

GatorMarket

SW Engineering CSC 648/848 Spring
2025

Team 4

Team Lead: Clark Eullo Batungbakal
cbatungbakal@sfsu.edu

Front-end lead: Thanh Duong

Front-end member: Daniel Lee

Back-end lead: Caleb Onuonga

GitHub Master: Trinity Godwin

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EXECUTIVE SUMMARY

Why this product?

Students and professors at San Francisco State University (SFSU) frequently encounter difficulties when attempting to buy, sell, or trade various items, particularly during the transitions at the beginning and end of each semester. While alternative platforms such as Craigslist and OfferUp offer general marketplaces, they often come with significant drawbacks, including potential scams, high transaction fees, and unreliable buyers or sellers, making them less than ideal for students.

To address these challenges, GatorMarket provides a secure, student-exclusive marketplace designed specifically for the SFSU community. By ensuring that all users are verified SFSU students and professors, GatorMarket fosters a trusted environment where students can conveniently and safely engage in transactions without concerns about fraud or excessive fees.

Functions and services

GatorMarket is a web-based marketplace created exclusively for SFSU students and professors, offering a secure and scam-free environment by requiring SFSU email verification to restrict access to authorized users only. The platform enables users to buy, sell, and trade a wide range of items, including textbooks, electronics, furniture, clothing, and collectibles such as Pokémon cards. With an integrated real-time chat feature, buyers and sellers can negotiate prices, arrange meetups, and finalize transactions without depending on third-party messaging apps. To further enhance safety, designated on-campus meetup locations provide a secure space for in-person exchanges, eliminating the risks of public transactions. Additionally, user profiles with ratings and reviews help build trust and credibility within the marketplace. GatorMarket is entirely free and it allows the users to retain 100% of their earnings. Unlike traditional platforms that impose listing or transaction fees. With these comprehensive features, GatorMarket offers a reliable, convenient, and cost-effective platform for the SFSU community to conduct trusted peer-to-peer transactions efficiently.

Uniqueness & Custom Features for SFSU

What sets GatorMarket apart is its exclusive focus on SFSU community. This platform is tailored to students and professor's needs, providing a cost-effective, local, and safe way to trade by integrating features like campus-specific meetup points. Having a safe and exchange points within the university eliminates the risks of meeting strangers in public places. To ensure the student has a secure and reliable experience, GatorMarket has a real-time chat for negotiation, and a rating system to build user trust.

About our team

Our team consists of dedicated and innovative computer science students at SFSU who are passionate about technology, problem-solving, and creating impactful solutions. As members of the SFSU community, we recognize the need for a secure and student-focused marketplace and are committed to developing an application that enhances convenience, safety, and accessibility for our peers. Our goal is to empower students and professors with a trusted platform for buying,

selling, and trading within the university. We believe that GatorMarket has the potential to not only streamline campus transactions but also serve as a model for other universities looking to build their own exclusive community-driven marketplaces.

PERSONAE

James

Demographics	Psychographic
Male 47 yrs old Truck Driver Part Time	Value Education Veteran Enjoys Traveling
Pain Point	Goal
Doesn't trust internet people Skeptical of online deals	Not worry about doing trades Trusting environment

Scenario

James is a 47-year-old part time student in business. He has a wife 3 kids working as a truck driver. Having limited time, he doesn't trust online deals and wants things safe and quick

Kevin

Demographics	Psychographic
Male 21 years old Full time Student Physiology Major	Busy Focused on grades Collector of limited items Good with people
Pain Point	Goal
Very Busy No time to browse Knows what he wants so no nonsense	Finish degree with good marks to get into med school

Scenario

Kevin is 21 years old majoring in physiology aspiring to be a doctor after bachelors. He has a hobby of collecting all sorts of collectibles, whether it be cards or clothes. Leading a busy life with hard goals, he doesn't have time to browse.

Emily

Demographics	Psychographic
Female 22 years old Graduating senior International Student	In a rush Want to finish and go home Sell everything
Pain Points	Goals
Fast and quick No Bogus	Liquidate Everything Go Home

Scenario

Being away from home for 4 years, she is eager to go home. To do that, she has to get rid of everything, but she wants to make some extra money. Selling clothes and furniture at a convenience.

Daniel

Demographics	Psychographic
Male 18 years old Undecided freshman Committed week before start of semester	Rushing Need Furniture Quick Procrastinator
Pain Point	Goal
Does last minute things Need stuff quick	Buy clothes and furniture before school start

Scenario

Daniel did a late commit to SFSU with 1 week to spare, he needs clothes and furniture to move with good filters. He is shopping for essentials as fast as he can.

HIGH LEVEL USE CASES

Use Cases 1: Creating an Account

James, Kevin, Emily, and Daniel want to start using the marketplace to buy, sell, and trade items within the SFSU community. To create an account, they simply fill out a registration form with their name, SFSU email, and password. The system automatically checks if their email ends with @sfsu.edu to ensure they are part of the university. Once they submit the form, their account is instantly created, allowing them to browse listings, post items for sale, and connect with other students without any additional verification steps. This process makes it fast and easy for SFSU students to join while keeping the marketplace exclusive to the university community.

Use Cases 2: Searching/Browsing

Kevin is a full-time physiology student with a busy schedule and little time to browse listings. He needs a fast and efficient way to find collectibles, clothes, or other essentials without wasting time scrolling through endless listings. To make his shopping experience easier, the platform offers an advanced search and filtering system. Kevin can quickly filter results by category, price range, item condition, and seller rating. He can also sort items by relevance, newest listings, or lowest price to find the best deals. With these streamlined search tools, Kevin can quickly locate what he needs without disrupting his studies, making his buying experience efficient and hassle-free.

Use Cases 3: Posting Items

Emily is a graduating international student who needs to sell all her belongings quickly before leaving for home. Since she has been away for four years, she has accumulated furniture, clothes, and other items she no longer needs. With little time left before her departure, she wants a fast and hassle-free way to list and sell everything. The platform allows her to create a listing in just a few steps. She can upload photos, add a description, set a price, and choose a category. With these features, Emily can liquidate her belongings quickly, avoid last-minute stress, and earn some extra money before heading home.

Use Cases 4: On-Campus Meetup Points

James is a truck driver and part-time student who does not trust online deals and prefers safe, in-person transactions. To address his concerns, the platform offers designated on-campus meetup points where buyers and sellers can safely exchange items. These locations are well-lit, monitored, and frequently visited areas on campus, reducing the risk of fraud or unsafe encounters. Before finalizing a purchase, James and the seller agree on a meetup location from a pre-approved list, ensuring both parties feel secure. With this feature, James can confidently trade without worrying about scams or dealing with strangers off-campus.

Use Cases 5: Wishlist Item

Daniel is a last-minute incoming freshman who committed to SFSU just a week before the semester started. He needs to quickly buy essentials like furniture, clothes, and school supplies to settle in before classes begin. However, some of the items he needs are not currently available on the marketplace. To solve this, Daniel adds the missing items to his Wishlist, allowing him to track availability without constantly checking the site. Whenever a seller lists an item matching his Wishlist, he receives a notification, so he can act fast before someone else buys it. With the Wishlist and notification features, Daniel can efficiently find and purchase what he needs without wasting time, ensuring he is ready before the semester begins.

DATA ITEMS AND ENTITIES

User Types

Users - Encapsulates all accounts, buyers and sellers

Buyer - An SFSU student or staff looking to buy items from other SFSU students or staff

Seller - An SFSU student or staff looking to sell items to other SFSU students or staff

Admins - Operators of the website who will help users sort out disputes and issues. They will be reachable through the in-site messaging service for any user

Product Categories

- **Books** - Academic and recreational reading materials
 - *Textbooks* (Mandatory: Title, Author, ISBN, Condition, Price; Optional: Course Code, Edition, Images)
 - *Fiction* (Mandatory: Title, Author, Genre, Condition, Price; Optional: Images, Description)
 - *Non-Fiction* (Mandatory: Title, Author, Category, Condition, Price; Optional: Images, Description)
 - *Course Materials* (Mandatory: Title, Course Code, Condition, Price; Optional: Images, Department)
- **Clothing** - Apparel for all demographics
 - *Men's* (Mandatory: Type, Size, Condition, Price; Optional: Brand, Color, Material, Images)
 - *Women's* (Mandatory: Type, Size, Condition, Price; Optional: Brand, Color, Material, Images)
 - *Kids* (Mandatory: Type, Size, Age Range, Condition, Price; Optional: Brand, Color, Material, Images)
 - *Accessories* (Mandatory: Type, Condition, Price; Optional: Brand, Size, Color, Images)
- **Collectible Items** - Specialized collector's merchandise
 - *Trading Cards* (Mandatory: Game/Series, Card Name, Condition, Price; Optional: Rarity, Set, Images)
 - *Action Figures* (Mandatory: Character, Series, Condition, Price; Optional: Manufacturer, Scale, Images)
 - *Plushies* (Mandatory: Character, Series, Condition, Price; Optional: Size, Manufacturer, Images)

Backend Items

- **Users Table**- repository for information on user accounts such as username, their relevant SFSU email, rating, history, and other necessary metadata.
 - *User Profile* (Mandatory: Username, SFSU Email, Password; Optional: Profile Picture, Phone Number, Bio)
- **Listings Table**- catalogue of all currently available items for sale, their price, who's selling them, and any other relevant data to the listing.

- *Item Details* (Mandatory: Title, Category, Subcategory, Condition, Price, Seller ID; Optional: Description)
 - *Item Media* (Mandatory: At least one image; Optional: Additional Images, Video)
 - *Listing Metadata* (Mandatory: Post Date; Optional: View Count, Save Count)
- **Messaging Table**- holds information about messages sent.
 - *Message Content* (Mandatory: Sender ID, Recipient ID, Timestamp, Message Text; Optional: Related Listing)
 - *Message Status* (Optional: Read/Unread)
 - *Chat Threads* (Mandatory: Participants IDs; Optional: Last Activity Timestamp)
- **Search Index** - Facilitates item discovery through search functionality
 - *Searchable Fields* (Title, Description, Category, Subcategory, Price Range, Condition)
 - *Filter Options* (Price Range, Condition, Date Posted, Seller Rating)
 - *Sort Options* (Price: Low to High/High to Low, Date: Newest/Oldest, Relevance)
Chat Threads (Mandatory: Participants IDs; Optional: Last Activity Timestamp)
- **Blocked List Table**
 - *Account ID*

REQUIREMENTS

HIGH LEVEL FUNCTIONAL REQUIREMENTS

Unregistered Users

- 1.1 System shall allow users to browse all available items without requiring login
- 1.2 System shall provide search functionality by item name, and type
- 1.3 System shall display detailed item information including images, description, and market price
- 1.4 System shall allow users to register for a new account
- 1.5 System shall provide information about trading policies and platform guidelines

Registered Users

- 2.1 System shall allow users to log in securely with username and password
- 2.2 System shall enable users to list their own item for sale or trade
- 2.3 System shall provide a way for users to set prices and trade preferences for their items
- 2.4 System shall facilitate direct messaging between users for trading negotiations
- 2.5 System shall allow users to rate and review other users after completed transactions

- 2.6 System shall provide transaction history for all past trades and purchases
- 2.7 System shall notify users of new listings matching their wishlist criteria

Admin Users

- 3.1 System shall allow administrators to approve or reject item listings
- 3.2 System shall enable administrators to suspend or ban users who violate platform rules
- 3.3 System shall provide administrators with transaction monitoring capabilities
- 3.4 System shall allow administrators to resolve disputes between users
- 3.5 Admins will not be blockable like regular users

SFSU-Specific Functions

- 4.1 System shall facilitate on-campus meetups for item trading between SFSU students
- 4.2 System shall verify SFSU student status using school email domains for special privileges
- 4.3 System shall provide marketplace section for SFSU-exclusive item events

Priority 1: (Must have)

Unregistered Users

- 1.1 System shall allow users to browse all available items without requiring login
- 1.2 System shall provide search functionality by item name, and type
- 1.3 System shall display detailed item information including images, description, and market price
- 1.4 System shall allow users to register for a new account
- 1.5 System shall provide information about trading policies and platform guidelines

Registered Users

- 2.1 System shall allow user to log in securely with username and password
- 2.2 System shall enable users to list their own item for sale or trade
- 2.3 System shall provide a way for users to set prices and trade preferences for their items
- 2.4 System shall facilitate direct messaging between users for trading negotiations
- 2.5 System shall allow user to rate and review other users after completed transactions

- 2.6 System shall provide transaction history for all past trades and purchases

Admin Users

- 3.1 System shall allow user administrators to approve or reject item listings
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- 3.3 System shall provide administrators with transaction monitoring capabilities
- 3.4 System shall allow administrators to resolve disputes between users
- 3.5 Admins will not be blockable like regular users

SFSU-Specific functions

- 4.1 System shall facilitate on-campus meetups for item trading between SFSU students
- 4.2 System shall verify SFSU student status using school email domains for special privileges

Priority 2: (Desired)

Registered Users

- 2.7 System shall notify user of new listings matching their wishlist criteria

SFSU-Specific functions

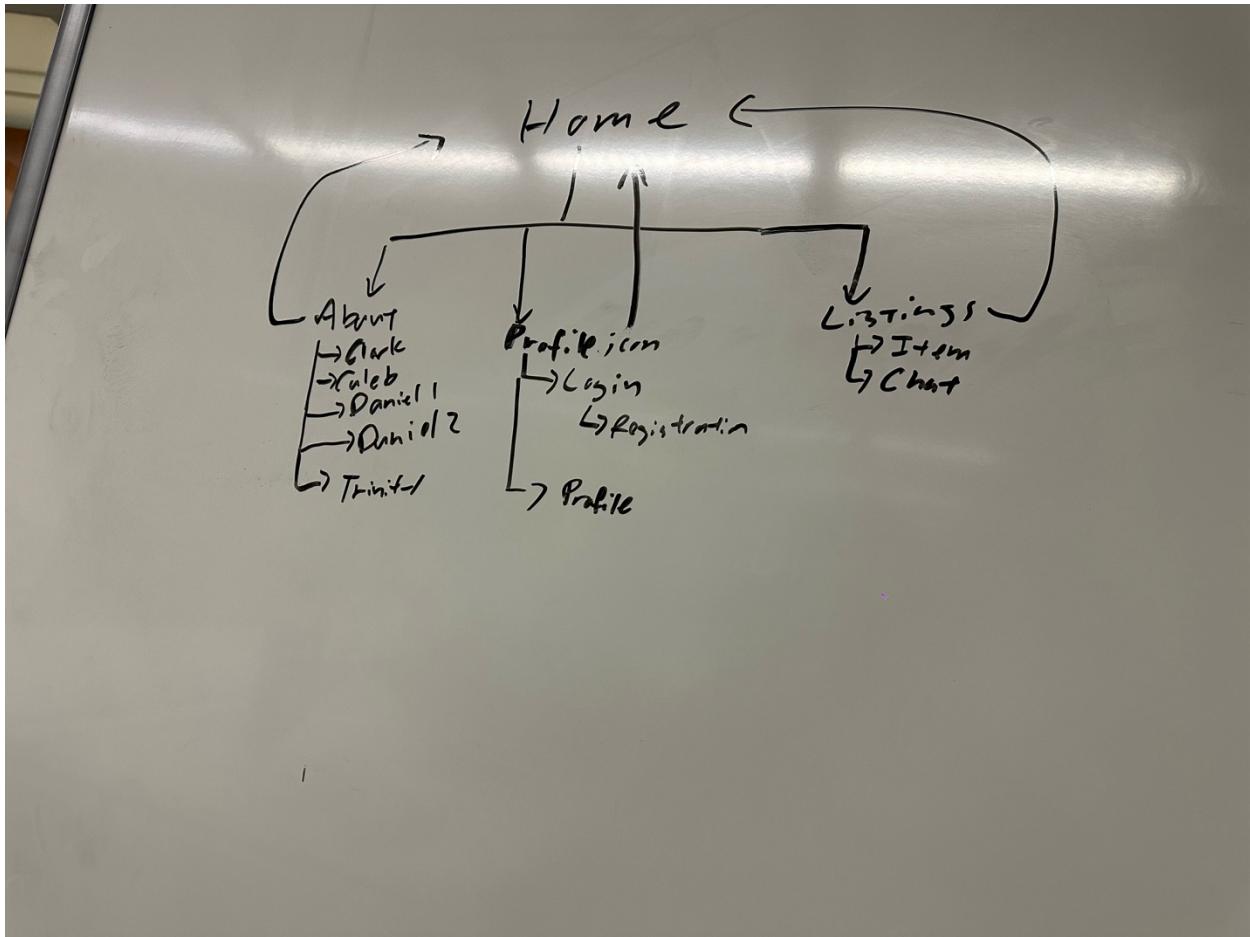
- 4.3 System shall provide marketplace section for SFSU-exclusive item events

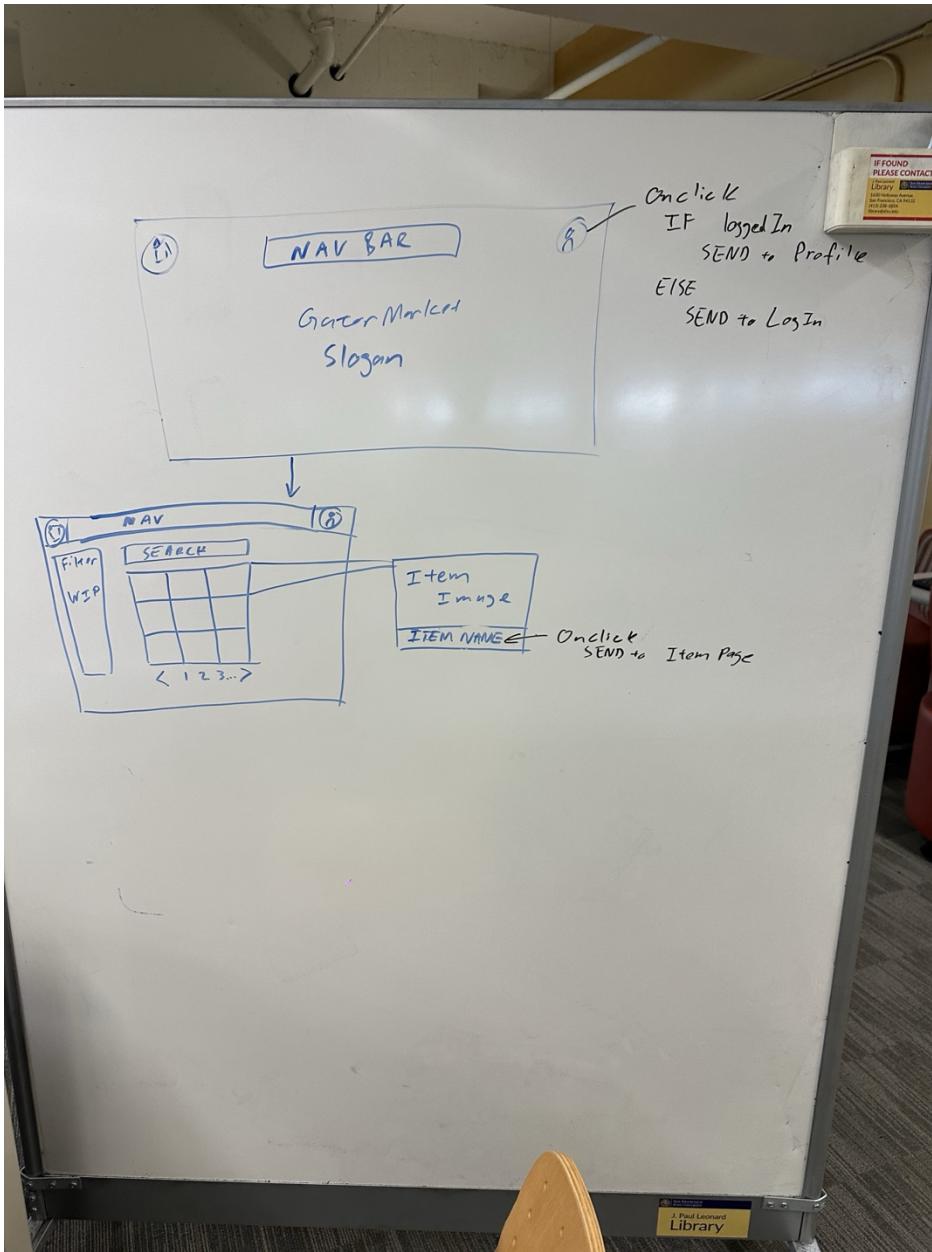
NON-FUNCTIONAL REQUIREMENTS

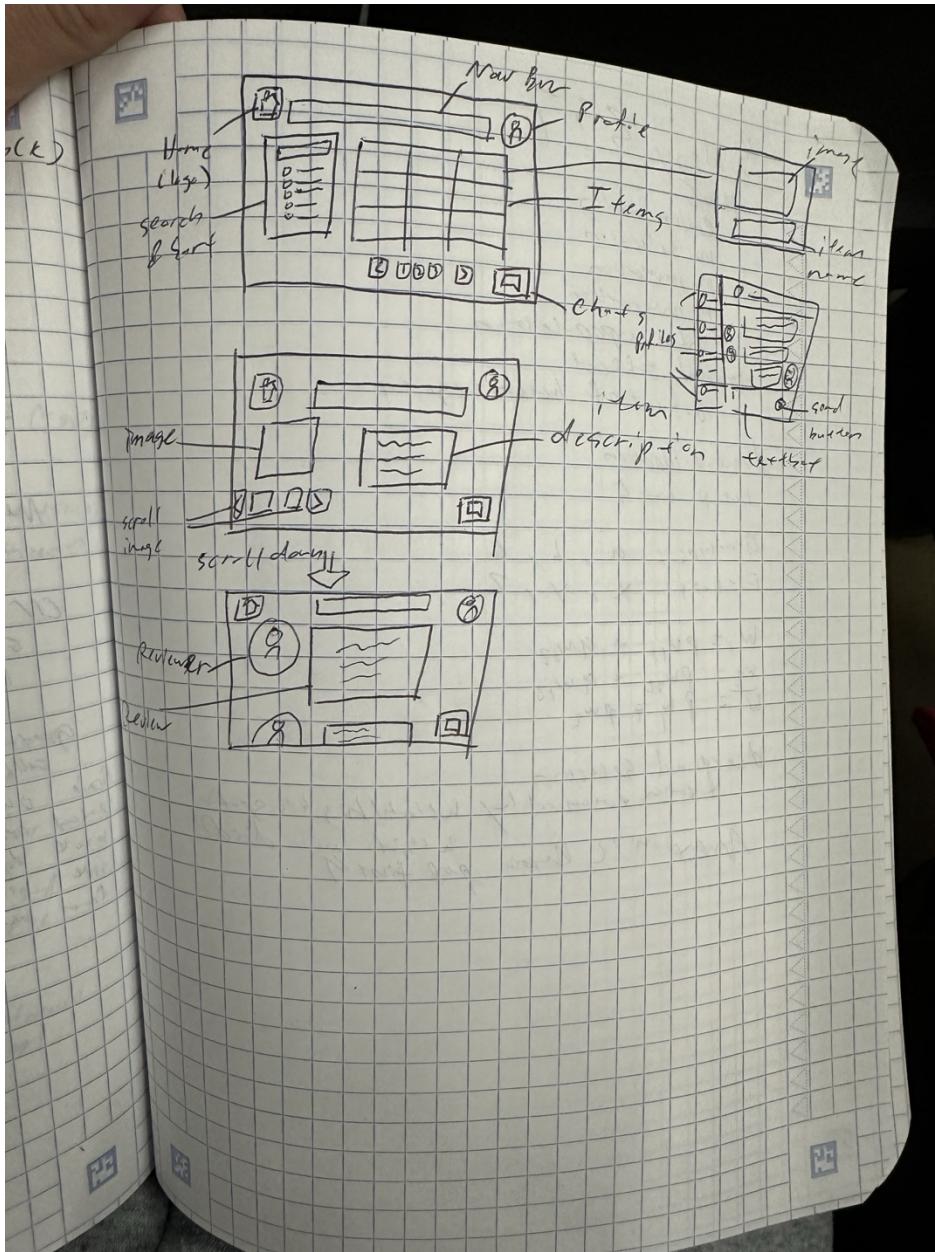
1. Application shall be developed, tested and deployed using tools and cloud servers approved by Class CTO and as-agreed in M0
2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest version of two major browsers
3. All or selected application functions shall render well on mobile devices (o 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 client 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 in the market today
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 to not confuse this with a real application). You must use this exact text without any editing.

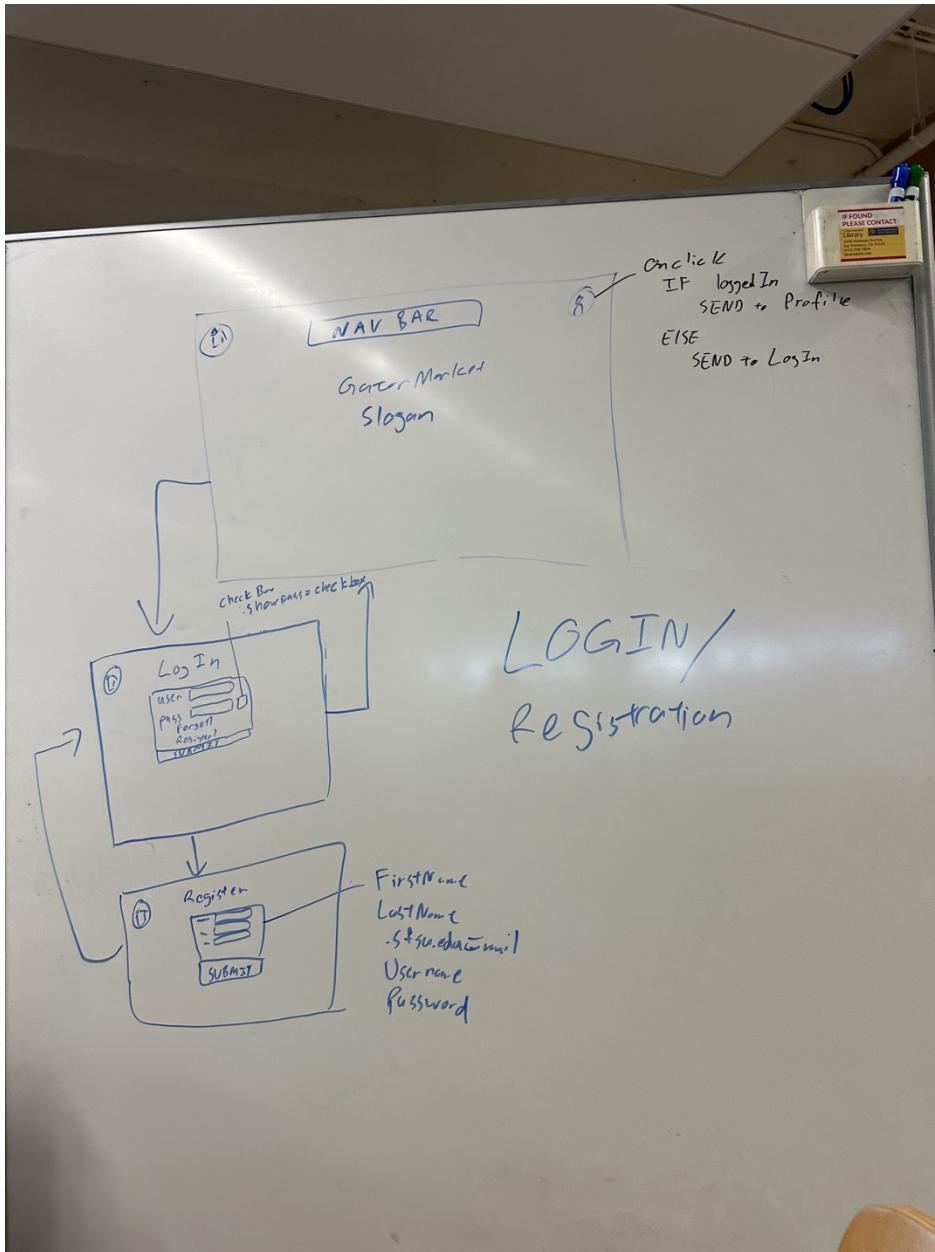
UI DIAGRAMS

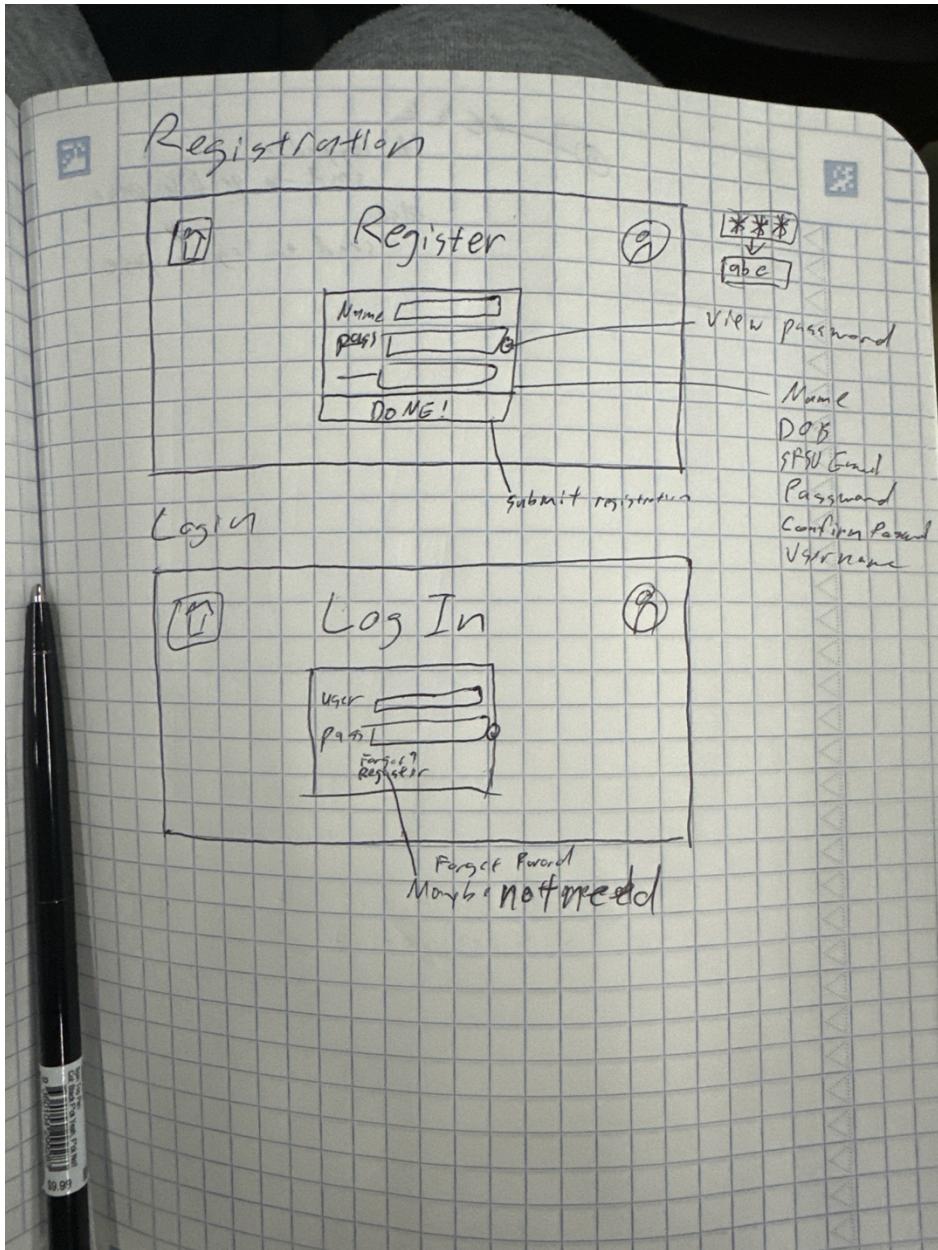


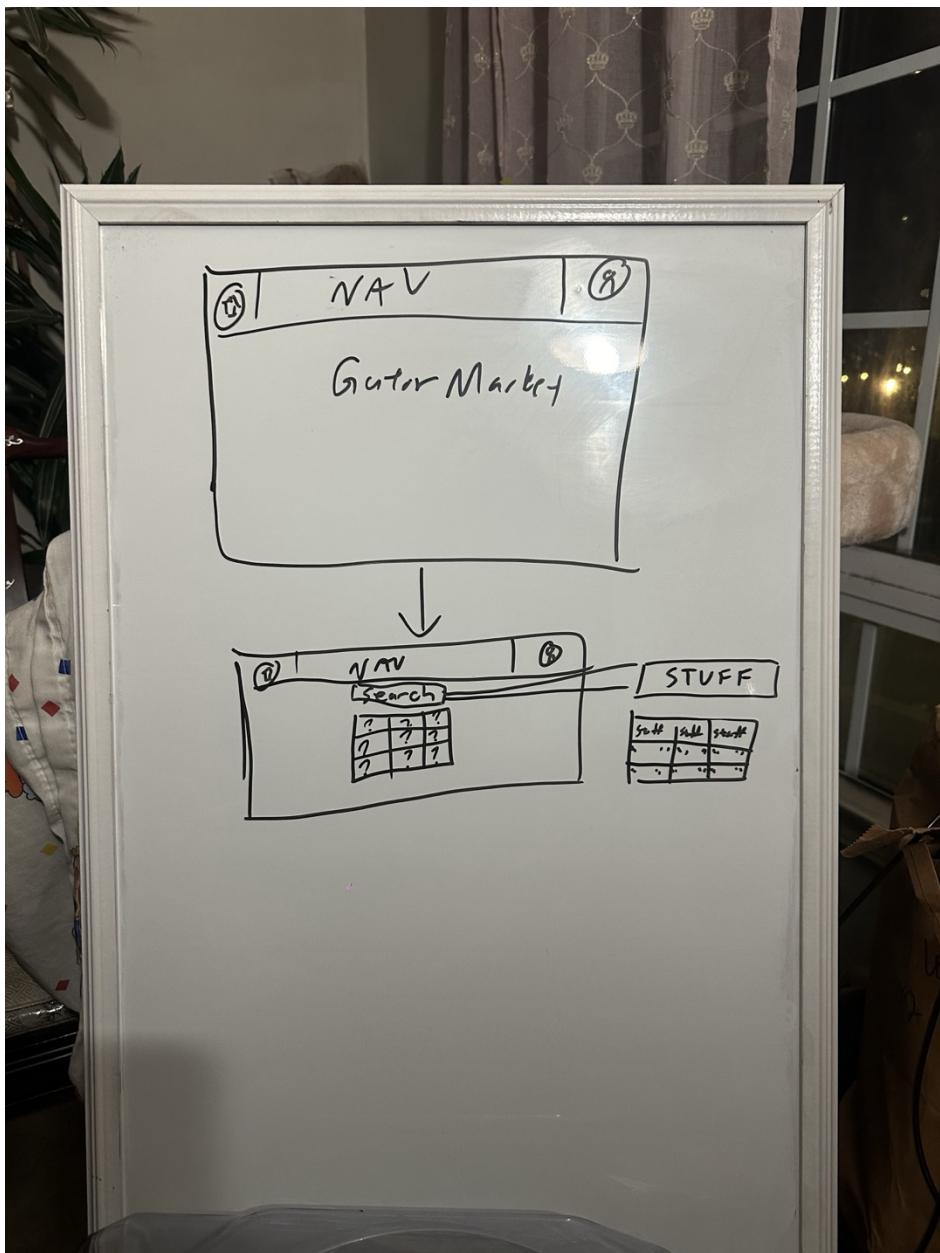




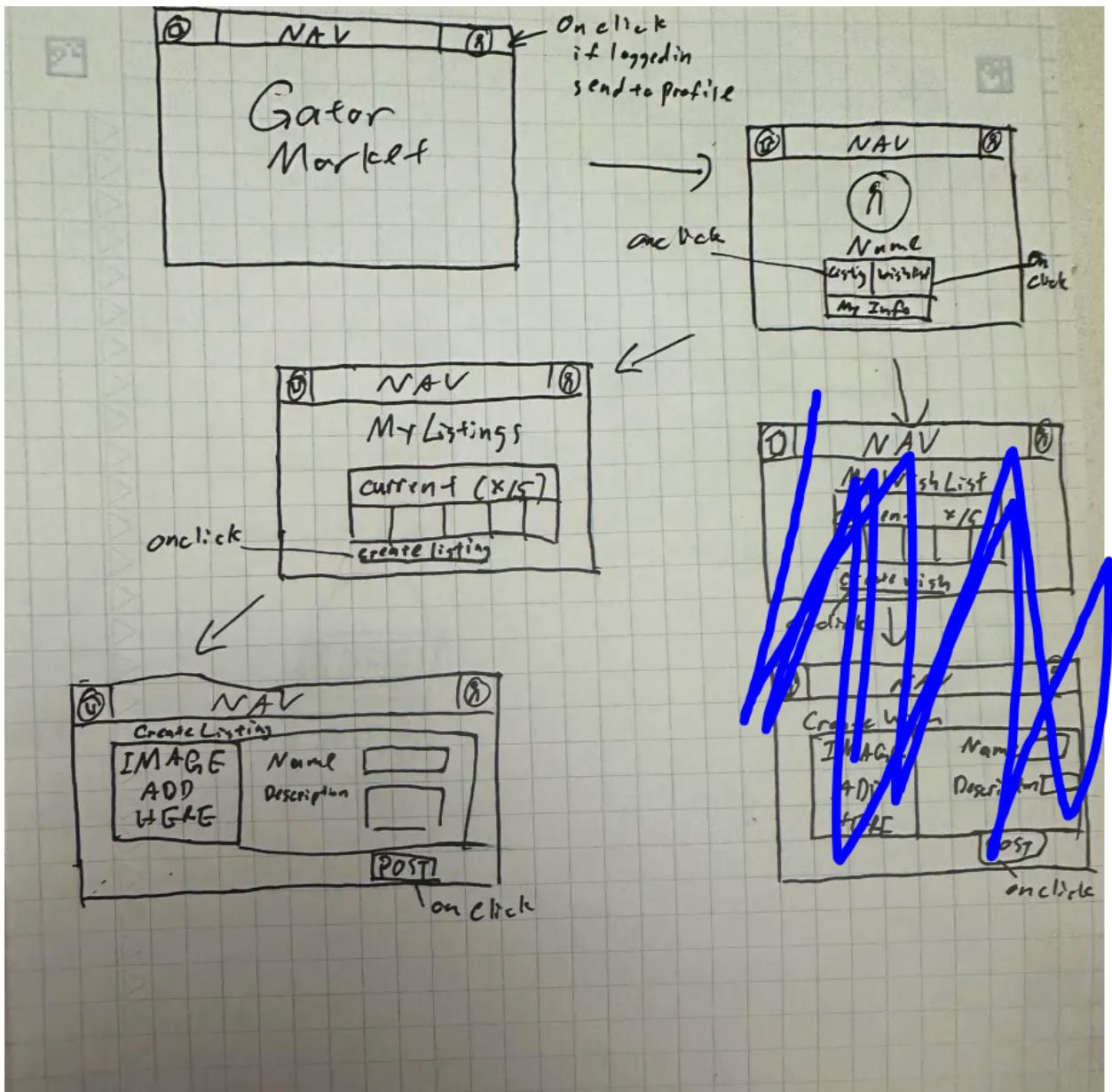
Create Account



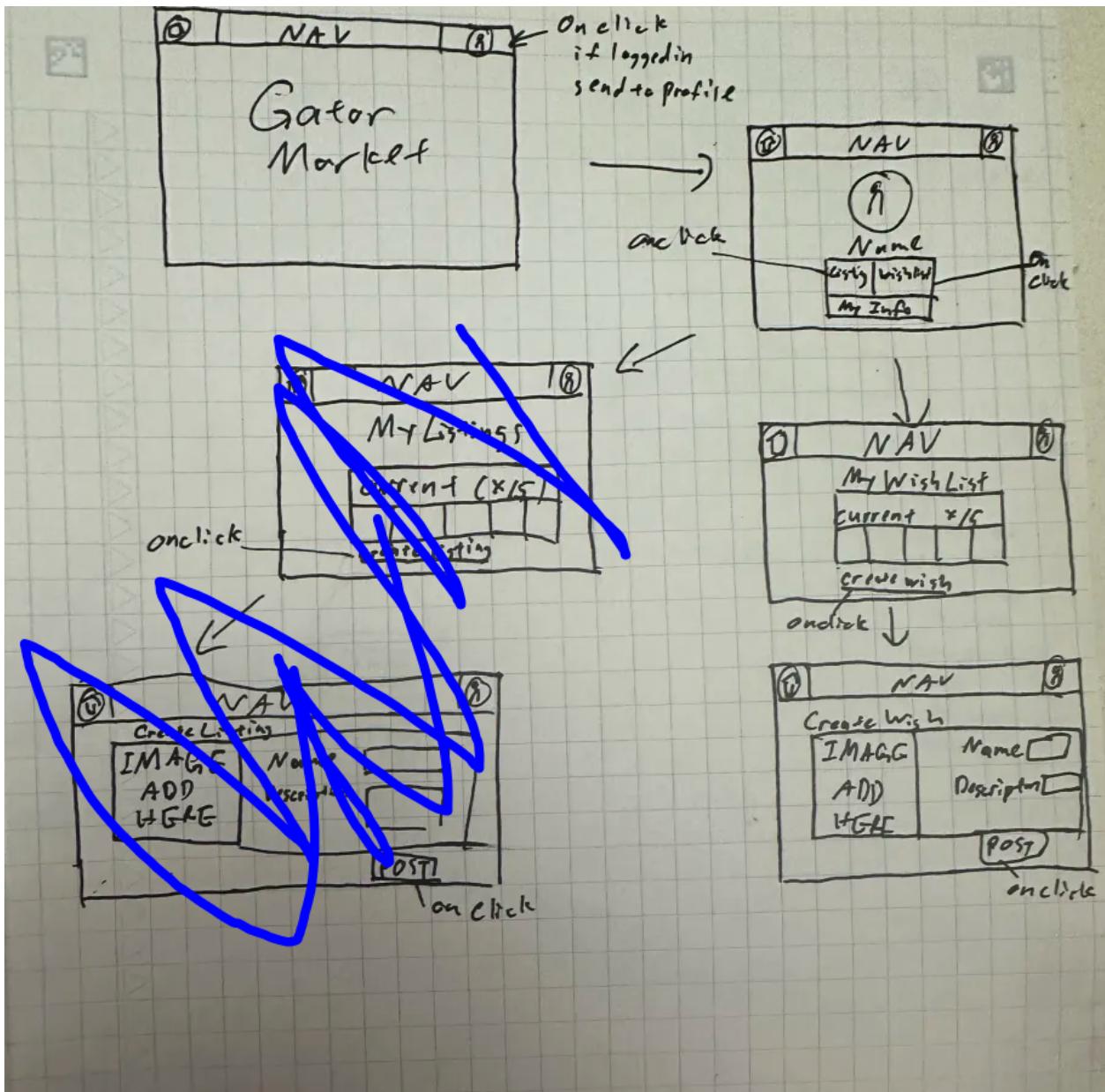




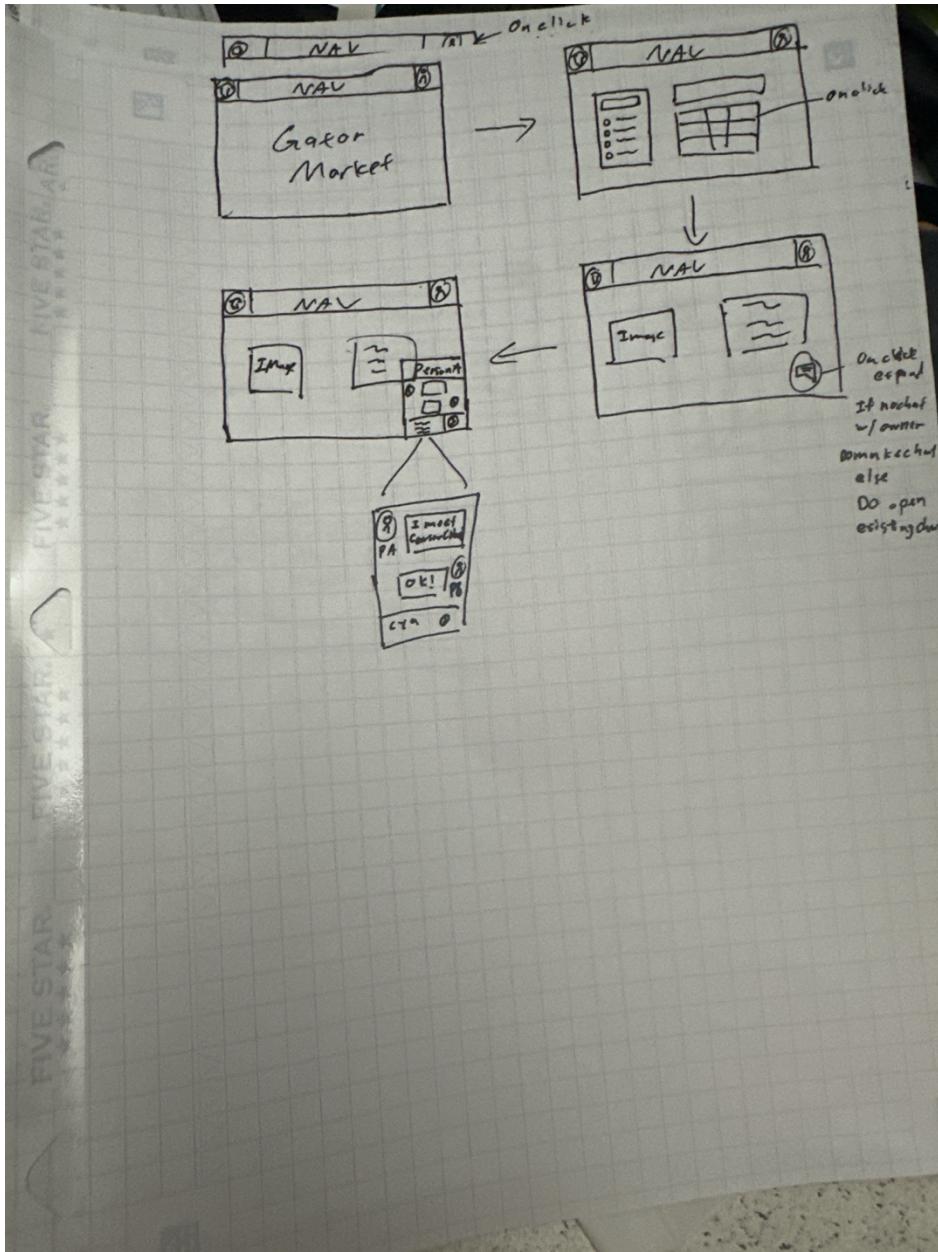
Post Listing



Make Wishlist



On Campus Meetup



COMPETITIVE ANALYSIS

Features	Craigslist	OfferUp	GatorMarket
On-Campus Safe Meetup	+	-	+
Real-Time Chat System	+	-	+
Trade Option	-	-	+
Reporting Option	-	-	++

+Feature Exist; ++Superior;-does not exist

Our site's value proposition comes from its community centered approach. It provides all essential features from Craigslist and OfferUp plus more. With a unique campus meetup and trade options exclusive only to SFSU students, safety is ensured. We pride ourselves in community and the safety of our users.

HIGH LEVEL SYSTEM ARCHITECTURE AND TECHNOLOGIES

Main SW Components

Database - AWS RDS for MySQL ver 8.0

WWW Server: Apache 2.4

Node.js (20.x)

Deployment Cloud Server

AWS free tier - EC2 instance free for 12 months

Frontend Frameworks

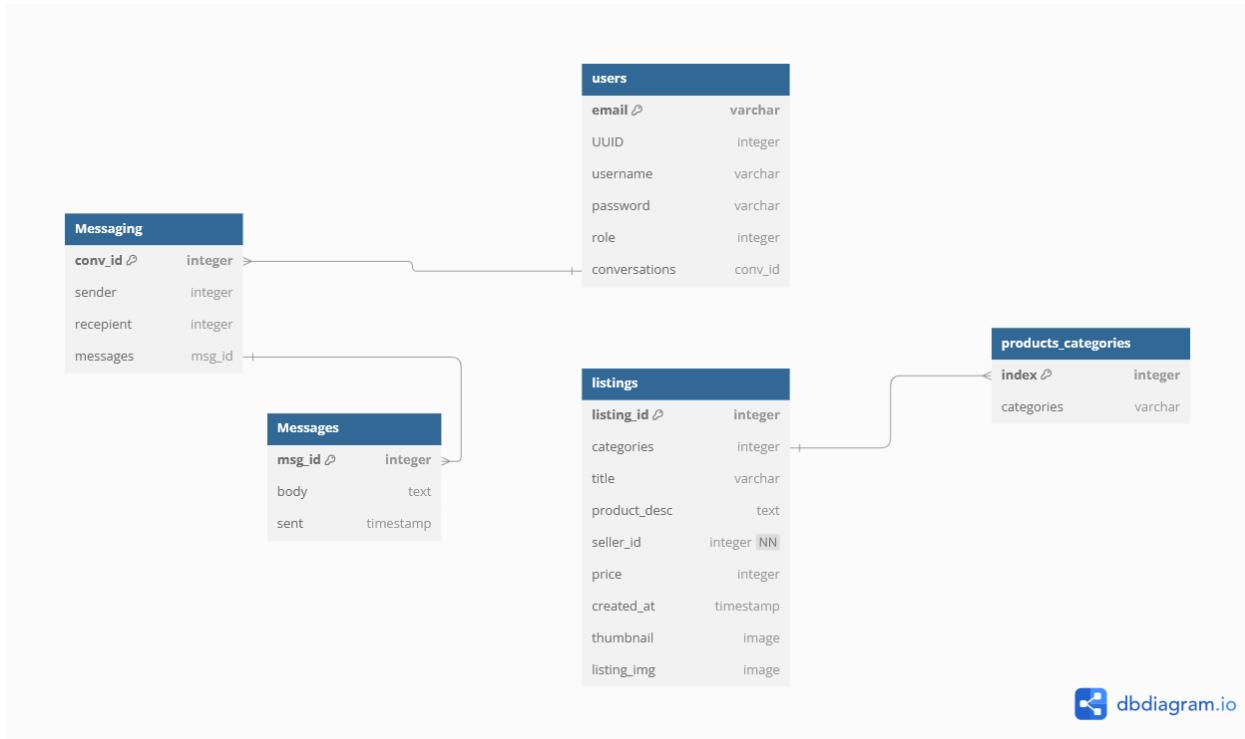
Express.js 4.18+

React (Next.js) 19.0.0

Browsers We Support

Chrome (Version 135)

Firefox (Version 136)



Media Storage: We will be using file systems to be storing images and other large media.

Search Filter: We will be using SQL and selecting using product categories, price, and possibly product description to find stuff for the users

We're aiming to minimize the rating system on any non-trivial algorithms or processing.

KEY RISK

Caleb

One technical risk I face is my limited knowledge of backend frameworks like AWS. This could make it harder for me to fully contribute to certain parts of the project. To address this, I plan to spend time learning more about AWS and how backend architecture works. I'll study how it connects with and supports our product or site. By improving my understanding, I can become more confident and effective in contributing to the backend work.

Clark

I realize that my lack of experience with backend development could pose a technical risk to the team. It's an area I need to improve in so I can keep up and contribute more effectively. To address this, I plan to meet with our backend lead for guidance. I'll ask him to walk me through the process and explain how things work. By learning from him, I hope to build my skills and become a more valuable team member.

Trinity

I feel like I lack experience in doing backend work with express js and sql. To remedy this to the best of my abilities I've been watching / doing tutorials related to areas of ignorance to fill in gaps. Making sure to be open to asking questions is also, in my opinion, key to filling holes in one's own knowledge. I also identified that communication over spring break would likely be difficult, so I suggested that we have extra meetings to coordinate.

Daniel Lee

This is my first time coding for web development in a long time so I'm rusty in regard to syntax. My knowledge of looking up front end to back end is very minimal and this is the first time I will be doing that. Currently I am reviewing with Mimo for front end. My schedule is also stretched thin with my classes and potential job, so there maybe conflicts ahead regarding that. I plan on doing what I can early before any deadline, so I have time to bend around.

PROJECT MANAGEMENT

As the team lead for Team 04, I carefully evaluate the requirements for each milestone and anticipate upcoming tasks. Based on my assessment, I assign roles according to each team member's strengths and capabilities. To ensure equal contribution, I include everyone's name when distributing tasks. After assigning responsibilities, I clearly communicate each person's role and set deadlines well ahead of the milestone due date. This approach allows me to identify if someone is falling behind and gives them a few extra days to catch up before the final deadline.

For future tasks, I plan to continue refining this system by regularly checking in with each member, adjusting roles as needed based on progress and feedback, and breaking down larger assignments into smaller, more manageable parts to maintain steady progress and accountability.

GENAI USAGE

Tool:

ChatGPT 4o

Task where it was used:

Executive Summary

Useful rating High

How it was used and benefits:

ChatGPT was utilized to edit the Executive Summary that I had originally wrote down and organize it

Prompt Used:

"Organize and edit the paragraph to make it sound professional"

Tool:

Claude 3.7 Sonnet

High Level Functional Requirements

MEDIUM

How it was used and benefits:

We used gen ai to assist with organizing and formatting the high-level functional requirements into user categories.

Prompt Used:

“Can you organize these high-level functionalities into user based categories? Examples - Unregistered Users, Registered Users, Admin Users”

Tool: Claude 3.7 Sonnet

Section: High Level Architecture and DB Organization

Useful Rating: MEDIUM

How it was used and benefits:

We asked Claude for simple examples of database designs and architectures

Prompt Used:

“Give me an example of a simple DB Design structure for an ecommerce site.”

TEAMS AND ROLES

Roles	Name	E-mail
Team Leader	Clark Batungbakal	cbatungbakal@sfsu.edu
Back-End Leader	Caleb Onuonga	jonusonga@sfsu.edu
Front-End Leader	Thanh Duong	tduong7@sfsu.edu
Front-End Member	Daniel Lee	dlee40@sfsu.edu
GitHub Master	Trinity Godwin	cgodwin@mail.sfsu.edu

TEAM LEAD CHECKLIST

MILESTONE 1

DONE/OK	So far, all team members are fully engaged and attending team sessions when required
DONE/OK	Team found a time slot to meet outside of class

DONE/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
DONE/OK	Team reviewed class slides on requirements and use cases before drafting Milestone 1
DONE/OK	Team reviewed non-functional requirements from “How to start...” document and developed Milestone 1 consistently
DONE/OK	Team lead checked Milestone 1 document for quality, completeness, formatting and compliance with instructions before submission
DONE/OK	Team lead ensured that all team members read the final M1 and agree/understand it before submission
DONE/OK	Team shared and discussed experience with GenAI tools among themselves
DONE/OK	GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)

MILESTONE 2

ON TRACK	So far, all team members are fully engaged and attending team sessions when required
ON TRACK	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/OK	Team reviewed class slides on requirements and use cases before drafting Milestone 2
DONE/OK	Team lead checked Milestone 2 document for quality, completeness, formatting and compliance with instructions before submission
DONE/OK	Team lead ensured that all team members read the final Milestone 2 document and agree/understand it before submission
ON TRACK	Team shared and discussed experience with GenAI tools among themselves

APPENDIX

Site Pages / Services:

User creation page - page where new users will be able to register/create their accounts.

Homepage - landing page for all users, logged in or otherwise, will serve as the primary page for looking at listings, finding listings, messaging Admins and other essential activities.

User page - All users will have a user page giving basic information about that user such as their username, access to message them, their rating, number of transactions, how long the account has existed and any other useful information. There will also be a block button. If the user is a Seller, it will also display the user's current listings.

Listings - This page will serve as the interaction portal for buyers to look at a particular seller's item. It will have an image of the card, a link to the sellers User page, a brief description, the seller's asking price, a chat box to send a message to the seller, quantity of available cards if there are multiple, any other relevant information about the card such as if it has been graded, and finally an 'offer' selection tab which will allow a buyer to send a proposed price, meetup location (selected from the predesignated on-campus locations) and a proposed meeting time.

Offers - These are special messages sent to the seller. The message will contain all relevant information including who is trying to buy, proposed location, price, quantity to buy, and meetup time. That seller will be given a certain amount of time to approve or deny. Replying to this message will allow the seller to send a counteroffer or negotiate with the buyer. Once an offer is accepted the listing will be taken off the website.

Blocking Service - Buyers and sellers can block users seamlessly without the blocked user being informed. All messages and offers made by a blocked User will not be shown to the blocker. Blocked sellers will not have their listings appear when searching / on the Homepage.

Messaging Service - The messaging service will serve as the primary way buyers and sellers are able to communicate and negotiate. Users will be able to go to another user's User page and start a conversation there as well as at the Listing page. The Homepage will have a notification bar that will alert a user to new messages and allow them to respond. This messaging service will also be how users are able to get in touch with the admins.

Wishlist - Users will be able to 'save' or otherwise highlight listings of interest as well as wish list sought-after cards. When a card the user has wish listed has a new listing, the User will automatically be messaged about the new listing.

Location Selection - Users will be only able to meet up at predesignated locations on campus where Admins have evaluated it to be safe. AKA places with cameras and bystanders to help prevent the service being used to target users.