

SW Engineering CSC648-848 Spring 2024

Milestone 1

SFSU E-Commerce Site “Gator Garage” Team 6

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History Table

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Executive Summary

The Gator Garage Project introduces an innovative solution tailored specifically for the San Francisco State University (SFSU) community, addressing critical needs for safety, convenience, and accessibility on campus. With a mission to enhance the daily lives of students, faculty, and staff, Gator Garage offers two key services: safe pickup areas and an online shopping platform.

The safe pickup areas strategically located across campus provide a secure environment for individuals to access transportation services efficiently. Equipped with advanced security measures, these zones prioritize safety while ensuring seamless access to transportation, benefiting both the campus community and visitors alike.

In addition, Gator Garage's online shopping platform revolutionizes the way SFSU members access goods and services. Tailored to meet the diverse needs and preferences of the SFSU community, this platform offers a wide range of products, providing convenience and accessibility at their fingertips.

What sets Gator Garage apart is its commitment to the unique needs of the SFSU community. From the design of safe pickup areas to the selection of products and services on the online platform, every aspect is customized to enhance the campus experience for students, instructors, and staff.

The Gator Garage Project is led by a dedicated student team committed to driving positive change within the university community. With a passion for innovation and a deep understanding of the campus environment, our team is poised to deliver tangible benefits that will improve the quality of life for all members of the SFSU community.

In summary, the Gator Garage Project represents an essential investment in the safety, convenience, and accessibility of the San Francisco State University campus. With its unique blend of services tailored specifically for the SFSU community, this project has the potential to significantly enhance the campus experience for all stakeholders.

Personae

img-src:<https://unsplash.com/photos/girl-wearing-eyeglasses-with-silver-frames-behind-graffiti-Q76DPRQ3Ix0>



Katie, 18

- ❖ Freshman at SFSU
- ❖ From San Luis Obispo, CA
- ❖ Great at networking and making friends
- ❖ Enjoys browsing online for unique finds

Goals:

- Decorate her dorm room
- Build a sense of community with her school mates
- Platform that offers furniture and decor items that are both stylish and functional
- Platform that offers convenience and a wide selection of items
- Platform that emphasizes safety and community

Pain Points:

- Is not familiar with SFSU's campus
- Feels unsafe messaging strangers
- Does not want her information to be sold or shared

img-src: <https://unsplash.com/photos/man-holding-his-graduation-cap-VnydpKiCDa>



Rizwan, 25

- ❖ SFSU MBA Graduate
- ❖ From Delhi, India
- ❖ Recently secured out-of-state job
- ❖ Skilled in entrepreneurship

Goals:

- Relocate for new job position
- Safely and efficiently find a way to sell his belongings
- Have the opportunity to connect with fellow students to find someone to take over his SFSU apartment lease

Pain Points:

- Will stop using an app immediately if it has bad UX
- Applications need to be cross-platform
- Using apps that include many unnecessary steps

img-src: https://unsplash.com/photos/a-man-in-a-suit-and-glasses-posing-for-a-picture-qpyR0WKV_Cs



Sam, 33

- ❖ SFSU Coach
- ❖ From San Francisco, CA
- ❖ Passionate about the SFSU community
- ❖ Passionate about helping SFSU athletes
- ❖ Excellent communicator

Goals:

- Aim to provide affordable used gear to SFSU athletes.
- Looks for items that can be delivered in a 24-hour time frame.
- Finds an easy way to post an item description he wants on the website board.

Pain Points:

- Websites that crash at critical times
- Lack of tools provided by e-commerce websites to distinguish himself from competitors
- E-commerce sites which charge high fees for selling products

img-src:

https://www.istockphoto.com/photo/adult-teacher-posing-on-blackboard-gm1089058072-292142782?phrase=professor+beard&search_scope=image%2Cfilm



Jim, 52

- ❖ Art professor at SFSU
- ❖ Resides in Marin County, CA
- ❖ Master's Degree in Fine Arts (MFA)
- ❖ Not technically inclined

Goals

- Increase the accessibility of acquiring curated art work
- Sell his art work securely and safely to a community that appreciates his art
- Purchase items that he can customize or break down for use in larger pieces
- Reinvest earnings to launch new art exhibits

Pain Points:

- Has security concerns in online art transactions
- Has difficulty navigating/using e-commerce platforms
- Concerns about financial stability and earning potential

img-src: <https://www.istockphoto.com/photos/female-administrator>



Sarah, 32

- ❖ Administrator at SFSU
- ❖ Resides in San Mateo, CA
- ❖ Dedicated to creating respectful and inclusive environments
- ❖ Tech Savvy

Goals

- Passionate about bringing a unique blend of technical expertise and user-centric focus to her role
- Find a role where she can use her knowledge of web development principles and content management systems to maintain a user-friendly environment
- Creating a platform that caters to the diverse needs of the SFSU community
- To ensure effective interaction with students, staff, faculty, and administrators
- To champion the importance of responsible content management, ensuring that all information adheres to university guidelines

Pain Points:

- Ineffective systems of communication
- Software that makes simple tasks more difficult
- Policies and systems that discriminate

High-Level Use Cases

BOLD indicates entry in data glossary

USE CASE: Unregistered User - Viewing Content and Registering

Jane is a first-year **student** at San Francisco State University. She is moving into the dormitories and would like to furnish her new place. She sees a flier for Gator Garage around campus and decides to check it out. She visits the websites and she notices that she can search for specific items. Jane starts her search by inputting key terms like "couch", "nightstand", and "lamp". She is thrilled to discover that all her needs can be found, so Jane decides to sign up with Gator Garage. She navigates to the sign-up section and fills out her information: **email**, **password**, **firstname**, **lastname**. Jane confirms her information and is now a Gator Garage member—she eagerly begins to make her first order.

USE CASE: Registered User, Staff - Normal Use Case

Bob is part of the **staff** at SFSU; he lives in the Sunset District and is interested in purchasing a new couch. He wants to save money and shop local so he decides to go on the Gator Garage app on his laptop to look for any good deals. He finds a **post** of a couch that he likes and starts **messaging** the user using the app regarding it. He sets up a meeting with the seller to purchase the couch at a secure location and within the week it is in his living room. Bob is happy and writes a great review about his new couch.

USE CASE: Registered User, Student - Messages and Reviews

Jill is a **student** at San Francisco State University. She recently got the Gator Garage app and would like to start buying and selling things from there. Jill only wants to do business with trustworthy sellers and buyers. When she finds something she likes she makes sure to go to the user's profile account and checks if a potential merchant has good ratings and reviews. She also likes to get to know about the people she might do business with by asking various questions by responding to a seller's **post** with a **message**. After determining that a person is trustworthy Jill will want to meet in person preferably on campus to perform the business transaction. Jill will later on in the day visit the app to write a review about her recent transaction.

USE CASE: Registered User, Faculty - Posting Content to Sell

Jim is a **faculty** member at SFSU. He is not very tech savvy; however, can follow directions quite well if they are clear. As an art professor, Jim spends a lot of his time crafting personal pieces. He just finished a new piece that he is excited to share with the world. Jim takes a picture of his artwork and opens the Gator Garage app. He finds where to make a **post** and uploads the **itemPicture**, then he fills out the **itemName**, **itemPrice**, and **itemDescription**. Lastly, Jim assigns a secure pick-up location for his item and confirms his post. Jim sees a message informing him that his post is under review and will be submitted within 24 hours. He will check his "Dashboard" in the application at a later time to see if any one has sent him a **message** about his artwork.

USE CASE: Registered User, Admin - Approving Submitted Content

Sarah is a website **administrator** who works on the SFSU campus. She possesses advanced MySQL skills and basic knowledge of Node.js. She loves SFSU as an institution and intends to uphold all of its honest principles. Sarah clocks into her shift and looks at the posts waiting for moderator approval, ordered by **postDate**. On each post, she reviews the **itemName**, **itemPrice**, and **itemPicture** to see if they are legitimate listings. She then checks the post's **itemLocation**, and sees if it's a valid location on the SFSU campus. Every post includes the seller, so Sarah checks the post's **sellerId** to see if the account has an affiliated SFSU **email**. After checking the post, she approves it and now others can view that content. She does this process for every unapproved listing until there are none left.

Data Glossary

1. Entities

users:

- **Definition:** A person with a SFSU email who buys and sells goods on campus
- **Attributes**
 - **userID:** Unique identifier for a user
 - **username:** Unique display name created by user
 - **password:** Encrypted password for user
 - **firstName:** User's first name
 - **lastName:** User's last name
 - **email:** Must be SFSU affiliated
 - **bio:** Short description of user
 - **role:** Defines user access level and permissions
 - **profilePicture:** Path to profile picture

post:

- **Definition:** An item offered for sale by a user.
- **Attributes**
 - **postId:** Unique identifier for post
 - **itemName:** Name of good being sold
 - **itemPrice:** Price of good in USD (\$)
 - **itemPicture:** Path to item picture

- **itemDescription:** Description of post
- **sellerId:** ID of the user that post belongs to
- **buildingName:** Building location of product
- **roomNumber:** Room location of product
- **postDate:** Timestamp of post creation
- **categoryId:** ID of the category the item belongs to

category:

- **Definition:** Naming conventions to distinguish product types
- **Attributes:**
 - **categoryId:** Unique identifier for category
 - **name:** Name of category

orders:

- **Definition:** A request to purchase a product from another user
- **Attributes:**
 - **orderId:** Unique identifier for order
 - **buyerId:** ID of the buyer
 - **sellerId:** ID of the seller
 - **postId:** ID of the post
 - **orderDate:** Timestamp of when order was placed
 - **status:** Current status of order

messages:

- **Definition:** Written exchanges between users
- **Attributes:**
 - **messageId:** Unique identifier for message
 - **content:** Sender's message to recipient
 - **recipient:** ID of the recipient
 - **sender:** ID of the sender
 - **sendTime:** Timestamp of when message was sent.

2. Permissions:

Unregistered: Can only view listings and search

Student: Can post, buy products, and message others

Staff: Can post, buy products, and message others

Faculty: Can post, buy products, and message others

Admin: Can approve posts and take down inappropriate listings

3. Enumeration:

```
users.role = {"admin", "unregistered", "student", "staff", "faculty"}  
  
post.buildingName = {"Administration", "Business", "Cesar Chavez Student Center",  
"Creative Arts", "Fine Arts", "Hensill Hall", "J. Paul Leonard Library", "Science", "Social  
Science", "Thornton Hall", "Academic", "Burk Hall", "Children's Center", "Ethnic Studies  
& Psychology", "Mashouf Wellness Center", "Humanities", "Mary Park Hall", "Mary Ward  
Hall", "Student Services", "The Towers at Centennial Square", "Thornton Hall",  
"University Park"}
```

```
orders.status = {"Pending", "Confirmed", "Shipped", "Complete", "Canceled"}  
category.name = {"Books", "Technology", "Clothing", "School Supplies", "Furniture",  
"Appliances", "Sports and Fitness", "Beauty", "Arts and Crafts", "Miscellaneous"}
```

High-Level Functional Requirements

Unregistered User

1. An unregistered user shall be able to search and browse content without an account.
2. An unregistered user shall be able to fill out a message without an account.
3. An unregistered user shall be prompted to register or log in upon submission of a message.
4. An unregistered user shall be able to create an account using a valid SFSU email address and password.

Registered User

5. A registered user shall inherit all the requirements of an unregistered user.
6. A registered user shall log in using their registered credentials.
7. A registered user shall be able to post many items for sale.
8. A registered user shall provide information such as name, price, description, location, and image when creating a new post.
9. A registered user shall submit their listing for moderation and approval.
10. A registered user shall be able to message many sellers about an item for sale.
11. A registered user shall have an SFSU email address.
12. A registered user shall be logged in to post an item for sale.
13. A registered user shall be logged in to send a message to another user.
14. A registered user shall be able to receive many messages.
15. A registered user shall receive a notification when other users send messages.
16. A registered user shall be able to make many purchases.
17. A registered user shall be able sell many items.
18. A registered user shall be able to provide additional profile information, including a profile picture and a brief description.
19. A registered user, who is selling an item, shall be able to specify their preferred meeting location for transactions.
20. Registered users shall be able to rate each other after a transaction.
21. Registered users shall be able to review each other after a transaction.
22. A registered user shall be able to post on a board for an item they request.

Admin

23. An admin shall inherit all the functional requirements of a registered user.
24. An admin shall be required to review many posts.
25. An admin shall be required to approve a post before it goes live.
26. An admin shall be able to reject a post from going live.
27. An admin shall be able to remove a post after it goes live.
28. An admin shall be able to view user-submitted posts pending moderation.
29. An admin shall be required to review user-submitted posts pending moderation.
30. An admin shall be required to review each post to verify they have a name, price, picture, location, and seller.
31. An admin shall be required to verify that registered users are affiliated with an SFSU email address.
32. An admin shall be able to only approve or reject posts.
33. An admin shall be required to verify the legitimacy of listings, checking for accurate information.

Non-Functional Requirements

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0.
2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers.
3. All or selected application functions shall render well on mobile devices
4. Data shall be stored in the database on the team's deployment server.
5. No more than 50 concurrent users shall be accessing the application at any time
6. Privacy of users shall be protected
7. The language used shall be English (no localization needed)
8. Application shall be very easy to use and intuitive
9. The application shall follow established architectural patterns
10. Application code and its repository shall be easy to inspect and maintain
11. Google Analytics shall be used
12. No e-mail clients shall be allowed. Interested users can only message to sellers via in-site messaging. One round of messaging (from user to seller) is enough for this application
13. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
14. Site security: basic best practices shall be applied (as covered in the class) for main data items
15. Media formats shall be standard as used in the market today.

16. Modern SE processes and tools shall be used as specified in the class, including collaborative

and continuous SW development and GenAI tools

17. The application UI (WWW and mobile) shall prominently display the following exact text on

all pages "SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only" at the top of the WWW page Nav bar. (Important so as to not confuse this with a real application).

Competitive Analysis

Services/Feature	Amazon	eBay	Craigslist	Gator Garage
SFSU Curated filter	No	No	No	Unique
Messaging to sellers	Yes	Yes	No	Yes
Items borrowing	No	No	Yes	Yes
Items request	No	No	No	Unique
Secure Campus Exchange Locations	No	No	No	Unique

Summary of Comparative Analysis

Our website is made specifically for the SFSU community and provides a uniquely tailored experience. It has many features that are made with SFSU students in mind. First, it has an SFSU-curated filter. This feature sets it apart by offering a selection of items and services vetted for relevance and therefore ensuring users find exactly what they need within their campus community. Unlike many competitors, our platform also introduces the concept of "Items Borrowing", enabling users to lend or borrow items within the community, promoting a sense of sharing and sustainability. The "Items Request" feature further differentiates our service by allowing users to post requests for specific items, tapping into the community to find what they need. Lastly, establishing "Secure Campus Exchange Locations" provides a safe, convenient place for transactions, addressing safety concerns often overlooked by other platforms. These combined features make our website unique and craft a community-centric, safe, and efficient marketplace tailored to the needs of the SFSU student body.

High-Level System Architecture and Technologies

Front End Technologies

- HTML: Content
- CSS and Bootstrap: Styling
- JavaScript and EJS: Logic and Templating

Back End Technologies

- Database: MySQL Workbench 8.0
- WWW server: Express.js 4.18.3
- Deployment Cloud Servicer: DigitalOcean

Browsers

- Google Chrome, Version 122.0.6261.95 (Official Build) (64-bit)
- Mozilla Firefox, Version 123.0

Services and APIs

- Google Analytics
- Lets Encrypt SSL Encryption

Use of GenAI Tools

Server boilerplate

Chatgpt was really helpful for creating fast boilerplate code. In this case, I asked it to create a quick express server for me.

Usefulness: High

Bootstrap

Chatgpt was really helpful for creating the bootstrap cards that were used in the About and Member pages. If I didn't like the style of a particular card I would ask it to make different versions. The more specific the request was the better card it would make. However, it can be a little tedious because I would have to ask it to make different versions until I found one that I liked.

Usefulness: Medium

EER Diagram

Gemini was very helpful when designing the database. It was utilized for offering suggestions for table columns that I did not think of. I also used GenAI to generate an enumeration list for SFSU buildings.

Usefulness: High

Grammar and Spell Checker

Chatgpt was helpful for checking for grammar and text errors, as well as improving the readability of sentences.

Usefulness: Medium

Team and Roles Information

Name	Email	Role
Utku Tarhan	mtarhan@mail.sfsu.edu	Team Lead
Akram Alraeeini	aalraeeini@mail.sfsu.edu	Github Master
Jacob Gerales	jgerales@mail.sfsu.edu	Backend Lead
Mohammed Mohamed	mmohamed2@mail.sfsu.edu	Frontend Lead
Eliza Ouyang	eouyang@mail.sfsu.edu	Support Engineer
Cesar A. Herrera	cherrera@mail.sfsu.edu	Support Engineer

Team-Lead Checklist

- ~~So far all team members are Fully engaged and attending Team sessions when required~~ - **DONE**
- ~~Team found a time slot to meet outside of the class~~ - **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 reviewed class slides on requirements and use cases before drafting Milestone 1~~ - **DONE**
- ~~Team reviewed non-functional requirements from "How to start..." document and developed Milestone 1 consistently~~ - **DONE**
- ~~Team lead checked Milestone 1 document for quality, completeness, formatting and compliance with instructions before the submission.~~
- ~~Team lead ensured that all team members read the final M1 and agree/understand it before submission~~ - **DONE**
- ~~Team shared and discussed experience with genAI tools among themselves~~ - **DONE**
- ~~Github organized as discussed in class (e.g. master branch, development branch, folder for milestoneDocuments etc.)~~ - **DONE**