SW Engineering CSC648-848 Spring 2025

Team #03

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MILESTONES:

M1-V1	March 12th 2025
M1-V2	March 20th 2025

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Milestone 1:

1. Executive Summary

San Francisco State University (SFSU) is well known as a commuter school, where many students leave campus immediately after classes, making it difficult to build meaningful connections. This has also affected participation in clubs and other school activities. Additionally, students frequently seek affordable ways to purchase textbooks, electronics, and other essentials for their college journey, but finding a safe and reliable marketplace can be a challenge. Gazaar is our solution to these issues-a centralized online platform designed exclusively for the SFSU community. It will serve as both a social hub and a secure marketplace, allowing students, faculty, and alumni to connect, engage, and support one another.

Through Gazaar, users can buy and sell items within a trusted, university-verified network, protecting them from potential scamming. You will also be able to discover and join events, making it easier to participate in student life, clubs, and activities. Gazaar is tailed to address the unique challenges of a commuter campus. By strengthening the SFSU community we also improve the overall student experience and appear appealing to potential future students.

The Gazaar team is made up of five student developers who want to improve student life at SFSU. We have seen and dealt with the struggles of finding community at a commuter campus firsthand and we are dedicated to building a platform for the SFSU community.

2. Personae

A) Involved Students:

Description:

i) Very Active for the events, buy, and sell. (entire website)

ii) Spends more time with detail and competitive attention

iii) Often has higher expectations for the tools they use, including this website

iv) Generally organized and has little time, will save time if possible.

v) Communicative and (generally) more reliable

Name: Shreya

Goal: Set up events and maintain the club they are working with. Staying involved with the campus and running things here at SFSU

B) Professors:

i) Less active but not entirely inactive

ii) Some are involved with clubs they run (event usage)

iii) Less likely to buy equipment but still might

iv) Likely not to spend time creating a page

v) Can learn navigation quickly

vi) Less experienced with websites

vii) Generally more organized

Name: Professor James

Goal: Sell or donate items simply and efficiently without dealing with complex interfaces or social interaction.

C) Alumni:

i) Mostly uses the buy section

ii) Logs in occasionally

iii) Needs to relearn navigation often

iv) Limited time to spend on the site

v) Usually lives farther from campus

Name: Kaylie

Goal: Find affordable items and deals from current students with minimal interaction and time commitment.

D) New Students:

i) Less likely to use the buy pages at first

ii) More likely to browse events and activities

iii) Looks for free items or deals

iv) Interested in joining opportunities

v) Trusts peer recommendations over reviews

Name: Ryan

Goal: Get settled at SFSU by finding affordable dorm essentials and getting involved in campus life.

E) Commuter:

i) Uses platform for event-based exchanges

ii) Not likely to browse casually

iii) Looks for swaps or free items

iv) Trusts reviews for decision making

Name: Mark

Goal: Make the most of short campus visits by finding needed items or exchanging goods during scheduled trips.

3. High Level Use cases

Involved Students:

Shreya, an involved club member at SFSU, is looking for a second-hand laptop for her student organization's events. She is already a member at SFSU Marketplace. She logins to the website and searches for the laptop and adds to her wishlist on the SFSU Marketplace with a maximum price of $500. A few days later, Raj, an alumni, lists a used laptop for $450. Since Shreya has it on her wishlist, she gets notified about the listing. She contacts Raj to ask about the laptop's condition. After confirming it's in good shape, they arrange to meet on campus. They meet at the Library for the exchange. Shreya buys the laptop, saving money for her student club. The process is seamless, thanks to the wishlist function. Shreya leaves a positive review for Raj, praising the easy transaction.

Functions Covered: Login, Registration, Wishlist, Review & Rating

Professors

Professor James, a senior faculty member in the Computer Science Department, recently upgraded his office setup and has an extra Dell monitor that he no longer needs. Since he prefers a straightforward, no-frills platform rather than social media-heavy sites, he logs into the SFSU Marketplace and quickly navigates to the "Electronics" section. He uploads a simple listing with a brief description: "24" Dell Monitor - $50, available for pickup at the Science Building, Room 205. Cash only." Within a day, a student named Lisa, who needs a second monitor for her coding projects, emails Professor James directly through the platform to inquire if it’s still available. They agree on a time to meet during office hours, and the exchange happens quickly. No unnecessary social engagement, just a direct sale—exactly what Professor James wanted.

Functions Covered: Registration, Login, Messaging, Page setup, Upload Listing Items

New Student:

Ryan, a transfer student from Southern California, has just moved into SFSU student housing. Since he is new to the university and city, he doesn't know where to buy affordable essentials like a mini-fridge, desk lamp, and SFSU hoodies. Instead of purchasing everything brand new, he decides to check the SFSU Marketplace.

After logging in with his university credentials, Ryan explores the "Dorm Essentials" and "Electronics" categories, filtering results to "Near Campus" for convenience. He finds a mini-fridge from a graduating senior, messages the seller, and arranges to meet at the residence hall common area. The seller even gives him tips about campus dining and best study spots during their exchange.

Since Ryan is also looking for student events to make friends, he checks the "Campus Activities" section and finds a student club selling discounted tickets for a weekend hiking trip. Excited to get involved, he buys a ticket and joins the club's group chat for new members.By using the SFSU Marketplace, Ryan saves money, finds useful items, and connects with students, making his transition to SFSU smoother.

Functions Covered: Registration, Login, Messaging and Affordable price

Alumni:

Less active individuals most of these people may only show up every once in a while to get a good deal. Their activity in events is probably no longer happening which means most of the traffic would be from buying from students. Kaylie is an alumni and Joel is selling his workout supplies for a decently cheap price. Kaylie, looking for workout supplies, takes the opportunity to reach out to Joel. Joel being a little busy hasn't responded in a couple days. Kaylie is debating whether or not to send a reminder to Joel. This would be a pain point because Kaylie wants to understand whether it is okay to ping Joel not doing so can make Kaylie frustrated.

Other than this mishap, Kaylie did not have much trouble navigating the website, especially after learning. Her website skills are decent however, due to the lack of time she does not have anything like templates to set up a personal page and instead uses the default ones when she wants to sell something.

Functions Covered: Registration, Login and Messaging

Commuter:

During the first week of the semester, SFSU hosts a “Textbook Exchange Event” organized through the SFSU Marketplace, promoting listings for textbooks students are selling or swapping. Mark, a commuter student, sees the event advertised on the platform and attends the event during his scheduled campus visit. He successfully exchanges a textbook he no longer needs for one required for his current class, making the most of the event without having to spend extra time searching for books online. After exchanging the textbook he gives the review of his experience using the marketplace.

Function Covered: Registration, Login, Messaging, Listed items and Review

4. Main Data

User Types:

Guest User: The users who have access to the home page, search listings, and view product details. They can browse the categories, but they cannot purchase, message sellers or post listings. The users must register to make transactions.

Registered User(Student Buyer/Seller): The users who have access to create, edit, manage listings , communicate with the buyers or sellers, through messaging and complete transactions. And they also have access to a dashboard to track their activities.

Faculty and Staff Sellers: The users who have access to post and manage listings. They cannot purchase student listings. Can respond to student enquiries.

Alumni Buyer/ seller: The users who have access to specific categories(limited access). They can sell leftover college items but cannot purchase most student-exclusive listings. They can communicate with buyers via messages.

Marketplace Admin: The users who manage user activity, ensuring compliance with marketplace rules. They can remove unwanted listings and ban users who are violating guidelines. They can also resolve disputes between buyers and sellers.

Data Items:

Users: Stores the user profile, including name, email, SFSU ID, and user type(Student, faculty, alumni). Maintains the passwords and account settings.

Listings: Items for sale(Listing ID, Title, Description, Price, Category) Status is Required(Available, Pending or Sold) Date Listed and Last Updated.

Messages: Communication between Buyers and sellers about listings. Which includes Timestamps, sender/receiver details and message body. Messages are stored for Transaction tracking.

Receipt: Captures purchase details(buyers, seller, item, date, amount). Tracks payment status(Pending, Completed, Canceled).

Review: Allows buyers to give the feedback based on the past transactions. Stores ratings(1-5) and review comments.

Wishlist: Allows users to save items they are interested in. They can access later for quick purchase.

5. High Level Functional Requirements

Unregistered Users

1. **Public Access**

   Unregistered users shall be able to view a public homepage with minimal site details.

2. **View Basic Item Info**

   The webpages shall show high-level information of items.

3. **Keyword Search**

   All users shall be able to run a simple keyword search to find items.

4. **Category based Filtering**

   All users shall be able to filter items by category.

5. **Create Account**

   SFSU members shall be able to create an account. (must contain “@sfsu.edu”)

Page

6. **Display Disclaimer**

   Every page shall display disclaimer text: “SFSU Software Engineering Project

   CSC 648-848, Spring 2025. For Demonstration Only” exactly as shown.

Registered Users (Students, Faculty, Alumni)

7. **Registered User Access**

   Register user shall be able to create a sell page

   Registered user shall be able to message sellers

   Registered users shall be able to create new item listings

8. **Internal Messaging**

   Registered users shall be able to communicate via an internal messaging feature without external email.

9. **Wishlist Feature**

   Registered users shall be able to save items to a wishlist and receive notifications if new postings match saved criteria (e.g., price or category).

10. **Review & Rating**

    Buyers shall be able to rate (1–5) and optionally review sellers, with ratings visible to other registered users.

11. **Personal Profile Page**

    Registered users shall have a personal profile page showing active listings and basic information.

12. **Refined Search and Filters**

    Registered users shall be able to refine search results using multiple filters (location, price range, category, etc.).

13. **Second-Hand Item Compliance**

    Sellers shall confirm that all listed items are pre-owned, following the "second-hand only" policy unique to SFSU.

Administrator:

14. **Admin Authorization**

    Listings shall be authorized by an admin before going public.

15. **Approve or Reject Listings**

    Administrators shall be able to approve or reject listings, optionally providing feedback to the user.

16. **Remove Listings or Ban Users**

    Administrators shall be able to ban users or remove listings that violate marketplace rules.

17. **Message & Activity Logs**

    Administrators shall be able to view user messaging logs for dispute resolution, without altering message content.

18. **Category Management**

    Administrators shall be able to create, rename, or remove listing categories (e.g., Books, Electronics) to keep the marketplace organized.

SFSU-Specific (Unique) Functions

19. Campus Event Listings

The system shall provide a special “SFSU Clubs & Events” section for listing on-campus club events, tickets, or merchandise, allowing students to discover and engage with campus life.

20. SFSU Campus Map

Pages shall have an interactive campus map. The size of the campus.

6. High Level Non-Functional Requirements

1. Application shall be developed, tested and deployed using tools and cloud 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 (no native app to be developed)
4. Posting of sales information and messaging to sellers shall be limited only to SFSU students
5. Critical data shall be stored in the database on the team's deployment server.
6. No more than 50 concurrent users shall be accessing the application at any time
7. Privacy of users shall be protected
8. The language used shall be English (no localization needed)
9. Application shall be very easy to use and intuitive
10. Application shall follow established architecture patterns
11. Application code and its repository shall be easy to inspect and maintain
12. Google analytics shall be used
13. No e-mail clients or chat services 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
14. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.15. Site security: basic best practices shall be applied (as covered in the class) for main data items
16. Media formats shall be standard as used in the market today
17. Modern SE processes and tools shall be used as specified in the class, including collaborative and continuous SW development and GenAI tools
18. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Spring 2025. For Demonstration Only" at the top of the WWW page Nav bar. (Important so as to not confuse this with a real application). You have to use this exact text without any editing.

7. Competitive analysis

Diagram:

+ Has feature
++ Does the feature well / focused on
- Does not have the feature

Companies	Personalized pages	Rating System	Event System	Wishlist	Meet Up Map*
Facebook Marketplace	++	+	-	++	++
Craigslist	+	+	+	-	+
SFSU Event Calendar and Website	-	+	+	-	-
OfferUp	+	+	-	+	++
Gazaar	++	+	++	+	+

The table shows how our project is focusing on two aspects. The personalized pages and the event system. These systems together will help us differentiate between the other competitions. Where are also attempting to maintain the basic features that most of the websites associated with buy and sell contain. These features such as searching, a wishlist and a rating system will help us keep up with other companies.

8. Tech stack

1. **Server Host / Deployment**:

   • **AWS EC2**, running an **Ubuntu 22.04 LTS** instance.

   • We are not using Amazon RDS; the MySQL service is hosted directly on our EC2 instance.

2. **Operating System**:

   • **Ubuntu 22.04 LTS**.

3. **Database**:

   • **MySQL 8.0** on the same EC2 instance.

   • **MySQL Workbench 8.0** for local DB management and schema design.

4. **Web Server**:

   • **Nginx** is used as a **reverse proxy**, routing incoming **HTTP traffic** to the Go application.

   • Used as a reverse proxy to route incoming HTTP traffic to our Go application, and to serve static files.

5. **Server-Side Language**:

   • **Go** (Golang) with **Gin Framework**.

   • Permission obtained from the instructor for using Go.

6. **Front-End**:• **HandleBars**

    • Tailwind 4.0 for styling.

7. **IDE / Development Tools**:

    • **VSCode** and/or **Neovim** for local development and debugging.

8. **Analytics**:

    • **Google Analytics (Free Version)** for tracking basic user interactions.

    • We do not plan to integrate domain-based SSL certs right now, so it may be set up using a generic AWS link or IP-based environment.

9. **Documentation**:

    • Using **Doxygen** (XML config) and **Sphinx** for generating internal docs.

    • A bit of **Bash** / PowerShell scripting to automate environment setup.

10. **Websites Support**

    • Chrome 134.0.6998.118

    • Firefox 135 - 136

9. AI For M1 / Teams

GenAI Tool: *OpenAI ChatGPT*
Version: *GPT 4.o*
T**asks:**

- **Grammar Checking and Paraphrasing for Executive Summary**
  - **Usefulness**: HIGH
    - Using GPT 4.o to check for grammatical errors and to fix any phrasing/clarity issues was very helpful. It took the paragraph I had written, fixed any of the grammar issues I had and offered ways to rephrase or rewrite my sentences so that they had more impact. I found it difficult to write about the project in marketing buzz words, so the use of ai helped to make the project seem more appealing.

  - **Prompt**: Help me to check this paragraphs grammar and phrasing and make sure it matches these given requirements. Executive Summary: Short description of the final product/application and its key advantages, novelty, value (up to 1 page). Make it as an executive summary to be readable to broad and not just technical audience – think also of answering the question of why we should fund this project. We suggest you assign a name to your project for easier reference and good “marketing”. This summary should be readable to a general manger/executive that is not a CS specialist and is used to explain and also to advertise/promote your project. Typical outline is: one paragraph on the motivation and importance of the application you are developing, followed by a paragraph on what functions and services your application will be providing and how it helps the users (high level only, no jargon). You also must say what is unique and custom for SFSU in your design. At the end say in one paragraph something about your team (e.g. about your student startup team…). (BTW ChatGPT may help here BUT be careful not to use meaningless fluff written in perfect English, a common error in blindly using ChatGPT or likes).

- **Finding websites based on Craigslist and persona**
    - **Usefulness**: MEDIUM
    - **Prompt**:
        - **1:** Find some websites that we can do a competitive analysis on. Give this pdf
        - **2:** I am looking for something closer to craigslist

10. Team Lead Checklist

- ☑ ~~So far, all team members are fully engaged and attending team sessions when required.~~
- ☑ ~~Team found a time slot to meet outside of the class.~~
- ☑ ~~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.~~
- ☑ ~~Team reviewed class slides on requirements and use cases before drafting Milestone 1.~~
- ☑ ~~Team reviewed non-functional requirements from "How to start…" document and developed Milestone 1 consistently.~~
- ☑ ~~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.~~
- ☑ ~~Team shared and discussed experience with GenAI tools among themselves.~~
- ☑ ~~GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.).~~