

# SW Engineering CSC648-848 Spring 2024

GatorTrader

Team 05

Milestone 2

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MILESTONE	DATE SUBMITTED	DATE REVISED
#2	3/22/2024	-

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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 and how easy it is to search for textbooks required by courses. 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.

# Main Data Items and Entities (Glossary)

## Guest Users

### **Definition:**

- Fully anonymous user that can view, search and browse for posts.

### **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.

### **Registered Record Items:**

- 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.

## 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.

## 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 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.
- Image: Image of product.
- 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.).

SFSU Textbook**Attributes:**

- Course: The course associated with the textbook
- Professor: The professor requiring the textbook

Seller**Definition:**

- Registered User with the intention of selling a product.

Buyer**Definition:**

- Registered User with the intention of buying a product.

## Message

### **Definition:**

- Interaction between two registered users regarding a product listing.

### **Attributes:**

- Product: Product associated with the message.
- 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.).

## Private Dashboard

### **Definition:**

- Private listings of posted products by Registered User and messages to-and-from other Registered User.

### **Attributes:**

- Private: Viewable by Registered Users.
- Personal: Registered User specific.

## 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 -Prioritized-

## Priority 1

### Guest Users and Registration

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. Users shall authenticate themselves with a valid SFSU school email and password to access specific features.

### Registered Users

3. Registered Users shall be able to create posts for products they want to sell.
4. Registered Users shall be able to view messages on their dashboard.
5. Registered Users shall be able to view their product posts on their dashboard.

### Admin Functions

6. Admins shall be required to review product posts.

### Product Posts

7. Product posts shall include item details, price, and image upload functionality.
8. Product posts shall be labeled as Clothes, Shoes, Accessories, Electronics, Media, Furniture, Decorations, Materials, Books or SFSU Textbooks.
9. Product posts labeled as a SFSU Textbook shall require a course and professor associated with it.
10. Submitted product posts shall be subjected to admin approval before being published on the website.

11. Approved product posts shall be displayed on the marketplace for other users to see.

### Browsing and Searching

12. Users shall be able to filter product posts on the marketplace by category.
13. Users shall be able to search for a product post in the marketplace that they are interested in buying.
14. Users shall be able to browse for a product post in the marketplace.

### Buying and Selling

15. Buyers shall be able to submit a message to a seller about a specific seller's product post.

## Priority 2

### Registered Users

16. Registered Users shall be able to review and rate a registered user's profile.
17. Registered Users shall be able to add a biography for their own user profile.

### Product Posts

18. Registered Users shall be able to edit product posts in which they would need another admin approval.

### Browsing and Searching Posts

19. Product posts shall be able to be hidden by buyers.

### Priority 3

#### Registered Users

- 20. Registered Users shall be able to reset their password.
- 21. Registered Users that are not signed in shall be able reset their password.

#### Product Posts

- 22. Product posts shall be capable of multiple image uploads and multiple videos uploads.
- 23. Product posts shall be capable of showing multiple images or videos.
- 24. Approved product posts shall be displayed on their seller's profile for other users to see.
- 25. Registered Users shall be able to put products they want in a list for a future transaction.

#### Browsing and Searching Posts

- 26. Product post information shall be deleted automatically after 2 weeks of being hidden.

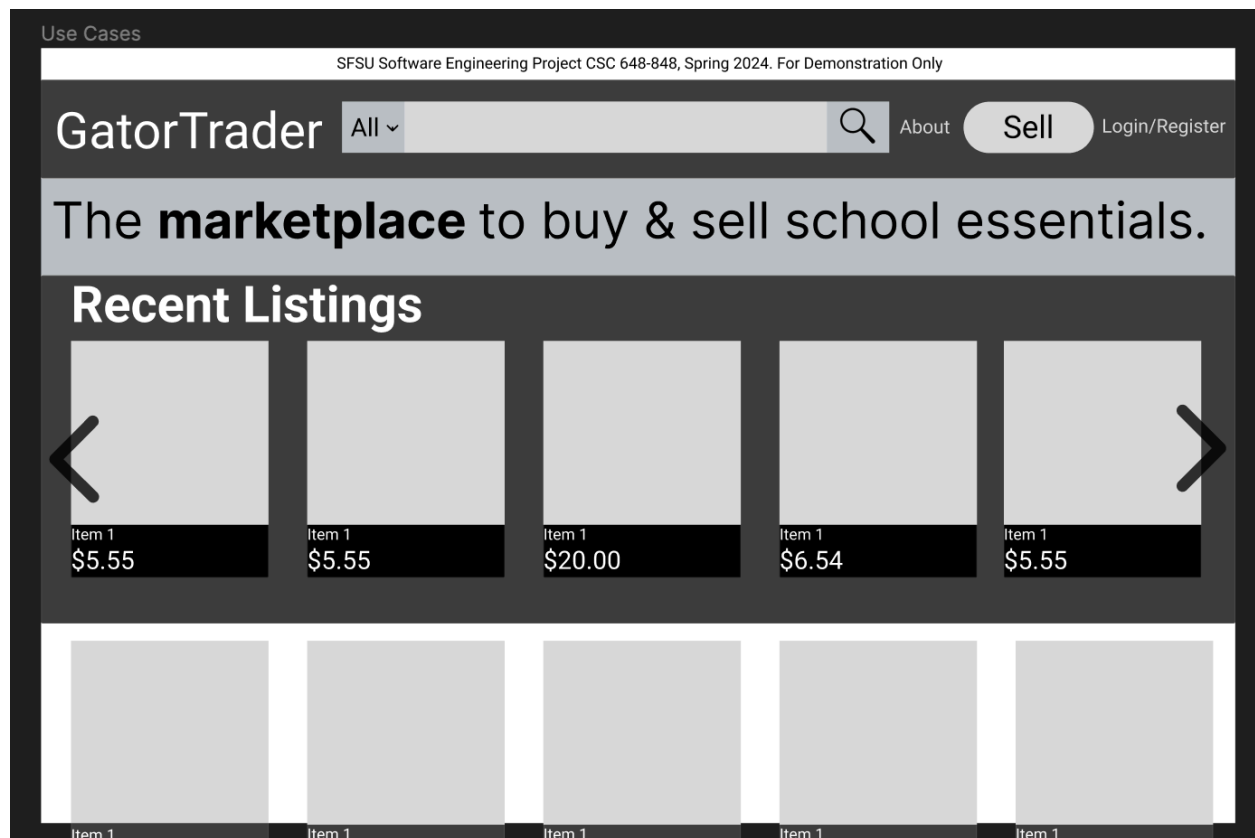
#### Buying and Selling

- 27. Sellers shall be able to respond to a message about their product posts.

# UI Storyboards

## Use Case Amirah Jordan

*Amirah heard from her freshman orientation that SFSU offers the GatorTrader website to buy/sell a vast variety of items ranging from school to personal. Therefore she goes on her laptop and references her phone containing screenshots of the required Biology textbooks and materials.*



*She types in the title of the textbook realizing there are multiple editions in the search results and filtered them out to be exclusively for Biology courses then clicks on the first one.*

MacBook Pro 14" - 1

SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

# GatorTrader

All ▾ Biology Textbook about Mitochondria 🔍 About Sell Login/Register

1-25 over 225 results for "Biology Textbook about Mitochondria" Sort by: Best Match

**Category**

- Clothes, Shoes, & Accessories ▾
- Electronics & Media ▾
- Furniture ▾
- Textbooks ▾
  - Accounting
  - Biology
  - Computer Science
  - Economics
  - Finances
  - Journalism
  - Nursing
  - Political Science
  - Spanish
  - Tourism
  - Theater Arts
- + Show More

**Price Range**

Min to

**Condition**

- ☐ New
- ☐ Used

**Date Posted**

- ☐ Within 3 Days
- ☐ Within a Week
- ☐ Within a Month

**Delivery Method**

- ☐ Local Pickup
- ☐ Delivery

**Seller Type**

- ☐ Student
- ☐ Faculty

Item 1 \$1200.00	Item 1 \$500.00	Item 1 \$800.00	Item 1 \$123.50
Item 1 \$555.55	Item 1 \$230.00	Item 1 \$456.54	Item 1 \$56.78

*She realizes the first hardcover textbook she clicked on is overpriced, so she sorts the results by price (low to high) to find a cheaper alternative.*

MacBook Pro 14" - 3

SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

# GatorTrader

Textbooks ▾ Biology Textbook about Mitochondria 🔍 About Sell Login/Register

1-25 over 55 results for "Biology Textbook about Mitochondria" Sort by: Low to High

**Category**

- Clothes, Shoes, & Accessories ▾
- Electronics & Media ▾
- Furniture ▾
- Textbooks ▾
- + Show More

**Price Range**

Min to Max GO

**Condition**

- ☐ New
- ☐ Used

**Date Posted**

- ☐ Within 3 Days
- ☐ Within a Week
- ☐ Within a Month

**Delivery Method**

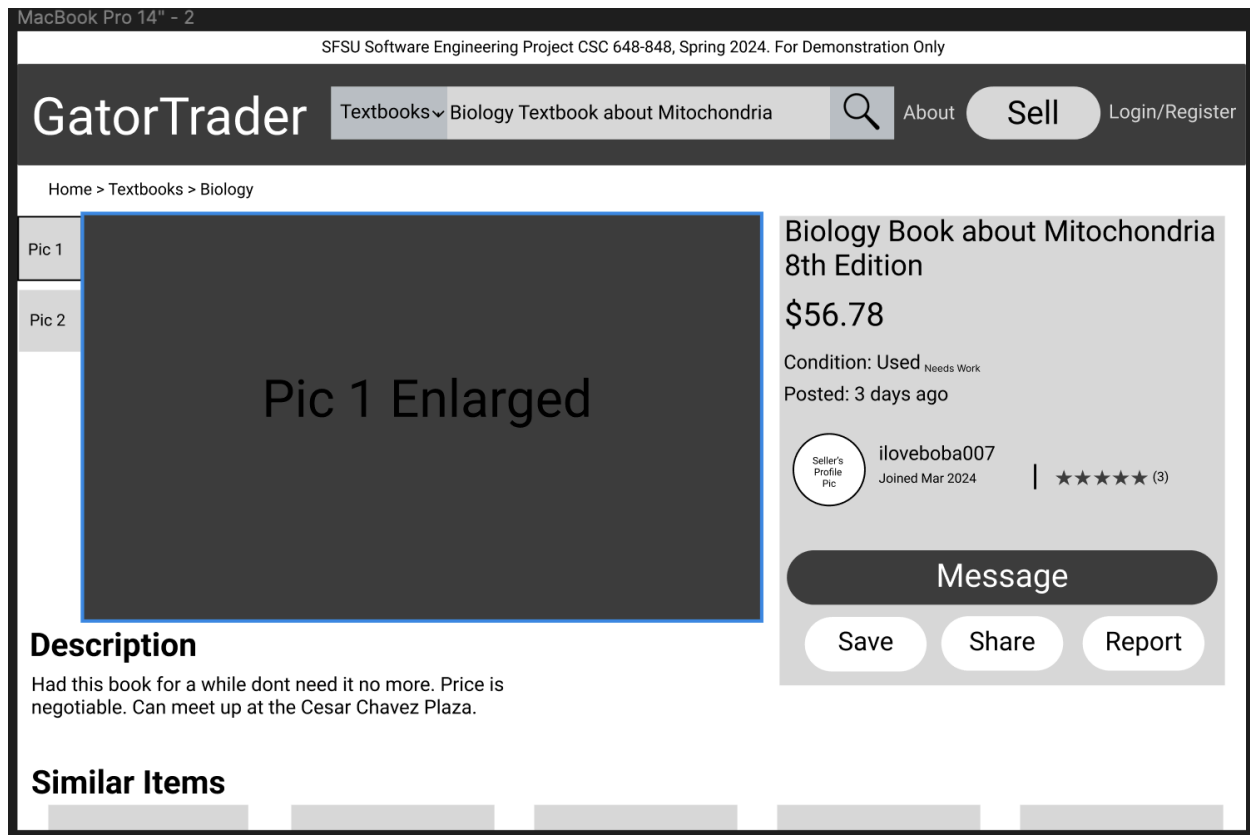
- ☐ Local Pickup
- ☐ Delivery

**Seller Type**

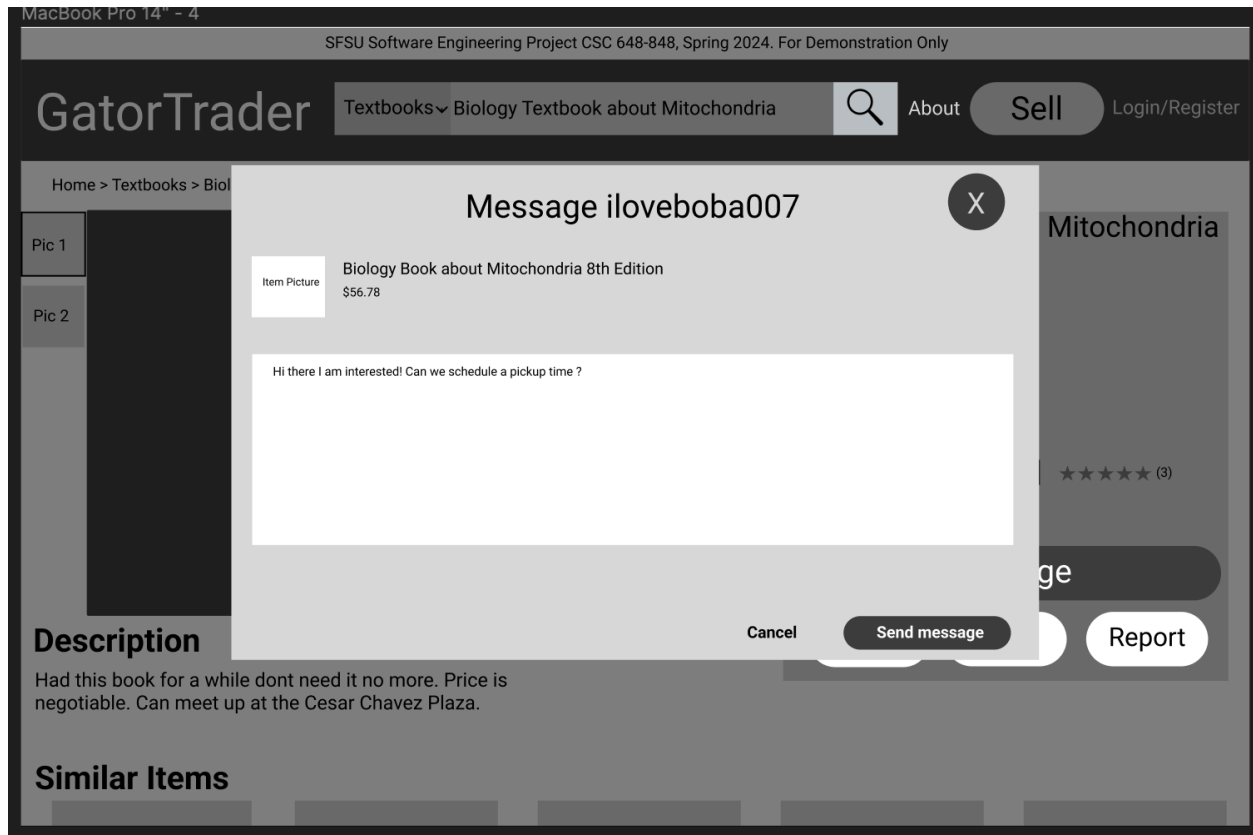
- ☐ Student
- ☐ Faculty

Item 1 \$56.78	Item 1 \$123.50	Item 1 \$230.00	Item 1 \$456.54
Item 1 \$500.00	Item 1 \$555.55	Item 1 \$800.00	Item 1 \$1200.00

*She successfully finds a cheaper alternative that suits her budget with a seller that is too good to be true. Amirah eagerly clicks the listing to view more photos of the product making sure the condition is great. She also compares the screenshot of the required Biology textbook on her phone to the listing to ensure everything looks good.*

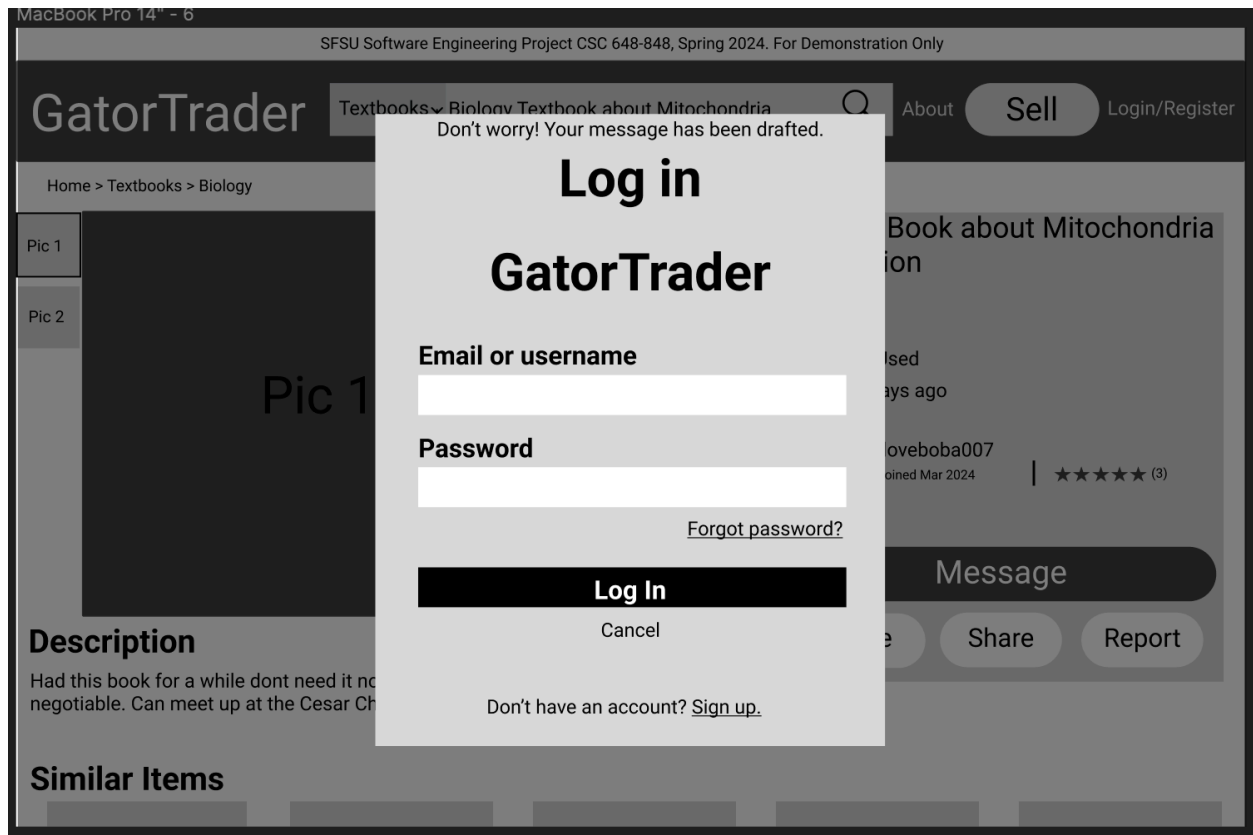


*She is then inclined to contact the seller when all details look the same as her screenshot. Amirah begins to inquire on the listing by typing a message in the contact field and once she concludes in typing the message up.*



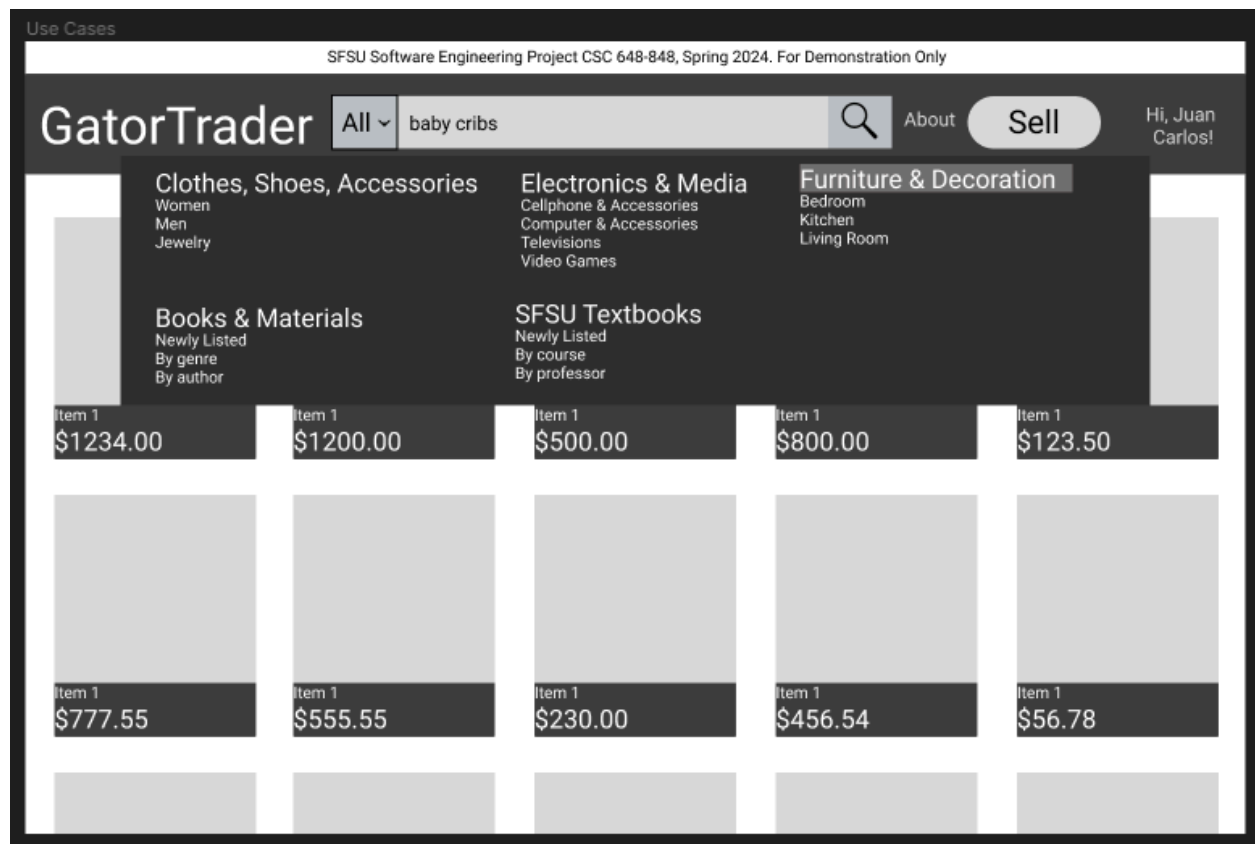


*Upon completing the inquiry message to the seller, she is prompted to “log in or register”. She happily registers and creates a new account. The message to the seller is drafted during the registration process and it is sent to the seller concurrently when registration is completed and then notified that the message has been successfully sent.*



## Use Case Juan Carlos

*Juan Carlos has registered with the website before as an undergrad and wants to browse listings from faculty who donate/sell their unwanted infant furniture. Therefore he securely browses by exclusively using the dropdown menu of categories (Furniture) to narrow his search.*



*As protective as he can be he uses the filters to only show listings posted by faculty members and local pickup. Thankfully he finds a range of listings that have cribs and various other necessities that he didn't even realize the app had.*

MacBook Pro 14" - 7

SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

# GatorTrader

Furniture & Decorations Baby cribs

About Sell Hi, Juan Carlos!

1-8 over 8 results for "Baby cribs" Sort by: Low to High

**Category**

- Clothes, Shoes, & Accessories
- Electronics & Media
- Furniture
- Textbooks
- + Show More

**Price Range**

20 to 200 GO

**Condition**

- ☐ New
- ☐ Used

**Date Posted**

- ☐ Within 3 Days
- ☐ Within a Week
- ☐ Within a Month

**Delivery Method**

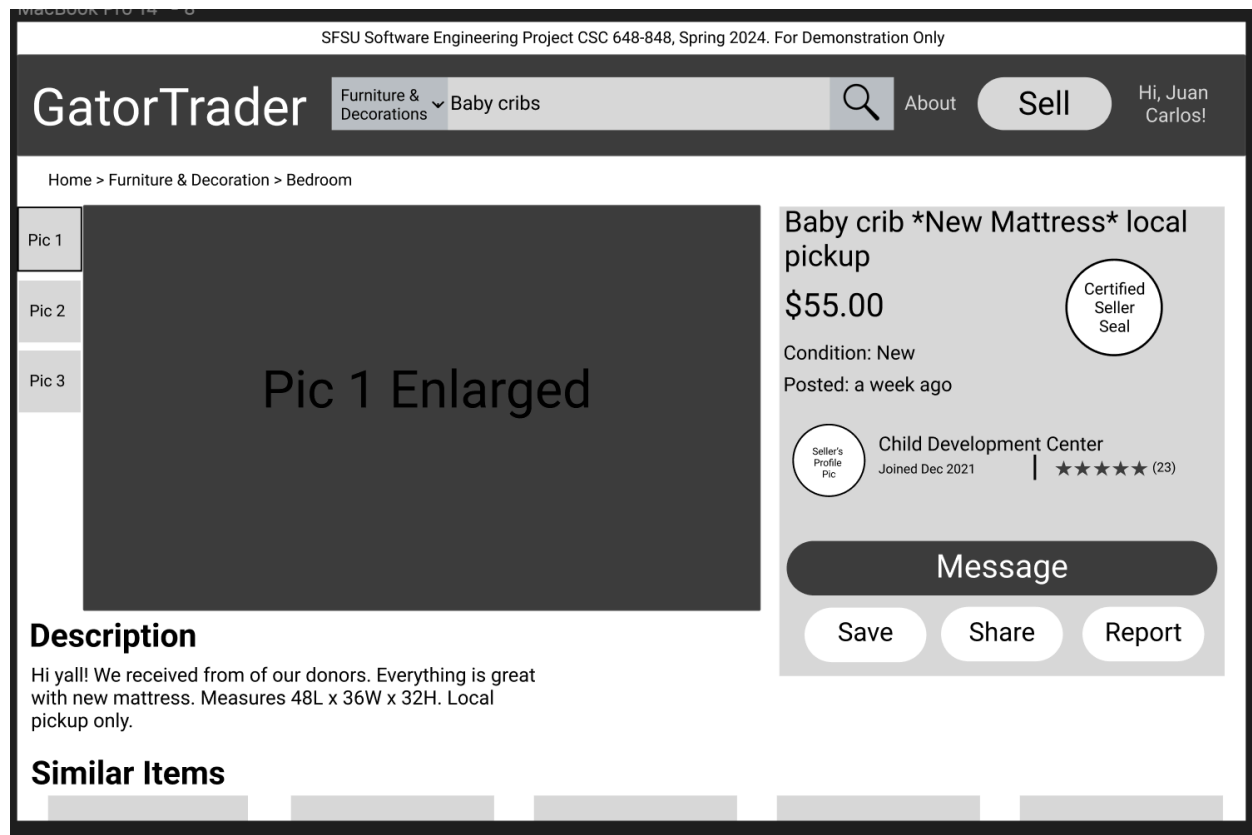
- ☒ Local Pickup
- ☐ Delivery

**Seller Type**

- ☐ Student
- ☒ Faculty

Item 1 \$20.00	Item 1 \$50.00	Item 1 \$55.00	Item 1 \$123.50
Item 1 \$130.00	Item 1 \$135.00	Item 1 \$135.00	Item 1 \$199.99

*After doing a couple of back-to-back in detail clicks of various cribs, Juan Carlos finds the perfect crib in great condition at a reasonable price as well as finding something that is local pickup.*



*Juan Carlos is cautious when buying things online so he relies on going through the seller's profile (Child Development Center), to view their reviews and previous listings therefore concluding that their ratings are well received. He realizes in the description of this specific listing it says it is local pickup only via Child Development Center which is perfect for him as he owns a pickup truck.*

macBOOK PRO 14 - 9


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# GatorTrader

Furniture & Decorations ▾ Baby cribs

About Sell




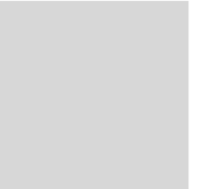

Hi, Juan Carlos!








**Child Development Center**  
Joined Dec 2021 | ★★★★★ (23)

Hi yall! We are located near by State Dr. (near Lot 20). We aim to ease the journey for new/upcoming parents affiliated with SFSU. Message us for information on our annual donation drive.

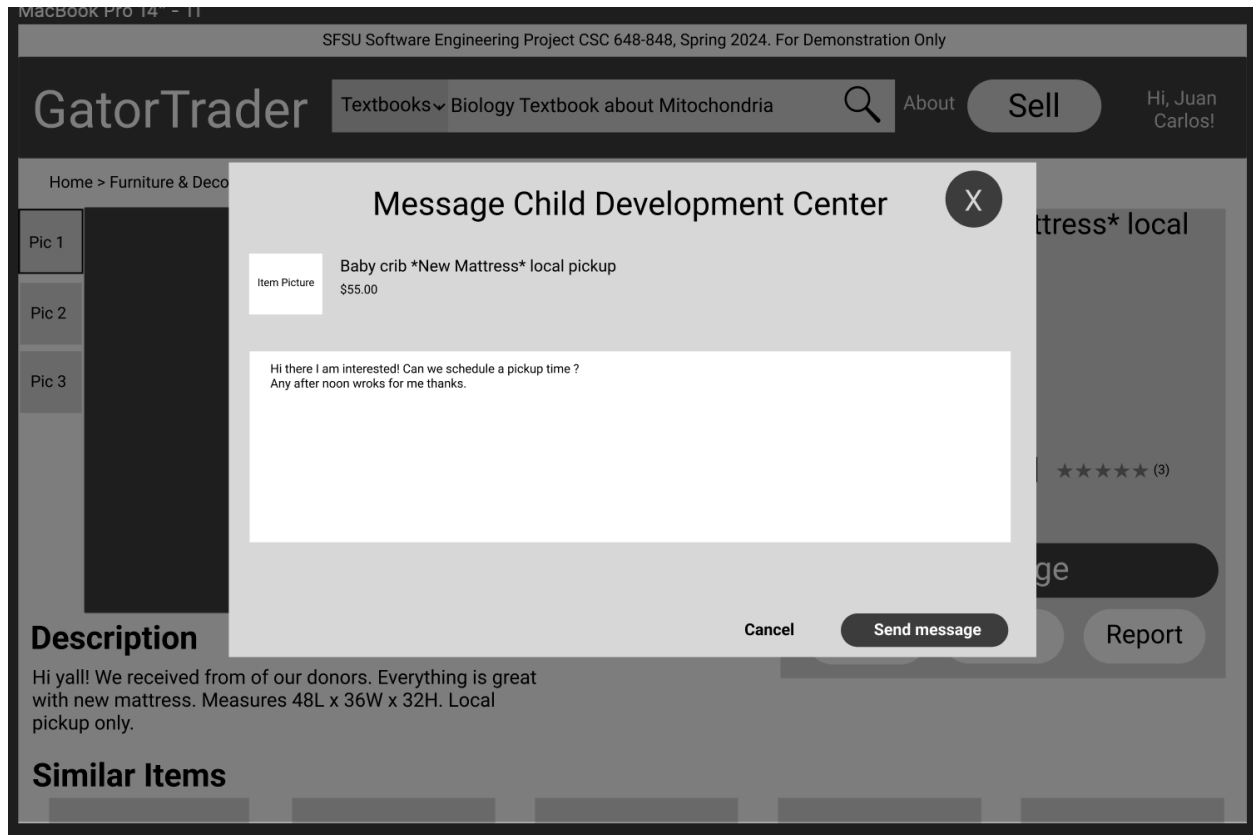
## All Listings

	Recently Viewed			
				
Item 1 \$56.78	Item 1 \$55.00	Item 1 \$123.50	Item 1 \$230.00	Item 1 \$456.54

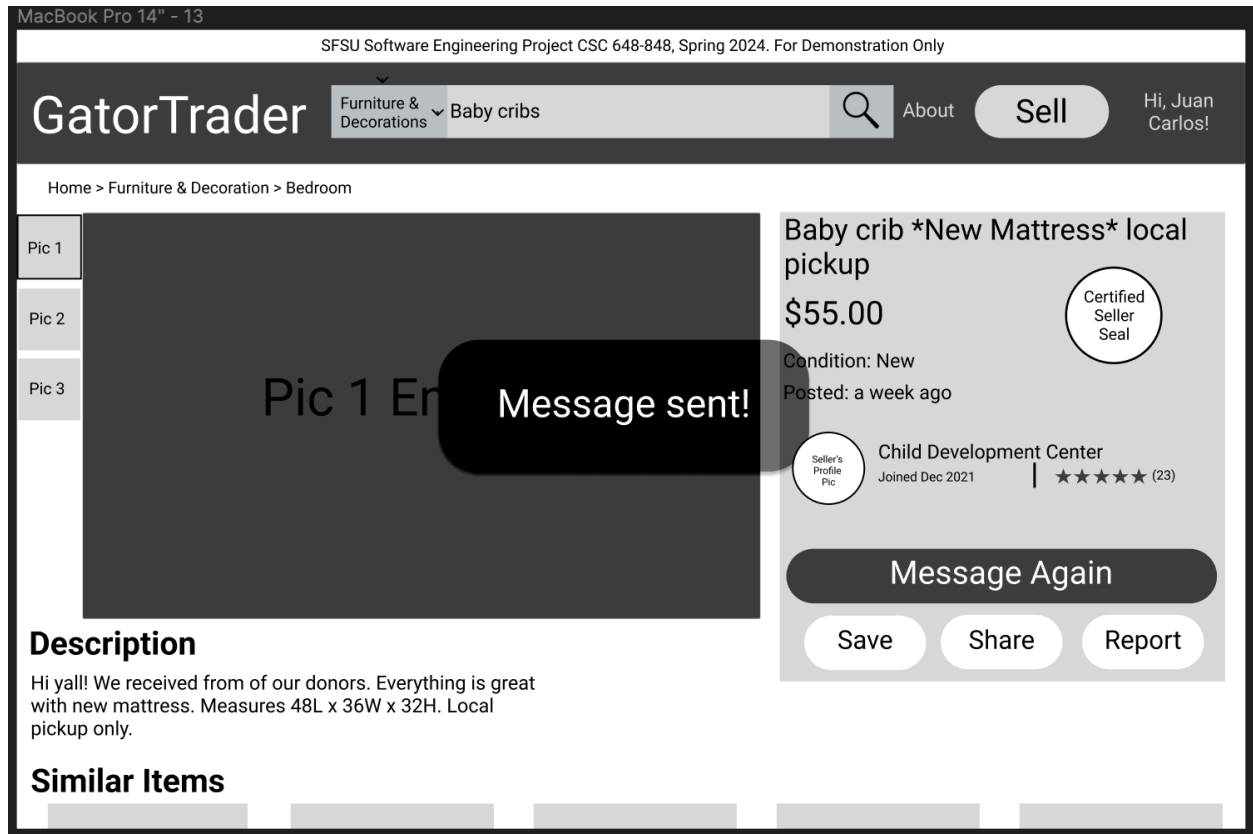
## Similar Items

				
---	---	---	--	---

*Juan Carlos inquires by leaving a message about the crib listing and other infant furnitures that this profile has under their listings scheduling a meet up time. Upon sending the message, he is notified that the message has been successfully sent.*



*Juan Carlos feels relieved for relying on the app to securely purchase the listing(s) and begins to do more browsing in other categories.*



## Use Case Dr. Mei Ling

*Dr Mei Ling decides she wants to declutter her office hours room and her personal study room with the excessive amount of scholar books she has accumulated throughout her career. After years of being a SFSU faculty, she finally decides to give the GatorTrader app a try since she's heard good things about it. Her lack of knowledge with newer technology is a burden to her but she gives her best to upload her first listing.*

Use Cases
SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

GatorTrader
All
Search
About
Sell
Login/Register

### Upload Your Listing

**\*Title:**

**\*Category:**

▼

- Clothes, Shoes, and Accessories
- Electronics and Media
- Furniture and Decorations
- SFSU Textbooks**
- Books and Materials

**\*Price:**

**\*Course**

**\*Professor**

**Description:**

[Cancel](#)

**Upload Image:**

☐
By checking the box you agree to [TOS](#) and [SFSU Code of Conduct Policy](#)

Please allow up to 24 hours for post to publish



*After that she clicks the button “Sell Now” and goes through the process of filling out the details of the listing. She realized the process is super simple and doesn't require extensive details, but simply just a title, category, description, price, and uploading images.*

Use Cases

SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

# GatorTrader

All   [About](#) [Sell](#) [Login/Register](#)

Don't worry! Your upload has been drafted.

## Log in

## GatorTrader

**Email or username**

**Password**

[Forgot password?](#)

Don't have an account? [Sign up.](#)

**TITLE:**

EX: CSC 415 TEXTBOOK

**DESCRIPTION:**

**CATEGORY:**

**DROPDOWN**

- Clothes, Shoes, and Accessories
- Electronics and Media
- Furniture and Decorations
- Textbooks and Materials

**LOAD IMAGE:**


☐ [READ AND AGREE TO TOS](#)

Once she is done filling out the details of her listing she clicks to upload her listing and upon submission she is prompted to login/register, therefore she fills out the registration by filling out her Name, SFSU email, password, relation to SFSU, and agreeing to Terms and Conditions.

macBOOK PRO 14" = 13"

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# GatorTrader

All  About **Sell** Login/Register

Don't worry! Your message has been drafted.

## Sign up

First name  Last name

SFSU Email

Username

Password

Confirm Password

☐ By checking the box you agree to [TOS](#) and [SFSU Code of Conduct Policy](#)


**Sign Up**


After successfully registering, she is then prompted with “Listing Uploaded Successfully, Please allow up to 24 hours for post to appear.” notifying her that the product listing was saved during the registration process.

macBOOK PRO 14" - 10

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# GatorTrader

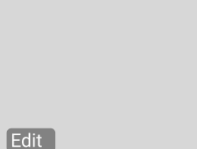
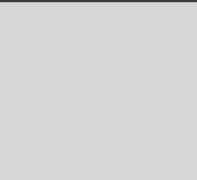
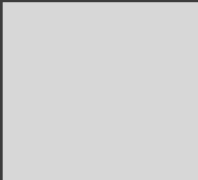
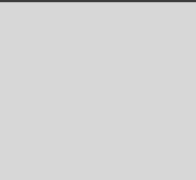
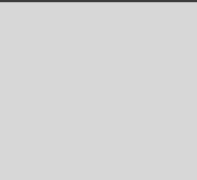

All ▾  About **Sell** Hi, Dr. Ling!

**Dr Mei Ling**  
Joined March 2024 | ☆☆☆☆☆ (0)






Professor of Environmental Science at SFSU of 30 years  
and mother of two beautiful children.

**Upload Successful! Please allow up to 24 hours to review.**

**My Listings** Messages

Review In Progress				
				
				
ERTH 406 TEXTBOOK \$55.00	Random Book \$777.55	Item 101 \$555.55	How to \$230.00	Item 1 \$456.54

## Similar Items



Within her dashboard page, she realizes that she can edit/delete listings as she wishes. She finds the listing she made a mistake in and corrects the title and continues on with her uploads but then has second thoughts of selling a specific textbook her parents got her during her masters, therefore she deletes the post with no impact to her account since the post was not live yet.

Use Cases
SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

GatorTrader
All
Search
About
Sell
Hi, Dr. Ling!

### Upload Your Listing

**\* Title:**

**\* Category:**  

▼

Clothes, Shoes, and Accessories  
Electronics and Media  
Furniture and Decorations  
**SFSU Textbooks**  
Books and Materials

**\* Price:**

**\* Course**

**\* Professor**

**Upload Image:**

**Description:**

☐ By checking the box you agree to [TOS](#) and [SFSU Code of Conduct Policy](#)

[Cancel](#)


Please allow up to 24 hours for post to publish


*Fast-forward, Dr Mei Ling receives a message from a potential buyer (student) that wishes to further the inquiry via SFSU Email to buy and pick up during her office hours.*

macBOOK Pro 14" 17"

SFSU Software Engineering Project CSC 648-848, Spring 2024. For Demonstration Only

# GatorTrader

All ▾  About **Sell** Hi, Dr. Ling!

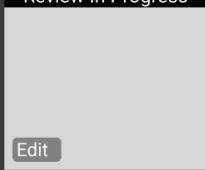
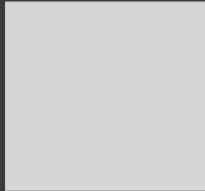
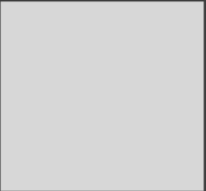
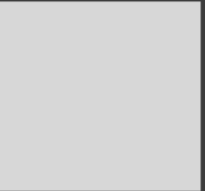
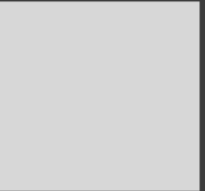
**Dr Mei Ling**  
Joined March 2024 | ☆☆☆☆☆ (0)

**Random Book**  
iloveboba007 sent you a message!






Professor of Environmental Science at SFSU of 30 years  
and mother of two beautiful children.

**Upload Successful! Please allow up to 24 hours to review.**

**My Listings** **Messages**

<b>Review In Progress</b>  <b>Edit</b>				
<b>ERTH 406 TEXTBOOK</b> <b>\$55.00</b>	<b>Random Book</b> <b>\$777.55</b>	<b>Item 101</b> <b>\$555.55</b>	<b>How to</b> <b>\$230.00</b>	<b>Item 1</b> <b>\$456.54</b>

## Similar Items



# High Level Architecture: Database Organization

## Database Organization

Table: user

Columns:

- user\_id (primary key)
- user\_name
- password
- last\_name
- email

Table: product\_post

Columns:

- post\_id (primary key)
- item\_name
- item\_description
- price
- category
- user\_id (foreign key)
- image\_file
- status

Table: purchase\_message

Columns:

- message\_id (primary key)
- sender\_id (foreign key)
- reciever\_id (foreign key)
- message
- date

### Search/Filter Architecture And Implementation

The product\_post table contains columns that can be used in searching and filtering.

These columns are item\_name, item\_description, price, and category. We will concatenate all of these values so that the app shows any posts that may be relevant to the user. We will use SQL %like as search pattern matching to perform searches.

Default category is all, and the user can select other categories

Category: used as a filter to list the product\_post rows that match category; e.g. category = 'Clothing', 'Materials', 'Electronics', and 'Decoration'.

### Significant Non-trivial Algorithms

Rating system: Registered users shall be able to rate another registered user's profile.

The rating system will be based on a scale of 1–5 stars. 1 star will be the worst rating while 5 stars will be the best rating, which indicates that the buyer is reputable and trustworthy.

**No SW tools or frameworks were changed.**



# Key Risks

## Server Maintenance Risk

Due to our little understanding of third party cloud hosting services like AWS, we have little knowledge about how reliable our server is. We may need to allocate more time to developing and deploying the hosted web application.

Our current solution is to minimize interaction with the server through Github Actions and through local development. In other words, we will locally develop the application on our own machines and deploy it to the server, where the server will execute an automated task of pulling code from the main branch and building the web app.

## Schedule Risk

It is difficult to get everyone to meet up. Although we have a set day each week where we all meet, it will be difficult to arrange any other meetings where people are available.

This is especially because of the home addresses of some members.

We will address this by further subdividing our team into front-end and back-end, and have separate meetings with each of them as needed. That will allow some flexibility by ignoring the schedule of those who don't need to be part of the conversation.

## Technical Risk

There is a lot that we don't know about when it comes to our tech stack, due to the inexperience of developing and deploying professional web apps. For instance, we lack

the knowledge of how to use some third-party services or applications such as Google Analytics.

Our solution will be to read official documentation when the time comes to implement them. We will plan our project conservatively to ensure we have enough time to address any issues that we come across with those services or applications.

## Security Risk

Due to a lack of experience, there is a risk of our application, and by extension, our server, to be vulnerable to cyber-attacks. Whether it be through social engineering or security exploits, our application, clients, and users are at risk of being compromised.

We will resolve this by maintaining cyber security best practices and ensure everyone, developers and clients included, only have the necessary permissions needed to do their task. Although this still leaves some vulnerabilities be exploitable (such as DDOS attacks or PHISHING attacks), it minimizes the risk without scaling our infrastructure. We will also ensure to only track information that is necessary for a user to interact with our website.

## Project Management

We've been using Trello right from the start for our project management. We created different cards for each task and assigned them according to our roles. Once someone finishes their task, they will move the card to the "Review" column, and then it goes through testing or reviewing by our GitHub Master before finally being marked as "Done". To make sure no steps are skipped, our Trello board will be moderated by our GitHub Master.

Our team is divided into two main groups: front-end and back-end. We work separately but make sure to come together in weekly meetings to keep everyone updated and on the same page. Everything we complete gets reviewed by both the Team Lead and the GitHub Master to ensure it's up to our standards.

Our front-end team uses Figma to prototype our app's look and collaborate in real time. It helps us quickly improve our designs and make sure they match our vision before we start building them. This gives us a good wireframe of how the product will look and we will henceforth reference our Figma design when discussing UI/UX design decisions.

# Usage of GenAI

## Alternatives to Media Storage:

**Usefulness:** Medium - High

**AI Agent:** ChatGPT

**Usage:** Initiated with asking a question to find alternatives to BLOBs or a traditional file system for storing media files such as images and videos. Based on a list of alternatives given, requested for a more detailed response on the first alternative given.

**Benefit:** Found a list of alternatives to BLOBs and a traditional file system that doesn't have the same drawbacks.

**Prompt:**

- “what alternatives other than BLOBs are there for storing image in a web application running in aws cloud”
- “benefits of using aws s3”

## Team Lead Checklist

CHECKLIST	STATUS	COMMENTS
So far all team members are fully engaged and attending team sessions when required.	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.	OK	
Team reviewed suggested resources before drafting Milestone 2.	OK	
Team lead checked Milestone 2 document for quality, completeness, formatting and compliance with instructions before submission.	ON TRACK	
Team lead ensured that all team members read the final Milestone 2 document and agree/understand it before submission.	OK	
Team shared and discussed experience with genAI tools among themselves.	ON TRACK	