SW Engineering CSC648-848

Spring 2024

Campus Buy/Sell Application: SwiftSell
Team 04

Team Members:
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Milestone 1

Submitted	Revised
March 8th 2024	March 9th 2024

1. Executive Summary

SwiftSell is a marketplace platform aimed at revolutionizing the way San Francisco State University (SFSU) students, faculty, and staff members buy and sell goods within the university community such as students, faculty and staff at SFSU . Our project is motivated by the need to create a safe, convenient, and student-friendly marketplace that fills a gap in the market that provides unique SFSU functions specially designed for the SFSU community. By providing a platform specifically tailored to the needs of college students, faculty and staff members, SwiftSell seeks to enhance the overall student experience at SFSU.

The motivation behind SwiftSell stems from the recognition of the challenges students , faculty and staff members at SFSU face when buying and selling goods in a university setting. Current platforms lack the safety, convenience, and campus-specific features that are essential for a thriving marketplace within a college community. By developing SwiftSell, we aim to provide SFSU students with a reliable, secure, and user-friendly platform for buying and selling goods, ultimately enriching campus life and fostering a sense of community.

SwiftSell will offer a range of functions and services tailored to the needs of the SFSU community such as students, faculty and staff at SFSU. These include verified user profiles with the use of SFSU emails, local listings convenient for the target clientele to complete their purchases, search items such as textbooks by classes, as well as a dashboard for users to be able to view messages from prospective buyers and sellers. The platform will also feature search categories, including textbooks searchable by class, furniture, and electronics. The platform will also provide the user with the ability to list and accept job listings such as assisting in moving furniture sold on our marketplace and listing tutoring services for university classes. By providing a market focused on student, staff, and faculty needs, SwiftSell aims to simplify the buying and selling process for users, making it easier to find and sell items within the SFSU community.

Our team is composed of driven and innovative students from diverse backgrounds, all united by a shared vision of enhancing the student experience at SFSU. With an emphasis on the user experience, we aim to create an easy to use and attractive marketplace for users to interact with. With expertise in Computer Science and the guidance of our CEO Dragutin Petkovic and CTO Anthony Souza, we are equipped to develop and launch a successful marketplace platform. Together, we are committed to making SwiftSell a valuable resource for members of SFSU and a thriving marketplace within the college community.

2. Personae

Student: John - Seller and full-time student

"Generated by OpenAI's DALL-E model (OpenAI, 2024)”

About John	Goals and Scenarios
• Meet John, a 21-year-old Computer Science major at San Francisco State University (SFSU). • John is a tech-savvy student	• John aims to be time efficient and make extra money through the selling process.

enthusiastic about using an online platform for efficient selling.	• He seeks a user-friendly platform that simplifies selling, maximizes item visibility, and ensures safety. • The website should cater to John's preferences, providing a seamless and secure experience for SFSU students engaged in buying and selling goods. • Limited time and security concerns are constraints for John in the selling process.

Student: Sarah - Buyer

"Generated by OpenAI's DALL-E model (OpenAI, 2024)”

About Sarah	Goals and Scenarios
● Sarah is a 20-year-old Psychology major at San Francisco State University (SFSU).	● Sarah aims to find good deals on essential items like textbooks, furniture, and electronics.

• Sarah is in her second year and actively engaged in campus events and social activities. • As an eager student buyer, Sarah values convenience, affordability when searching for items and hates wasting time. • Sarah is not as tech-savvy as some of her peers but is open to exploring user-friendly platforms for buying used items. • Limited budget and time constraints due to academics and part-time work are her challenges.	• Sarah thinks it would be awesome to also request services such as tutoring, help with moving out furniture, etc. • The website should cater to Sarah's need for an easy-to-navigate platform. • Clear item descriptions and secure transactions are essential for enhancing her overall buying experience as an SFSU student.

Staff/faculty: James

"Generated by OpenAI's DALL-E model (OpenAI, 2024)”

About James	Goals and Scenarios
• James is a 47-year-old staff member at San Francisco State University (SFSU) working in the administrative office. • James holds a position in student services, assisting with various administrative tasks related to student affairs. • He is responsible for coordinating events and often helps students navigate administrative processes.	• James seeks a user-friendly platform that facilitates smooth communication between buyers and sellers. • The website should cater to James's need for simplicity, providing quick access to information. • James has an sfsu email and would like to engage in either selling or buying products on the website

● James, has vision problems and gets confused when there is too much information at once ● Time is a precious resource for him, balancing work responsibilities and personal commitments.	

Admin: Alex

"Generated by OpenAI's DALL-E model (OpenAI, 2024)”

About Alex	Goals and Scenario
● Introducing Alex, the 21-year-old administrator overseeing the online marketplace at San Francisco State University (SFSU). ● With a background in information technology and a wealth of experience in system administration, Alex plays a crucial role in maintaining platform integrity and security. ● Detail-oriented and security-conscious, Alex ensures that the website complies with university policies and standards. ● As an administrator, Alex values robust features for user management, transaction monitoring, and issue resolution. ● With a busy schedule, time efficiency is a priority for Alex.	● Alex seeks a platform that allows seamless oversight, quick problem resolution, and adherence to data security protocols. ● The website should provide a user-friendly administrative interface. ● This interface should enable Alex to efficiently manage the platform while ensuring a secure and reliable experience for all users in the SFSU community.

3. High-level Use Cases

1. Search Browse and Message

   Users, like John, an SFSU student, have the ability to effortlessly browse or search for items on the SFSU marketplace (SwiftSell). For instance, John is looking for a specific textbook for his computer science class. He navigates to the website, enters the book title, and reviews the search results. Once he finds the desired item, he wants to be able to initiate a conversation with the seller directly on the platform to inquire about the book's condition, price, and potential meeting arrangements. The goal is to facilitate seamless communication between buyers and sellers within the SFSU community, enhancing the overall user experience. Upon sending the message he composed, he is prompted to login or register.

2. Posting Content

   Users, such as Sarah (student at SFSU), have the ability to easily post content for sale on the SFSU marketplace. Sarah has a set of furniture items she wants to sell before moving off-campus. Sarah will be prompted to either log in or register once she wants to post an item. She logs into the platform to sell her item and proceeds by creating a new listing.

   Sarah uploads clear images, provides a concise description, and a price for each item. The system allows her to efficiently post multiple items for sale within a short timeframe. The objective is to empower sellers like Sarah to showcase their items effectively, promoting a diverse range of listings on the platform.

   Sarah might also want to request a service, she can use our platform to request a service to be executed, she can write a description of what the service entails and the price she is willing to pay for such service.

3. Dashboard View What is For Sale:

   Any user of the website such as students, faculty and staff members at SFSU have a dashboard view. James for example is a staff member, in his late forties, who benefits from a user-friendly SFSU marketplace website designed for easy interaction. Featuring good color contrast and appropriately-sized text. James, like all users of SwiftSell have access to the dashboard view.

   James accesses a comprehensive dashboard upon login. The dashboard categorizes listings, including textbooks, electronics, furniture, and more, facilitating quick navigation, viewing of trending items, and application of filters for specific criteria.

   James logs in and is greeted with a dashboard displaying categorized listings, including textbooks, electronics, furniture, and more. The dashboard allows him to quickly navigate through sections of interest, view trending items, and access filters for specific criteria.

4. Admin Approval:

   Administrators, like Alex, have the authority and obligation to review and approve listings before they go live on the SFSU marketplace. For example, a user submits a listing for a high-value electronic item. Alex receives a notification and accesses the administrative dashboard, where pending listings are displayed.

   Alex reviews the listing for compliance with university policies, ensuring it aligns with the platform's guidelines. If everything meets the criteria, Alex approves the listing, making it visible to users.

   The focus here is on empowering administrators like Alex to control and curate the content that goes live on the platform.

Main Data Items and Entities

Items for Sale: Objects available for sale by registered users.
Associated data fields include:

- Category (e.g., Furniture, Electronics, Textbooks)
- Description (e.g., description of item)
- Price (price of item)
- Picture (photo of item)
- Thumbnail (generated from the user-supplied image)
- Item id

Services for Sale: Services available for sale by registered users.
Associated data fields include:

- Category (e.g., Tutoring, Moving)
- Description (e.g., tutoring subject and hours)
- Price (hourly rate for services)
- Picture (image of flyer for services)
- Thumbnail (generated from the user-supplied image)
- Item id

Dashboard: A screen view within the website, available to registered users, which displays messages sent to the user but also displays the user's posted items.

Messages: Communication between two registered users on the website.
Associated data fields include:

- Sender
- Recipient
- Content of message
- Timestamp of when it was sent
- Unread/read by the recipient
- Message id

Register/Registration: The process whereby an unregistered user becomes a registered user by creating a username and password.

User: Visitors to the web application are part of one of three groups: unregistered users, registered users, and admin.
Associated data fields include:

- Email address (sfsu.edu)
- Password
- Date joined
- User id

Unregistered User: An unregistered user is not allowed to sign into the website. The unregistered user is not allowed to login, post, or message, and cannot view the dashboard; the unregistered user is allowed to view items for sale, to fill out the form to post an item or send an item (but not submit the form), and to register.

Registered User: In addition to the actions allowed to an unregistered user, a registered user is allowed to sign into the website. Once signed in, a registered user is allowed to post items for sale (with admin moderation), message other registered users, and view the dashboard.

Admin: In addition to the actions allowed to a registered user, the admin shall have the responsibility to approve posts for sale that conform to terms of service.

Functional Requirements

5.**List high level functional requirements**

1. **Unregistered User**
    - 1.1. An unregistered User shall be able to search for specific items. - Priority 1
    - 1.2. An unregistered User shall be able to browse the website's items - Priority 1
    - 1.3. An unregistered User shall be able to categorize items for sale by area of use (electronics, textbooks, furniture, etc) - Priority 2
    - 1.4. An unregistered User shall be able to sort items for sale by majors. - priority 2
    - 1.5. An unregistered User shall be able to see images for items/services with accurate description - priority 1
    - 1.6. An unregistered User shall be able to filter through items based on price, date posted, etc. - priority 2
    - 1.7 An unregistered user shall be able to register - priority 1
2. **Registered Users shall have ability to do all things above plus…**

2.1. A Registered User shall have a dashboard with information containing order history, messages, notifications, and the items they posted for sale. - priority 1
2.2. A Registered User shall be able to post items and/or services(tutoring,delivery, etc) for sale with approval of admin - priority 1
2.3. A Registered User who posts items for sale shall upload at least one image, a brief description of said item, and a reasonable price for the item. - priority 1
2.4. A Registered User shall be able to delete a post without the approval of an admin. - priority 3
2.5. A Registered User shall be able to message sellers about items for sale. - priority 1
2.6. Only Registered Users shall be able to message other Registered Users. - priority 1
2.7. A Registered User shall be able to post small jobs such as tutoring, moving furniture, etc. - priority 1
2.8. A Registered User's post may take up to 24 hours to be approved by the admin. - priority 2
2.9. A Registered User shall be informed if another user wants one of their items via in-site messaging. Priority 1
2.10. A registered user shall be able to remove items for sale once a transaction is complete via in-site messaging. - priority 3
2.11. A registered User shall be able to login. - priority 1

3. Admin

3.1. An admin shall be required to approve or deny user's posts to go online. - priority 1
3.2. An admin shall be able to remove users. - priority 3

Non-functional Requirements

6.**List of 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 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

7.**Competitive analysis (functions/features only, not business or marketing)**:

Feature	**SwiftSell**	**Facebook Marketplace**	**Amazon**	**OfferUp**	**Craigslist**
Product Listings	++	++	++	++	++
Local Services (e.g., Tutoring/Delivery)	++	+	-	+	+
User Authorization (SFSU Email)	++	-	-	-	-
Admin Approval	++	-	-	-	-
Search/Categorize by Course	++	-	-	-	-
Text Search	++	+	+	+	+

“++” Superior; “+” Feature Exists; “-” Does Not Exist

Swiftsell is designed to exclusively serve San Francisco State University, facilitating a direct connection between students, faculty, and staff for buying/selling goods. By bringing the SFSU community (e.g. students, faculty, and staff) together, our site serves as the perfect intermediary to connect people together, allowing the buying/selling of items relevant to student, faculty and staff. Differentiating ourselves from competitors, Swiftsell goes beyond the typical buy/sell of goods, where users will be able to offer services such as tutoring or delivery services to benefit the SFSU community (e.g. students, faculty, and staff). Furthermore, by implementing SFSU email verification and admin-approved listings, it ensures a trusted environment tailored towards this academic lifestyle. Swiftsell facilitates connections within the SFSU community (e.g. students, faculty, and staff) for academic materials and local services, providing a seamless experience for those looking to engage in exchanges within the SFSU setting.

Our search feature is superior to that of the competition because it is tailored to SFSU students, allowing them to search for items by class/course number. This customization makes it easier for students to find relevant academic materials and other items specific to their courses, providing a more efficient and effective search experience within the SFSU community.

High-level System Architecture and Technologies

8.**High-level system architecture and technologies used:**

Server Host: AWS: EC2
Operating System: Ubuntu 22.04.3

Database: MySQL v. 8.3.0

Web Server: Apache 2.4.58
Server-Side Language: Python 3.12.2

Additional Technologies:
Web Framework: Flask
Frontend Framework: Bootstrap
IDE: VsCode
Web Analytics: Google Analytics
SSL Cert: DV SSL
SASS: 3.5.5

Use of GenAI Tools

9.Use of GenAI tools like ChatGPT and copilot

OpenAI's ChatGPT (Versions 4.0 and 3.5)

1. ***Task: Competitive Analysis***
    a. ***GenAI Tool/Version:*** *ChatGPT (GPT-4.0)*
    b. ***Helpfulness Rating:*** *High*
    c. ***Comments:***
        i. *Helpful in searching for a unique idea which differs us from other marketplaces, after giving insight on potential ideas which we had along with how our platform works, chatgpt gave recommendations on which implementation would be best suited for a user.*
        ii. *Furthermore it was helpful in creating the paragraph for our executive summary, allowing for comments from the professor to be taken into consideration when reviewing our summary. Looking at the use of certain verbages and how to effectively communicate our ideas.*
        iii. *Example prompt: "In creating our marketplace, we are trying to establish a unique feature which differentiates us from the rest, some ideas we have are the ability to offer local services such as tutoring/delivery, would this be beneficial and unique to our platform? Are there potentially other implementations that may be better?"*
        iv. *Example prompt2: "Within the competitive analysis summary, suggestions were made to avoid the use of the word 'transaction' along with the word 'community' as they are too broad, what are some suggestions to alter our summary to fit as best as possible?"*

Team and Roles

10.**Team and roles**:

Aymane Arfaoui	aarfaoui@sfsu.edu	Team Lead
Markus Reyer	mreyer1@sfsu.edu	GitHub Master, Frontend and Backend help.
Amandeep Singh	asingh51@sfsu.edu	Frontend Lead
Alexis Alvarez	aalvarez26@mail.sfsu.edu	Backend
David Daly	ddaly@sfsu.edu	Backend Lead

Team Lead Checklist

11.**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 | Done
- 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 milestone documents etc.) | Done