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# SW Engineering

## CSC648/848 Spring

### 2022

### Team 01

## Gator Xchange

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### Milestone 1

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## **1. Executive Summary:**

In a world where virtual marketplaces and online shopping is prolific, the existence of a platform solely for SFSU students, faculty, and staff is absent. Imagine a convenient method in order to facilitate the purchases and selling goods at affordable prices amongst the SFSU community. With the courtesy of safety being one of our top concerns and priorities, our startup, Gator Xchange provides the solution to this problem as a host for SFSU's online marketplace. Thus, providing users a seamless eXchange, and a safe environment while shopping & selling within the SFSU community.




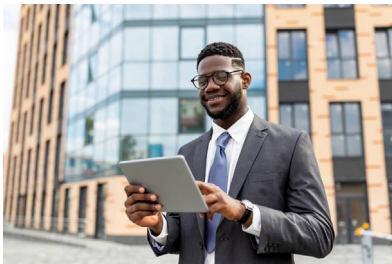
Our users will consist of verified SFSU members, such as students, staff and faculty, so a sense of trust lies between each party to prevent unethical transactions such as fraud and scams. Our user interface provides a convenience function to browse through categories of products, register an account, login, create a product listing, and has an option to share seller's contact information. We provide users an option to search for any specific item in the database which includes a function to browse through the item listings based on keywords and filter options. Just like a middle man, our app connects the buyers and sellers where they can organize a safe location to meet and pick up at SFSU using the map functionality. This creates a personalized and convenient eXchange for our users, with ease and familiarity of the pick up location. We emphasize the importance of personal safety for our users to eXchange a safe and smooth transaction. The Gator eXchange provides users with the option to choose their own pick-up locations on SFSU campus from the list of safe places provided. The list contains pick-up spots that are well-lit, populated areas of campus to ensure personal safety between buyers and sellers. We provide a consistent user eXchange through a blend of sleek, minimalistic design combined with fast and responsive performance. Our product's advantages over our competitors is our focus on affordable prices, local trade, and personal safety. We believe that trust and camaraderie will allow our local gator community to thrive.



Our startup team consists of six students, where we use our skills and background to create a true gator eXchange for our SFSU academic community.

Our team incorporates an agile methodology during development so we can reiterate our website and continue to listen to our user's pain points. We hope you join us in our journey in creating the foundation for a growing community within SFSU that current and future generations of gators will love and build upon.

## 2. Personae & Use Cases:

### Personae:

<p>1. Student: Claire unregistered user looking to post an ad</p> <ul style="list-style-type: none"><li>● Year: Senior</li><li>● Age : 22</li><li>● Average computer skills (4 / 5)</li><li>● Introvert</li><li>● Full time student</li><li>● Part time worker on campus</li><li>● Looking for a fair price for her laptop</li></ul>	
<p>2. Student: John, the student athlete</p> <ul style="list-style-type: none"><li>● Year: Junior</li><li>● Age: 20</li><li>● Average computer skills (3 / 5)</li><li>● Doesn't like using apps/services that are not user friendly</li><li>● Values simplicity and ease of use over innovation</li></ul>	
<p>3. Student: Alia, the full time student and part time worker</p> <ul style="list-style-type: none"><li>● International student</li><li>● Year: Sophomore</li><li>● Age: 19</li><li>● Above average computer skills (4 / 5)</li><li>● Looking to save money on textbooks by buying used textbooks.</li><li>● Values time and wants the product as soon as possible.</li></ul>	
<p>4. Student: Liam, student in senior year</p> <ul style="list-style-type: none"><li>● Graduating soon</li><li>● Age: 23</li><li>● Average computer skills (4 / 5)</li><li>● Very busy schedule</li><li>● Looking for selling used textbooks online quickly</li></ul>	

<p>5. Faculty: Elizabeth, the Assistant Professor of Electrical Engineering</p> <ul style="list-style-type: none"> <li>● Age: 30</li> <li>● Busy schedule, little wiggle room between lectures, meetings, office hours, and conducting research</li> <li>● Above average computer skills (4 / 5)</li> <li>● Likes to try new things and understand them at a deeper level</li> </ul>	
<p>6. Admin: Henry, works as an Admin at the registrar's office.</p> <ul style="list-style-type: none"> <li>● Full time SFSU employee</li> <li>● Age : 29</li> <li>● Above average computer skills (4/5)</li> <li>● Wants to start a side business selling for the SFSU body</li> <li>● Has a detailed business plan</li> </ul>	

## Use Cases:

### 2.1 Claire

Claire - unregistered user trying to post an ad.

Claire is a student at SFSU who wants to sell her laptop online. She has heard about Gator- Xchange but this is the first time she's using the website. She reviews a lot of items posted on the website and is satisfied that her laptop will be an easy sell if she uses our website. For her post, she chooses the appropriate function from our www site, fills out a form and upon submission is prompted to register or log in as she hasn't logged or registered in yet.

Our website allows users to view the listings however, they need to be registered users. Because our process is user-friendly, Mary is able to register herself quickly and she logs in and is able to send her request to post the ad to the admin. The admin verifies the post and Mary's post is live on the website.

### 2.2. John

John, the Student Athlete

John is a **student** athlete who plays for SFSU's basketball team. His gym bag is worn down from heavy use and one day, it rips as he gets home after a long day of practice. The bag is no longer usable and John needs to replace his gym bag on short notice. He is short on money this month so he cannot buy a brand new gym bag so he looks for used gym bags on the Gator Xchange website to see if anyone is selling any that are **affordable**. He goes to our site, searches by the name "gym bag," and filters the price from "low to high" in order to find a gym bag that is in **good condition and sold at a fair price**. He becomes interested in buying the bag and so he contacts the seller to arrange a day and time to pick it up at one of the SFSU's safe locations within a few days before the big game.

Our website allows users to find affordable items. Along with that, we provide users with our unique feature to pick up from safe locations at SFSU and so John can conveniently pick up his bag on SFSU campus.

#### 2.4 Alia

Alia, international student

Alia is an international student who is a full time student at SFSU. She is currently a **sophomore** and is taking 2 Math courses at the university.. These Math courses require textbooks and so she's looking to find the textbooks online. These Math textbooks are expensive and she's looking to find the books which are used and are not so costly. She goes to our website and can easily find the used textbook posted by the seller. While other online websites also provide these textbooks, they are expensive and are not guaranteed to arrive on time. As our website has the feature to select pick up locations inside SFSU, Alia doesn't have to wait for delivery and can get the textbooks at her convenience.

As our website provides pick options, the users won't have to wait for the delivery of their item or go through the hassle of a misplaced delivery.

#### 2.5 Liam

Liam, the Senior

Liam is a senior at SFSU majoring in Environmental Science. Liam is looking to move to the East Coast after his graduation as he already got a job offer from a company in New Jersey and doesn't want to carry all his textbooks with him . As he's graduating soon he wants to quickly sell all the textbooks. However, some of the textbooks he has are only used at SFSU and hence he has trouble selling them on other online websites. As our website

caters especially to SFSU, Liam will have no trouble selling his textbooks. When Liam posts an ad for selling the textbook by choosing an appropriate function from our website and fills out the form and is verified by the Administrator he will be able to sell his textbooks in no time.

As our website caters specially to the SFSU community, the users will be able to easily sell their items which are related to the needs of the community.

### 2.3. Elizabeth

Faculty: Elizabeth, the Assistant Professor of Electrical Engineering

Elizabeth is an **assistant professor** for the Electrical engineering department at SFSU. She is on campus very often and has a busy schedule where she must juggle lectures, meetings, office hours with students, and doing research. Elizabeth arrives on campus in the early morning and accidentally forgot her phone charger. Knowing that her phone's charge cannot last the entire day, she decides to check out the new online SFSU marketplace website she's heard about among her students to see if a compatible phone charger is available to be picked up on campus the same day. Elizabeth finds a charger in stock, reserves the charger for a timeslot that fits her schedule, and completes the purchase.

Our website provides users with the fastest mode of buying the products with ease of pick up on site, and buyer suited timing, at SFSU.

### 2.5 Henry

Henry, works as an Admin at the registrar's office.

Henry is an SFSU **Admin** who works at the registrar's office. Henry likes his job where he helps students and the university thrive, but Henry also knows that he has a good eye and talent for business. He has been told many times by friends and family that he should pursue his business dream. Henry wants to start small by selling products he knows the entire SFSU campus is in need of. Working at the registrar's office has given him a unique opportunity to learn what his future customers might need. He has been asked many times by students, staff and faculty on where to buy products for a cheaper price. Henry knows understanding the business environment and demographics is vital for his success. Henry registers on Gator Xchange in order to start listing items to sell.

Our website will offer Henry a user-friendly platform he needs to make his business plans and dreams a reality. It will help him create and grow the clientele he needs for his business.

### **3. Main data items/entities:**

- Guest users - Read permission - can only view and search for public listings and advertisements. Does not need to login or register.
- Registered users - Read and write permission - only available to SFSU students, verified by the school email id, can access and post listings explicitly approved by the admin. Will need to login/register.
- Site administrator - Read, write, execute permission - can access all data and content and modify the database. Needs to login/register
- Product listing - A product for sale or up for exchange; approved by the admin
- Login: SFSU email, password, login button.
- Cart: list of items, add/remove, checkout button
- Item - name, description, price, photo, keywords, number of items, contact information of the seller.
  - Subtypes of items: books, electronics, SFSU merch, stationary(school supplies)
- Pickup Option - can be accessed only by a registered user to choose a safe pickup location at SFSU.



#### **4. Initial List of Functional Requirements:**

1. Guest and registered users shall be able to view all the products listed on the website.
2. Guest and registered users shall be able to search for a product and filter by title.
3. Guest and registered users shall be able to search for a product and filter by category.
4. Guest and registered users shall be able to search for a product and filter by price.
5. Guest users shall only be able to view product listings.
6. Guest users shall be prompted to register for an account at the end of the product listing submission process.
7. Users registering for an account shall fill out a registration form.
8. The system's registration form shall require users to register with their name, SFSU email, school ID, password, address and optionally phone number and is stored in the database.
9. Every registered user's account ID shall be their SFSU ID (Prevent situations where users with the same first and last name cannot both have their own account. E.g. past user is no longer at SFSU anymore and a new user with same first/last name cannot create their own account).
10. Registered users shall be able to create their own product listing.
11. Registered users shall be able to edit any of their product listings after submission.
12. Only registered users shall be able to contact the product's seller.
13. Registered users shall be able to view all current and past product listings they've created.
14. Registered users who created a product listing shall have the capability to delete it.
15. Registered users shall be able to choose a safe pickup location at SFSU.
16. The users shall be required to login with their registered account id and password.
17. The site administrator shall be required to view user generated product listings.
18. The site administrator shall be required to delete the user generated product listings.
19. The site administrator shall be required to approve all user generated product listings.
20. Every product listing shall have an image(s).
21. Every product listing shall have a title.
22. Every product listing shall have a category.
23. Every product listing shall have a price.
24. Every product listing shall have a description.

## **5. 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 must 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 should 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 practices shall be used as specified in the class, including collaborative and continuous SW development.
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 2022. For Demonstration Only" at the top of the WWW page nav bar. (Important so as to not confuse this with a real application).

## **6. Competitive Analysis:**

Feature	Facebook Marketplace	Craigslist	OfferUp	Team 1
Product Search	+	+	+	+
Browse by category	+	++	+	+
Simple User Interface	+	+	+	+
Pickup option at SFSU	-	-	-	++
Affordable prices	+	+	+	++
Exclusive to SFSU students	-	-	-	++

**+ feature exists**

**++ superior**

**- does not exist**

## **7. High-level system architecture and technologies used:**

**Below is a list of the technologies used in Team 1's software stack:**

Server Host: AWS EC2 t2.micro, 1vCPU, 1 GiB RAM , 8 GiB storage

Operating System: Ubuntu Server 20.04 LTS

Database: MySQL v8.0.28

Web Server: NGINX 1.20.1 (Stable)

Server Side Language: Javascript - node.js v16.14.0 LTS

Additional Technologies:

- Web Frameworks: Express.js, socket.io, React, Bootstrap
- Tools: pm2, multer, sharp
- IDE: Visual Studio Code

## **8. Team and roles**

### **Team Lead, Document Master**

Drashti Pareshkumar Shah

### **Back End Lead**

Thomas Duc Nguyen

### **Front End Lead**

Mary Nicole Tangog

### **Github Master**

Wilfredo Joel Aceytuno Jolon

### **Team Members**

Micheas G Gebere

Javier Guintu Marquez

## **9. Checklist**

1. So far all team members are engaged and attending ZOOM sessions when required -  
DONE
2. Team found a time slot to meet outside of the class  
DONE
3. Back end, Front end leads and Github master chosen  
DONE
4. 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  
ON TRACK
5. Team lead ensured that all team members read the final M1 and agree/understand it before submission  
DONE
6. Github is organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)  
DONE