

Software Engineering 648/848 Spring 2022

Milestone 2

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Team #2 - GatorMart

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I. Executive Summary

In most hallways on campus at San Francisco State University, we see multiple bulletin boards looking to buy, or sell goods and services. Slips of paper, in all sizes, shapes, and colors can be found posted for the passby to glance at. A person looking for a particular item or service could spend hours roaming the hallways of every building, looking across all these bulletin boards. Not only is this time consuming and frustrating, these efforts could prove to be futile. In the fall of 2020, San Francisco State University enrolled 24,025 students. With a large and diverse body of staff and students, the university lacks a centralized hub for them to buy, and sell goods and services. We have developed a website service, GatorMart which provides this service exclusively to current students, faculty, and staff.

GatorMart is a vast online “bulletin board” that is organized into specific categories, allowing registered users to quickly find a specific item. To register, all one needs is a sfsu.edu email that confirms they are a part of the San Francisco State community. Once a user’s registration has been confirmed, they are free to browse various categories for the items or services they are seeking. These include old textbooks, tutoring services, electronics, and job listings. The bulletin board is maintained by an administrator who must approve all postings before they go public. This way, we are able to filter out any inappropriate or spam postings. The administrator’s responsibilities also include confirming a user as a current staff or student of the university. A user can be distinguished by badges on their profile, indicating whether they are part of the staff or student body. Specifics of how a user can fully utilize GatorMart can be found in the following sections.

As former members of the SFSU community, this project means more convenience and accessibility for current and future members of the community. Our team believes that GatorMart will pave the way for a streamlined online community of users at San Francisco State University to purchase, and sell.

II. List of Main Data Items and Entities

Entities	Data Items	Definition
Unregistered Visitor		View user listings (i.e., services, selling, buying, job listings) and listing details.
Registered User	UserID, email, password, User Type (student/teacher/admin) profile, fullname, profile picture, payment method, buyer rating, seller rating.	Registration Every category of data that a user can view/access on any operation of the website.
Registration Record	UserID, password, full name	Required data for registering as a user.
Items	Post ID, cost, item ID, image, tags, item name, description, date, owner.	These data categories define an item.
Message	Sender, recipient, date, time, status	These data categories will be stored when sending messages to other users.
Reviews	Posted by, date, time	These data categories will be stored when posting and viewing reviews.

Meet-up spots	Location ID, marker	These data categories will be stored when users are using the meet-up spot function.
Offer	Offer ID	This data category will be stored when the new offer is made.

III. Prioritized Functional Requirements

Priority: 1	
Unregistered User	2) Register Account - Unregistered visitors shall be able to register for an account with their active sfsu.edu email address and a desired password. This email address will be verified via a link in an email. Registered users will have more privileges than unregistered, as described in the Data Items and Entities 'Permissions' column. Additional optional information will be requested, such as major, minor, and interests. This is priority 1, but remains secondary to listing items.
	1) View Marketplace - All users shall be able to view the full marketplace. Unregistered users will not be able to make offers or purchase items.
	13) Search Marketplace (Simple Regex) - All users shall be able to search the marketplace via a typed search-bar. Priority 1 will be simply getting the Regex to match exact substrings to find items.
	14) Filter Listings - All users shall be able to filter the marketplace by tags placed on listings. This way, users can more properly find the items / services they're looking for.
Registered User	3) Log in - Registered users shall be able to log in to our site using the information they registered with. This will allow them the privileges of registered users.
	4) List item for sale - Registered users shall be able to post an item they would like to sell with a title, a description, a price, and, optionally, tags and photos. They shall also be able to decide what information of theirs is made public on the listing (i.e., do they want their email/phone number/name on the listing). Some form of contact information must be available.
	7) List Service (Provided) - Registered users shall be able to list services they are able to provide to other students. Payment for these transactions will happen off-site. Provided services must have a title, description, desired pay, and some form of contact information, and, optionally, tags and photos.
	9) Purchase - Registered users shall be able to purchase an item for its listed price. A notification of this will be sent to the seller with the buyer's contact information.
	10) Accept or Decline Offer/Purchase - Registered users who have listed an item must be able to accept or decline an offer or purchase. If they accept the offer, the buyer and seller must determine a pickup location and payment method off-site.

Admin	16) Remove Listing - Site administrators will be able to remove listings which have already been made public if there is a good reason to do so. This will permanently remove that listing from the marketplace, and users will no longer be able to interact with it.
	17) Approve / Disapprove Listing - Site Administrators must review listings before they are made public on the site. If the content of the listing is not approved, the administrator will be able to prevent that item from being uploaded to the site. A second priority would be adding the ability to include a message (written by the administrator) informing the user on the reason for their listing being removed.
	18) Remove User - Administrators shall be able to permanently remove a user from the website. This will block them from signing up to the site in the future. Their username and email will remain in the database, but will permanently be flagged as unable to login. When the previously registered user attempts to log in in the future, they will be signaled of their account's removal.

Priority: 2	
Registered User	5) List Item Needed - Registered users shall be able to list items they are looking to purchase. Required information includes a title, description, desired buying price, and, optionally, tags and photos.
	6) List Service (Needed) - Registered users shall be able to list services they need help with. Payment for these types of transactions will happen off-site. Service listings must have a title, description, a desired price, and some form of contact information (implementing private messaging is a tier 2 priority), and, optionally, tags and photos.
	8) Make an Offer - Registered users shall be able to make offers on items available for purchase. This must be an offer below the listed price; the site will not host auctions. Offers can be accepted or declined by the user who listed the item (when on-site private messaging is implemented, users will be able to include messages with their offers).
	15) View Profile - All users shall be able to view other users' profiles. The user profile will show any information the user has made public (i.e., contact information, name, etc.), and will always show their poster / responder ratings as well as the other items they have listed.
	19) Report Listing - All users shall be able to report a listing which contains content they find offensive/harmful/etc. This will notify the administrators that a post has been flagged, and allow them to decide whether to keep it up or remove it permanently.

Priority: 3

Registered User

11) Rate Transaction (Buyer) - Buyers will be able to rate transactions (from 1 to 5 stars, with a description) after they have taken place. These ratings will be listed on the opposing user's profile.

12) Rate Transaction (Seller) - Similar to the last list-item, the only difference being that posters will be able to rate their experience with the responder. This rating will also show up on the opposing user's profile.

13.5) Search Marketplace (Fuzzy) - Search shall be improved with a more advanced search algorithm. Excluding unlikely characters, permutation matching, etc.

20) Change User Settings - Registered users shall be able to modify their settings (contact information, major, description, etc.) after their account has been created.

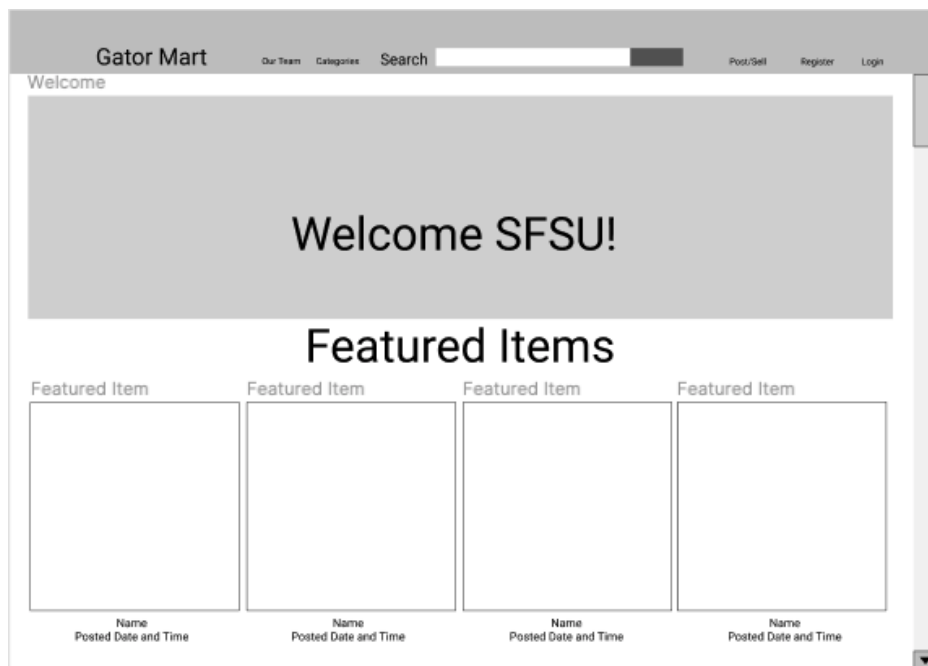
IV. UI Storyboards for Main Use Cases

Use Case #1 - Dylan

Dylan is a full-time student at SFSU and works a part-time job. He prefers to buy used books every semester. He doesn't have time to leave campus or his job to pick up used books, so he resorts to ordering them online. But he finds it's more expensive to order online than picking them up in person.

He finds GatorMart a great place for him to buy used books, as GatorMart is an online hub exclusively for the SFSU community. All the used books he needs can be found on GatorMart.

He visits GatorMart's home page. He sees featured items from various categories.

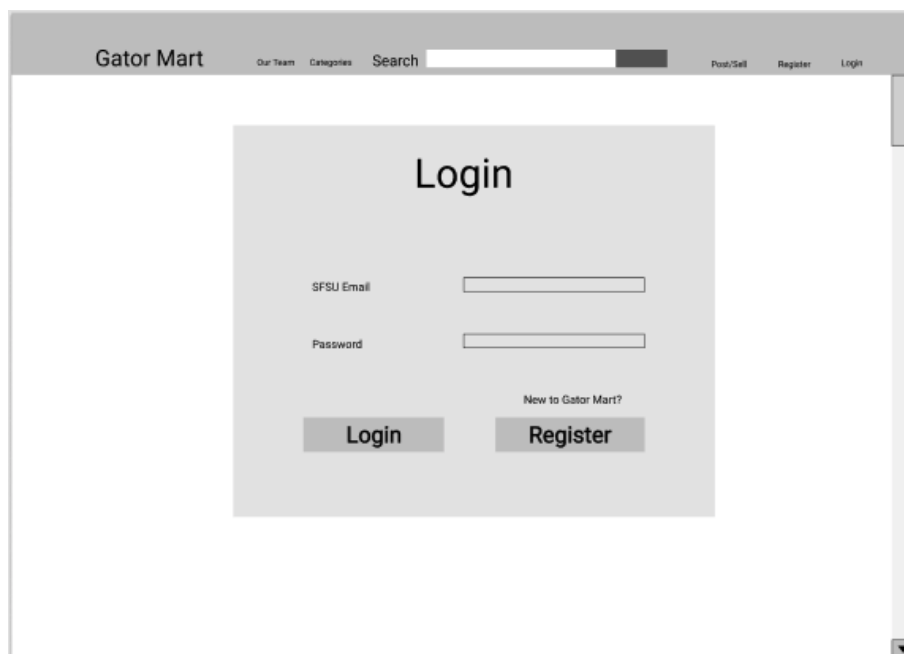


Then he types in the book name he is looking to buy in the search bar. The books that match the keywords show:



The first book looks like the one he needs. He clicks on the first book to see more detail about it.

Since he is not logged in, it prompts him to login or register:



Since he doesn't have an account with Gator Mart. He clicks the register button to register as a new user:

Then he clicks on the first book to see more detail about it:

The screenshot shows the 'Gator Mart' website interface. At the top, there is a navigation bar with 'Gator Mart', 'Our Team', 'Categories', a search bar, and links for 'Post/Sell', 'User', and 'Logout'. The main content area is divided into two columns. The left column is labeled 'Item Picture' and contains a large empty rectangular box. The right column is labeled 'Item Name' and contains a list of fields: 'Seller Name', 'Price', 'Condition', 'Location', and 'Item Description'. Below these fields is a smaller empty rectangular box. At the bottom of the right column is a button labeled 'Make Offer And Message Seller'.

This book is exactly what he needed for the semester. He clicks the “make offer and message seller” button to message the seller. Since Dylan prefers to be very safe, he selects the meeting location as SFSU library front door. He asks the seller if they can meet tomorrow at 12pm and he offers to pay cash.

The screenshot shows the 'Gator Mart' website interface with the 'Offer Message' form. The navigation bar is the same as in the previous screenshot. The main content area is titled 'Offer Message:'. Below the title is a form with two columns. The left column is labeled 'Item picture' and contains a gray rectangular box. The right column is labeled 'Location to meet' and contains a gray rectangular box. Below these two columns is a text area containing the word 'Message' repeated ten times. At the bottom of the form is a button labeled 'Send'.

Later that day, he logs into Gator Mart to see if the seller replies to him. He sees that he has one notification. He clicks on the notification and it directs him to his dashboard.



He sees the seller agrees to his term. He doesn't reply anything more and just closes the website.

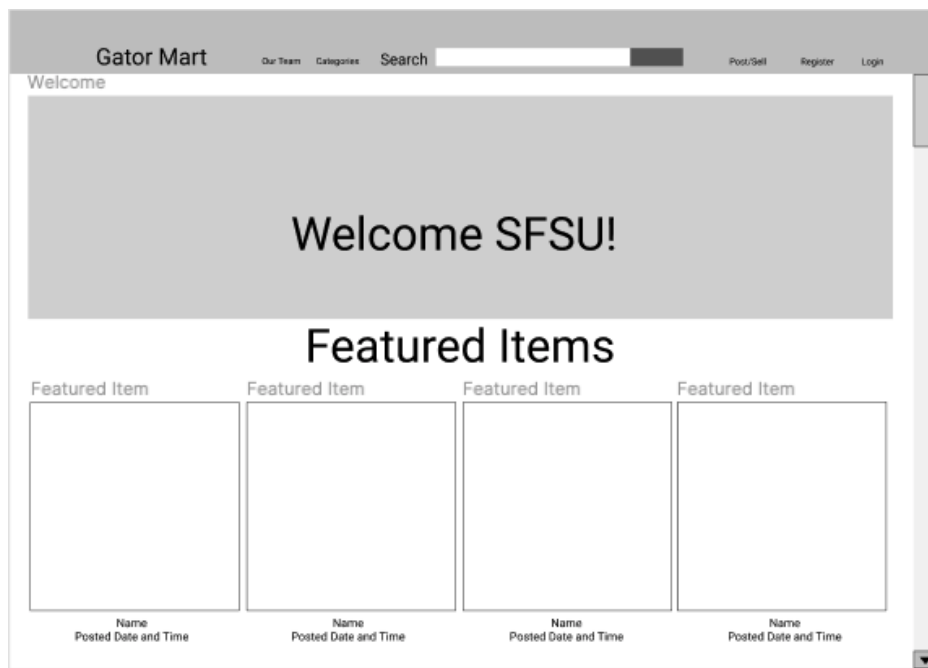


The next day, he and the buyer meet at the time and place they agreed on. He purchases the book and he is happy with the experience he has with Gator Mart.

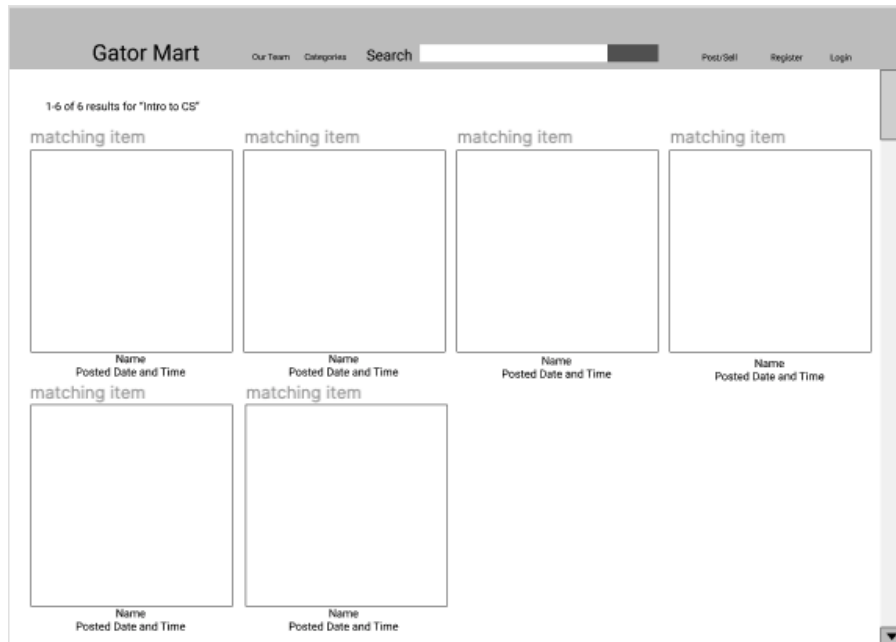
Use Case #2 – Sophia

Sophia is neither a student nor a staff at SFSU, however she is hopeful that she may be accepted to SFSU soon. She has an education plan and some classes that she is interested in taking after successfully enrolled. She heard of the good reputation of Gator Mart as the online hub for SFSU community. So she would like to check the prices of books/notes for the classes that she is interested in or planned to take.

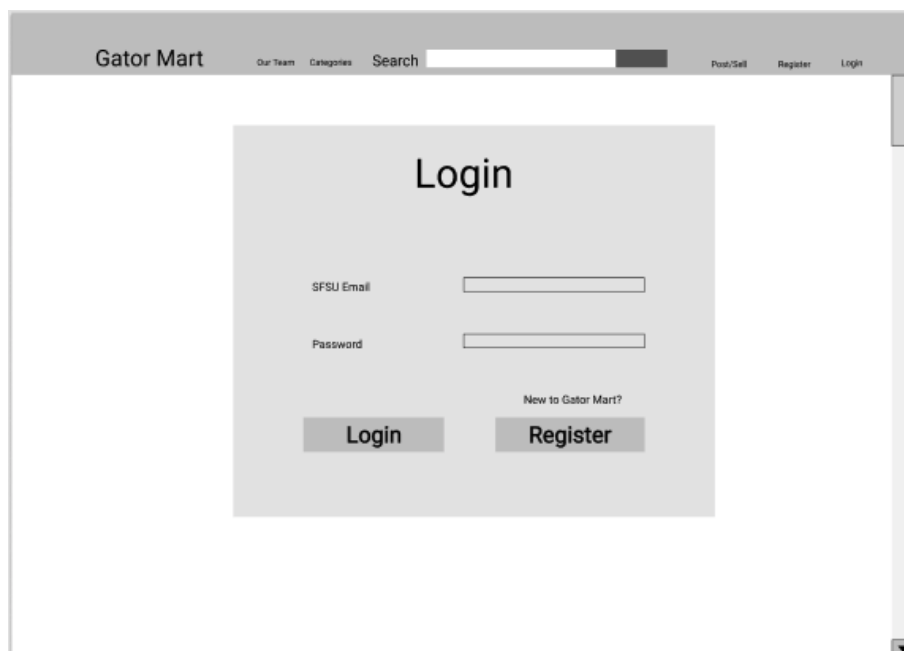
She visits GatorMart's home page. She sees featured items from various categories.



She browses the homepage and searches one of the books for the class that she is interested in. The matching results for the book shows.



She clicks on the second book to see more detail. As she is not logged in, the website prompts her to login or register.



Since she doesn't have an account with Gator Mart, she clicks on the register button. Yet she finds out that she will need a SFSU email to register.

The screenshot shows the 'Gator Mart' website with a navigation bar containing 'Our Team', 'Categories', a search bar, and links for 'Register' and 'Log In'. The main content area, labeled 'Frame 2', features a 'Registration' form. The form includes five input fields: 'Full Name', 'SFSU Email', 'Username / Display Name', 'Password', and 'Confirm Password'. A 'Register' button is positioned at the bottom of the form.

Since she is not a SFSU student yet, she can't register for now without the SFSU email. She clicks back to the home page to browse the items.

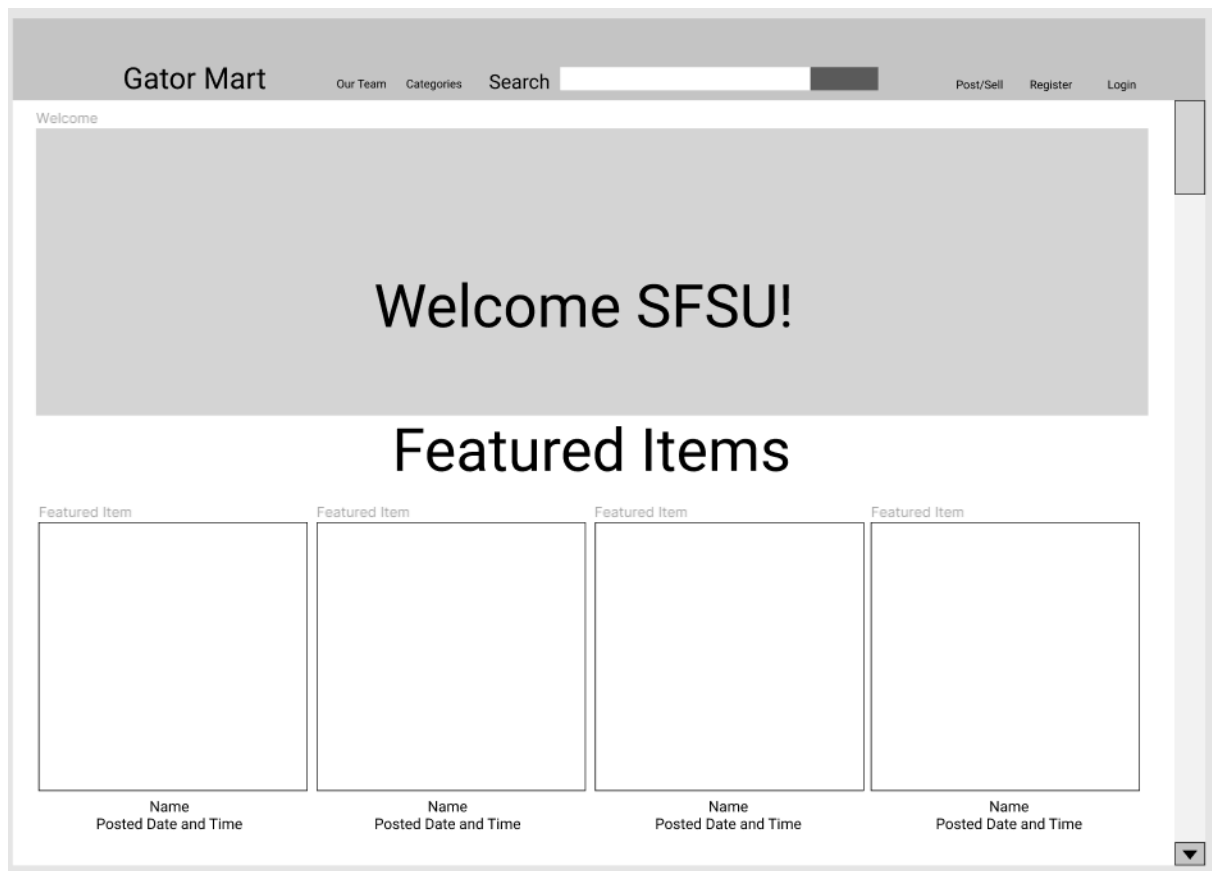
The screenshot displays the 'Gator Mart' home page. The navigation bar includes 'Our Team', 'Categories', a search bar, and links for 'Post/Sell', 'Register', and 'Login'. A 'Welcome' message is shown above a large grey banner that reads 'Welcome SFSU!'. Below the banner is a 'Featured Items' section with four columns, each titled 'Featured Item'. Each column contains a placeholder box for an item image and a label 'Name Posted Date and Time' at the bottom.

Seeing all the items available on the website, she knows that she will be a regular user of Gator Mart once she becomes a SFSU student.

Use Case #3 - Daniel

Daniel is a 3rd year SFSU student who has accumulated many books over the years. Knowing it cost him a lot of money to purchase these materials, he wants to sell them instead of throwing them away. However, he doesn't have an easy mode of transportations since he has to commute to campus. He needs to meet at locations that are convenient to him on campus.

Daniel visits GatorMart, and on the homepage, he sees some recently popular items. Some of them are textbooks. He decides that this marketplace centered around SFSU is a perfect platform to post his books.



He clicks the register link on the top right, and is prompted to go to make an account. It gives him peace of mind that he has to register with his SFSU email.

The screenshot shows the Gator Mart website's registration page. The header includes the site name 'Gator Mart', navigation links 'Our Team' and 'Categories', a search bar, and user links 'Register' and 'Log In'. The main content area, labeled 'Frame 2', features a 'Registration' form with five input fields: 'Full Name', 'SFSU Email', 'Username / Display Name', 'Password', and 'Confirm Password'. A 'Register' button is positioned at the bottom of the form.

After the admin approves his account, he can log in. The user home page asks him if he would like to post/sell.

The screenshot displays the Gator Mart user home page after login. The header now includes a 'Post/Sell' link alongside 'Register' and 'Log In'. The main content area begins with a 'Welcome' message, followed by a large banner that reads 'Welcome Back Daniel!'. Below this is a section titled 'Featured Items' which contains three empty placeholder boxes. Each box is labeled with 'Name' and 'Posted Date and Time' at the bottom.

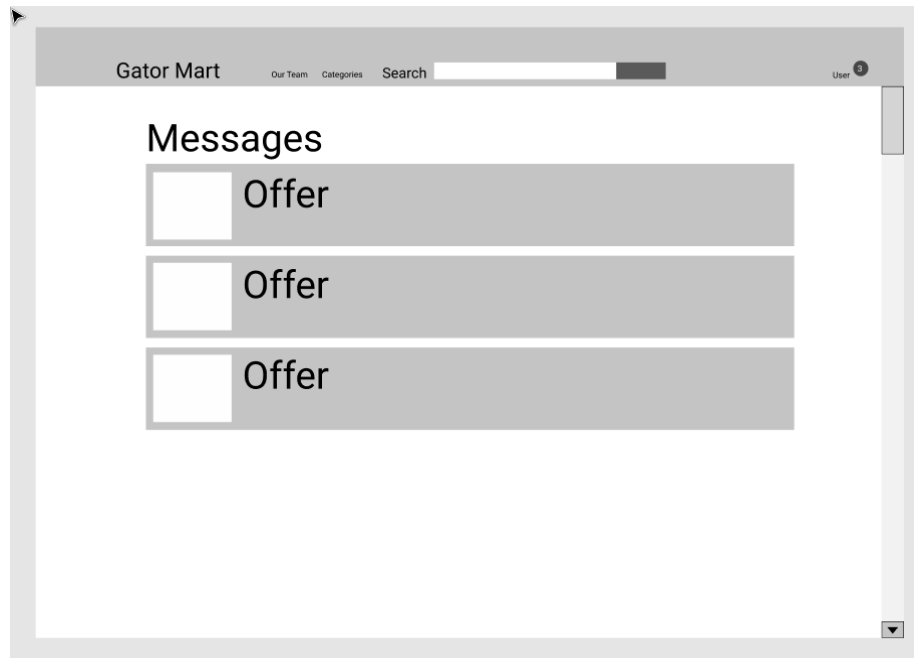
He clicks “post/sell”. It directs him to the post/sell page, which prompts him for information about his item. He uploads a picture of “Transcendental Calculus”, and in the location field puts down that he would like to meet up at the Cesar Chavez Center or outside Thornton Hall.

The screenshot shows a web browser window with the title 'Gator Mart'. The navigation bar includes 'Our Team', 'Categories', a search bar, and links for 'Post/Sell', 'User', and 'Logout'. The main content area, labeled 'Frame 9', contains a form for posting an item. The form fields are: 'Upload Image:' with a 'Browse' button, 'Item Name:', 'Category:' with a dropdown arrow, 'Price:', 'Condition:', 'Location(s):', and 'Item Description:' with a large text area. A 'Post' button is at the bottom right of the form.

Wanting to make sure his post was successful, he searches “Transcendental Calculus” and sorts by most recent posts. His post is the first one. He is satisfied.

The screenshot shows the 'Gator Mart' search results page. The navigation bar is the same as the previous screenshot. Below the navigation bar, there is a 'Filter by:' dropdown menu set to 'Most Recent'. The search results are displayed in a grid of five items, each with a placeholder image and the text 'Name Posted Date and Time'. The items are labeled 'Home page item 5', 'Home page item 6', 'Home page item 7', 'Home page item 8', and 'Home page item 9'.

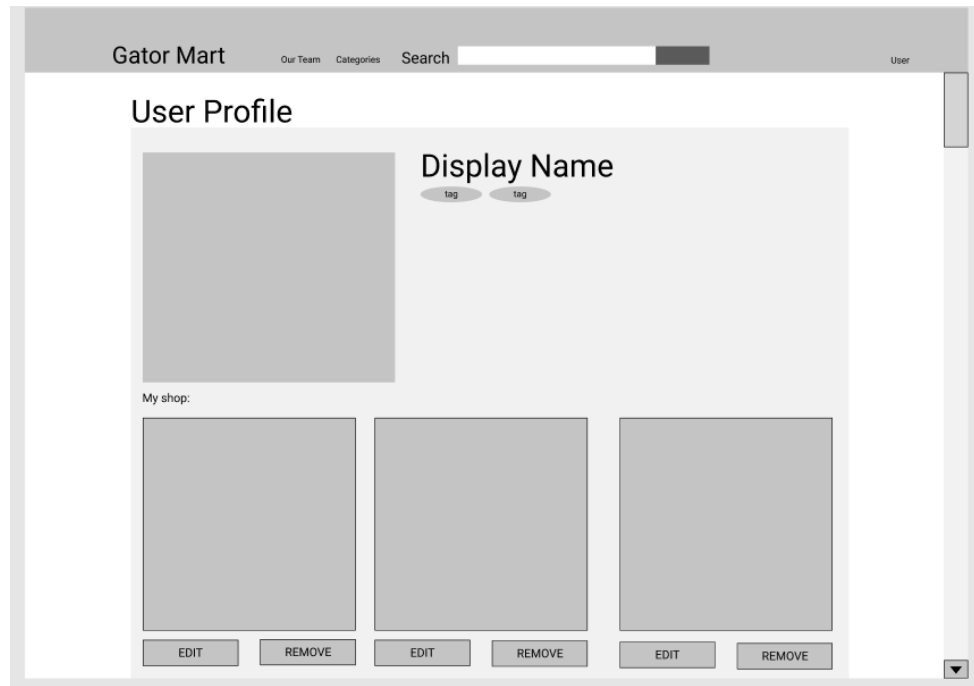
The next day, he logs into GatorMart after lecture. He sees that he has three notifications, so he clicks the notification and it directs him to his website inbox.



Daniel reads the message sent by the person making the offer. They ask if they can pick it up on the steps of Thornton Hall the next day, and that they would be paying with cash. Daniel prefers cash, so he accepts the offer.



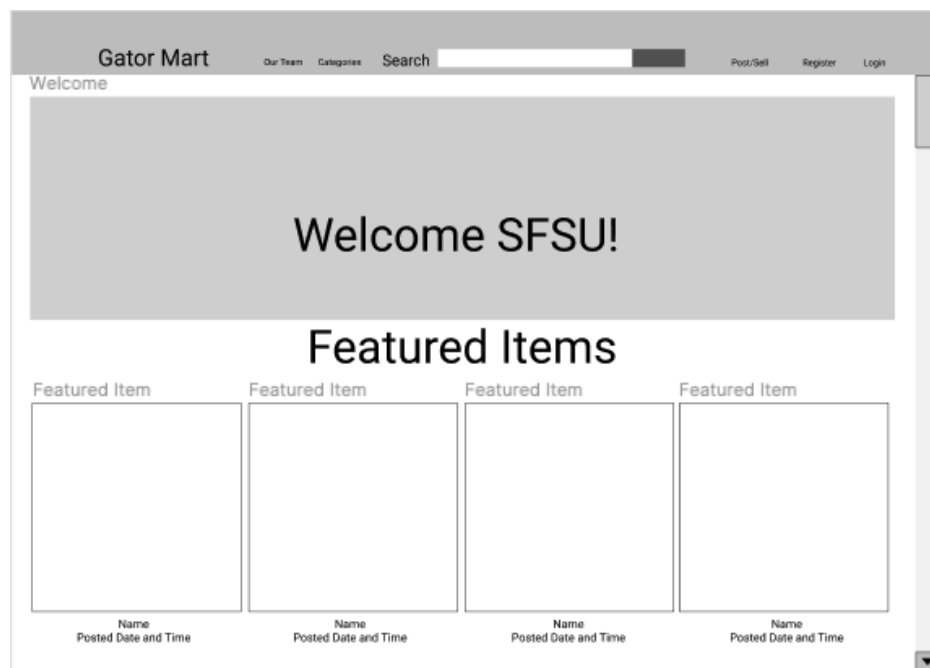
The next day, he meets the buyer and the transaction is complete. He logs into GatorMart and removes the listing from the marketplace, so people don't message him anymore about the Calculus textbook.



Use Case #4 – Isabell

Isabell is a math professor at SFSU and is looking for a TA as a grader to lighten the class load she has. She wants a SFSU student who has experience in the math classes she teaches to be her TA. She finds GatorMart a great place for her, as the users for the website are all part of the SFSU community.

She visits GatorMart's home page. She sees different items, services and job posts listed there.



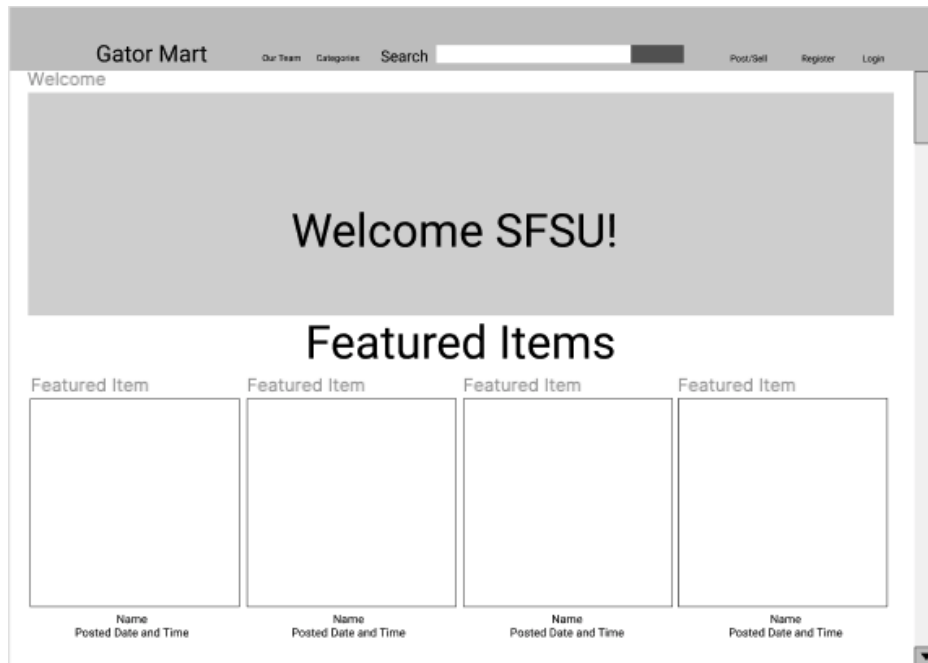
She sees the post/sell button on the top right and clicks it. Since she's not logged in yet, the website prompts her to log in or register.

The screenshot shows the Gator Mart website's login interface. At the top, a navigation bar includes the site name 'Gator Mart', links for 'Our Team', 'Categories', a search bar, and buttons for 'Post/Sell', 'Register', and 'Login'. The main content area features a central 'Login' form. This form has two input fields: 'SFSU Email' and 'Password'. Below these fields, there is a link that says 'New to Gator Mart?' and two buttons: 'Login' and 'Register'.

Since she doesn't have an account with Gator Mart. She clicks the register button to register an account.

The screenshot shows the Gator Mart website's registration interface. The navigation bar at the top is identical to the login page. The main content area features a central 'Registration' form. This form contains five input fields: 'Full Name', 'SFSU Email', 'Username / Display Name', 'Password', and 'Confirm Password'. Below these fields is a single 'Register' button.

After the admin approves her account, she can log in. The website directs her back to the previous page, the home page. She clicks on the post/sell button again.



It directs her to the post page, which prompts her for information about her post. First, she puts “Math 325 TA” in the item name box as the keyword. She uploads SFSU’s logo as the image, and chooses the correct category. Then she puts all the job description, and her contact information in the description box.

Since it’s a job posting, she would like to have the students email her their CVs and transcripts via email. Thus, she writes in the description to contact her via email. She also puts her SFSU email in the location text box.

Gator Mart

Our Team

Categories

Search

Post/Sell

User

Logout

Frame 9

Upload Image:

Browse

Item Name:

Category

▼

Price:

Condition:

Location(s):

Item Description:

Post

She wants to make sure her post was successful, she searches “Math 325 TA” and sorts by most recent posts. Her post is the first one. She is happy.

Gator Mart

Our Team

Categories

Search

Post/Sell

User

Logout

Filter by: ▼ Most Recent

Home page item 5

Home page item 6

Home page item 7

Home page item 8

Name
Posted Date and Time

Name
Posted Date and Time

Name
Posted Date and Time

Name
Posted Date and Time

She is impressed by the user experience of Gator Mart. She closes the website, and she is confident that she'll find a TA soon.

V. High Level Architecture, Database Organization

Media Storage: Our team will be storing images in the file system and storing links to those images in the DB. This way, video and image upload/retrieval can be handled with the same function.

DB Schema:

User:

Column	Datatype	Valid Entries
id (PK)	INT	(set to auto_increment from 0)
email	VARCHAR(255)	Exclusively “*.sfsu.mail.edu” or “*.sfsu.edu”
pw	VARCHAR(255)	Any string encrypted with SHA256.
bio	VARCHAR(255)	“My name is... I am a... I enjoy...”
phone_number	VARCHAR(255)	“+1-000-000-0000”, or “+1-000-000-0000 ext 0000”

Review:

Column	Datatype	Valid Entries
id (PK)	INT	(set to auto_increment from 0)
user_id (FK)	INT	1, 2, 3, etc.
post_id (FK)	INT	1, 2, 3, etc.
direction	VARCHAR(255)	Exclusively “buyer” or “seller”
review	VARCHAR(255)	“The transaction went... I would recommend buying from...”
rating	INT	Limited from 1 to 5 (i.e., a 1

		to 5 star rating).
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Post:

Column	Datatype	Valid Entries
id (PK)	INT	(set to auto_increment from 0)
user_id (FK)	INT	1, 2, 3, etc.
category	VARCHAR(255)	Choice from a finite set of categories (“art”, “entertainment”, “furniture”, etc.). Full list yet to be decided.
available	NUMBER(1) (essentially a boolean)	Exclusively 0 or 1.
description	VARCHAR(255)	“This is a new chair with...” etc.
price	FLOAT	34.50, 0.00, 900.12, etc.
type	VARCHAR(255)	Exclusively “service” or “product”.
direction	VARCHAR(255)	Exclusively “requesting” or “providing”.

Media:

Column	Datatype	Valid Entries
id (PK)	INT	(set to auto_increment from 0)
post_id (FK)	INT	0, 1, 2, etc.
file_link	VARCHAR(255)	“images/image.jpg”, “videos/vid.mp4”, etc.

VI. Key Risks

While the team certainly has the necessary skills to develop the application outlined in this document, the time constraints pose genuine risks. Balancing usability, effectiveness, and warranted-uniqueness within the given time frame will be difficult; as such, proper time management and task allocation is necessary. Prioritizing app functions will prove to be helpful as well. Another risk is that our team is likely only going to collaborate online. Meeting in person is difficult and slightly risky considering the ongoing pandemic, so building close relationships is difficult. That being said, our team has made strides to get to know each other better and to not treat every meeting as a strictly formal matter.

VII. Project Management

So far, our team has been collaborating and managing tasks over Discord. How this works is, there are separate chat rooms for each section of the team (backend, frontend, etc.). There is also a weekly goals chat room and a meeting minutes chat room. In the weekly goals chat room, groups and individual members are assigned tasks to complete throughout the week. These are usually planned in our weekly meetings outside class, which usually take place on Mondays. This system has been effective; however, we all believe we will be more effective once we transition to Trello. Trello allows for much more flexibility in role-assignment and task completion. The transition will likely happen in between submitting Milestone 2 and receiving the description of Milestone 3. This transition did not take place in the midst of finishing Milestone 2 so as to not disrupt the flow of work. Team members have generally been responsive and hard-working.