

SW Engineering CSC648-848 Spring 2024

GatorTrader

Team 05

Timothy Lor - Team Lead (tlor@sfsu.edu)

Luis Angeles - Lead FrontEnd

Jayden Wong - Lead Backend

Parampal Singh - Github Master

Cole Douglas

Haley Park

MILESTONE	DATE SUBMITTED	DATE REVISED
#1	3/8/2024	

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Executive Summary

GatorTrader is a special online spot made just for the San Francisco State University (SFSU) community. It's where students, teachers, and staff can easily buy or sell things they need or no longer use, like books, bikes, or even dorm decorations. This site is safe and only for our SFSU family because you need to use your school email to sign up.

What makes GatorTrader special is how simple it is to use. We know how busy school life can be, so we designed it to help you quickly find what you need without having to leave campus or spend too much money. It's made by people who are part of the SFSU family, so everything about it is meant to make our lives easier by satisfying everyone's needs.

A unique feature for our SFSU community on GatorTrader is the "Book" category. This is where you can buy and sell books directly related to your classes. By simply putting in your class number, you can find the books you need or sell the ones you don't. It's a great way for us to help each other out, making sure everyone has the books they need for class without spending too much.

Our team behind GatorTrader is made up of current students and alumni who understand the struggles and needs of living and studying at SFSU. We're passionate about making our campus life better and more affordable for everyone. GatorTrader isn't just a website; it's a way for us to support each other as a community, making sure we all succeed together.

Personae



Source: [IStockPhoto](#)

Amirah Jordan (Undergraduate Student)

Skills:

- Familiar with basic technology.
- Proficient in navigating academic requirements in the biology major.

Attitude:

- Seeks affordability and efficiency in academic materials.
- Values community and mutual support.

Limitations:

- Restricted by a tight budget and financial responsibilities.
- Limited time due to academic workload and part-time employment.

Pain Points:

- Financial strain from expensive textbooks and lab materials.
- Limited options within budget constraints.

Goals:

- Save money on essential academic resources.
- Connect with peers facing similar financial challenges.
- Enhance academic journey through community engagement.



Source: [USA Today](#)

Juan Carlos Espinoza (Graduate Student)

Skills:

- Strong negotiation skills.
- Effective time management abilities.

Attitude:

- Seeks efficient solutions to balance academic and family demands.
- Values reliability and affordability in purchases.

Limitations:

- Busy schedule with graduate studies and family responsibilities.
- Limited storage space in a small apartment.

Pain Points:

- Difficulty balancing academic workload with family life.
- Concerns about the reliability and security of transactions.

Goals:

- Furnish apartment affordably and efficiently.
- Find reliable sellers within the SFSU community.



Source: [FreePik](#)

Dr. Mei Ling (Faculty)

Skills:

- Expertise in environmental science.
- Good communication skills.

Attitude:

- Values simplicity and reliability in academic materials.
- Seeks convenience in managing academic resources.

Limitations:

- Busy with teaching, grading, and personal responsibilities.
- Limited familiarity with online marketplaces.

Pain Points:

- Lack of time for personal errands and organization.
- Concerns about privacy and security in online transactions.
- Difficulties in reading small fonts.

Goals:

- Ensure reliable transactions for academic materials.
- Simplify the process of selling or buying old books and equipment.



Source: [BigStock](#)

Khalid Rao (Admin)

Skills:

- Familiarity with website management and technology.
- Proficiency in implementing security measures.

Attitude:

- Committed to creating a safe and inclusive online environment.
- Values user experience and community engagement.

Limitations:

- Requires a balance between security and user accessibility.
- Concerns about monitoring and managing app activities.

Pain Points:

- Monitoring and managing listings, customer support, and system updates.
- Ensuring the security and privacy of user interactions.

Goals:

- Provide a user-friendly experience for all users.
- Foster community engagement and support while ensuring security and privacy.

High Level Use Cases

Use Case: Academic and Financial Balancing Act

Actor: Amirah Jordan, SFSU Undergraduate Student

Scenario:

Amirah Jordan, a diligent undergraduate Biology major at San Francisco State University, faces the all-too-common struggle of balancing academic excellence with financial survival. As a first-generation college student from a hardworking Nigerian immigrant family, the pressure to succeed is compounded by a tight budget and the responsibility of sending financial aid back home. Amidst her academic challenges and financial constraints at San Francisco State University, Amirah Jordan discovers the GatorTrader app, a marketplace designed with students in mind. This platform becomes a crucial tool for her, especially when it comes to finding affordable textbooks and lab materials. The app's functionality to sort and filter items based on price allows Amirah to easily identify and purchase the cheaper alternatives she needs for her studies. This not only eases the financial burden but also allows her to maintain her focus on academic excellence without the added stress of overspending on essentials.

Use Case: Living Space Transformation Amidst Transition

Actor: Juan Carlos Espinoza, SFSU Graduate Student

Scenario:

Juan Carlos Espinoza, embarking on his graduate journey in Public Health at SFSU, finds himself in the whirlwind of transition and adaptation. Moving from Colombia to San Francisco with his wife and toddler, Juan Carlos is determined to create a nurturing home environment conducive to both study and family life. However, the challenges of finding affordable living solutions in a new country loom large, especially when trying to balance the demands of graduate studies with family responsibilities. The introduction of the SFSU Marketplace app into Juan Carlos's life marks a turning point in his quest to furnish his new home on a budget. Through the app, he discovers a treasure trove of affordable, gently used furniture that is perfect for his family's small apartment. Each item found and purchased through the app helps transform their living space into a cozy, inviting environment where he can study effectively while his family feels comfortable and settled. The app's ability to connect Juan Carlos with other SFSU students and faculty who are selling or giving away items they no longer need proves invaluable. It not only aids in his home transformation project but also helps him build a network within the SFSU community. This sense of connection is vital for Juan Carlos and his family as they navigate the challenges of adapting to a new country and culture. The SFSU Marketplace app becomes more than just a resource for furnishing his apartment; it's a gateway to community integration and support during a critical time of transition.

Use Case: Transitioning Academic Legacy in Retirement

Actor: Dr. Mei Ling, Long Term Faculty

Scenario:

Dr. Mei Ling, a respected Environmental Science professor at SFSU and a single mother of two, is embarking on a journey towards retirement. In her quest to transition smoothly into this new phase of life, she endeavors to reorganize her home, particularly her study, which has accumulated years' worth of academic materials. Recognizing an opportunity to declutter while leaving a lasting impact on the academic community at SFSU, she turns to the GatorTrader app.

The app's ease of use is a crucial feature for her, enabling her to participate without the need for extensive technical knowledge or facing complicated registration steps. This accessibility means that even as someone who might not be as adept with digital marketplaces, she can quickly adapt, creating an account with minimal fuss.

Once registered, Dr. Ling and others like her can easily list items for sale or donation, browse resources they might find useful, or even discover unexpected treasures that could enhance their teaching or personal lives. This seamless transition from a guest to a registered user encourages a broader participation across the university, bridging the gap between different generations within the academic community.

Use Case: Community Safety and Engagement through Administrative Vision

Actor: Khalid Rao

Scenario:

Khalid Rao, an administrator at SFSU with a rich background as a tech enthusiast and community volunteer, brings a unique perspective to his role, shaped by his experiences as a Syrian refugee. With a deep commitment to creating a safe and inclusive online environment, Khalid oversees the GatorTrader app with a focus on security, user experience, and community engagement. One of Khalid's core responsibilities is to ensure the security and integrity of the marketplace. He diligently reviews and approves or denies sellers' product listings, leveraging his expertise to identify potential violations of terms or insufficient information provided. Khalid's thorough scrutiny of listings helps maintain transparency and trust within the community, ensuring that only legitimate and reliable listings are made available to users. His proactive approach to enforcing marketplace guidelines fosters a sense of confidence among users, knowing that their interactions are safeguarded by robust security measures. Under Khalid's guidance, the marketplace app became a beacon of innovation and inclusivity, exemplifying how technology can enhance community well-being and engagement. His leadership, rooted in empathy and innovation, underscores the importance of creating a digital space that reflects the values and diversity of the SFSU community, making the marketplace app an integral part of the university's culture of inclusivity and support.

Main Data Items and Entities (Glossary)

User

Definition:

- Generic user. Refers to both, guest users and registered users.

Guest Users

Definition:

- Fully anonymous user that can view posts and interact with limited permissions.

Permissions:

- View Marketplace: Browse and view product postings available on the marketplace.
- View Product Posting: View products and product details on product postings.

Registered Users

Registered users inherit all attributes and permissions of Guest Users, with additional features and capabilities.

Definition:

- Non-anonymized User with elevated permissions and attributes.

Attributes:

- Name: The full name of the registered user.
- Email: SFSU email address for account verification and communication.
- Username: A unique identifier chosen by the registered user.
- Password: A securely stored password for account access and authentication.
- Biography: Optional character limited statement provided by the registered user.

Permissions:

- Create Product Post: Creation of product posts for sale, including setting prices, adding descriptions, and uploading images.
- Purchase Items: Buy products shown on the marketplace.
- Send and Receive Messages: Communicate with other users through the messaging system.

Admin Users

Admin users inherit all attributes and permissions of Registered Users, with additional administrative privileges.

Definition:

- Registered User with elevated permissions to manage and maintain the website.

Attributes:

Inherits all attributes from Registered Users (Name, Email, Username, Password).

Permissions:

- Approve or Denial of Product Posts: Approval or denial of products posted by any user for regulatory and quality control purposes.
- Managing User Accounts: Suspension or deletion of accounts that violate marketplace policies.
- Access to All Transactions and Messages: View all transactions and messages.
- Global Notifications: Issue notifications to all users, such as announcements, updates, or warnings.

Product

Definition:

- Item which a registered user is selling.

Product Posting

Alias: Product post

Definition:

- Detailed descriptions and specifications of products.

Attributes:

- Item Name: Name or title of the product being posted for sale.
- Description: Detailed description of the product including its condition, specifications, etc.
- Price: The asking price for the product.
- Category: Category or type of the product (e.g., books, electronics, furniture, etc.).
- Seller: The registered user who is posting the product for sale.
- Date: The date and time when the product post was created.
- Status: Current status of the product post (e.g., active, pending, sold, etc.).

Seller

Definition:

- Registered User with the intention of selling a product.

Buyer

Definition:

- Registered User with the intention of buying a product.

User Profile

Alias: Seller Profile, Registered User profile

Definition:

- Profile associated with a registered user.

Attributes:

- Product Posts: Displays approved product posts created by the registered user.
- Five Star Rating: Displays how other registered users rated the user's profile.

- **Comments:** Displays comments by other registered users regarding the user's profile.

Messaging System

Definition:

- System that allows messaging between registered users for a product posting.

Message

Definition:

- Interaction between two registered users regarding a product listing.

Attributes:

- **Sender:** The user sending the message.
- **Recipient:** The user receiving the message.
- **Content:** The text content of the message.
- **Timestamp:** Date and time when the message was sent.
- **Status:** Current status of the message (e.g., unread, read, replied, etc.).

Dashboard

Definition:

- Private listings of posted products and messages to-and-from a registered user.

Marketplace

Definition:

- Collection of viewable approved product posts. Users may browse or search for a product.

Attributes:

- **Public:** Viewable by Guest Users.

- Filtering: Allows users to filter products by category.

Functional Requirements

1. Guest Users shall be able to register using their SFSU school email to be able to post items for sale or make purchases.
2. Registration form shall include necessary fields: full name, SFSU email, a password, and an agreement to our terms and conditions.
3. Users shall authenticate themselves with a valid SFSU school email and password to access specific features.
4. Registered Users shall be able to create posts for products they want to sell.
5. Product posts shall include item details, price, and image upload functionality.
6. Submitted product posts shall be subjected to admin approval before being published on the website.
7. Approved product posts shall be displayed on their seller's profile and on the marketplace.
8. Registered Users shall be able to edit product posts in which they would need another admin approval.
9. Registered Users shall be able to put products they want in a list for future notifications.
10. Admins shall be required to review and moderate product posts.
11. Product posts shall be able to be hidden by buyers.
12. Product post information shall be deleted automatically after 2 weeks of being hidden.
13. Buyers shall be able to submit a message to a seller about a specific seller's product post.
14. Sellers shall be able to respond to a message about their product posts.
15. Users shall be able to filter product posts on the marketplace by category.
16. Users shall be able to search for a product post in the marketplace that they are interested in buying.
17. Users shall be able to browse for a product post in the marketplace.

18. Registered Users shall be able to review and rate a registered user's profile.
19. Registered Users shall be able to view messages on their dashboard.
20. Registered Users shall be able to view their product posts on their dashboard.
21. Registered Users shall be able to add a biography for their own user profile.

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. Application shall follow established architecture patterns
10. Application code and its repository shall be easy to inspect and maintain
11. Google analytics shall be used
12. No email 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

Competitive analysis table

Feature	craigslist	OfferUp	Depop	Our future product
Search	+	+	++	+
Browse	++	+	+	++
Messaging	-	++	+	+
Buy/Sell items	+	+	++	+
Manage profile	+	+	+	+
Review	-	+	+	++

++ superior; +feature exist; -does not exist

Summary

Companies like Craigslist, OfferUp, Depop, and our future product share features like search, browse, manage profile, and buy/sell functionalities. While Depop's search feature is superior to ours we believe that our browse functionality will be equally as useful because of ease of navigation and intuitive design. Our planned review system will be more helpful than what Depop's currently uses because not only can users check a seller's rating out of 5 stars, users will be able to provide comments based on their own experiences with the seller. While Craigslist has a history of success with its simple

browsing function our browsing will be similar in simplicity but with an enhanced visual appeal. Offerup's real time chat is adequate and is not a feature we plan to implement. That is because the simplicity of our seller review function makes more sense for our platform. As we are more focused on getting our users what they want with the assurance that they are not getting scammed. So that is why our review system is much more thorough.

System Architecture and Technologies

Server Host: AWS EC2 750 Hours (1GB Storage) (1 CPU)

Operating System: Debian v12

Database: MySQL v8

Reverse Proxy: NGINX v1.12.2

Web Server: Express v4.18

Server-Side Language: JavaScript (Node.js)

Frontend Framework: Svelte v4.2

CSS Framework: Tailwind v3.4.1 + Flowbite v2.3 (Added)

Browser Supported:

- Google Chrome v122.0
- Firefox v123.0

Web Analytics: Google Analytics

SSL Cert: Lets Encrypt (Cert Bot)

Usage of GenAI

Crafting High-Level Use Cases

Usefulness: Medium - High

Usage: Initiated with a broad description of the use cases based on personas. Used ChatGPT to refine the narrative, enhance the vocabulary, and deepen the engagement level. Further personalized the scenarios by requesting unique and diverse names for the characters involved.

Benefit: Enhanced readability and relatability of use cases, ensuring a diverse representation that aligns with SFSU's community diversity. This approach helped in creating compelling narratives that clearly illustrate the app's value proposition to different user groups.

Prompt:

- “make each case a bit more personal by incorporating outside endeavors such as a family, kids, hardships, etc.”
- “make it more diverse by giving more unique names and heritages”

Defining Data Entities and Attributes

Usefulness: Low - Medium

Usage: Started with a basic list of entities (guest, registered user, admin) and used a template from previous coursework (CSC675) as a baseline. Asked ChatGPT to expand on this by specifying attributes and permissions for each user type, ensuring a thorough understanding of each entity's role and capabilities.

Benefit: Somewhat helped but the majority was off from what i know when creating strong entities

Prompt:

- "Based on these user types, list potential attributes and permissions for guest users, registered users, and admins, drawing from standard practices in app design and my coursework as a reference."

Team and Roles

NAME	ROLE	EMAIL
Timothy Lor	Team Lead	tlor@sfsu.edu
Luis Angeles	Frontend Lead	langelestavera@sfsu.edu
Jayden Wong	Backend Lead	jwong51@sfsu.edu
Parampal Singh	Github Master	psingh17@sfsu.edu
Cole Douglas	Frontend Developer	cdouglas8@sfsu.edu
Haley Park	Backend Developer	jpark58@sfsu.edu

Team Lead Checklist

CHECKLIST	STATUS	COMMENTS
So far all team members are fully engaged and attending team sessions when required	ON TRACK	
Team found a time slot to meet outside of the class	OK	
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	ON TRACK	
Team reviewed class slides on requirements and use cases before drafting Milestone 1	ON TRACK	
Team reviewed non-functional requirements from “How to start...” document and developed Milestone 1 consistently	ON TRACK	Most (not all) team members were able to allocate time to read the document.
Team lead checked Milestone 1 document for quality, completeness, formatting and compliance with instructions before the submission	OK	
Team lead ensured that all team members read the final M1 and agree/understand it before submission	OK	

Team shared and discussed experience with genAI tools among themselves	ISSUE	There was no discussion involved with genAI.
Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	OK	