Final Project for SW Engineering Class CSC 648-848 Spring 2022

Team 3

Gator Express

Amir Modan (Team Lead) - amodan1@mail.sfsu.edu

Dev Soni (Front-End Lead)

Kayvaun Khoshkhou

Vicente Pericone (Back-End Lead)

Brian Cheng

Majid Samir (Github Master)

http://ec2-44-205-80-79.compute-1.amazonaws.com/

05/21/2022

Product summary

Gator Express

Life can be stressful for college students. This is especially true due to the challenges associated with being an independent adult who, oftentimes, must obtain necessary items such as books, supplies, and clothing. We aim to alleviate this burden by designing “Gator Express”, a web-based service on which college students, staff, and faculty can easily exchange items. Students will no longer have to pay high prices for many of their required items as most will already be sold by their predecessors on Gator Express at a fraction of the cost.

Our application allows users to:

- Search for items to buy.
- View all the categories of posts on the website and navigate to their preferred section.
- Sort search results.
- Click on any post and see its details, pricing, etc.
- View Gator Express’s about page.
- View the map of SFSU for reference.
- Register using name and email id (must be .edu).
- Login to create posts.

Registered users are allowed to:

- Post items to sell (Must be approved).
- View their own created posts.
- View messages received from prospective buyers.
- Send their contact information to a seller via one-way chat.

Admin are allowed to:

- Manage posts created by the users.
- View requests to add posts.
- Delete inappropriate posts.
- Approve posts before they go live.

We will ensure that all users can make informed decisions when selecting a meeting location by displaying a labeled map within our UI. Furthermore, the map will provide users with the locations of SFSU’s police department and “Emergency Blue Light Phones”, so that the users can make exchanges with maximum personal security incomparable to exchanges made on competing platforms.

http://ec2-44-205-80-79.compute-1.amazonaws.com/

Milestone documents – M1-M4

SW Engineering CSC648/848 Spring 2022

Gator Express

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Milestone 1

03/20/2022

Version #	Date Submitted	Changes
1	03/03/2022	First version submitted
2	03/15/2022	Revision done as per instructor feedback
3	03/20/2022	Minor changes to Functional Req.

1. Executive Summary

Life can be stressful for college students. This is especially true due to the challenges associated with being an independent adult who, oftentimes, must obtain necessary items such as books, supplies, and clothing. We aim to alleviate this burden by designing “Gator Express”, a web-based service on which college students, staff, and faculty can easily exchange items. Students will no longer have to pay high prices for many of their required items as most will already be sold by their predecessors on Gator Express at a fraction of the cost.

Gator Express will be tailored specifically to fit the needs of those in the university system. While our current aim is to accommodate SFSU affiliates only, it is possible to expand our application to other CSU campuses given the demand and the necessary funds. By restricting access to this clientele, we can better cater to the needs of our target audience by implementing features specific to SFSU. Registered users can post items they want to sell on Gator Express, including information such as the item’s description, asking price, and an optional image. This information can be removed by the seller at any time. Users can also browse available items via search bar and can even apply filters to only return relevant items. Search results can also be sorted based on characteristics such as price, location, date posted, etc., so users can find what they want quickly and effortlessly. Once a user finds an item they are interested in, they can notify the seller in-site with their contact information, so the two parties can negotiate an exchange. Unlike competing platforms who must cater to a global audience, Gator Express users can rest assured that their exchanges will take place swiftly due to the locality of the application. For this reason, we will ensure that all users can make informed decisions when selecting a meeting location by also displaying a labeled map within our UI. Furthermore, the map will provide users with the locations of SFSU’s police department and “Emergency Blue Light Phones”, so that the users can make exchanges with maximum personal security incomparable to exchanges made on competing platforms.

The team that will be designing this revolutionary platform consists of 6 brilliant students, part of SFSU’s Computer Science program. As members of the SFSU community, we understand the needs of the target audience and can therefore, deliver the most relevant product while applying the knowledge we have learnt through our time at SFSU to ensure that the product is seamless and error-free.

2. Personae and Main Use Cases

- Frank

  - Basic Information:
    - Occupation: Student
    - Year: Freshman
    - Residence: Living on Campus with three other housemates
  - About Frank:
    - Frank is a computer science major, taking two CS courses and three GE courses
    - From Orange County and is not familiar with the area or the people
    - Frank has also wanted to come to San Francisco since he was a child
  - Goals and Scenario:
    - Frank has no school supplies and is looking for an easy way to get them while meeting other students at the same time
    - Frank is thinking about buying new clothes because he only has two weeks worth of clothing
  - Limitations:
    - No job; very little money to spend
    - Does not know how to use the Muni for public transportation
    - Needs materials urgently

- George

  - Basic Information:
    - Occupation: Student
    - Year: Senior
    - Residence: Living off campus in San Mateo (20-30 minute drive)
  - About George:
    - George is a business major in his last semester of SFSU
    - Doing a part-time internship in Downtown San Francisco on Tuesdays and Thursdays
    - George is on Campus Monday, Wednesday, and Fridays, going to class in the morning and then studying in the library until closing
  - Goals and Scenario:
    - George has a lot of old material from past semesters and wants to get rid of them
    - George plans to sell his old laptop for money to upgrade into a newer model for work
  - Limitations:
    - Has to commute if he wants to meet other students on campus
    - Constantly busy with both school and internship; little time to interact with other students

- Prof. Smith

  - Basic Information:
    - Occupation: Faculty
    - Residence: Commuting from Union City
  - About Prof. Smith:
    - Professor Smith is a full-time faculty from SFSU's math department who teaches four different in person classes from Monday through Friday
    - Has a traditional style of teaching (white board only, no powerpoint, does not use iLearn)
    - Took a break from teaching due to the pandemic and has now returned for the semester
    - His classroom includes a projector and a screen which he does not know how to set up
  - Goals and Scenario:
    - Prof. Smith is thinking about switching to a different style of teaching next semester and needs equipment
    - Prof. Smith has also written multiple books on computing which he wants to sell to his students
    - All of his classes have required textbooks and he may want students to have an easy way to access it
  - Limitations:
    - Not familiar with UI and online shopping at all
    - Usually, not willing to learn new technology

3. List of main data items and entities – data glossary/description

- Users
  - Anonymous_Users:
    - Does not need to login/register
    - Can view posts from other users
    - Can make posts but will be asked to register/login after making a post (Lazy registration)
    - Unable to interact with others posts
  - Registered_Users:
    - Registration Record - Username, password, email
    - Needs to login/register
    - Able to make posts
    - Able to view and interact with others' posts
  - Admin
    - Username
    - Password
    - Needs to login/register
    - Can access all data and content and modify the database
    - Approves posts made by users
- Posts - Items users will post onto the marketplace. Any user can create a post but must be registered and logged in at the end of creating a post
  - Textbooks
    - Post Title
    - Post Description
    - Post owner (user who posted)
    - Book Title
    - Book Author
    - Edition/Volume number
    - Photos
    - Price
    - Classes it was used used for

  - Class Equipment (Like lab coats, clickers, anything that is specifically required for a class)
    - Post Title
    - Post Description
    - Post Owner
    - Photos
    - Price

    - Classes it was used for

- Technology
    - Post Title
    - Post Description
    - Post Owner
    - Condition (New, refurbished, used, etc)
    - Photos
    - Price

- School Supplies (Like pencils, calculators, notebooks, etc)
    - Post Title
    - Post Description
    - Post Owner
    - Photos
    - Price

- Clothes
    - Post Title
    - Post Description
    - Post Owner
    - Size
    - Type of clothing (shirt, pants, dress, etc)
    - Condition (new, used, etc)
    - Photos
    - Price

4. Initial list of functional requirements

1. System shall provide full functionality using mouse and keyboard.
2. System shall provide login to registered users. Contains user id and password.
3. All users shall be able to search for items to buy.
4. All users shall be able to view all the categories of posts on the website and navigate to their preferred section.
5. All users shall click on any post and see its details, pricing, etc.
6. All users shall be able to view Gator Express's about page.
7. All users shall be able to view the map of SFSU for reference.
8. Registered Users shall be able to login to use the website, create posts.
9. Registered Users shall be prompted to enter a password to get access to their account.
10. Forgot Password: Registered Users shall use this option to regain access to their account. This shall always be visible on login page.
11. Username shall be displayed on the header after the registered user logs in.
12. Registered Users shall be able to logout of the website when not in use and keep surfing for posts but not use the functions.
13. Post Creation: Registered users shall create posts from their account and make it public for buyers to see.
14. Registered users interested in purchasing the item from any post shall send the seller their contact information.
15. Sellers shall rely on the buyer to send them their contact information via one-way chat on the website.
16. Registered users shall create posts to sell or add details about the course material used in their respective classes.
17. Registered users shall be able to view messages sent from other registered users.
18. Registration form: required for anonymous users to register. Contains name, email id, optionally phone number and terms and conditions.
19. Anonymous users shall only register using their university's email id (.edu email).
20. Anonymous users shall not have permission to post items.
21. Anonymous users shall not have permission to contact sellers.
22. Admin shall have special login access to the backend of the website.
23. Admin shall manage the posts, view requests to add posts, delete an inappropriate post, block a user, approve a post.

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

	Amazon	eBay	Craigslist	Facebook Marketplace	Gator Express
Search Bar	✓✓	✓✓	✓✓	✓✓	✓
Post Items	✓	✓	✓✓	✓✓	✓✓
Local Pickup	X	X	✓	✓	✓✓
SFSU Member	X	X	X	X	✓✓
Categorize by Class	X	X	X	X	✓✓

Gator Express exclusively works with SFSU members to make transactions safer and easier. This provides extra security by requiring “.edu” email accounts to sign up with. Competitors include Amazon, Craigslist, Ebay, Facebook marketplace. Compared to competitors, we’re more involved in our students’ day to day lives, what materials, tools, and accessories are required or best needed to strive in their classes. Additionally, we advertise and market directly to our audience who we solely provide our service for, so our audience has certain things in common across the board. Whereas with companies like Amazon, they have to cater to a much more general audience. We know a majority of our audience is composed of students, professors, or administration, who live somewhat close to SFSU, and are well into their late teens or adulthood. Our product is a straightforward online vendor meant to act as a gateway between customers and sellers, with items for sale in between while providing secure in-person transactions.

7. High-level system architecture and technologies used

- Server Host: AWS EC2 1vCPU 1 GB RAM
- Operating System: Ubuntu 20.04.3 LTS
- Database: MySQL v.8.0
- Web Server: Node.js v.16.14.0
- Server-Side Language: JavaScript ES6
- Additional Technologies:
    - Front-End Web Framework: Bootstrap v.5.1.3
    - Back-End Web Framework: Express v.4.17.2
    - IDE: Visual Studio Code v.1.64

8. Team and roles

- Amir Modan - Team Lead / Document Master / Team Member Front-End
- Brian Cheng - Team Member Back-End
- Dev Soni - Front-End Lead
- Kayvaun Khoshkhou - Team Member Front-End
- Vicente Pericone - Back-End Lead
- Majid Samir - Github Master / Team Member Back-End

9. Checklist

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

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Milestone 2

04/09/2022

Version #	Date Submitted	Changes
1	03/20/2022	First version submitted
2	04/05/2022	Func. Req. revised Optimized UI
3	04/09/2022	Removed trivial/invalid Func. Req

1. Executive Summary

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    - Able to message sellers
  - Admin
    - Username
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    - Post Title
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    - Book Title
    - Book Author
    - Edition/Volume number
    - Photos
    - Price
    - Classes it was used used for

  - Class Equipment (Like lab coats, clickers, anything that is specifically required for a class)
    - Post Title
    - Post Description
    - Post Owner
    - Photos

        - Price
        - Classes it was used for

    - Technology
        - Post Title
        - Post Description
        - Post Owner
        - Condition (New, refurbished, used, etc)
        - Photos
        - Price

    - School Supplies (Like pencils, calculators, notebooks, etc)
        - Post Title
        - Post Description
        - Post Owner
        - Photos
        - Price

    - Clothes
        - Post Title
        - Post Description
        - Post Owner
        - Size
        - Type of clothing (shirt, pants, dress, etc)
        - Condition (new, used, etc)
        - Photos
        - Price

Database Organization

- Users
    - Columns
        - Id - INT (Primary Key)
        - Username - VARCHAR(128)
        - Password - VARCHAR(2056)
        - Email - VARCHAR(255)
        - Created - DATETIME
        - Admin - BOOLEAN || TINYINT
- Categories
    - Columns
        - Id - INT (Primary Key)

        - Name - VARCHAR(128)
- Products
    - Columns
        - Id - INT (Primary Key)
        - Title - VARCHAR(128)
        - Description - MEDIUMTEXT
        - Photopath - VARCHAR(2048)
        - Thumbnail - VARCHAR(2048)
        - Created - DATETIME
        - Price - INT
        - UserId - INT (Foreign Key)
        - CategoryId - INT (Foreign Key)
- Message
    - Columns
        - Id - INT (Primary Key)
        - Text - MediumText
        - productId - INT (Foreign Key)
        - sellerId - INT (Foreign Key)
        - buyerId - INT (Foreign Key)

3. Initial list of functional requirements

<u>Priority 1</u>

Anonymous Users:

(3) Anonymous users shall be able to search for items to buy.

(3.1) Anonymous shall also have access to advanced search functions such as sorting of results.

(4) Anonymous users shall be able to view all the categories of posts on the website and navigate to their preferred section.

(5) Anonymous users shall click on any post and see its details, pricing, etc.

(5.1) The option to contact the seller shall also be visible to all users.

(6) Anonymous users shall be able to view Gator Express's about page.

(7) Anonymous users shall be able to view the map of SFSU for reference.

(18) Registration form: required for anonymous users to register.

(18.1) Shall contain name, email id.

(18.2) Shall contain phone number as an optional field.

(18.3) Shall contain terms and conditions.

(19) Anonymous users shall only register using their university's email id (.edu email).

(19.1) Anonymous users registering with any other email shall be rejected immediately.

Registered Users:

(8) Registered users shall be able to login to use the website and create posts.

(9) Registered users shall be prompted to enter a password to get access to their account.

(9.1) Registered users shall not be able to see their password echoed as they are entering it.

(10) Forgot Password: Registered Users shall use this option to regain access to their account.

(13) Post Creation: Registered users shall create posts from their account and make it public for buyers to see.

(14) Registered users interested in purchasing the item from any post shall send the seller their contact information.

(15) Sellers shall rely on the buyer to send them their contact information via one-way chat on the website.

(16) Registered users shall create posts to sell items.

(17) Registered users shall be able to view messages sent from other registered users.

(17.1) However, Registered users shall not be able to respond to said messages.

(28) Registered users shall be able to view their own posts.

Admin:

(23) Admin shall manage the posts.

(24) Admin shall view requests to add posts.

(25) Admin shall be able to delete inappropriate posts.

(26) Admin shall be required to approve all posts before they go live.

Priority 2

Admin:

(27) Admin shall be able to block a user from making further posts.

Priority 3

Anonymous Users:

(29) Anonymous users shall be able to sort search results based on similarity.

4. UI Storyboards for each main use case

I. First-Time Buyer: Frank is a computer science major, taking two CS courses and three GE courses. Frank has no school supplies and is looking for an easy way to get them while meeting other students at the same time. However, he is unemployed with very little money to spend. Also, he does not know how to use the Muni for public transportation. He hears about “Gator Express” from his roommate who is a regular user and decides to try it out for himself. After searching for materials needed for his computer science class, he comes across a seller who had recently taken the same class and is selling exactly what he needs. Once he created his account on Gator Express, Frank was able to contact this seller and negotiate an exchange to be done near his dorm.

On Gator Express, Frank can choose to browse and buy items from other SFSU affiliates. Frank can also choose to post and sell any items that he owns to any interested buyers. Either way, an exchange must be made in-person on the SFSU campus for the purpose of maintaining reliability and security. In order to initiate the exchange, an interested buyer must send a message to the seller explaining their interest in the product as well as contact information and a possible exchange location. Since Frank intends to buy an item, he will go through this process.

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log In
Computer Science
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Page
1
2
3
Filter :
Best Match
Price: Low to High
Price: High to Low
Title
$ 00
Contact Seller
Frank searches for CS items
CS items appear in descending order of similarity
Frank selects the item he wants

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
@
username (default)
Title
This is the Title
Category
Select Category...
Description
This is the Description of the Post
$
.00
Meetup Location
Select Location from Map...
Contact Seller
Close
Frank is enticed by the offer and decides to contact the seller

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log In
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Sign In
User Name *
Password *
SIGN IN
Forgot Password?
* Required Fields
New User
SIGN UP
Frank must first sign in before contacting the seller
Frank doesn't have an account, so he signs up

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log In
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Sign Up
User Name *
frank
Email Id *
frank@mail.sfsu.edu
Password *
****
Confirm Password *
****
SIGN UP
* Required Fields
Frank enters his information

Having used his SFSU email, Frank successfully creates his Gator Express account

Frank sends a message to the seller expressing his interest in the item along with his contact information and a proposed exchange location

Frank can also view his posts though as a first-time buyer, this will be empty.

The message is sent to the seller and Frank is taken to his dashboard containing his sent/received messages

II. Seller Receiving Offers: John is an SFSU humanities student hoping to sell some of his old textbooks for some extra cash. He is a regular user of Gator Express and has posted and sold several textbooks on the site already. John decides to log in to see whether he has received any new messages regarding potential exchanges. If John receives a message from a prospective buyer, he will contact the buyer using other modes of communication to agree on a possible exchange location on-campus.

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log In
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Sign In
User Name *
johndoe
Password *
****
SIGN IN
Forgot Password?
* Required Fields
New User
SIGN UP
John signs in

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Page
1
2
3
Filter :
Best Match
Price: Low to High
Price: High to Low
Title
$ 00
Contact Seller
John wishes to view his messages
John is directed back to the home page after logging in

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
My Posts
My Messages
Sent
Received
Title of Post
Received from : @stu
View My Post
Message you received from the buyer.
Title of Post
Received from : @rst
View My Post
Message you received from the buyer.
Title of Post
Received from : @fgh
View My Post
Message you received from the buyer.
John can view messages he's received from prospective buyers
John can also click here if he wants to review the item that he is selling

III. Casual Browsing: Jane is an SFSU faculty member looking to save some money on a laser pointer. She overhears her students talking about a convenient platform called “Gator Express” on which SFSU members could buy/sell various items including electronics. She browses through the website and finds various sellers with the laser pointers she wants. However, none have it at a price she would deem acceptable, so she does not contact anyone nor does she even create an account.

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log In
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Page
1
2
3
Filter :
Best Match
Price: Low to High
Price: High to Low
Title
$ 00
Contact Seller
Jane narrows search to Electronics & Media only

GATOR EXPRESS
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
@
username (default)
Title
This is the Title
Category
Select Category...
Description
This is the Description of the Post
$
.00
Meetup Location
Select Location from Map...
Contact Seller
Close
Jane is not interested in offer and returns to search

IV. New Buyer Purchase Process: Sarah is a SFSU freshman who is starting her first week of classes on campus. Her professors assign texts that she must acquire in order to pass the class because her homework is dependent on it. When she looks up the textbooks online she finds that they're a bit pricey and she can't afford to buy them all. She goes about her day trying to figure out a solution, looking for deals on other websites. While browsing the SFSU Reddit she finds a student's posting about Gator Express, and how it's a great way to find exactly what you need for your classes. She looks up her required texts and sees a few of her texts being offered for a fraction of the cost for new ones online. She creates an account and contacts the sellers and arranges for pickup.

Figure 1.

Sarah finds the Gator Express Website and is greeted with our homepage. From here she clicks to contact seller on a listing or post. She will be redirected to the sign up page automatically.

Figure 2.

Upon this page Sarah will enter her credentials and sign up for an account on Gator Express. She will then be redirected back to the post she was interested in contacting the seller for with a message confirming the successful sign up.

Figure 3.

Figure 4.

After clearing the notification Sarah will see the full page to contact the seller for the listing.

Figure 5.

After contacting the seller, Sarah will see a message confirming her message was sent.

Figure 6.

After clearing the notification, Sarah will see a list of posts that she's sent messages to and has open conversations with. She can click between her sent messages and received in an organized fashion for when the sellers respond to her offers.

Figure 7.

From here, Sarah will work out the details with the seller on price and meetup location.

V. New Seller Process: Professor Vera is looking to upgrade to an updated, more modern calculator. The one he has right now is in perfect working condition. He thinks updating his calculator is a waste of money because he would just have to toss his old one. He explains this to his TA and the TA brings up the trending “Gator Express” website. Professor Vera decides to check it out and see if he can sell his calculator to minimize the damage it would bring to his wallet if he chose to buy a brand new calculator. He creates a listing with a title and description and waits to hear back from an interested buyer.

Figure 1.

Professor Vera finds his way to our website where he is greeted with our homepage.

Figure 2.

Professor Vera aims to sell his current calculator, so he will click on "Post Ad" where he will be redirected to the sign up page since he is not logged in with any credentials.

Figure 3.

Here Professor Vera will receive the notification for signing up successfully.

Figure 4.

Now Professor Vera will be redirected back to the Post Ad page where he will be able to fill out the required fields to have his post go live.

Figure 5.

After which Professor will be given a notification of the post being created successfully.

Figure 6.

Professor will then be redirected to the "My Posts" page where he will be able to see the listing he just created. From here, the post will be approved and then live on our listing page where users will be able to see his post.

5. High level Architecture, Database Organization

Database Organization

- Users
  - Columns
    - Id - INT (Primary Key)
    - Username - VARCHAR(128)
    - Password - VARCHAR(2056)
    - Email - VARCHAR(255)
    - Created - DATETIME
    - Admin - BOOLEAN || TINYINT
- Categories
  - Columns
    - Id - INT (Primary Key)
    - Name - VARCHAR(128)
- Products
  - Columns
    - Id - INT (Primary Key)
    - Title - VARCHAR(128)
    - Description - MEDIUMTEXT
    - Photopath - VARCHAR(2048)
    - Thumbnail - VARCHAR(2048)
    - Created - DATETIME
    - Price - INT
    - UserId - INT (Foreign Key)
    - CategoryId - INT (Foreign Key)

Media Storage

Images will be kept in file systems. There is a folder in the application that is labeled “imgs” that will contain all the pictures uploaded to the website. We still do not know how we will be storing or implementing audio, video, and gps functionality.

Search/Filter

For searching for products on our application, there are two fields the user can use. The first field is a blank textbox that customers can input search terms into and the application will return products that contain the search terms within its title or description. We are doing this by running a MySql query on our backend that uses the %LIKE parameter.

The other field is a dropdown menu that has different categories the customer can choose from. If a customer selects a category, the application will return results only from the category. Since it's impossible for the customer to misinput spelling in the dropdown menu, we are simply running a query that will return posts with the same category name as the one chosen. Both of these inputs can also be combined together to narrow down the customer's needs more to improve usability.

Software Used

For this vertical stack, we are using JavaScript and NodeJS with Express on the backend. We have not discussed in detail what we will be using for the frontend but currently we are using handlebars as our templating engine along with a little bit of bootstrap.

6. Key Risks

While many different types of risks are associated with any Software Engineering project, there is one that we anticipate to be a possible threat to the completion of our project, a lack of effective communication (Teamwork). Throughout the course of the project, the Front and Back-End teams will likely work independent from each other for the most part due to the stark contrast in skills required for each area of expertise. Nevertheless, it is imperative that the two communicate their progress regularly so as to prevent either end from lagging behind the other in terms of development. We believe this to be an actual threat particularly because the development of the project will occur virtually, making it difficult for our team members to effectively communicate progress. As a result, we may face bottlenecks in which development of a component cannot continue until a related component has been completed first. We plan to mitigate this risk by having each end present their work on a weekly basis including design and methodology and assigning appropriate tasks to Front and Back-End teams that will compliment each other.

7. Project management

Milestone 2 was the first assignment in which we were able to distinguish between Front-End and Back-End tasks. Specifically, the vertical stack was largely to be worked on by the Back-End team only, since functionality of the search was prioritized as opposed to the user experience. On the contrary, the storyboard was drawn out by the Front-End team since they are more specialized in optimizing the user experience than the Back-End team. In doing so, the Front and Back-End teams required minimal interaction only to integrate the two frameworks into one functional application.

For the future, we plan to continue this trend of splitting tasks between Front and Back-End teams. In order to facilitate development within each team, we also plan on experimenting with Visual Studio Code's "Live Share" Extension. In doing so, members of each team can work on a single document simultaneously, reducing the chances of merge conflicts and other organizational issues. We will also make use of *Trello* for delegating tasks to each team member. Furthermore, we can assign deadlines for each of these tasks, so that the team does not fall behind on the project.

Summary of Milestone 3 ZOOM meeting review with Prof. Petkovic and plans for further development

Team number: 03

Meeting date: April 13, 2022

Summary of feedback on UI (list if items, note that details are available in ZOOM recording):

1. Prof. says it's unusual to have tabs above the search box, but it's ok.
2. We should change Login to Login/Signup.
3. 'About' button should be on the left of Post.
4. On the top of the page, we shall have the requirement of spec 17 in smaller letters.
5. We can leave copyrights on the bottom of the page.
6. Prof. did not like the frame UI, it is distracting.
7. We need to make the page responsive when shrinking the frame. It has to show on mobile.
8. Regarding the Latest posts, we should list many, not just one.
9. When clicking on search, the upper-left corner should show the number of items in the search.
10. Filter should be changed to price low to high instead of latest. Don't say filter just put price low to high on the pulldown menu.
11. The nav bar:
    a. Should have a different color to separate from the rest of the page.
    b. It needs to be more visible.
    c. Can put a line to separate it from the rest of the page.
12. When clicking on an image:
    a. It shall show product details, and should have the same effect as when the contact seller button is pressed.
    b. Make contact seller button a positive color; e.g. Yellow like Amazon.
    c. Need a pulldown menu from the contact seller that would prefill product details and provide a text box that says: " Please enter your contact info…"
13. When clicking on post: the order should be all in one column in the following order:
    a. Title
    b. Category
    c. Price
    d. Description
    e. Upload file (replacing Choose file button)
14. Then the asterix on the bottom shall say Mandatory Fields, and should be on its own column.

15. Need to add a cancel button to the left of the Post Item button.

16. Under the Post Item button, display a text that says it may take up to 24 hours for the post to be approved.
17. When the user clicks Post, we shall enforce registration or login.
18. The Login text should be consistent and not alternate between “Login” and “Sign in”.
19. On the signup page:
    a. Required fields shall be on the upper right, not the bottom.
    b. Choose one color for the buttons that perform positive actions (use green/yellow for contact seller, post, and message. Use gray for the cancel button).
20. On the tab that says “My Messages”:
    a. Call it “My Page” instead.
    b. By clicking on it the user shall be forced to login.
    c. It shall have two inner tabs named “Messages” and “My Posts” respectively
21. On the My Messages page,
    a. Just show received messages and remove the “sent” and “received” tabs
    b. The message should contain product title, date received, and text. Or make it clickable to display this info.
22. On the My Posts page:
    a. Show product title and date it was received.
    b. Instead of having a “View Post” button, we shall put the title of the product and make it clickable.
    c. Have a delete button where we can delete the post.

Summary of feedback on code and architecture

1. Use a header comment with name of owner, input, output, error messages, etc.
2. Use comments on top of lines of code as well.
3. Put the name of the owner in all code that comes to the master branch.
4. There shall be up to 40 alphanumeric characters on the search.
5. Focus and the user UI not the admin UI.

Summary of feedback on github usage

1. On github page:
    a. Set rule that only team lead and github master can merge code.
    b. The Github structure should have a development branch and a master branch.
    c. Establish a master branch with test commits before merging.
    d. Commit comments are good, industry and management looks at it. Keep comments descriptive.
    e. Name folders that contain code carefully so that we can find it easily.
    f. There needs to be comments above the code: “input is this, output is that”, etc.
    g. There shall be a boolean set to false describing whether a post has been approved and visible to users. The admin approval process shall be flipping the boolean to true by admin to approve the post

Summary of feedback on DB

1. The database:
    a. Passwords must be encrypted. Do it early.
    b. Shall have a foreign key to categories, which we already have.
    c. Pathname shall be relative.
    d. Do not encode the pulldown menu by hand, it should be from category via foreign key.

Summary of feedback on teamwork

1. Teamwork has been efficient thus far.
2. Continue using Trello to assign tasks to team members.
3. Continue following Agile methodology by continuously evaluating our application and adapting to any necessary changes.
4. Continue enforcing Scrum by reflecting on team progress multiple times per week.

Any other comments and issues

No other comments given.

Check Point (CP) if given, DUE:

No Check Point given.

Agreed upon P1 list of features for final delivery

Anonymous Users:

(3) Anonymous users shall be able to search for items to buy.
(3.1) Anonymous shall also have access to advanced search functions such as sorting of results.
(4) Anonymous users shall be able to view all the categories of posts on the website and navigate to their preferred section.
(5) Anonymous users shall click on any post and see its details, pricing, etc.
(5.1) The option to contact the seller shall also be visible to all users.
(6) Anonymous users shall be able to view Gator Express's about page.
(7) Anonymous users shall be able to view the map of SFSU for reference.
(18) Registration form: required for anonymous users to register.
(18.1) Shall contain name, email id.
(18.2) Shall contain phone number as an optional field.
(18.3) Shall contain terms and conditions.
(19) Anonymous users shall only register using their university's email id (.edu email).
(19.1) Anonymous users registering with any other email shall be

rejected immediately.

Registered Users:

(8) Registered users shall be able to login to use the website and create posts.
(9) Registered users shall be prompted to enter a password to get access to their account.
(9.1) Registered users shall not be able to see their password echoed as they are entering it.
(10) Forgot Password: Registered Users shall use this option to regain access to their account.
(13) Post Creation: Registered users shall create posts from their account and make it public for buyers to see.
(14) Registered users interested in purchasing the item from any post shall send the seller their contact information.
(15) Sellers shall rely on the buyer to send them their contact information via one-way chat on the website.
(16) Registered users shall create posts to sell items.
(17) Registered users shall be able to view messages sent from other registered users.
(17.1) However, Registered users shall not be able to respond to said messages.
(28) Registered users shall be able to view their own posts.

Admin:

(23) Admin shall manage the posts.
(24) Admin shall view requests to add posts.
(25) Admin shall be able to delete inappropriate posts.
(26) Admin shall be required to approve all posts before they go live.

Plan of action

First, our Github master will establish a development branch, so that our main branch can function as the “Golden” branch which has tested code. This must be done immediately, so that both Front and Back-End teams can revert to the Golden branch if the application is unexpectedly broken.

The Front-End team will first focus on implementing any Functional Requirements that haven’t already been met. We can start with adding Non-Functional Req. 17 as it is as simple as just inserting text above the header. Then we will implement basic UI for any remaining pages, so that all Use Cases can be performed. We will then optimize the resizing of the application in order to meet Non-Functional Req. 3. After that, there are no serious Front-End issues that violate P1 Functional or Non-Functional Requirements, so we can implement the other suggestions made by the Professor in ascending order of implementation cost.

The Back-End team will first encrypt all passwords so as to meet Non-Functional Req. 14. Then, functionality will be added for remaining features which have not already been implemented. We will prioritize adding functionality for Use Cases whose UI has already been developed, so that QA can begin testing those Use Cases even if the entire application is not complete.

SW Engineering CSC648/848 Spring 2022

Gator Express

Team 3

Amir Modan (Team Lead) - amodan1@mail.sfsu.edu

Dev Soni (Front-End Lead)

Kayvaun Khoshkhou

Vicente Pericone (Back-End Lead)

Brian Cheng

Majid Samir (Github Master)

Milestone 4

05/16/2022

Version #	Date Submitted	Changes
1	05/16/2022	First version submitted

1. Product summary

Gator Express

Life can be stressful for college students. This is especially true due to the challenges associated with being an independent adult who, oftentimes, must obtain necessary items such as books, supplies, and clothing. We aim to alleviate this burden by designing “Gator Express”, a web-based service on which college students, staff, and faculty can easily exchange items. Students will no longer have to pay high prices for many of their required items as most will already be sold by their predecessors on Gator Express at a fraction of the cost.

Our application allows users to:

- Search for items to buy.
- View all the categories of posts on the website and navigate to their preferred section.
- Sort search results.
- Click on any post and see its details, pricing, etc.
- View Gator Express’s about page.
- View the map of SFSU for reference.
- Register using name and email id (must be .edu).
- Login to create posts.

Registered users are allowed to:

- Post items to sell (Must be approved).
- View their own created posts.
- View messages received from prospective buyers.
- Send their contact information to a seller via one-way chat.

Admin are allowed to:

- Manage posts created by the users.
- View requests to add posts.
- Delete inappropriate posts.
- Approve posts before they go live.

We will ensure that all users can make informed decisions when selecting a meeting location by displaying a labeled map within our UI. Furthermore, the map will provide users with the locations of SFSU’s police department and “Emergency Blue Light Phones”, so that the users can make exchanges with maximum personal security incomparable to exchanges made on competing platforms.
http://ec2-44-205-80-79.compute-1.amazonaws.com/

2. Usability Test Plan

Test Objectives:

The objective of this test is to analyze the functionality of Creating an Ad post for the GatorExpress Marketplace application. The link is provided below to run the web application. This feature is being tested to make sure the user has a pleasant experience of using the web app and successfully create a post to sell the item they want and find a potential buyer for the item. It is also necessary to note the user has a smooth rundown and easy way to navigate through the application for achieving the expected results.

Test Background and Setup:

Background : Will the user be able to create an Ad post to sell the item of his/her choice effectively and with minimum clicks. People can buy and sell items on campus with trust and safety and without having to reach out for external apps.

System Setup : The user can open the web browser of his/ her choice with internet connection from anywhere in the world. This application is specifically for members fo SFSU (Students & Staff). The user can then navigate the website for various options/ features. The test will take place using electronic observation room (Online Zoom Meetings)

Starting Point : URL of the application mentioned below is the starting point. Specifically the home page of the application is the first page the user sees once the website is loading.

Intended Users : Our application focuses on members of San Francisco State University that includes students and all the staff members. Anyone above age 17, with an authorized sfsu.edu email id can use GatorExpress to buy/ sell items. Our website is beneficial for safe exchange of items on campus using the provided campus map.

URL of the system : http://ec2-44-205-80-79.compute-1.amazonaws.com/

Subjective Feedback:

- Measure task satisfaction by creating a Likert questionnaire
- Ease of use
- Search result relevance
- How likely would you use the application in real life
- How streamlined is the buying & selling process

Usability Task:

The task given to the user is to post an ad for used/ reusable items for a potential buyer on campus and perform safe exchange of items. Perform voluntary usability tests with people and keep the user's identity anonymous.

Steps:

1. Go to GatorExpress's Home Page (website url)
2. Explore some categories of items one can sell
3. Register and create an account for login to begin
4. Post an Ad for the item
5. Include category and images
6. Read the terms and disclaimer while posting your ad

Optional Steps:

7. Wait for a potential buyer to message you
8. Check the messages tab for any received messages
9. Visit the campus map & other posted items to buy

TASK	**DESCRIPTION**
Task	Post an Ad for item
Machine State	No items posted
Successful completion criteria	Posted item is visible in marketplace within 24 hours
Benchmark	Completed in 3 minutes

Evaluation of Effectiveness:

We will use our real time website to show the testers the different pages of the application. We will start by using a demo account of GatorExpress to ask the tester to post an ad for a used item. We will also provide test images of used items. This process would be then judged for its effectiveness, efficiency, and feedback.

Measuring Effectiveness:

- If tester can complete the task of posting an ad
- Number of errors in each stage of the application

- Successful posting of ad and receiving messages from potential buyers

Evaluation of Efficiency:

- Minimal amounts of clicks necessary to post an ad.
- Minimal effort required to complete tasks (low average time to complete)
- Minimal number of pages of the application to register, login and use the application to post an ad

Test/Use Case	% Completed	Errors	Comments
Search Engine for Posted Items			
Register/ Login			
Post an Ad			
Message a Seller			

Evaluation of User Satisfaction:
We will collect the feedback based on the above table and will evaluate it based on the Likert questionnaire below to measure efficiency.

Name: _____

Feedbacks:
It was easy to navigate through the application with few clicks.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

The user experience makes me want to post used items and sell them on campus.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

I will use this application multiple times in real life.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Very few clicks are required to post an item/ buy an item.
○ Strongly Agree ○ Agree ○ Neutral ○ Disagree ○ Strongly Disagree

Any comments or suggestions on what we can do to provide you with a better service?

_____

Legal Issues:
Tests are voluntary, anonymous and can be abandoned at any time.

Report:
The final report will contain efficiency results, errors in the application, suggestions from users, upcoming improvements in the application, and some ways to navigate through our application.

3. QA Test Plan

Test Objectives:

Once again, we will test the application's ability to post items. However this time, we will assess the *functionality* of posting rather than its *usability*. This means that the application must perform as per the functional requirements defined and must not produce any bugs. We will **not** consider the application's ease of use as this falls under Usability Testing rather than QA.

HW and SW setup:

While the QA process can be automated using testing software such as *Selenium*, we will test use cases manually for simplicity. The software we will be testing is located on our application's Development branch and once it has passed all tests, will be merged onto our main branch. The reason for this is to ensure that the main branch only contains code that is guaranteed to work, so that we will always have access to a working application. The application being tested can be found at http://ec2-54-236-202-65.compute-1.amazonaws.com:3000/.

Feature to be tested:

We will test the **post** function which allows a registered user to post items to be sold. This means that the system should be able to save the item's information exactly as specified by the user. Although we will need to login to use this feature, we will not place much emphasis on the login use cases since that is a separate feature that would need to be tested on its own.

QA Test plan:

Post Test					
Test #	Title	Description	Input	Expected Output	Results (Google Chrome / Microsoft Edge)
1	Post Item Data	Post complete item information including name, description, image, price, and category. User is NOT logged in initially.	Click Log In / Register button	Navigates to ./Login	PASS / PASS
			Type "QA_User" in username field	"QA_User" is displayed in field	PASS / PASS
			Type "Password1!" in password field	"••••••••••" is displayed in field	PASS / PASS

Post Test					
Test #	Title	Description	Input	Expected Output	Results (Google Chrome / Microsoft Edge)
			Click Log In button	Navigates to home page	PASS / PASS
			Click Post button	Navigates to ./Post	PASS / PASS
			Click on “Choose File”	Opens file directory	PASS / PASS
			Upload “Item.png”	“Item.png” is displayed in field	PASS / PASS
			Type “QA Test” in title field	“QA Test” is displayed in field	PASS / PASS
			Type “This is a test” in description field	“This is a test” is displayed in field	PASS / PASS
			Type “$5” in price field	“$5” is displayed in field	PASS / PASS
			Click Category Drop-down	Drop-down displays: Books, Class Equipment, Clothes, Kitchen, School Supplies, Sports, Technology	PASS / PASS
			Select “Books”	“Books” is selected in drop-down	PASS / PASS
			Click Post Item button	Navigate to Home Page	PASS / PASS
2	Check Database	Check all attributes for the target item match expected.	Enter query for “QA_Test” item	Title = “QA_Test” Image = “Item.png” Price = 5.0 Category = “Books” Description = “This is a test”	PASS / PASS
3	Check Item Is Not Live	Check that the target item is not live before being approved.	Type “QA_Test” in search field	“QA_Test” is displayed in field	PASS / PASS
			Click Magnifying Glass Icon	“QA_Test” item is NOT displayed among results	FAIL / FAIL

4. Code Review

For the code review section, our team discussed what we should do a code review on and we decided that I (Vicente) should review Brian's code for posting products. After discussing it during the meeting, I decided to do the code review on github because there is a feature where you can review commits on a specific branch which makes it easy to see what code is being changed. I go through the documents changed during the merge of feature/post into the main branch. After reviewing all the code, I wrote a summary explaining the important aspects that I noticed. I then send the email to Brian with the summary and a link to my review on github.

VP Vicente Yazmil Pericone
Tue 5/10/2022 6:22 PM
To: Brian Christopher Gorospe Cheng

Hello Brian,

I forgot to include the link to the review. The review can be found here https://github.com/CSC-648-SFSU/csc648-03-sp22-team03/pull/14.
Thank you for your hard work.

Thanks,
Vicente

...

Reply | Forward

VP Vicente Yazmil Pericone
Tue 5/10/2022 6:20 PM
To: Brian Christopher Gorospe Cheng

Hello Brian,

I reviewed the code we discussed that we would go over during our last meeting. This is an old merge from the feature/post branch. The structure of the code was formed well, and it was very easy to read from an outside perspective. The main thing that I would say to work on is using comments and headers to explain the logic of the files to someone who might not be a programmer. And I believe we added a lot of headers after this merge, but it is important to just keep it in mind. I thought all the names for the class/methods/variable were consistent and proper. One last thing to remember is to write the commit, even if it's a merge, to be descriptive so that others understand the gist of what's being changed.
Otherwise, you are doing a great job, and keep up the good work!

Best Regards,
Vicente Pericone

B

Brian Christopher Gorospe Cheng

To: Vicente Yazmil Pericone

Wed 5/11/2022 9:23 AM

Hello Vicente,

Thanks for the feedback and for doing the code review!

Best,
Brian

...

No problem! | Always happy to help! | Happy to do it!

Are the suggestions above helpful? Yes No

Reply | Forward

ViP-Cente left a comment

Hello Brian. I reviewed the code we discussed that we would go over during our last meeting. This is an old merge from feature/post branch. The structure of the code was formed well in my opinion and it was very easy to read from an outside prospective. The main thing that I would say to work on is using comments and headers to explain the logic of the files to someone who might not be a programmer. And I believe we added a lot of headers after this merge but it is important to just keep it in mind. I thought all the names for the class/methods/variable were consistent and proper. One last thing to remember to label the commit, even if it's a merge, to be descriptive so that others understand the gist of what's being changed. Otherwise, you are doing a great job and keep up the good work!

application/server/routes/index.js

```
...  ...  @@ -33,20 +44,14 @@ router.get('/map', (req, res, next) => {
33   44       res.render('map', {title: "Campus Map", onMap: true});
34   45   })
35   46
```

ViP-Cente 20 minutes ago

There can be comments for explaining how the myPage works with the options of either viewing the user's posts or messages.

Reply...

Resolve conversation

application/server/routes/users.js

```
...  ...  @@ -8,8 +8,128 @@
8    8    ****************************************************************************/
9    9
```

ViP-Cente 20 minutes ago

This file is pretty good. Since flash messages aren't currently working, we can comment it out or delete to be more concise. There can also be more comments to make the logic more clear. Missing header. Good variable names.

Reply...

application/server/models/Users.js

```
@@ -0,0 +1,61 @@
+ var db = require('../config/database');
```

ViP-Cente 21 minutes ago

Missing header. Needs more in-line comments. Good and consistent naming. Overall good structure

Reply...

Resolve conversation

application/server/middleware/validation.js

```
@@ -0,0 +1,58 @@
+ const checkUsername = (username) => {
```

ViP-Cente 21 minutes ago

Missing header. Needs more in-line comments. Good and consistent naming. Godd structure but needs comments to explain it.

Reply...

Resolve conversation

application/server/middleware/myPageMiddleware.js

```
@@ -5,4 +5,31 @@
 *
```

ViP-Cente 21 minutes ago

Missing header. Needs more in-line comments. Good and consistent naming. The sql query can be refractured to a model file

application/server/helpers/debug/debugprinters.js

```
@@ -0,0 +1,23 @@
+ const colors = require('colors');
```

ViP-Cente 22 minutes ago

Missing header. Good and consistent naming. Good class structure

Reply...

Resolve conversation

application/server/middleware/myPageMiddleware.js

```
+
+ myPageMiddleware.loadMyPosts = (req, res, next) => {
+   let userId = 1;
```

ViP-Cente 22 minutes ago

userId is a hardcoded value and needs a commented explaining that we need to change it later

Reply...

Resolve conversation

application/public/js/frontendjs.js

```
@@ -11,4 +11,35 @@
function submitExternal() {
    let formElement = document.getElementById('search-bar');
    formElement.submit();
+ }
+
```

ViP-Cente 22 minutes ago

This feature is currently not being used and could have a comment explaining so or commented out.

5. Self-check on best practices for security

Asset to be protected	Types of possible/expected attacks	Your strategy to mitigate/protect the asset
The user database	1. Unauthorized user gains access to confidential data 2. SQL injection	1. Require users to authenticate themselves. 2. Only a select few people can manage the database directly
User Passwords	1. Unauthorized user gains access to confidential data 2. SQL injection	1. Passwords are encrypted in the database. 2. Passwords are validated by the front and backend
User Email	1. Unauthorized user gains access to confidential data 2. SQL injection	1. Emails are validated by the front and backend 2. Emails are required to have sfsu.edu at the end
Search Input	1. Unauthorized user gains access to confidential data 2. SQL injection	1. Search input is limited to 40 alphanumeric characters 2. Search is validated on the backend before executing the query

6. Self-check of the adherence to original Non-functional specs

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0. **DONE**
2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers. **ON TRACK**
3. All or selected application functions must render well on mobile devices. **ON TRACK**
4. Data shall be stored in the database on the team's deployment server. **DONE**
5. No more than 50 concurrent users shall be accessing the application at any time. **DONE**
6. Privacy of users shall be protected. **ON TRACK**
7. The language used shall be English (no localization needed). **DONE**
8. Application shall be very easy to use and intuitive. **DONE**
9. Application should follow established architecture patterns. **DONE**
10. Application code and its repository shall be easy to inspect and maintain. **DONE**
11. Google analytics shall be used. **ON TRACK**
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. **ON TRACK**
13. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI. **DONE**
14. Site security: basic best practices shall be applied (as covered in the class) for main data items. **DONE**
15. Media formats shall be standard as used in the market today. **DONE**
16. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development. **DONE**
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). **DONE**

Product Screenshots:

Figure 1. Main Page

Figure 2. About us page

Figure 3. SFSU Map page

Figure 4. Empty “My Page” when logged out.

Figure 5. Log In Page

Figure 6. Register Page

Figure 7. Message Center Page

Figure 8. Posts Page

Figure 9. Example Post Page

Figure 10. Message Prompt for Seller page

Figure 11. Post your item page

Figure 12. Demo of filled post item page.

Figure 13. Demonstration of search and drop down categories.

Figure 14. Demonstration of search with filter in action

Figure 15. Item Page displaying title, sold by, price, description, and contact.

Figure 16. Message for example pen.

Figure 17. My Page - Messages

Figure 18. My Page - Posts

Database Organization:

Categories:

id	name
1	Books
5	Class Equipment
4	Clothes
7	Kitchen
3	School Supplies
6	Sports
2	Technology
NULL	NULL

Messages:

id	text	productId	buyerId	created
1	i would like this book	1	5	2022-05-09 08:43:47
2	message for this book	33	8	2022-05-10 00:54:23
3	message to myself	33	5	2022-05-10 00:56:19
NULL	NULL	NULL	NULL	NULL

Products:

id	title	description	categoryId	photopath	thumbnail	created	userId	price	status
1	Cool Book	This is a great read	1	public\assets\img\upload\myFirstCodingBook.jpg	public\assets\img\upload\myFirstCodingBook.jpg	0000-00-00 00:00:00	1	5	0
2	Brightly ...	These are brand n...	3	public\assests\img\upload\	public\assets\img\upload\coloredPencils.jpg	0000-00-00 00:00:00	3	50	0
3	Used Lap...	The camera is in a ...	2	public\assets\img\upload\badCamera.jpg	public\assets\img\upload\badCamera.jpg	0000-00-00 00:00:00	3	100	0
4	My lucky ...	This shirt is in grea...	4	public\assets\img\upload\coolShirt.jpg	public\assets\img\upload\coolShirt.jpg	0000-00-00 00:00:00	4	24	0
5	Lab Coat	I used this for a c...	5	public\assets\img\upload\labCoat.jpg	public\assets\img\upload\labCoat.jpg	0000-00-00 00:00:00	4	30	0
12	1984	Selling this book. ...	1	public\assets\img\upload\ddfb2b747269a53914...	public/assets/img/upload/thumbnail-ddfb2b747...	2022-04-08 05:29:22	3	20	1
13	SFSU Ho...	Doesn't fit me any...	4	public\assets\img\upload\ac9aa514f7506c8522...	public/assets/img/upload/thumbnail-ac9aa514f7...	2022-04-08 08:36:01	4	30	0
14	Football	Very cheap football	6	public\assets\img\upload\a0aa8c83c384c3522a...	public/assets/img/upload/thumbnail-a0aa8c83c...	2022-04-09 18:14:21	4	5	0
15	Rice Coo...	High-end rice cook...	7	public\assets\img\upload\d18740c997884a7a48...	public/assets/img/upload/thumbnail-d18740c99...	2022-04-11 21:59:03	4	150	0
16	Used He...	Used numerous ti...	2	public\assets\img\upload\857dc1f274b928c80b...	public/assets/img/upload/thumbnail-857dc1f274...	2022-04-13 18:51:14	2	225	0
17	SFSU Shi...	Hello, I am trying t...	4	public\assets\img\upload\8aa7bffa991c08fb573...	public/assets/img/upload/thumbnail-8aa7bffa99...	2022-04-13 19:49:29	1	123	1
18	Used iPad	I don't need this a...	2	public\assets\img\upload\640eb25b304cc009b7...	public/assets/img/upload/thumbnail-640eb25b3...	2022-04-13 19:51:55	1	192	1
19	12-Piece ...	Have spoons if an...	7	public\assets\img\upload\db9f39b050d2bee3cb...	public/assets/img/upload/thumbnail-db9f39b05...	2022-04-13 20:52:48	3	89	1
20	Pencil Case	Pencil Case	3	public\assets\img\upload\74a1410451b06dfa8f...	public/assets/img/upload/thumbnail-74a141045...	2022-04-15 08:59:26	3	23	1
21	Hello	31231as	1	public\assets\img\upload\61fd97fd5b4b464926...	public/assets/img/upload/thumbnail-61fd97fd5b...	2022-04-17 00:03:18	3	12	1

Users:

Users' passwords were encrypted after userId 4

Admin is currently not used

id	username	password	email	created	admin
2	user2	test456	user@name.com	2022-03-14 00:00:00	0
3	MyOwnUsername	password123	own@mail.com	0000-00-00 00:00:00	0
4	Skiiirt	myPassword123	yes@mail.com	0000-00-00 00:00:00	0
5	vicente	$2b$15$HOEorRT02gCBfEdavAWXpe4U2BBCKk...	vpericone@mail.sfsu.edu	2022-04-21 01:34:41	0
6	test90	$2b$15$W6qkJtatrhMLJZ4rQyRoM.127TsSY6/....	test90@test.com	2022-04-22 01:24:20	0
7	test123	$2b$15$z7R93bOFEtYYwCragVdot.KWHRM3me...	mail@test.com	2022-04-28 16:38:39	0
8	messsage	$2b$15$zsqV18Gk3YajZU.3/pf9K.MjjjABRkU6eI...	messageMail@mail.com	2022-05-09 23:59:27	0
9	amir	$2b$15$bgpGuoEqwffg0J02UrTzK.OGNQJpoVcf...	a@sfsu.edu	2022-05-17 04:50:43	0
10	brian	$2b$15$yXVH5uHa47CCYP.NTbyvpeBEktqAM0s...	b@sfsu.edu	2022-05-17 23:04:05	0
11	username1	$2b$15$.Qxh00GFXBHtGYC/wc9k6.5lm5OvRN0...	asamir@mail.sfsu.edu	2022-05-19 16:41:48	0
15	username2	$2b$15$ghkHWXWMaxv1jVtVgCRz4e17s2FgO7...	email@mail.sfsu.edu	2022-05-19 17:06:24	0
16	fakemaan	$2b$15$R1rLLJC8ifjHYyG9JigTNe3ZAn8g/wmv6...	fakeman@sfsu.edu	2022-05-20 00:12:05	0
17	sarah2000	$2b$15$EE3ohQc1dlll2TsWiTPoQuhrUGBuGJLHg...	sarah2000@gmail.com	2022-05-20 02:59:04	0
18	kayvaun123	$2b$15$vXMKFguGcFQ4YfAjmZWtY.DyNt5XN9...	kayvaun123@gmail.com	2022-05-21 05:08:50	0
NULL	NULL	NULL	NULL	NULL	NULL

Github organization:

a) Branches in our team GitHub:

- main (master)
- Development
- QA
- feature/login-reg
- feature/messaging
- feature/my-page
- feature/post
- hotfixes
- dev
- kayvaun

Access to master(main) branch : Everyone had the access to master branch but the merging to the master branch was strictly decided after code reviews, no conflicts, and proper merge requests and was controlled with permission from the team lead. Code was merged into master branch when all the bugs are fixed for the most recent update in the development branch. Only development branch can be merged with the master branch.

b) Top level folders in GitHub

- **Milestones:** The milestone folder contains all 5 documentation i.e M1-5. It contains the complete details and updates at every stage in our development process. These documents also show our build process and the idea behind GatorExpress.

- **application:** This folder contains the main source code of our web application. It has public and server folders which contains the front-end and back-end files.
  → **public:** This folder contains all the assets files, css code, javascript code, and handlebar files for the front end. These folders further have subfolders to maintain various layouts, partials, images, and scripts.
  → **server:** This folder contains folders required for the database and backend of the web application. It contains config, helpers, middleware, models and routes. These folders further have subfolders to maintain database, debugging & error scripts, middleware scripts, and routes to multiple end points.
- **credentials:** The purpose of this folder is to store all credentials needed to log into our server and databases. The main reasons for this is logging the servers and databases to check code and functionality of the application.

c) Screenshot of Team GitHub Home Page

Google analytics stats plot for your WWW site

Project management:

Trello Workspace for Milestone 3

We used *Trello* to monitor progress on all tasks for our project. We categorized tasks based on their domain to make it easier for members of each team to understand which tasks they were responsible for. Any tasks which needed to be improved on also had their own section. This was especially useful for implementing any suggestions made by our users (Professor Feedback). Labels were added to each task to describe that task's level of importance and its status. Tasks which needed to be completed before a set deadline also displayed the corresponding date, so that these tasks could be prioritized. Any time a task was completed and required no further improvements, it would be moved to the "Resolved" section, so that all team members can refer to them during our Scrum meetings.

Discord Channel Displaying Main Tasks

Additionally, we used *Discord* as our primary channel of communication between team members. Within the Discord server, team members can post and view messages relating to the entire project, or a specific team. Each member was also assigned a role, so that they can be notified automatically when a message was sent in a channel pertaining to their role. Resources and recordings of our Scrum meetings were also uploaded to their own channels, so that members can refer to them easily for assistance on their tasks. Finally, general tasks pertaining to the entire team would be uploaded to the to-do channel in addition to the Trello workspace mentioned previously.

Team member self assessment and contributions

Amir Modan:

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

AM

Amir Modan

1

To: Dev Hemal Soni; Kayvaun Jonathan Khoshkhou; Vicente Yazmil Pericone; Brian Christopher Gorospe Cheng; Majid Samir

Wed 5/18/2022 10:29 PM

Hello everyone,

Throughout this project, my contributions were as follows:

- Enforced Scrum methodology by reviewing team progress, issues, and plans on a recurrent basis.
- Delegated tasks to all team members based on relevant expertise and ensured that they were completed before a target deadline.
- Reviewed instructor feedback with team and ensured that all suggestions were implemented in the next iteration.
- Formatted, reviewed, and published all milestones.
- Designed starter layout files for various pages on the horizontal prototype.
- Assisted in formal QA on application.
- Assisted in designing Use Cases.

Number of submissions made to Dev. branch: 19

The main challenge for me was in deciding which tasks/responsibilities would fall to which team member. What made this difficult was that each team member had their own strengths, their own prior experience, and their own interests. Using myself as an example, I am most comfortable with mobile development and am rather inexperienced in both Front and Back-End web development. For this reason, it was crucial that I take into account the background of each member of our team rather than blindly assigning tasks which would've been easier. By assigning tasks to those who already have relevant knowledge/experience, the task was more likely to be completed sooner, with higher quality, and with fewer bugs.

Although we were able to complete the project within the allotted time by utilizing Scrum methodology, I feel as though as I should've also reiterated on the "big picture" during each meeting. That is to say, rather than only focus on completing the tasks given to us in each milestone, I should've also noted our progress in achieving both the functional and non-functional requirements that we had defined at the beginning of the project. As a result, we had left out some easy-to-miss requirements such as the approval of posts and had to implement this late in the cycle, even though we could've done so much earlier. Also, by not reflecting on functional/non-functional requirements in meetings, we missed the opportunity to revise our requirements in response to the needs of the user, a key component of modern Agile software development.

Best Regards,
Amir

Vicente Pericone:

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

VP

Vicente Yazmil Pericone

To: Amir Modan; Kayvaun Jonathan Khoshkhou; Dev Hemal Soni; Brian Christopher Gorospe Cheng; Majid Samir

Fri 5/20/2022 3:28 PM

Hello everyone,

Throughout this project, my contributions were as follows:

- Deploying the web application remotely using AWS EC2 Instance
- Deploying the MySQL database from an AWS remote server
- Delegated tasks to backend team members
- Designed the database architecture using MySQL
- Created Messaging functionality on the backend
- Reviewed a pull request using Github's review functionality

Number of submissions made to Dev. branch: 32

One of the main challenges that I encountered throughout the project is managing my time well and keeping on a good pace throughout the development cycle. I had four other CS classes and it made managing my time difficult. Another difficulty I had was delegating tasks to other backend team members. It was hard for me to choose tasks that were well suited to a specific team member, so I instead posted the tasks that needed to get done and let the members themselves pick up the tasks if they choose to do so. Another challenge for me was deploying the application on our remote AWS instance. There were a lot of issues I ran into and there were a lot of intricacies I was not aware of before starting this project when trying to deploy our software.

After experiencing this class and what it was like to work on a software engineering team at a professional level, there are some things that I will do better the next time I'm on a project like this. One thing I would do better is to create weekly soft deadlines for myself and the rest of the team so that way we always have a goal that we're working towards. I believe that this would help the team stay more on track for our final goal and helps break down large daunting tasks into smaller manageable ones. Another thing I would do better is using Trello in a more efficient way. I used Trello as a task board to post anything that I saw that needs to get done. I could've used the program's features to delegate backend tasks to other group members so we would all know who was working on what. One last thing I could've done better is to review the functional and non-functional specifications more often throughout the development process because I realized there were some things we overlooked until the very end of our development.

Best Regards,
Vicente

Dev Soni:

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

DS

Dev Hemal Soni

To: Vicente Yazmil Pericone; Amir Modan; Kayvaun Jonathan Khoshkhou; Brian Christopher Gorospe Cheng; Majid Samir

Fri 5/20/2022 6:01 PM

Hello everyone,

Throughout this project, **my contributions** were as follows:

- Created initial structure of the website by developing wireframes using draw.io
- Converted the wireframes to prototypes and designed the UI, following the updates
- Reviewed instructor feedback with the team and ensured that all suggestions were implemented in the next iteration
- Reviewed team code on GitHub and made necessary changes throughout the development process
- Contributed to milestones documentation 1 to 5, and made necessary updates
- Fixed various UI components to meet usability standards and web compatibility
- Developed a Usability Test plan and a list of all Functional Requirements
- Followed Trello project cards to meet deadlines

Number of submissions made to Dev. Branch: 20

Challenges I faced: There were a few challenges throughout the development of GatorExpress web applications. One of them was managing time, for the assigned tasks, in my schedule due to a load of multiple projects. Other challenge also includes coming up with new ideas and new solutions to the problems that arises every week. Making multiple design changes to meet our design needs and follow the best HCI methodologies. Reducing the number of clicks to navigate throughout the website was also quite tedious. However, we came together as a team and integrated all the ideas in this project.

Improvements next time: I have learnt a lot of new technologies and methodologies relating to software engineering in this class. It also gave me an overall idea and practice on how to work in a team setting following all the guidelines and effective ways to come up with solutions among teammates. Some improvements I would do next time is taking more time to work on color palettes, coding the overall design in the front end and adding intuitive instructions for navigating. The SCRUM methodology was the most effective and has become my favorite way to work in a team setting and get all the tasks completed with new updates launching every week. Discussions can be improved and pair programming can be made more efficient as well.

Thank you.

Sincerely,
Dev Soni

Brian Cheng:

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

B

Brian Christopher Gorospe Cheng

To: Dev Hemal Soni; Vicente Yazmil Pericone; Amir Modan; Kayvaun Jonathan Khoshkhou; Majid Samir

Sat 5/21/2022 11:13 AM

Hello everyone,

Throughout this project, my contributions were as follows:

- Developed the vertical prototype allowing our application to retrieve data from the database and creating the results page
- Created the nav bar with containing a text and dropdown menu for categories
- Initialized routes for our application
- Implemented the Post function for both front-end and back-end
- Organized structure of our modules
- Added header and inline documentation to our code
- Made Header, Post page, and Results page responsive so application is viewable on mobile
- Created pages for individual posts
- Connected My Posts page to the database
- Created message modals for users to quickly contact the seller
- Remade our GitHub structure for group members to easily see where changes were made
- Suggested different ideas through Discord and Trello to improve usability of our application

Number of submissions made to Dev. Branch: **35**

Challenges:

- **Lack of Javascript Knowledge**: Coming into this course, I was not proficient in this language since my only exposure to this was in CSC 317 where I had a difficult time understanding the concepts to begin with. To tackle this, I had to review everything from CSC 317, even recreating my term project to better equip myself for this course. With that I also learned MySQL on YouTube to understand how to create queries for our Search function. Looking back, this project initially very intimidating, but after numerous sessions of studying Javascript and other programming languages, I can see that I have benefitted from this as I now have a better understanding of the concepts of software development and was able to contribute much more than I anticipated.
- **Developing the Search Function**: The tutorial given for the Search function on Milestone 2 used the "mysql" library and used ejs as the viewing engine.

First setting up the viewing engine was difficult but understanding the tutorial instructions and then translating it to the "mysql2" syntax proved to be a one of the biggest challenges I had to face.

- **Considering Different Use Cases**: Although, I had our program working for the most part, I also had to consider what can go wrong with our application. For example, our post function should not pass in empty fields into our data base because that will disrupt our application. With this, I had to create validation for both front-end and back-end. This by itself was a challenge. However, after seeing how many different ways our program could go wrong made me realize that there is so much to consider when it comes to software engineering.

Improvements:

- **Asking for Help**: Most of the time, I worked on my own, and whenever I ran into problems, I would try to fix it by myself, not going to the group, or other teams, or even the CTO. I believe that most of my time trying to figure everything out on my own could have been save by simply asking help from others.
- **Coordination**: Everyone in our group has different ideas and may clash with one another. I believe it is important to ensure everyone is on the same page and that our approaches do not conflict. With this, I was not completely aware if everyone completely understood my method of approaching our application. For next time, I think I can improve on making sure everyone is caught up so we can all work as a team.
- **Improved Task Delegation**: Furthermore, I do not believe that everyone on our team had a specific task to do. For me, a majority of what I produced resulted from spontaneous outbreaks, shifting from back-end to front-end and moving around everywhere not according to plan. This can be reflected on our GitHub since I worked on different functions simultaneously. An approach like this becomes problematic and invites conflict among our individual ideas. For next time, I think that it is important for each of our group members, including myself, to understand our different tasks so everyone can contribute to their fullest degree.

Thank you!

Best regards,
Brian Cheng

Kayvaun Khoshkhou:

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

KK

Kayvaun Jonathan Khoshkhou

To: Brian Christopher Gorospe Cheng; Dev Hemal Soni; Amir Modan; Vicente Yazmil Pericone; Majid Samir

Sat 5/21/2022 1:16 PM

Hey everyone,

Throughout this project, my contributions were as follows:

- Assisted in the development of Executive Summaries
- Developed a Competitive analysis of our application in regards to high end e-commerce sites like Amazon, eBay, Craigslist, and Facebook
- Created UI Storyboards use cases for different scenarios on our website
- Supported the QA plan with Pass/Fail testing
- Helped create and visualize Gator Express pages
- Reviewed instructor feedback on Milestones and implemented fixes on each rendition of updates
- Captured and refined product screenshots with descriptions

Number of submissions made to Dev. Branch: **3**

Challenges: This project contained a lot of secret challenges that we only discovered once we started it. One of the most challenging things was communication. At the beginning things were very rough, not a lot of questions were asked, and a lot of things were left unexplained in full detail. As the project went on, I noticed questions were easier to ask and there were a lot more of them. If someone wanted more of an explanation on a subject, they were not very hesitant to ask because we'd all gotten more comfortable knowing each other in the 2nd half of the course. Despite having access to zoom, and discord, it can still be difficult to communicate and have everyone on at the same time. Having that time slot after class lecture helped tremendously and without that I don't think this project would have progressed as smoothly as it did for us.

Improvements: In terms of improvement, personally I learned a ton of new stuff from assisting and observing with code. I wasn't allotted any individual tasks because I lacked the skill compared to my peers but if I was allotted a task, I'm sure I could have figured it out especially in a team environment where I could ask for help with certain matters. As a measure of improvement, I would be prepared to

reach out more and ask to be delegated more difficult tasks because of my newfound experience in this project. In terms of improvements on communication, it's up to us as members of a team to be approachable and understanding and I feel as though everyone on this team was amazing. I did not feel intimidated or uncomfortable and I don't think anyone else did either towards the end of the project. The only problem is getting to that state of comfort faster so that we can have more crystal-clear communication sooner along the timeline. A couple icebreakers or a group outing would be tremendously helpful in getting this done. Though since we are just coming out of the pandemic and getting things back to normal this would have been seen as rather difficult at the beginning of the semester, but hopefully as we move forward in our careers we will see more and more of these team-based environments and break out of our shells much quicker.

Thank you very much for all your hard work, assistance, and troubleshooting prowess.

Best,
Kayvaun Khoshkhou

Majid Samir

CSC 648-848 Spring 2022 Milestone 5 Team 03 - Self Assessment

Majid Samir

To: Amir Modan; Vicente Yazmil Pericone; Kayvaun Jonathan Khoshkhou; Dev Hemal Soni; Brian Christopher Gorospe Cheng

Mon 5/23/2022 9:32 AM

Hello,

My contribution to this project were:

- Setting up the github page and sending links to everyone in the group
- Help with choosing the framework for the app
- Help sketching the skeleton of the app including use cases and wireframe
- Help choosing template for the About me page
- Testing functionality of app features
- Contribution in filling out documentation for the app
- Typed feed back into a document so that it is easier to check each remark

The challenge I had was mainly technical, I was a part of the backend team, but did not learn the framework quick enough to contribute in the implementation of functional requirements. Luckily we had a backend lead and another backend engineer with a strong background that were successful in implementing the app features.

Cheers

Majid