SW Engineering CSC648/848 Fall 2022

MarketGator

Team 05

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1. Executive Summary

The purpose of MarketGator is to connect the San Francisco State University community and create a platform where students and faculty can buy, sell, or share for free digital media. This platform shall facilitate the process of gathering items which shall range from obtaining textbooks, finding media resources that can be used for university projects, or to share created content among students and faculty. Our technology shall empower the SFSU students and faculty to grow businesses and create a culture of commerce that will undermine the old ways of purchasing works at high prices from online vendors who charge at a premium price.

The service of MarketGator is to provide an online marketplace website for SFSU students and faculty to buy, advertise, and sell digital media. MarketGator will allow users to browse its selection and register MarketGator accounts for free in order to advertise, sell, and or buy digital media. MarketGator users will also facilitate the communication between buyers and sellers in the case users need to ask about certain items listed on the market. MarketGator will also have moderators who shall be required to approve each media item before it becomes advertised in order to verify that it conforms to SFSU rules on digital media and other common ethical rules. Items deemed unsuitable or inappropriate shall be deleted by MarketGator moderators.

A component of MarketGator that makes it uniquely useful for SFSU students and faculty is the ability for users to not only buy their digital and or physical media with United States dollars, but also facilitate the trade of media for media. MarketGator users will be able to advertise or offer their media items for the exchange of other media items listed. The reason for this is that we are aware that as university students, money is a valuable tool that is also used to obtain nourishment and supplies, and we want not only to provide an online marketplace, but also make it easier for students to obtain the resources they need.

2. Personae and Main Use Cases

Persona One: Jack (Student)

About Jack:

- Jack is a very busy but determined student.

- Jack is tech savvy and understands the internet well.

- Jack's main priority is having something that is minimalistic and simple to understand. His busy schedule does not afford him time to play around with badly made and overly complicated technology.

Goals and Scenario

- Jack needs to buy a textbook for his class and wants to have a way to buy it online and at a good price.

- Sometimes Jack is frustrated by the anonymity of sites like craigslist and wants a safer way to buy the things that he needs preferably from people in his immediate area.

Persona Two: John (Professor)

About John:

- John is a lecturer at SFSU who has been teaching for many years and is very passionate about his job.

- As John has aged, he has become increasingly frustrated with how complicated websites have become since the 90s when he started his profession.

- John wants an easily usable interface and is annoyed by extra details like ads.

Goals and Scenario

- With rising inflation John has had many issues where students of his were unable to purchase the required reading material for his class. He thinks that it would be much easier if he could share his own ebook with students for a semester.

Persona Three: Jane (Moderator)

About Jane:

- Jane is a faculty member at SFSU who deeply values things like honesty and integrity.

- Jane is quite tech savvy and spends the majority of her free time on websites like reddit which has given her a strong grasp of the web.

- User interface is not huge issue for Jane however like most people she would prefer that it is easy to use and understand

Goals and Scenario

- Jane feels a strong conviction to make the web a safer place for the people who use it. After being scammed on craigslist multiple times she has become resolute in her new goal of policing the internet.

Persona Four: Joe (Admin)

About Joe:

- Joe is one of the admins of GatorMarket who deeply cares about the user experience of the website. He has a strong user focus and likes the website to have good functionality and smooth user interface.

- Joe understands the web technologies, knows the ins and outs of the architecture of the website and has advanced programming skills.

- Joe has a lot of ideas for new features and changes but does not know if the users will like them or not.

Goal and scenario:

- Joe wants to release new features to stay relevant and ahead of competitors and get feedback on the new features from the existing users.

- Joe also wants the suggestions from the existing users to improve the website.

Persona Five: Jacob (Seller)

About Jacob:

- Jacob is a busy senior student at SFSU.

- Jacob has basic www skills and knows how to navigate and use all kinds of websites.

- Jacob has a lot of old textbooks which are in good condition and they have been in his apartments since he finished his junior semesters.

Goal and scenario:

- Jacob wants to get rid of his old textbooks and wants to get some extra cash for himself.

- Since being a full time senior student with a part time job, Jacob does not have a lot of free time. Jacob wants to sell his old textbooks at his convenience.

Use Cases

Use Case 1: Student Bookstore

Actor: Students, Faculty

Description:

Students often find it difficult to get products and services at reasonable prices including books for their classes. As a result students have to buy books often at expensive prices which is not ideal since most students have low incomes. GatorMarket will help out with this problem by creating an online bookstore for the people of SFSU. Students and faculty will be able to upload and purchase books either from other students and faculty directly from the app at discounted prices instead of using third party services. Faculty will also be able to host ebooks for all of the students in the class to download for free.

Use Case 2: User Moderation and Administration

Actor: Moderator, Students and Faculty

Description:

GatorMarket appears to be working well however there have been some reports of site misconduct. Because of this, the need for a report button and GatorMarket administrators emerge. An admin user will be present to read reports and take disciplinary action on the users who violated the app policy upon reading and reviewing the report.

Use Case 3: Selling Items

Actor: Seller

Description:

Students often become sellers after they pass a class in order to recuperate most of the money they spend on expensive textbooks. However, many of these sellers don't have the time

to sell and ship on third party websites where the interest in these textbooks may be lower. By creating GatorMarket that consolidates many of these textbooks into a singular marketplace for SFSU students, the seller will be able to efficiently sell and ship these textbooks to SFSU students who enroll in similar majors/classes as them.

Use Case 4: Auctioning of Items

Actor: Buyer and Seller

Description:

A student wants to sell their textbook, however they are unsure about the price they want to set it at and they ultimately just want to sell the textbook at a reasonable price. GatorMarket will help facilitate the student to sell their textbook by providing an online auction house where the student can set the price at a starting point and duration of bidding. Other users on GatorMarket will be able to bid on the highest price before the time runs out and ultimately ease the issue of choosing a price for an item by having other users submit their own bidding price.

Use Case 5: Digital Media for Digital Media Trade

Actor: Buyer and Seller

Description:

A student wants to purchase a digital movie off GatorMarket, however they want to save their money. The student messages the seller and asks if they are open to trading their personal library of tardigrade pictures for the digital movie and the seller accepts. GatorMarket then facilitates the trade and sends the digital movie to the buyer and the tardigrade pictures to the seller. The buyer and sellers are satisfied, and the buyer ultimately saves money.

3. List of main data items and entities - data Glossary and Description

1. **Users**

   - Unregistered_user: A general user without an account that can search and access all seller posts. They cannot post items for sale or purchase. Does not need to login or register.

   - Registered_user: Can search and access all seller posts and see all public pictures. Can post items for sale and buy items. Must login

   - Admin: Can modify user privileges, access all content, remove posts, modify database

   - Moderator: Can approve or remove items that do not follow guidelines, as well as suspend or ban users that do not follow guidelines.

2. **Picture:** Public image accessible to all users

3. **Review:** Review that users are able to write for other users after a transaction. These include a rating and a description of why that rating was given.

4. **Transaction:** Transaction information with two user IDs of buyer and seller, transaction status, and a timestamp of transaction completion date.

5. **Item:** A media item with a Listing price, tags(Course ID, Major,, etc), description, photo(s)

6. **Private_message:** Message between buyer and seller to exchange contact or item information to complete a transaction.

4. Initial list of Functional Requirements

1. **Unregistered User**

   1.1 Unregistered users shall be able to create a new account with valid SFSU email.

   1.2 Unregistered users shall be able to access the homepage.

   1.3 Unregistered users shall be able to search the items and listings.

   1.4 Unregistered users shall be able to view the details of the listings such as price, pictures, conditions, descriptions of items and the names, classes, ratings and the reviews of sellers.

   1.5 Unregistered users shall be able to share the listings.

   1.6 Unregistered users shall be to sort and filter the items and the listings based on categories, price range, classes and reviews.

2. **Registered User**

   2.1 Registered users shall be able to log in with valid SFSU emails.

   2.2 Registered users shall have access to all the additional features on top of the features unregistered users have.

   2.3 Registered users shall be able to rate the sellers.

   2.4 Registered users shall be able to write reviews on the items and the sellers.

   2.5 Registered users shall be able to inquire about the items by sending a message to the sellers.

   2.6. Registered users shall be able to receive responses from the sellers.

   2.7 Registered users shall be able to create listings and sell items.

   2.8 Registered users can anonymously report the listings that include prohibited content such as counterfeit items, scams and adult products and more to the moderators to review.

3. **Buyers**

3.1 Buyers are registered users who buy items on the website.

3.2 Buyers shall be able to log in with their valid SFSU emails.

3.3 Buyers shall receive the inquiry messages from sellers.

3.3 Buyers shall be able to respond to the messages from sellers.

3.4 Buyers shall be able to view the photos, conditions, and descriptions of the items they are selling.

3.6 Buyers shall be able to view the rating and reviews from the sellers.

4. **Sellers**

   4.1 Sellers are registered users who also buy and sell items on the website.

   4.2 Sellers shall be able to log in with their valid SFSU emails.

   4.3 Sellers shall receive the inquiry messages from buyers.

   4.3 Sellers shall be able to respond to the messages from buyers.

   4.4 Sellers shall be able to add the photos, conditions, and descriptions of the items they are selling.

   4.5 Sellers shall receive the reviews and ratings on the items that have been sold to by another registered user.

   4.6 Sellers shall be able to view the rating and reviews from the buyers.

   4.7 Sellers shall not know the identities of the users who reported their listings.

5. **Moderator**

   5.1 Moderators shall be able to log in with valid SFSU emails.

   5.2 Moderators shall be able to review the listings from the registered users/ sellers.

   5.3 Moderators shall be able to review the reports from the registered users.

   5.4 Moderators shall be able to remove the listings that violate the rules and policies of the website.

   5.5 Moderators shall be able to ban the registered users who violate the rules and policies of the website.

6. **Administrator**

6.1 Admins shall have the additional abilities on top of the abilities that moderators have.

6.2 Admins shall be able to make a registered user a moderator.

6.3 Admins shall be able to remove moderators and other admins.

6.4 Admins shall be able to ask feedback from registered users on new features, user experience and suggestions to further improve the website.

6.5 Admins shall be able to create, update, remove and improve the features and overall usability and functionality of the website.

5. Initial 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.

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 email 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.

6. Competitive Analysis

The planned advantages between GatorMarket and other online marketplaces already available is enticing for San Francisco State University students and faculty. While other online e-commerce marketplace competitors charge a fee for commission on buying and selling of items, GatorMarket imposes 0% fees for all trades and even supports non-currency trade by providing the feature of trading digital media for digital media. This business model supports students especially as this will be the cheapest and most accessible way for them to buy and sell digital media without having to spend their own money.

Marketplace	GatorMarket	Competitor 1: eBay Inc.	Competitor 2: Amazon, LLC	Competitor 3: AliExpress
Fee	GatorMarket takes away 0% portion of fees from sales	eBay takes away up to 12.9% of the sale price as a fee	Amazon takes away from 8% to 15% of the sale price as a fee	AliExpress takes away from 5% to 8% of the sale price as a fee
Fulfillment Method	GatorMarket provides direct download of digital all items or local pickup	By courier or local pickup	Fulfillment by Amazon program or by courier	By courier
Purchase	Auction House and Buy Now	Auction House and Buy Now	Buy Now	Buy Now
Advertisement	Items are listed for free with no hidden fees	Sellers are charged when buyer purchases item	Sellers are charged when buyer clicks on item	Seller is charged the difference of their markup item price and wholesale item price
Registration	GatorMarket provides absolutely free registration and service	Registering an eBay business account will impose selling fees on listing and selling of products	Basic Amazon account is free, however Amazon Prime is behind paywall to unlock all perks for buying items	Registering an account on AliExpress is free, however a commission fee is imposed when selling products
Media for media trade	GatorMarket allows the trade of media for media	eBay does not have this feature	Amazon does not have this feature	AliExpress does not have this feature

<u>Competitive Analysis Chart:</u>

GatorMarket vs Competitors (eBay, Amazon, AliExpress)

7. High-Level System Architecture and Technologies Used

- Server Host: Amazon Web Servers 1vCPU 2 GB RAM

- Operating System: Ubuntu Server 16.04 LTS

- Database: MySQL Community v8.0.30

- Web Server: Express 4.16.1

- Server-Side Language: JavaScript

- Additional Technologies:

    - Web Framework: Handlebars 4.2.0

    - IDE: Visual Studio Code 1.70.2

    - Web Analytics: Google Analytics 4

    - Image upload: Multer 1.4.5

8. Team Members and Roles

Patrick Celedio	Team Lead/Frontend Lead Engineer/Document Master
Michael Feger	Backend Lead Engineer
Ahmad Adnan	Github Master/Frontend Engineer
Rohit Devdhar	Backend Engineer
Nyan Ye Lin	Frontend Engineer
Ethan Lunderville	Backend Engineer

9. Checklist

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