to even change out of her pajama pants and slippers. She opens the bag. The heavenly smell reminds her of her mother's cooking.

3. Delivering:

Kylie is an undergraduate communications major. She is very motivated in her studies but also likes to have fun on the side. Like many college students, she often finds that her bank account gets uncomfortably low toward the end of the semester. She wanted to pick up a part-time job, but it's hard to find one that will fit her busy schedule. A few weeks ago, a friend recommended that she try delivering food for a delivery service. She doesn't have a car, so she wouldn't be able to make deliveries far from campus. She does have an electric scooter, though, and it is often faster to get around on than a car near campus. She then found out about the campus delivery app, which only does deliveries from restaurants near campus. Perfect! Since then, she has made nearly 100 deliveries to students, faculty, and staff on the SFSU campus. Using her scooter, she is able to deliver faster than any other food delivery service. She is also able to use the built-in maps feature to navigate safely and avoid high-traffic areas that might be dangerous for a scooter. Kylie now has a steady income that allows her to have more fun on the weekends and enjoy her college experience.

4. Group Order:

Steven is a facilities maintenance manager at SFSU. He is in charge of a team of 4 that specializes in utility maintenance. On this particular Friday, there was an unexpected pipe burst in the main sprinkler line on the campus lawn. It had been an unusually hot week for the bay area, and the sprinkler would have to be fixed before the weekend. Steven and his team worked in the heat for hours and finally got it fixed around two in the afternoon. They had worked through lunch, and Steven wanted to thank them for their good work. At this point, they're cooling off in the maintenance office, and he doesn't want anyone to have to go get food, so he opens the campus food delivery app. Ordering through this service will allow the food to be delivered directly to the maintenance office. It will also be fast because the delivery drivers never go far from campus. Steven is not very tech-savvy, and he doesn't care to be, so he doesn't use apps that aren't user-friendly or take more than a few taps to get what he wants. He sees the option for pizza. Perfect for a Friday afternoon. He knows that one of his team members, Cathy, has recently become vegan, so he chooses a restaurant that has vegan options. He orders the pizza, and it arrives quickly. Team morale has never been higher.

5. Registering Restaurant:

Haru is the owner of a Japanese restaurant near the SFSU campus. He has only lived in the United States for 3 years, and his English is not yet fluent. His employees all speak Japanese as well, so that is not a problem for him. He recognizes the potential of marketing to the nearby campus but is not really sure how to do it. He tried setting up a delivery app service before, but it was confusing and frustrating, so he gave up quickly. Then he found the campus delivery app. It is exactly what he needs to reach hungry university students. He goes into his office and logs into his desktop computer. The setup is very simple and straightforward. He fills out the form and uploads some photos of the restaurant and the menu items. He clicks submit and is prompted to make an account. Once it's submitted, he is informed that it may take up to one business day for his application to be approved. The next day, his restaurant was listed on the app, and he got his first order. It was quickly picked up by a student delivery person. Haru is now very excited that he was able to expand his customer base.

6. Approving Restaurants

Sarah fills the admin role for the backend of the food delivery app. She loves tech and is very proud of being good at her job, but one of her biggest pet peeves is poorly written-software. Fortunately for her, the campus food delivery app is a well-written piece of software, making her job a breeze. Today is a day just like any other. Working from home, she signs into her desktop computer and logs into the app as the admin user. There are three new applications from restaurants wanting to have their business listed on the app. She reviews the content to make sure it is in line with the content guidelines and that they have all of the necessary information, such as an address, photos, menu, and discounts. All three of them are complete today, so she accepts them. They are listed on the app, and the restaurants are notified that they are accepted.

3. List of main data items and entities – data glossary/description

1. **Users:**

   - Unregistered users: Anyone visiting the website that has not created an account, who have limited access to the website, but can still browse restaurants and items, and create an account.
   - Registered SFSU users: SFSU students, staff, and faculty who have full access to the website (Aside from admin, rest-reg, and driver section). Can log in and add items to the cart and place an order. Req Record: username, email, password
   - Registered Restaurant owners: Users who have created a restaurant account while enrolling in their restaurant. Can manage their restaurant: delete, add/remove items, etc. Req Record: username, email, password, restaurant_id
   - Registered Drivers (Not a priority): Users that created a driver's account, can pick up active orders and deliver them, can manage order status, and have access to restaurant addresses and delivery locations, via a map to guide their delivery. Req Record: username, email, password

2. **Account:** The registered account of a user, including their data such as a username, email ending with @sfsu.edu (not required for restaurant owners and drivers), and password

3. **Restaurants:** The registered business by restaurant owners:

   - Will include a unique ID, name, price range (1-5: $), cuisine, description, rating (1-5), estimated delivery time, address, and main restaurant picture.

4. **Menu Items:** The list of the food for each specific restaurant, including the food item's unique id, name, description, price, corresponding restaurant id, and image.

5. **An order:** The record of a placed order that includes the user's info, the items in the order and their info, and the delivery location.

6. **Delivery:** The status of the order, and the driver's info

7. **Location:** The location of the restaurant, the building of the delivery, and the room number of the user

8. **Map:** A map available to the driver to help them deliver the food.

9. Payment: A selection when ordering to use Student ID or in-person cash!

10. User App features: Ability to see order status and 'Favorite' Restaurants/Food Items in particular restaurants

4. Initial list of functional requirements

<u>**Unregistered Users:**</u>

1. Map - Unregistered users shall be able to see a map of the area where the restaurants are in relation to you.

2. Search Bar - Unregistered users shall be able to type in the name of a restaurant and its plans for it on the map. This search bar could autofill with suggestions.

3. Browse Food Items - Unregistered users shall be able to see what restaurants have and which items are available for ordering.

4. Filter by different categories - Unregistered users shall be able to click on different filters (price, cuisine, distance) above the list of restaurants, the ordering of the list will be changed depending on delivery time.

5. View the popularity of restaurants - Unregistered users shall be able to view which restaurants are popular at which times depending on how many people order from a specific restaurant at different times of the day (could also tap into external analytics, but not sure of the logistics of it)

6. Estimated time for delivery vs. pickup - Unregistered users shall be able to see the estimate of the delivery. Each restaurant has an estimated time to complete an order, and then the system will use that for pickup time or add on additional delivery time for delivery.

7. Filing the restaurant form- Unregistered users shall be able to see the needed information and the policy for filing the form as a restaurant owner, it will be part of the registration choice.

8. Register - Unregistered users shall be able to register for an account (inputting sfsu.edu information   if applicable)

Registered SFSU Users: inherit all functions from the unregistered users plus the below functions.

9. Login -users shall be able to log in

10. Place Order for pickup - users shall be able to select items from a menu from a specific restaurant (who has provided their menu already) and place an order with those items. This order will be conveyed to the restaurant, which will have it ready for you to pick up.

11. Place order for delivery - users shall be able to select items from a menu and place an order with those items. This order will be conveyed to the restaurant with a driver specified so that it can be delivered to you.

12. View Order Status - users shall be able to check a page to see the status of their order, any delivery updates, and the estimated time it will arrive.

13. Update Order Status - users shall be able to cancel or add things to their order (this times out depending on how far along the restaurant is with completing their order)

14. Write a review - users shall be able to get feedback. After you have ordered from somewhere, you will have the ability to give the restaurant a rating and include a written review if you choose.

15. Save restaurants - users shall be able to save their favorite restaurants. A little star will appear next to restaurants that you can click on, and it will add it to your list of saved restaurants (a list that you can easily access when you want to see what you like)

Restaurant Manager:

16. Register for the service - Restaurants shall be able to opt-in to the service so that they will be displayed on the website as orderable. Will need specific information from them to ensure that they're legitimate.

17. Advertising - Restaurants shall be able to advertise on the website would include things like promoted restaurants that prominently display their food in the specific well has seen places on the website. You can click on these advertisements, and it will take you to the typical page where you can order from them.

18. Update menu - Restaurants shall be able to upload and update their menu in an easy-to-use form (that can include pictures), which will then allow users to select from it.

19. Instructions to delivery drivers - Restaurants shall be able to give instructions to drivers, including a list of items that can include a lot of information or very little. This typically will include a specific list of the items that the customer ordered so that the driver can ensure that everything is present.

Driver:

20. Delivery interface for drivers - Drivers shall be able to get their own orders which contain a map marked with the order number, etc. Drivers have a specific interface.

21. Report information to customer - Drivers shall be able to update the customer with any extra information that the customer may need, including. I'm here with your food, Increased wait time, etc.

Admin:

22. Approve pending requests from restaurants - Admin shall be required to approve pending requests from restaurants that are available to get orders from the website

23. Reject pending requests from restaurants - Admin shall be required to reject the requests which are inappropriate.

24. Control the list of approved restaurants - Admin shall be required to delete restaurants If sees an inappropriate username or receives a complaint from someone about anything.

5. List of non-functional requirements

• Refer to system properties and constraints such as:

– Reliability

– Response time

– HW and networking requirements

– Usability requirements

– Marketing, legal, licensing

– Media content (formats, size...)

– Privacy: what is the data collected, how is the data used

– Compatibility (e.g. which browsers...)

– Can refer to:

– Product (product behavior like speed, reliability)

– Organization (e.g. process, standards used)

– External factors (e.g. branding, legal disclaimers displayed)

6. Competitive analysis:

Feature	DoorDash	UberEats	GrubHub	Food Feast
Restaurant Search	++	+	+	+
Ease of Ordering	+	+	+	++
Delivery to specific places on campus	–	–	–	+
See what's popular to SFSU users	–	–	–	+
Ability to tip restaurant (supports restaurant workers)	–	–	–	+

Our app, designed for university students and staff, offers several advantages over its competitors: **Ease of ordering**: While competitors may have complex interfaces, our app streamlines the process for quicker and more efficient ordering, catering to the busy schedules of university users. **Delivery to specific locations on campus**: Unlike other food delivery apps, this app focuses on accurate delivery to designated spots within the university premises, ensuring timely and convenient food delivery for users in campus buildings or facilities. **Popular choices among university users**: Competitors may offer general popularity rankings, but our app displays the most popular menu items specifically among the university community, enhancing decision-making based on like-minded individuals' preferences. **Ability to tip restaurants**: In contrast to some competitors that only allow tipping drivers, our app provides users with the option to tip their favorite restaurants, fostering stronger relationships between customers and local eateries. By targeting these specific points and addressing the unique needs of the university community, the proposed food delivery app aims to create a competitive edge over existing services in the market.

7. High-level system architecture and technologies used:

A client-server model is used for the high-level system architecture. The client is built using React as it communicates with the server-side via HTTP requests.

The server side is built using Node.js and Express as it makes it easier to handle HTTP requests and middleware due to its functionality. The server is hosted on Amazon Web Services (AWS), and the operating system used is Amazon Linux 2, which offers a stable and secure Linux distribution optimized for AWS. The database used is MySQL v8.0, with MySQL is known for storing and managing large amounts of data in databases. We will also be using Visual Studio Code, which is an IDE, to build and deploy web applications.

8. Team and roles:

Team Lead: Elahe Bashiri
>   Responsible for providing guidance and support. Assigning tasks to team members based on their strengths and abilities and ensuring that each team member clearly understands their responsibilities. Arranging weekly meeting groups to make sure about meeting deadlines.

GitHub Master: Nathan Rennacker
>   Responsible for managing the repositories, ensuring that they are properly set up, maintained, and secured. Responsible for managing pull requests, ensuring that they are properly reviewed and merged and that any conflicts are resolved.

Back-end Lead: Abbas Mahdavi
>   Responsible for the server-side web application logic, definition, and maintenance of the central database as well as integrating the work front-end developers do. Responsible for advocating best practices and providing technical guidance to their team.

Front-end Lead: Megan Lew
>   Responsible for implementing visual elements that the user sees and interacts with within a web application as well as determining the structure of a web application. Responsible for advocating best practices and providing technical guidance to their team.

Front-end Developer: Alexander Diaz

        Responsible for implementing visual elements that the user sees and interacts with in a web application, developing user interfaces, and determining the structure and build of web pages.

Back-end Developer: Jed Graves

        Responsible for the server-side web application logic, definition, and maintenance of the central database as well as integrating the work front end developers do.

9. Checklist:

- So far all team members are engaged and attending team sessions when required. **(DONE)**

- Team found a time slot to meet outside of the class**. (DONE)**

- Back end, Front end leads, and Github master chosen. **(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. **(DONE)**

- Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.). **(DONE)**

- NEW: Use of any GenAI tool like ChatGPT: say if you used ChatGPT or like

    and how and for what segment of Milestone 1 (brief paragraph). **We don't use ChatGPT**