

Software Engineering (SE) Course CSC 648-848

Spring 2022

Class Team Project

**WWW site for Buy/sell/exchange exclusively for SFSU students,
staff and faculty**

Gator BnS

[**http://54.219.192.219/**](http://54.219.192.219/)

Team 07

Nyan Tun - Project Manager/Team Lead - ntun@mail.sfsu.edu

Jimmy Nguyen - Front End Lead

Anish Somisetty - Back End Lead

Kyle Chen - GitHub Master & Back End

Annie Liao - UI & Front End

Matthew McAuley - UI & Front End

Milestone 5

May 21 2022

Date Submitted	May 21 2022
Date Revised	

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Product summary:

Name of the product: Gator BnS

Describe your product: Gator BnS is an e-commerce website specifically for users who can only be SFSU students, faculty, and staff members to be able to buy and sell items. There will be categories ranging from Books, Electronics & Media, Clothing, Home, Health & Beauty, and Supplies. Providing an organized, categorized assortment of items, users can easily search, filter, and sort for the items they are looking for. Moreover, it is important to note that users will be able to have a sense of safety and familiarity using the app because it is exclusive to SFSU students, staff, and faculty only. We are oriented towards connecting buyers and sellers through one way messaging. Buyer sends a message to the seller and they will contact off-site to complete their transaction. Users can efficiently get what they need by convenient means like meet-ups on campus locally. The goal is not to directly sell, but rather allow people to make contact and exchange.

Itemized list of ALL major committed functions (your final P1 list):

1. Search and browse
2. Sort results by price
3. Login and logout
4. Register an account
5. Logged in users can post an item for sale
6. Logged in users can contact seller
7. Admin is required to approve all items before it goes live
8. Admin is required to delete users and posts violating ToS
9. My Page shows active posts created by user and inbox
10. Logged in users can delete a post they created

URL to your product: <http://54.219.192.219/>

Milestone documents – M1-M4:

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Milestone 1

March 04 2022

Date Submitted	March 04 2022
Date Revised	March 18 2022

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1. Executive Summary:

Due to the variety in curriculum at SFSU, there is always a demand for specific materials and equipment for classes in order for courses to be conducted properly. However, a common complaint is that buying directly from an official source is too costly. To help provide enough supply for this need, we want to create an app named “Gator BnS”, an e-commerce website to allow users to be able to sell and purchase items. In addition, users are not limited to selling only class related material. There will be categories ranging from Books, Electronics & Media, Clothing, Home, Health & Beauty and Supplies. Providing an organized, categorized assortment of items, users can easily search, filter, and sort for the items they are looking for. Moreover, it is important to note that users will be able to have a sense of safety and familiarity using the app because it is exclusive to SFSU students, staff and faculty only. We are oriented towards connecting buyers and sellers through one way messaging. It'll be straightforward. Buyer sends a message to the seller and they will contact off-site to complete their transaction. Users can efficiently get what they need by convenient means like meet-ups on campus locally.

Team 07 is dedicated to build a web-application named Gator BnS, to cater daily necessities to SFSU students, faculty and staff alike. Our goal is to help save time and money by providing SFSU students, faculty and staff an additional avenue to obtain necessary items for their day-to-day lives without resorting to first-party prices. The application will be carefully moderated by the team so users will have the best possible experience using Gator BnS. Posts would have to go over review and approval before it could show up to the public.

2. Personae and main Use Cases:

Personae:

Bob Graduate student at SFSU	<p>Short Bio: Bob is a graduate student at SFSU who is taking classes that are only available remotely online. He is currently living in San Jose. During his undergrad years, he purchased books from the bookstore full price for previous courses over several years.</p> <p>Goals and Scenario: Bob has made an account on the app before but he has never used it to make a purchase or sale. He preferred to buy books in brand new condition. He is now looking to sell his old textbooks that were sitting on the shelf for years.</p>
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<p>Anne Full-time Undergraduate student at SFSU</p>	<p>Short Bio: Anne is a full-time undergraduate student at SFSU studying Mathematics. Due to financial needs, she searches for inexpensive options when purchasing anything.</p> <p>Goals and Scenario: Anne has recently moved to a new apartment next to SFSU and is currently looking to buy some furniture. Before Anne goes to IKEA looking for new furniture, she wants to search for inexpensive options and doesn't mind buying used furniture as long as the condition is still like new.</p>
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<p>Susan New Professor at SFSU Faculty Member</p>	<p>Short Bio: Susan is a new Physics professor at SFSU. She has minimal experience using web applications. It is her first time purchasing something online. She is really old school and always preferred to go in-person at shops to buy what she needed.</p> <p>Goals and Scenario: Susan wants to purchase some Physics lab supplies and equipment for her very first class at SFSU. Her colleagues at SFSU recommended her to check out Gator BnS so she can save money and be resourceful, especially since Physics lab equipment sometimes can be really expensive.</p>
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<p>Timothy Campus security at SFSU Staff Member</p>	<p>Short Bio: Timothy used to be a student at SFSU but has graduated for several years now. He recently joined the security department as an officer and is now an official staff member of SFSU.</p> <p>Goals and Scenario: Timothy has used the app many times before when he was a student at SFSU. He currently has an existing post and he is selling his Playstation 5 along with some video games. He is waiting for someone to contact him to purchase the item. When he gets contacted, he plans to do a meet-up on campus to sell his items.</p>
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<p>Jimmy Admin at Gator BnS</p>	<p>Short Bio: Jimmy is a senior admin from Gator BnS. He has experience with content moderation.</p> <p>Goals and Scenario: Jimmy is ready for another day of work. His job is to moderate the web app Gator BnS. He needs to approve posts, disapprove any inappropriate posts and take any actions to the user if necessary.</p>
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Main Use Cases:

Use Case 1: Graduate student wants to sell old textbooks

Bob is a graduate student at SFSU and is currently taking classes online remotely. While cleaning up his room, he noticed a lot of old textbooks and required readings on the shelf from previous courses over several years. He figured it would be a good time now to sell the books for some extra cash. He logs in on the app with his existing account and clicks the “Create a post” tab from the navigation bar to create a new post. He fills in the required fields to create a new post. He writes down the textbook name for the post name, \$20 for price, “Like new” for condition, selects “Books” for category and writes down his phone number in the contact info. In the description box, Bob writes down details about the book and mentions shipping only because he is currently living in San Jose and is not available to do meet-ups in SF. Lastly, he uploads an image of the textbook. He clicks submit and his listing is now shown in the home page that displays the most recent listings.

Use Case 2: Full-time Undergraduate student searching for furniture

Anne is a full-time undergraduate student at SFSU. She recently moved to a new apartment next to SFSU and wants to browse for some furniture on Gator BnS. She goes on the Gator BnS website and starts browsing without logging in. She selects the “Home” category in the dropdown menu next to the search bar and enters without a search keyboard. Anne sees all the posts categorized as “Home”. She wants to narrow down her search so she clicks the “Filter and Sort” button to filter the posts by price range so she enters \$1 to \$50 for the price range and filters by condition “New” and “Like new”. She also selects sort by: “Price: Low to High”. Anne submits and she sees posts filtered by the price ranging \$1 to \$50, condition “Like new” and posts are sorted by prices in descending order.

Use Case 3: Faculty member is a new user

Susan is a new Physics professor at SFSU and she is interested in buying some Physics lab supplies and equipment for her very first class at SFSU. She has never used the app before but was recommended to check it out. The first thing Susan tries to do is search “Physics” and receive a lot of results but she wants to narrow down her search so Susan clicks on the dropdown menu next to the search bar and selects the “Supplies” option. She found a post selling several lab equipment that she is interested in and however, she didn’t see any contact information written on the post. Therefore, Susan clicks on the “Contact seller” but it gives her a warning saying she must sign in, in order to message the seller. Susan needs to make an account so she clicks on “Sign up” at the navigation bar. She fills in the required fields to create an account. It is simple and straightforward. She wrote down a username, a lengthy password, confirmed password and wrote her personal email address. She clicks submit but the sign up was denied because the email doesn’t end with “sfsu.edu”. She quickly changed her info and entered her SFSU email instead of her personal email. Susan has successfully made an account and logged in.

Use Case 4: Staff member sold his Playstation 5 and video games

Timothy is a staff member at SFSU and is part of the security crew. He used to be a student at SFSU and has an existing account. He posted some video games and Playstation 5 for sale on Gators BnS. Few days later, he logged in and clicked “Inbox” to check his inbox page and saw someone interested had sent him a message that included their contact information. Timothy calls the buyer’s phone number that was written in the message, negotiates the price and makes an appointment to meet up on campus. He met up with the buyer and sold the Playstation 5 along with his video games. So now, Timothy logged in to the website and clicked the “Account” tab to where he can see all his active posts. Since Timothy has sold the item already, he needs to manually delete his post so no more people will contact him further. He clicks the delete button on the post and confirms the deletion of the post.

Use Case 5: Admin needs to moderate the website

Jimmy is an admin at Gator BnS. It’s another hectic day and he needs to moderate the website. To moderate the website, he doesn’t necessarily have to sign in. Everything admin-related is done through the workbench he has access to. Jimmy opens the workbench and opens the MYSQL connection for the Gator BnS database. He runs the query “Select * from Posts” to view all posts made by users. Posts with the attribute “approval” equal to 0 means the post has yet to be approved. He simply changes the value to 1 to approve the post if nothing is

wrong with it. Once approved, the post should be live. He later sees a post that includes an inappropriate description so he simply deletes the post from the result grid by right clicking it and selecting “Delete Row(s)”.

3. List of main data items and entities:

a. Items and Entities

Posts : Any student, staff or faculty member can post an item up for sale.

Posts have several categories which include books, electronics & media, supplies & tools, home, clothing and health & beauty.

1. description: will store the description of the item(s) that the seller is listing.
 2. title: store the name of the post
 3. condition: store the condition of the item limited to “Like New”, “New” and “Used”
 4. price: store the price of each post/product the seller is listing.
 5. image: an image of the item is required
 6. category: will be used to store the category of each post and be used to filter/categorize (e.g. Books, Electronics & Media, etc.)
- ii. Messages : Users are able to contact sellers through in-site messaging. It is only one way messaging so only a user can send a message to the seller. Sellers would need to read the message and contact them through the contact information that was given on the message.
 - iii. Email : This will be used to store the registered user’s email which will be limited to sfsu email only and will also be used to sign in and sign up to our webpage.
 - iv. Username : Username is unique for every user. This is required to sign in/sign up.
 - v. Password : Password will be required to sign in/sign up to the website with limitations such as a certain number of letters and unique characters, etc.

b. Type of Users

- i. Registered users : The users entity holds personal information of all registered users. Users can only be SFSU staff, faculty or students. Every registered user has the same permission. They are able to post items for sale and they can also purchase from sellers. Users are able to contact sellers through the in-site messaging system and sellers are able to respond.
- ii. Non-registered users: Non-registered users can browse and search for the contents and products but will not have access to message or buy before

being registered as an user. Non-registered users would also be limited from listing items or seeing the other registered users personal information.

- iii. Admins : Administrators of the website have the permissions to approve posted items before it can go live. They are also responsible for deleting any appropriate items or users.

4. Initial list of functional requirements:

1. Any user shall be able to register an account successfully using an sfsu.edu mail.
2. Any user shall be able to see the home page, search result pages, specific post pages, about page, sign in page and register page without signing in.
3. Any user shall be able to search without signing in.
4. Any user shall be able to filter their search by price range.
5. Any user shall be able to filter their search by condition (e.g. Used, New).
6. Any user shall be able to sort their search by price (e.g. Prices: Low to High).
7. Any user shall be able to narrow down their search by categories (e.g. Books, Health & Beauty, etc.)
8. Registered users shall be able to sign in and sign out successfully.
9. Registered users shall be able to create a post.
10. Registered users shall be able to see all their active posts they have created in the account page.
11. Registered users shall be able to delete posts they have created.
12. Registered users shall be able to contact sellers through in-site messaging one way.
13. Registered users shall be able to see a history of messages they have sent out.
14. Registered users shall be able to see a history of messages they received.
15. Registered users shall be able to change their username.
16. Registered users shall be able to change their password.
17. Non-registered users shall receive a pop-up telling them to sign in when they click Contact Seller in an individual post.
18. Admins shall be able to delete inappropriate users.
19. Admins shall be able to review and approve listings created by users before it can go live.
20. Admins shall be able to delete posts deemed inappropriate or obsolete.

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 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
- 16. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
- 17. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Spring 2022. For Demonstration Only" at the top of the WWW page nav bar. (Important so as to not confuse this with a real application).

6. Competitive analysis:

Feature	Competitor A (Craigslist)	Competitor B (OfferUp)	Competitor C (Etsy)	Our Product (Gator BnS)
Efficiency	+	-	-	++
Buy and sell	+	+	+	+
Safety & Familiarity (SFSU Campus Pick-Up)	-	-	-	++
Search Engine	+	+	+	+

In comparison to our competitors, our product will offer the familiarity and safety that all the users including buyers and sellers will be identified as SFSU affiliates before being registered with us. It will only allow users with the SFSU email tag to register and all users need to be registered before any contact with the sellers regarding the product. In addition, there will be a direct inquiry from the buyer-to-seller system which will allow a more consistent and streamlined experience for both parties, versus the free-for-all nature of other sites for contacting one another. Gator BnS will provide the most convenient and effective way of buying and selling for users as they could have meet-ups or pick up at SFSU campus as a desirable option. Therefore, the buyers will have the sense of security and the familiarity of the pick up location, also the convenience and efficiency of choosing pick up location around SFSU campus compared to other competitors like Craigslist or OfferUp. It will provide the most efficiency designed for SFSU and for the convenience of users-centric.

7. High-level system architecture and technologies used:

- ❖ Server Host: Amazon Web Services (AWS) 2 GB RAM
- ❖ Operating System: Linux (Ubuntu)
- ❖ Database: MySQL 8.0
- ❖ Web Server: Nginx
- ❖ Server-Side Language: Express.JS & Handlebars
- ❖ Additional Technologies:
 - Web Framework: Bootstrap
 - IDE: Visual Studio Code, IntelliJ
 - Web Analytics: Google Analytics
 - SASS: 3.5.5

8. Team and roles:

- ❖ Nyan Tun - Project Manager/Team Lead/Back End
- ❖ Jimmy Nguyen - Front End Lead
- ❖ Anish Somisetty - Back End Lead
- ❖ Kyle Chen - GitHub Master & Back End
- ❖ Annie Liao - UI & Front End
- ❖ Matthew McAuley - UI & Front 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
➤ DONE
- ❖ Team lead ensured that all team members read the final M1 and agree/understand it before submission
➤ DONE
- ❖ Github is organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)
➤ DONE

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Matthew McAuley - UI & Front End

Milestone 2

March 20 2022

Date Submitted	March 19 2022
Date Revised	April 12 2022

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1. Executive Summary:

Due to the variety in curriculum at SFSU, there is always a demand for specific materials and equipment for classes in order for courses to be conducted properly. However, a common complaint is that buying directly from an official source is too costly. To help provide enough supply for this need, we want to create an app named “Gator BnS.” The app is an e-commerce website specifically for users who can only be SFSU students, faculty, and staff members to be able to buy and sell items. In addition, users are not limited to selling only class related material. There will be categories ranging from Books, Electronics & Media, Clothing, Home, Health & Beauty, and Supplies. Providing an organized, categorized assortment of items, users can easily search, filter, and sort for the items they are looking for. Moreover, it is important to note that users will be able to have a sense of safety and familiarity using the app because it is exclusive to SFSU students, staff, and faculty only. We are oriented towards connecting buyers and sellers through one way messaging. Buyer sends a message to the seller and they will contact off-site to complete their transaction. Users can efficiently get what they need by convenient means like meet-ups on campus locally.

Team 07 is dedicated to build a web-application named Gator BnS, to cater daily necessities to SFSU students, faculty, and staff alike. Our goal is to help save time and money by providing SFSU students, faculty, and staff an additional avenue to obtain necessary items for their day-to-day lives without resorting to first-party prices. The application will be carefully moderated by the team so users will have the best possible experience using Gator BnS. Posts would have to go over review and approval before it could show up to the public.

2. List of main data items and entities:

a. Items and Entities

- i. Posts: Any student, staff, or faculty member can post an item up for sale. Posts have several categories which include Books, Electronics & Media, Supplies, Home, Clothing, and Health & Beauty.
 1. description: description of the item(s) that the seller is listing.
 2. title: name of the post, determined by the user.
 3. id: unique identification number of the post
 4. condition: condition of the item(s) limited to “Like New”, “New”, and “Used”
 5. price: price of the item(s) the seller is listing for sale.
 6. photopath: a larger image of the post
 7. category: the category of the post, used to filter/categorize (e.g. Books, Electronics & Media, etc.)

8. created: the time the post was created at
 9. approval: determines whether the post is approved or not to go live
 - ii. Messages: Users are able to contact sellers through in-site messaging. It is only one way messaging so only a user can send a message to the seller. Sellers would need to read the message and contact them through the contact information that was given on the message. No contact information is needed until the users decide to interact of their own volition.
 1. id: unique identification number of the message
 2. text: the content of the message
 3. created: the time the message was sent
 - iii. Users: Stores the information of all registered users
 1. email: This will be used to store the registered user's email which will be limited to sfsu email only and will also be used to sign in and sign up to our webpage.
 2. username: Identifier attribute that a user can choose as their online pseudonym for posts and interaction with other users.
 3. password: Password will be required to sign in/sign up to the website with limitations such as a certain number of letters and unique characters, etc.
 4. id: unique identification number of the user
- b. Type of Users
- i. Registered user: The users entity holds personal information of all registered users. Users can only be SFSU staff, faculty, or students. Every registered user has the same permissions, being able to post items for sale and also purchase from sellers who are just other users who have posted. Users are able to contact sellers through the in-site messaging system and sellers are able to respond.
 - ii. Non-registered user: Non-registered users can browse and search for the contents and products, but will not have permissions for messaging, posting or inquiring on posts before verifying and registering successfully.
 - iii. Admin : Administrators of the website are required to approve all posted items before it can go live. The admins are required to check and make sure each posting aligns with the policy. They are also required to delete any inappropriate items or users. Admins users will have access to the workbench to see all the MySQL data-tables where they are able to approve and delete entries if they deemed they are not aligned with the policy.

3. Initial list of functional requirements:

Priority 1:

1. Non-Registered Users:

- 1.1. Non-registered users shall be able to browse and search without signing in.
- 1.2. Non-registered users shall be able to sort their search by price (e.g. Prices: Low to High).
- 1.3. Non-registered users shall be able to register an account successfully using only an sfsu.edu mail.
- 1.4. Non-registered users shall be able to narrow down their search by categories (e.g. Books, Health & Beauty, etc.)
- 1.5. Non-registered users shall be able to see the home page, search result pages, about page, sign in page, and register page without signing in.
- 1.6. Non-registered users shall be able to view details of a specific post.
- 1.7. Non-registered users shall receive a pop-up telling them to sign in when they try to message the seller in an individual post.

2. Registered Users:

- 2.1. Registered users shall be able to create a post.
- 2.2. Registered users shall be able to contact sellers through in-site messaging one way.
- 2.3. Registered users shall be able to sign in and sign out successfully.
- 2.4. Registered users shall be able to see a history of messages they received.
- 2.5. Registered users shall be able to see all their active posts they have created in their My Page.

3. Admin Users:

- 3.1. Admin users shall be required to approve posts created by users before it can go live.
- 3.2. Admin users shall be required to delete posts that are deemed inappropriate or obsolete.
- 3.3. Admin users shall be required to delete inappropriate users not aligned with the policy.
- 3.4. Admin users shall be required to use MySQL Workbench to maintain the users and postings.

Priority 2:

2. Registered Users:

- 2.6. Registered users shall be able to delete posts they have created.
- 2.7. Registered users shall be able to see a history of messages they have sent out.

Priority 3:

2. Registered Users:

- 2.8. Registered users shall be able to change their username.
- 2.9. Registered users shall be able to change their password.

4. UI Storyboards for each main use case

Use Case 1: Graduate student wants to sell old textbooks

Bob has a lot of textbooks and required readings from previous courses sitting on the shelf for several years. He figured it would be a good time to sell the books now for some extra cash on Gator BnS. To do so, he needs to first sign in before he can create a new post. Bob goes to the Gator BnS website which directs him to the home page and clicks *Sign In*.

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS Register Sign In

Select a category Search

Buy/sell/exchange website exclusively for SFSU students, staff and faculty.

Some nice image

Most Recent Explore All Image	Books Explore All Books Image	Clothing Explore All Clothing Image	Electronics & Media Explore All Electronics & Media Image
Health & Beauty Explore All Health & Beauty Image	Home Explore All Home Image	Supplies Explore All Supplies Image	New to Gator BnS? <input type="button" value="Create an Account"/>

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Bob already has an existing account on Gator BnS. To sign in, Bob simply needs to enter his login credentials which includes his account *username* and *password*.

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS Register Sign In

Welcome Back!

Username

Password

[Forgot password?](#)

New to Gator BnS? [Sign Up](#)

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After Bob successfully signs in, he is directed back to the Gator BnS home page. He clicks on *Create a Post* from the Navbar which directs him to the Create a Post page.

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS Create a Post My Page About Sign Out

Select a category v Search

Buy/sell/exchange website exclusively for SFSU students, staff and faculty.

Some nice image

Most Recent
[Explore All](#)

Books
[Explore All Books](#)

Clothing
[Explore All Clothing](#)

Electronics & Media
[Explore All Electronics & Media](#)

To create a new post, he needs to enter the required fields which include the *title*, *description*, *price*, *condition*, *category* and an *image* file of the item. After Bob double checks what he wrote and clicks *Create Post* to successfully create the post. It will take up to 24 hours for the post to be approved by an admin.

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only				
Gator BnS	Create a Post	My Page	About	Sign Out
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"><h3 style="text-align: center;">Create a Post</h3><p>* Category : <input style="width: 150px; height: 25px; border: 1px solid black; border-radius: 5px;" type="button" value="Select--"/></p><p>* Title: <input style="width: 150px; height: 25px; border: 1px solid black; border-radius: 5px;" type="text" value="AA S 210 Textbook for sale"/></p><p>* Price: <input style="width: 150px; height: 25px; border: 1px solid black; border-radius: 5px;" type="text" value="\$ 10.00"/></p><p>* Condition: <input style="width: 150px; height: 25px; border: 1px solid black; border-radius: 5px;" type="button" value="Select--"/></p><p>* Description: <input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px;" type="text"/></p><p>* Image: <input style="width: 100px; height: 25px; border: 1px solid black; border-radius: 5px;" type="button" value="Choose File"/> No File Chosen</p><p style="text-align: center;">May take up to 24 hours to be approved.</p><p style="text-align: center;"><input type="button" value="Cancel"/> <input type="button" value="Create Post"/></p></div>				
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Use Case 2: Full-time Undergraduate student searching for furniture

Anne recently moved to a new apartment next to SFSU and she wants to browse for furniture on Gator BnS. Anne is an existing user on Gator BnS but she does not need to sign in to start browsing. Anne has used Gator BnS for a long time so she knows what to do. She goes on the Gator BnS website. She selects *Home* in the drop down menu located at the search bar, types in *Desk* for the search key and enters.

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Gator BnS Register Sign In

Select a category ▼ Search

Buy/sell/exchange website exclusively for SFSU students, staff and faculty.

Some nice image

Most Recent Explore All Image Books Explore All Books Image Clothing Explore All Clothing Image Electronics & Media Explore All Electronics & Media Image

Health & Beauty Explore All Health & Beauty Image Home Explore All Home Image Supplies Explore All Supplies Image

New to Gator BnS? Create an Account

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The wireframe shows the layout of the Gator BnS website. At the top, there's a header with the site name, registration links, and a search bar. Below the header is a placeholder image labeled "Some nice image". The main content area is organized into a grid of categories. The first row contains four boxes: "Most Recent" (with "Explore All" link), "Books" (with "Explore All Books" link), "Clothing" (with "Explore All Clothing" link), and "Electronics & Media" (with "Explore All Electronics & Media" link). The second row contains three boxes: "Health & Beauty" (with "Explore All Health & Beauty" link), "Home" (with "Explore All Home" link), and "Supplies" (with "Explore All Supplies" link). To the right of the "Supplies" box is a sidebar for new users with a "Create an Account" button. At the bottom, there are copyright and navigation links.

This directs Anne to the results page where she received 25 results. She narrows down her search by clicking the sort button and chooses Price: Low to High.

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Gator BnS

Register Sign In

Desk

25 results

Home  Desk 

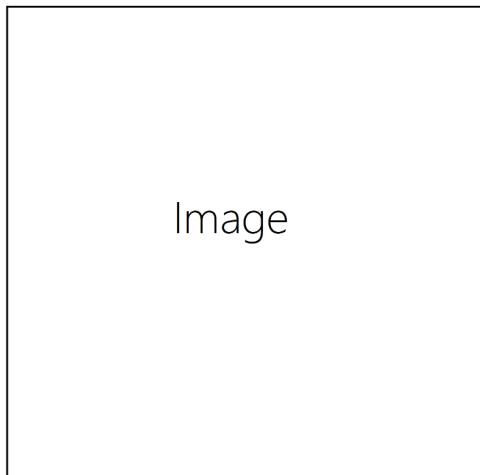
Price: Low to High 

Image Post Name Price					
Image Post Name Price					
Image Post Name Price					

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She came upon this post selling a really nice desk in one post and clicks on it. In the post page, she can see the post *title, price, condition, description* of the item. She could also see the time this post was made by the Seller. She is interested and would like to contact the Seller so she clicks *Contact Seller*.



Post Title

\$100

Posted by user on April 1, 2022

Condition: New

Description: Contact me for more information!

[Contact Seller](#)

Anne clicks on the *Contact Seller* button but just recalled she had to sign in before messaging the seller. She heads to the sign in page, log in and go back to the post page to contact the seller by sending a message.

Message Seller X

Post Name
Date

Type here..

Sign in to message the seller

Use Case 3: Faculty member is a new user

Susan is new Physics professor at SFSU and she was recommended to check out Gator BnS by her colleagues. She goes to the Gator BnS website. Susan wants to look for Physics lab supplies and equipment. She sees these cards at the bottom of the home page. One of them has a label with *Supplies*. Susan clicks on *Explore All Supplies*.

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Gator BnS [Register](#) [Sign In](#)

Select a category

Buy/sell/exchange website exclusively for SFSU students, staff and faculty.

Some nice image

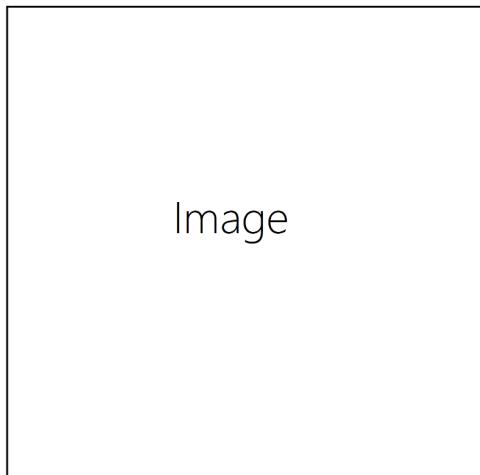
Most Recent Explore All Image	Books Explore All Books Image	Clothing Explore All Clothing Image	Electronics & Media Explore All Electronics & Media Image
Health & Beauty Explore All Health & Beauty Image	Home Explore All Home Image	Supplies Explore All Supplies Image	New to Gator BnS? Create an Account

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After clicking *Explore All Supplies*, it directs her to the results page where she can see all the posts from the Supplies category. She sees 40 results.

The screenshot shows a web application interface for 'Gator BnS'. At the top, there is a header bar with the text 'SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only'. On the right side of the header are 'Register' and 'Sign In' buttons. Below the header, the main content area has a title 'Supplies' with a dropdown menu showing a checkmark next to 'Supplies' and a magnifying glass icon. A button labeled 'Sort by: Most Recent' is also present. The main content area displays a grid of 12 items, arranged in three rows of four. Each item in the grid is represented by a placeholder 'Image' and below it, the text 'Post Name Price'. The grid is contained within a scrollable container, indicated by vertical and horizontal scroll bars on the right and bottom edges respectively. At the bottom of the page, there is a footer with the text '© 2022 Gator BnS All Rights Reserved.' and links for 'About Us', 'Terms of Services', and 'Privacy Policy'.

She came upon this post selling several lab equipment in one post and clicks on it. In the post page, she can see the post *title*, *price*, *condition*, and *description* of the item. She could also see the time this post was made by the Seller. She is interested and would like to contact the seller so she clicks *Contact Seller*.

**Post Title**

\$100

Posted by user on April 1, 2022

Condition: New

Description: Contact me for more information!

[Contact Seller](#)

Susan types in the message she would like to send to the Seller. She enters her contact information and types a brief description regarding her interest in purchasing the lab equipment. After she is done typing the message, she clicks *send*. However, it did not let her send the message and a pop up showed up saying *Sign In to message the seller*. She must sign in to contact the Seller. She goes to the *Sign In* page.

Message Seller

Post Name
Date

Type here..

[Send](#)
[Sign in to message the seller](#)

In the Sign In page, she can see *New to Gator BnS? Sign Up*. Susan clicks Sign Up which directs her to the Sign Up page.

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Gator BnS [Register](#) [Sign In](#)

Welcome Back!

Username

Password

[Forgot password?](#)

[Sign In](#)

[New to Gator BnS? Sign Up](#)

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In order to create an account, she fills in the required fields: *username*, *password*, *confirm password*, and *email*. She tried to enter a personal email but she changed it to her *sfsu.edu* email as required. She clicks the check box to accept the ToS and Privacy Policy rules and signs up. After successfully signing up, she is directed back to the Sign In page where she enters her login credentials and signs in. Now she can go back to the post page and successfully send the message to the seller.

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Gator BnS [Register](#) [Sign In](#)

Create Account

Username*

Password*

Confirm Password*

Email*

I accept the ToS and Privacy Policy.*

[Sign Up](#)

Have an account already? [Sign In](#)

You must use an sfsu.edu email.

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Use Case 4: Staff member sold his Playstation 5 and video games

Timothy is a staff member at SFSU and is part of the security crew. Recently, he posted some video games and Playstation 5 for sale on Gator BnS. He wants to sign in to see if anyone has sent him a message. He goes to the Sign In page and enters his login credentials.

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Gator BnS	Register	Sign In
<div style="border: 1px solid black; padding: 10px; text-align: center;"><p>Welcome Back!</p><p>Username <input type="text"/></p><p>Password <input type="password"/></p><p>Forgot password?</p><p><input type="button" value="Sign In"/></p><p>New to Gator BnS? Sign Up</p></div>		
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To see his Inbox, Timothy clicks on *My Page* which directs him to his personal account page.

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Gator BnS	Create a Post	My Page
About	Sign Out	
<div style="border: 1px solid black; padding: 5px; display: flex; align-items: center;"><input type="button" value="Select a category"/> <input type="button" value="v"/> <input type="text" value="Search"/> <input type="button" value="🔍"/></div>		
<p>Buy/sell/exchange website exclusively for SFSU students, staff and faculty.</p> <div style="border: 1px solid black; padding: 10px; height: 40px; margin-top: 10px;">Some nice image</div>		

In My Page, Timothy can see his *Posts*, *Inbox*, *Sent* (messages), and *Settings*. Timothy clicks on *Inbox* from the tab bar and sees that he received a message from user1. Timothy can not reply back to user1. Timothy calls the Buyer's phone number written in the message.

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Gator BnS Create a Post My Page About Sign Out

My Page

Posts	Inbox	Sent	Settings
From user1 Post name Hello, is the playstation 5 and games you have up for sale still available? Could we possibly meet up in campus? I can be contacted by phone @ 415-222-3333		April 1, 2022	

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After negotiating and meeting up with the Buyer to sell his video games and Playstation 5. Timothy clicks *Posts* from the My Page tab bar. He can see his active posts from the Posts tab. To delete the post, he simply clicks *delete*.

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Gator BnS Create a Post My Page About Sign Out

My Page

Posts	Inbox	Sent	Settings
Image Post name Post price Delete			

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Use Case 5: Admin needs to moderate the website

Jimmy is an admin at Gator BnS. His job is to approve listings before they go live if nothing is wrong with it, delete posts that are deemed inappropriate and against our rules. Admins do everything through the workbench. To see all Posts made by users, he needs to run a simple query to select from all Posts. In the result grid, he can see if the posts are approved or not by looking at the approval attribute. If it's 0, it means it hasn't been approved yet. 1 means the post has been approved. He notices an inappropriate post and takes action by right clicking on the post and clicks Delete Row(s). To confirm his changes to the table, he clicks Apply.

The screenshot shows the SSMS interface with the following details:

- Navigator:** Shows the database schema. Under the 'csc64807db' schema, there are tables: Category, Messages, Posts, sessions, and Users. There are also Views, Stored Procedures, and Functions.
- Query Editor:** The query is `SELECT * FROM Posts;`.
- Result Grid:** The grid displays the following data:

	id	approval	condition	created	description	title	photopath
1	1	Like new	2022-04-12 01:32:52	I kept the condition of this desk clean. It still go...	Selling nice desk!	images/desk	
2	1	Like new	2022-04-12 01:34:20	Only wore it a few times. It's still in like new con...	Gator shirt	images/gator	
3	1	Like new	2022-04-12 01:35:23	The condition is still like new. I hardly even used...	Selling MATH 226 textbook	images/math	
4	1	Used	2022-04-12 01:37:14	The laptop is still usable and working. I only had...	Old laptop	images/laptop	
5	1	Used	2022-04-12 01:39:58	I have used this quite a lot for exercising but it'...	10k dumbbell	images/dumb	
6	1	New	2022-04-12 01:40:57	Got a set of unused stationary for sale.	Some stationary	images/static	
7	1	New	2022-04-12 01:42:25	Hey, I'm bob. T took AA S 210 last semester an...	AA S 210 textbook	images/aaste	
8	1	New	2022-04-12 01:43:20	Selling a lot of art supplies. Please contact me f...	Art supplies	images/penci	
9	1	Like New	2022-04-12 05:30:26	Have these nice paint brushes up for sale. Price...	Amazing paint brushes!	images/paint	
10	0				Really inappropriate :)	not selling anything	images/bad

A context menu is open over the last row (id 10), with the option "Delete Row(s)" highlighted.

Buttons and Options: The toolbar includes buttons for Copy, Paste, Find, Replace, and various export/import options. The status bar shows "Limit to 1000 rows". The bottom right has "Apply" and "Revert" buttons.

5. High level Architecture, Database Organization summary only

DB organization: For the database organization, we are currently using a MySQL database stored under the free tier Amazon RDS which will also be linked to our server on AWS. There are 4 distinct tables as of now: Users, Posts, Category, and Messages which can possibly extend as we work on the project. The “Users” table contains the attributes of id, username, password, email and created. Each user would have the unique id number, unique username, unique that is associated with the SFSU email tag and a password. The “Posts” table will be used to contain the listings of items from the users with the attributes id, title, description, photopath, thumbnail, created, price, condition, approval and fk_userId, fk_categoryId. Each post will also have its own unique id, title, image (photopath, thumbnail), price, condition, description of their item(s) and the time the post was created. The foreign key fk_userId is used to identify who made the post and fk_categoryId is used to determine which category the post belongs to. The “Category” table would store the id and name of the categories which the users utilize to narrow down their search by category. The “Messages” table contains the attributes of id, text, created, fk_fromUserId and fk_toUserId. Each message will have their own unique id, a text area containing their message and the time the message was created. The Messages table contains two foreign keys to identify the person who sent the message and the person who received the message.

Media storage: The images (photopath) will be stored on MySQL workbench and we are thinking of keeping them in the file systems.

Search/filter architecture and implementation: We use Express and handlebars to implement our search/filter architecture. We are using SQL, %like select statement queries to do the search, selecting from Posts table. With our current implementation of search engines, we could do 4 distinct ways of searching. (1) The first way is selecting only the category filter in the drop-down menu without a search keyword. The user has 7 category options in the drop-down menu: All, Books, Clothing, Electronics & Media, Health & Beauty, Home, and Supplies. The search is done by using a simple select statement query from posts where the category attribute is equal to the category the user selected. (2) The second way is selecting no category in the drop-down and a search keyword on the search bar. This search is done by using a select statement query that will look through all posts to see if the search keyword is within the title, description and category. (3) The third way is a category selected in the drop-down with a search keyword typed in the search bar. This search requires both the query from (1) and (2). The query is combined using an AND operator. (4) Lastly, the fourth way is no category selected and no search keyword on the search bar. This should return all posts that were approved to go live. We simply use a select query that selects all from posts.

As we worked our way through the milestone 2 and testing out our website, we realized that we would like to migrate to Express.JS and handlebars instead of the React.JS. We confirmed with our class CTO, Anthony Souza, as well for the approval.

6. Identify actual key risks for your project at this time

As of this time, the actual key risks we could identify are technical risks and schedule risks. There are minor skills risks in regards to the tools we usually work with and the growing complexity of the project. In particular, the functionality for our website presented minor challenges in Front-End's implementation of our lay-out as this is unlike many other things the Front-End team has worked with, as well as other minor issues with SQL due to lack of major experience. While not disastrous, these risks did present themselves at small points. From the Back-End team's point of view, this is our first time using the actual server and deploying our codes to the cloud. There were many obstacles when we tried to set up our server and deploy our application to the server at the early stage. We have to learn and research the best optimal and feasible way to not only set up and deploy our application to the server but we also need to make sure our application can adapt to the server's requirement and will be able to deploy the server for months and years to come. There are still many technicalities and skills that our team would need to research and learn to create an efficient and long-lasting application that we could use as our resume in the future. One of the examples would be the photopath or storing the media files on the MySQL server. We will be taking advantage of our spring-break and research more on MySQL. Then, we will be ready to tackle the project and put our research and information together to keep improving our web application.

As all of us are full-time students, there are deadlines and workload from other classes overlaps from time to time. Even though we tried to adjust and adapt according to the deadlines and workload, there are times where some personal unavoidable situations came up here and there. As a team, we will try to be more understanding of each individual's situation and we will try to help out and cover our team-members' workload from time to time. But we should still keep each other in check and try our best to meet the deadlines of our work that we have promised since the start of the project. In order to avoid this risk, we will try to set pre-deadline dates, split each task and milestone into smaller portions of implementations and keep track of them through Trello. We would also try to communicate with the team and resolve any difficulties as soon as it comes upon. Lastly, we reduce the scope of the project to a viable minimum when necessary.

The legal/content risks could also be one of the risks that we could face in our project. As we continue moving on with our web application, we realized we need to use a lot of open resources and the sources through google such as the pictures. As we all know, the media files are all copyright protected and we should all give credits to the

creator and producers. In order to prevent any legal/content complication, we will include the line of “SFSU Software Engineering Project CSC 648-848, Spring 2022. For Demonstration Only” on top of all our web pages. This way we could actually prevent our website being swamped in the legal/content implications as everything on our website is all for class demonstration purposes and they won’t be used in actual real life to gain profits from the public. The public will also notice that our web application is not an actual website and only for demonstration for class work purposes.

7. Project management

As there are a variety of tasks and initiatives to solve for each developer of the team, it would also become harder for us, team-lead, to manage and keep up with the deadlines and priorities. Agile method is the proven modern method that many technological companies adopted to manage the development successfully. Agile method is the perfect example method of divide and conquer. Each task or initiatives are split and divided into smaller tasks and the developers would complete them in the span of two-weeks for each feature release. One-week time is about the right time for the regular company but as for our team, we should try to make it a shorter time as we have deadlines that we need to meet.

The scrum or stand-ups would help the project-manager to keep up with the progress that each developer made for their tasks which would eventually be added towards the feature releases. To keep up with the tasks and tickets of which developers are working on, we will be using Trello to make sure which developers are already working on the certain tasks and their progress on each task. It is a great tool as it would not only give us the glimpse of how the industry has been working and collaborating but also would help us to keep track of our own tasks.

Software Engineering (SE) Course CSC 648-848

Spring 2022

Class Team Project

**WWW site for Buy/sell/exchange exclusively for SFSU students,
staff and faculty**

Gator BnS

Team 07

Nyan Tun - Project Manager/Team Lead - ntun@mail.sfsu.edu

Jimmy Nguyen - Front End Lead

Anish Somisetty - Back End Lead

Kyle Chen - GitHub Master & Back End

Annie Liao - UI & Front End

Matthew McAuley - UI & Front End

Milestone 3

April 13 2022

Date Submitted	April 20 2022
Date Revised	

Appendix II: M3 ZOOM meeting review summary template

This report must be done as soon as the M3 ZOOM meeting review is done to document the findings and conclusions. Prof. Petkovic does not need to see this document until it is submitted with the final M5 folder. This document is used to guide delivery plans for the rest of the team project development. NOTE: you will have a record of the meeting too so consult it before creating the summary. Template for this document is below. Be concise but ensure you record all issues (1-2 line per issue is OK)

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

Team number: 07

Meeting date: 04/13/2022 - 6:30 pm

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

- Visually make CSS and Navbar distinguished from the rest, have it same in all pages, blue is too strong
- Put About to the left
- Make sure people know the links are clickable (bigger)
- Pulldown menu is too wide, make it as big as electronic and media
- Make buy/sell/exchange a little bigger (font is too small)
- Clickable images
- Make fonts bigger
- Have a button to contact seller on the listings from results page
- Delete the “New to BnS? Sign up” in home page
- Remove condition column from Posts table since it’s not used as a filter
- Have space between item info
- Force login on contact seller and listing creation
- Title should go first, category second
- Search bar should be part of navbar
- Also the description under the search bar should be part of navbar
- Make navbar light gray or something
- Make links look like buttons
- Instead of “0 results” say “sorry we couldn’t find your product...”
- Navbar has to remain the same for all pages
- Force login/register for My Page
- Only posts and inbox for My Page (we have too many tabs)
- Email before password on register page

Summary of feedback on code and architecture

It was a great thing to put header comments on each file of the codes. Also the comments for each code snippet was also a great touch to ensure what each code snippet would do and great choices of variable names.

Summary of feedback on github usage

Good to have a separate ‘develop’ branch to test codes before merging to the ‘main’ branch. Great to have long comments explaining the features of each commits and pushes.

Summary of feedback on DB

Remove the condition column from postings and have it separately if we decide to include them for the filters but this should be priority 2.

Summary of feedback on teamwork

Great teamwork working on the project and taking care of the demo.

Any other comments and issues

Check Point (CP) if given, DUE:

List below agreed upon P1 list of features for final delivery which constitute product plan.

NOTE: after this meeting the team focuses solely on this P1 list of features, e.g. the development is in “feature freeze mode”. All listed P1 features (no more no less) MUST be delivered in usable way, free of bugs

1Non-Registered Users:

- 1.1. Non-registered users shall be able to browse and search without signing in.
- 1.2. Non-registered users shall be able to sort their search by price (e.g. Prices: Low to High).
- 1.3. Non-registered users shall be able to register an account successfully using only an sfsu.edu mail.
- 1.4. Non-registered users shall be able to narrow down their search by categories (e.g. Books, Health & Beauty, etc.)
- 1.5. Non-registered users shall be able to see the home page, search result pages, about page, sign in page, and register page without signing in.
- 1.6. Non-registered users shall be able to view details of a specific post.

- 1.7. Non-registered users shall receive a pop-up telling them to sign in when they try to message the seller in an individual post.

2. Registered Users:

- 2.1. Registered users shall be able to create a post.
- 2.2. Registered users shall be able to contact sellers through in-site messaging one way.
- 2.3. Registered users shall be able to sign in and sign out successfully.
- 2.4. Registered users shall be able to see a history of messages they received.
- 2.5. Registered users shall be able to see all their active posts they have created in their My Page.

3. Admin Users:

- 3.1. Admin users shall be required to approve posts created by users before it can go live.
- 3.2. Admin users shall be required to delete posts that are deemed inappropriate or obsolete.
- 3.3. Admin users shall be required to delete inappropriate users not aligned with the policy.
- 3.4. Admin users shall be required to use MySQL Workbench to maintain the users and postings.

Plan of action: Summary of plans for final several weeks e.g. what specific things will be done to address the above feedback in order to deliver on P1 features (note: seldom you can do everything that comes up in feedback so need to prioritize). This is IMPORTANT: analyze what needs to be done, prioritize based on two factors: a) importance for the product/user and b) cost/ability to deliver it in a given schedule. Based on this come up with the plan then execute it. Focus is on P1 features only.

April 18th week - we will start to fix our UI from Professor's feedbacks & we will prepare to start working on log-in/register connection with back-end and everything being connected

April 25th week - we will start working on anything from new milestones 4 & continued working on the milestone 3 features

May 2nd week - we will try to wrap our project and first priority features while also ensuring we will finish our milestone 4 & 5 workloads

May 9th week - QA certifying on our priority 1 features and wrap up our project for the final delivery plus presentation

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Team 07

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Kyle Chen - GitHub Master & Back End

Annie Liao - UI & Front End

Matthew McAuley - UI & Front End

Milestone 4

May 14 2022

Date Submitted	May 14 2022
Date Revised	

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1. Product summary

Name of the product: Gator BnS

Describe your product: Gator BnS is an e-commerce website specifically for users who can only be SFSU students, faculty, and staff members to be able to buy and sell items. There will be categories ranging from Books, Electronics & Media, Clothing, Home, Health & Beauty, and Supplies. Providing an organized, categorized assortment of items, users can easily search, filter, and sort for the items they are looking for. Moreover, it is important to note that users will be able to have a sense of safety and familiarity using the app because it is exclusive to SFSU students, staff, and faculty only. We are oriented towards connecting buyers and sellers through one way messaging. Buyer sends a message to the seller and they will contact off-site to complete their transaction. Users can efficiently get what they need by convenient means like meet-ups on campus locally. The goal is not to directly sell, but rather allow people to make contact and exchange.

Itemized list of ALL major committed functions (your final P1 list):

1. Search and browse
2. Sort results by price
3. Login and logout
4. Register an account
5. Post an item for sale
6. Contact seller
7. Admin approves all listings before it goes live
8. Admin can delete users and posts violating ToS
9. My Page shows active posts created by user and inbox
10. User can delete a post they created

URL to your product accessible to instructors: <http://54.219.192.219/>

2. Usability test plan

Test Objective:

The search function will be tested for usability because it is the most important functionality for our users and the functioning of the site as a whole. In order to deliver a quality e-commerce website for SFSU faculty, students, and staff, allowing precise searching of items is essential so users can achieve their goals in a swift and effective manner.

Test Background and Setup:

System setup: The user will open their device such as their laptop or desktop. Then, they will go to the URL <http://54.219.192.219/> to load the application.

Starting point: The user will simply open the URL <http://54.219.192.219/> on one browser such as Google Chrome or Microsoft Edge, and this will take them to the home page. They will be executing their search starting from the home page.

Intended users: The intended users are only SFSU faculty, staff and students.

URL of the system to be tested: <http://54.219.192.219/> is the URL where the search function will be tested.

What is to be measured: In relation to the Likert Scale, we will measure how easy it is to navigate and execute a search, how effective and how quickly they got to their intended search results, how effective it is to sort their search by price and overall ease of navigating through search results.

Usability Task Description: The task is to test the search functionality on Google Chrome and Microsoft Edge. You will execute several searches.

Evaluation of Effectiveness:

To measure effectiveness, it would be considering the completion of the main tasks for executing a search. Furthermore, the design of the site must be considered adequate for users in terms of visual clarity and readability. Reliability is also important, in which we want to measure how ‘polished’ the website is in terms of loose ends such as broken links, UI mistakes, and miscellaneous errors that users may be able to catch. Users would be put through tests to measure these, namely in their tasks in which they attempt to search things up and navigate through various pages.

Evaluation of Efficiency:

Efficiency would be a measure of speed and convenience. In particular, the number of clicks and total time it takes to achieve the goals would be the main measurement.

Effectiveness would be a main part of this somewhat, as the visibility would play a large factor into how efficient the site is to use. There would be an emphasis on seeing if a person goes to the wrong page, or has to backtrack or not.

Evaluation of User Satisfaction:

It was easy to execute a search.

Strongly agree Agree Neutral Disagree Strongly disagree

It was easy to navigate through search results.

Strongly agree Agree Neutral Disagree Strongly disagree

I was able to view a specific post to see more information regarding the post.

Strongly agree Agree Neutral Disagree Strongly disagree

3. QA test plan

Test Objections:

The goal is to effectively test how precise and efficient the search function is. We want to make sure the search engine works and gives accurate results, as well as displaying results in the correct way.

HW and SW setup: Go to your desktop or laptop. Open the browser (i.e. Google Chrome) and go to this URL <http://54.219.192.219/>

Feature to be tested: Executing the search functionality

QA Test Plan:

Perform tasks on Google Chrome:

Test #	Test Title	Description	Input	Output	Results
1	Search Test	Test % like in search for title and description field	Type “paint” in search field	Get 3 results, all have “paint” in title field and/or post description	PASS
2	Search Test	Test category dropdown in search	Select “Books” in dropdown menu on search bar	Get 4 results, all items related to books category	PASS
3	Search Test	Test % like in search for title and description field with category dropdown in search	Type “new” in search field and select “Clothing” in dropdown menu	Get 3 results, all from clothing category and have “new” in title field and/or post description	PASS
4	Search Test	Test nothing in search field	Leave the search field blank and select “All” in dropdown menu (default)	Get 24 results, this should be all posts	PASS
5	Search Test	Test random input in search field	Type “thisisrandom” in search field	Get 24 results, there should be a message saying	PASS

				“Sorry, we could not find any items for your search but here are some alternatives.”	
--	--	--	--	--	--

Perform the same tasks on Microsoft Edge:

Test #	Test Title	Description	Input	Output	Results
1	Search Test	Test % like in search for title and description field	Type “paint” in search field	Get 3 results, all have “paint” in title field and/or post description	PASS
2	Search Test	Test category dropdown in search	Select “Books” in dropdown menu on search bar	Get 4 results, all items related to books category	PASS
3	Search Test	Test % like in search for title and description field with category dropdown in search	Type “new” in search field and select “Clothing” in dropdown menu	Get 3 results, all from clothing category and have “new” in title field and/or post description	PASS
4	Search Test	Test nothing in search field	Leave the search field blank and select “All” in dropdown menu (default)	Get 24 results, this should be all posts	PASS
5	Search Test	Test random input in search field	Type “thisisrandom” in search field	Get 24 results, there should be a message saying “Sorry, we could not find any items for your search but here are some alternatives.”	PASS

4. Code Review

Coder: Annie Liao

Code Reviewer: Matthew McAuley



Annie Liao
Fri 5/13/2022 8:54 PM

To: Matthew McAuley

Hello Matthew,

This is a substantial amount of code relating to the search feature. I would recommend imagining yourself as the user who just inputted something to the search bar. Then, trace the code until you see how the results get displayed. Please review the code in order as listed below. The search starts at searchbar.hbs -> leading to frontend.js -> searchmiddleware.js -> Search.js -> cardresult.hbs -> results.hbs.

Reminder from Milestone 4 document: Peer review must include checking for basic header and in-line comments, as well as proper and consistent class/methods/variable names and consistency with naming established in DATA section of Milestone 2. Commit comments in GitHub should also be reviewed.

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/views/partials/searchbar.hbs>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/public/js/frontend.js>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/routes/index.js>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/middleware/searchmiddleware.js>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/models/Search.js>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/views/partials/cardresult.hbs>

<https://github.com/CSC-648-SFSU/csc648-03-sp22-team07/blob/backend/application/views/results.hbs>

Looking forward to hearing from you.

Thank you,
Annie Liao

CSC 648 Milestone 4 Code Review Request

3



Matthew McAuley
Fri 5/13/2022 10:41 PM
To: Annie Liao



3 attachments (1 MB) Save all to OneDrive - San Francisco State University Download all

Hello Annie,

I went to review the code once you sent the email. I carefully looked through the code in order as you have tasked me to. I imagined myself searching up a search term and traced the code to see how it works. The in-line comments and headers helped a lot! They were informative and understandable. The naming for the functions and variable names were consistent and properly named. I saw that when a search is made, it'll call the searchByTerm middleware function which retrieves the request body and then uses the searchByTerm model to utilize MySQL query to fetch the results. I noticed the naming in the attributes for the queries were consistent to the DATA names used in Milestone 2. I also looked at several commit messages made. The ones you wrote were detailed and you stated what changes were made and fixed. Please look at the attached files for annotation.

Great work!

Best,

Matthew McAuley

...

Reply Forward

```

1  const { searchByTerm, searchByCategory, searchByTermAndCategory, getAllPosts } = require('../models/Search');
2  const searchMiddleWare = {};
3
4  /**
5   * Search middleware      Header good - it explains what this file consists of.
6   * -----
7   * searchmiddleware.js is where we call the MYSQL query functions from Search.js (search model),
8   * obtain the search result and then render it to the results page. When a search
9   * result is not found, we render the results page with all posts as an alternative from the
10  * database instead of showing no results.
11 */
12
13 // Searching by a specific search input (without category selected)      In-line comments good
14 searchMiddleWare.searchByTerm = async function (req, res, next) {      - Understandable
15     try {      - Right to the point
16         let searchTerm = req.params.searchTerm;
17         let sort = req.params.sort;
18         let results = await searchByTerm(searchTerm, sort);
19         if (results.length) {
20             res.render("results", {      The function and variable names are consistent
21                 title: searchTerm,      and proper. I can see that when a user inputs a
22                 results: results,      search term to the search bar, the results are
23                 searchTerm: searchTerm,      retrieve from searchByTerm from search model to
24                 inputValue: searchTerm,      fetch the "results" using the MYSQL query.
25                 sortValue: sort,
26                 message: `${results.length} results`      I can see what is being rendered to the results page
27             });
28         } else {      when search is completed.
29             let results = await getAllPosts(sort);
30             res.render("results", {
31                 title: searchTerm,
32                 searchTerm: searchTerm,
33                 inputValue: searchTerm,
34                 results: results,
35                 sortValue: sort,
36                 message: `Sorry, we could not find any items for your search but here are some alternatives.`
37             });
38         }
39     } catch (err) {
40         console.log(err);
41     }

```

```

3
4  /** Header good! You stated the importance of the queries and how posts get approved.
5   * Search Model
6   * -----
7   * This is where all the MYSQL queries for the search and sort is located.
8   * It is important to know that we are only obtaining posts that is approved by
9   * the admin before it goes live. To check if the post is approved, we have an attribute
10  * called approval. If approval = 1, the post has been approved. If it's 0, it's not approved
11  * and will not show up browsing or in any of the search results.
12  *
13  * Note: ORDER by created DESC means sorting the search by Most Recent
14  *       ORDER by price ASC means sorting the search by price: Low to High
15  *       ORDER by price DESC means sorting the search by price: High to Low
16 */
17
18 // MYSQL query to fetch posts that has the search term within either the title or description
19 SearchModel.searchByTerm = (searchTerm, sort) => {
20     let baseSQL;
21     if (sort == "sort-by-price-asc") {
22         baseSQL = "SELECT u.username, p.id, p.title, p.description, p.price, p.fk_userId, p.photopath, \
23             concat_ws(' ', p.title, p.description) AS haystack FROM Users u JOIN \
24             Posts p ON u.id=fk_userId WHERE p.approval = 1 HAVING \
25             haystack like ? ORDER by p.price ASC;";
26     } else if (sort == "sort-by-price-desc") {
27         baseSQL = "SELECT u.username, p.id, p.title, p.description, p.price, p.fk_userId, p.photopath, \
28             concat_ws(' ', p.title, p.description) AS haystack FROM Users u JOIN \
29             Posts p ON u.id=fk_userId WHERE p.approval = 1 HAVING \
30             haystack like ? ORDER by p.price DESC;";
31     } else {
32         baseSQL = "SELECT u.username, p.id, p.title, p.description, p.price, p.fk_userId, p.photopath, \
33             concat_ws(' ', p.title, p.description) AS haystack FROM Users u JOIN \
34             Posts p ON u.id=fk_userId WHERE p.approval = 1 HAVING \
35             haystack like ? ORDER by p.created DESC;";
36     }
37     let sqlReadySearchTerm = "%" + searchTerm + "%";
38     return db.execute(baseSQL, [sqlReadySearchTerm])
39         .then(([results, fields]) => {
40             return Promise.resolve(results);
41         })
42         .catch((err) => Promise.reject(err));
43 }

```

Really good that you
explained what these meant.
Informative.

In-line comment good, tells what searchByTerm is doing

Pretty straight-forward, I can see that queries are used
to fetch results.

The attributes in the queries are consistent to the
DATA section of Milestone 2.

In results page, each item has a contact seller button, currently not...

[Browse files](#)

... working yet but it is pre-filling data. Earlier, we had an issue where the user couldn't send a message and req.body was empty. It was due to the
enctype and now, users can send a message successfully and I could see it in the workbench. I have added alerts for login and register so far. If there is any
registration error for example, it will show up a error letting the user know what is wrong. Other than that, just some minor CSS changes and also removing unused
code.

I was taking a look at several commit messages. They are informative and I know what was fixed and changed in the code. Good work!

[main \(#62\)](#)

 [anlia02](#) committed 8 days ago

1 parent [96c6161](#) commit [817ea9700a8b5f52291a0692f349fe35e36ffbb8](#)

5. Self-check on best practices for security

Asset to be protected	Types of possible/expected attacks	Strategy to mitigate/protect the asset
User credentials	Account hijacking	User passwords shall be encrypted via bcrypt
Images	Copyright, unauthorized user access	User's original image names are randomly generated names to prevent conflicts with duplicate names using multer and crypto.

- Confirm that you encrypt PW in the DB
Password encryption is DONE!
- Confirm Input data validation (list what is being validated and what code you used)
 - Search bar input for up to 40 alphanumeric characters: We used maxlength="40" so input is up to 40 characters and we used onkeypress event to make sure the user only inputs alphanumeric characters only.
 - Registration e-mail to include "sfsu.edu" at the end: We used regex to make sure that the e-mail includes sfsu.edu at the end.
 - Images need to be jpg, jpeg or png only: Regex is used.
 - Registration: Regex is used to validate username to be 3 or more alphanumeric characters, password is at least 8 characters, confirm password and password input must be the same. MYSQL query is used to check if username and email already exists because they need to be unique to one user.
 - Login: MYSQL query to check if username exists in database, then check if the input password matches the one from the database.

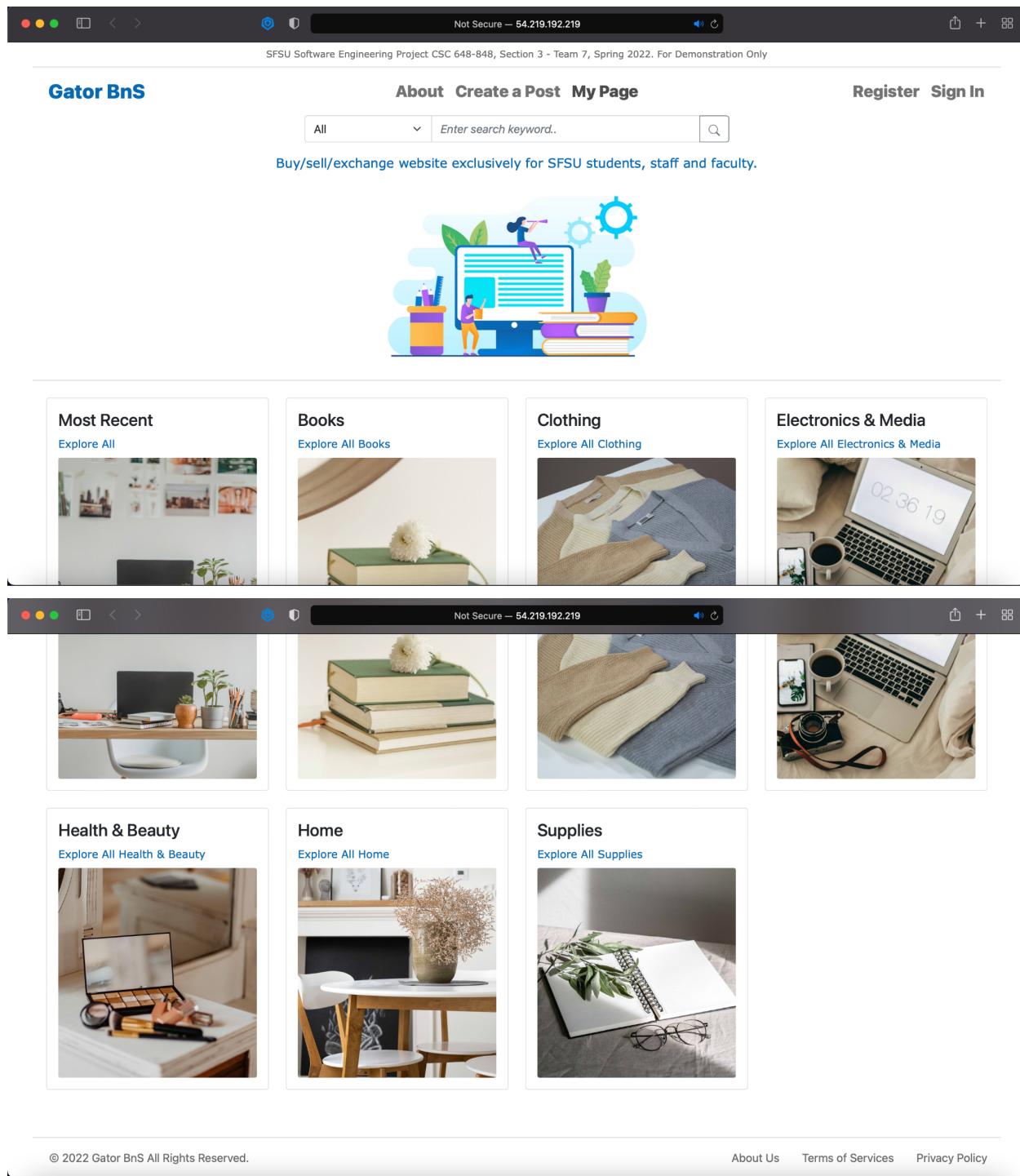
6. Self-check of the adherence to original Non-functional specs

- 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
DONE
- 3. All or selected application functions must render well on mobile devices
DONE
- 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
DONE
- 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 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
DONE
- 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:

➤ Home Page



The screenshot shows the Gator BnS website interface. At the top, there is a navigation bar with icons for search, refresh, and user account (Register, Sign In). Below the navigation bar, the page title "Gator BnS" is displayed. A search bar with dropdown options "All" and "Enter search keyword..." is present. To the right of the search bar is a magnifying glass icon. A sub-header below the title reads "Buy/sell/exchange website exclusively for SFSU students, staff and faculty." A central graphic features a person interacting with a computer screen displaying a bar chart, surrounded by gears and plants. Below this, four main categories are shown in boxes: "Most Recent" (Explore All), "Books" (Explore All Books), "Clothing" (Explore All Clothing), and "Electronics & Media" (Explore All Electronics & Media). Each category has a representative image. Below these boxes, there are four more categories arranged in a grid: "Health & Beauty" (Explore All Health & Beauty), "Home" (Explore All Home), and "Supplies" (Explore All Supplies), each with its own image. The bottom of the page includes a footer with copyright information and links to "About Us", "Terms of Services", and "Privacy Policy".

Not Secure — 54.219.192.219

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS

About Create a Post My Page

Register Sign In

All Enter search keyword..

Buy/sell/exchange website exclusively for SFSU students, staff and faculty.

Most Recent

Explore All

Books

Explore All Books

Clothing

Explore All Clothing

Electronics & Media

Explore All Electronics & Media

Health & Beauty

Explore All Health & Beauty

Home

Explore All Home

Supplies

Explore All Supplies

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About Us Terms of Services Privacy Policy

➤ Create a Post Page

The screenshot shows a web browser window for the 'Gator BnS' website. The address bar indicates the site is not secure (54.219.192.219). The page title is 'About Create a Post My Page'. On the right, there are 'Register' and 'Sign In' links. A search bar with dropdown options 'All' and 'Enter search keyword...' is present. The main content area is a form titled 'Create a Post' with the following fields:

- *Title :
- *Category :
- *Price :
- *Description :
- *Image : no file selected
May take up to 24 hours to be approved.

At the bottom are 'Cancel' and 'Create Post' buttons.

➤ Register Page

The screenshot shows a web browser window for the 'Gator BnS' website. The address bar indicates the site is not secure (54.219.192.219). The page title is 'About Create a Post My Page'. On the right, there are 'Register' and 'Sign In' links. A search bar with dropdown options 'All' and 'Enter search keyword...' is present. The main content area is a form titled 'Create Account' with the following fields:

- Username*
- Email*
- Password*
- Confirm Password*

At the bottom is a 'Sign Up' button and a link 'Have an account already? [Sign In](#)'.

➤ Sign-in Page

The screenshot shows a web browser window for the 'Gator BnS' project. The address bar indicates the site is not secure (54.219.192.219). The page title is 'Gator BnS'. The navigation menu includes 'About', 'Create a Post', 'My Page', 'Register', and 'Sign In'. A search bar with the placeholder 'Enter search keyword...' is present. The main content area features a large rectangular form with a white background and a thin gray border. The form has a heading 'Welcome Back!'. It contains two input fields: 'Username' and 'Password', each with a corresponding text input box. Below the password field is a link 'Forgot password?'. At the bottom of the form is a blue 'Sign In' button. Below the form, a small note says 'New to Gator BnS? [Sign Up](#)'.

➤ About Page

The screenshot shows a web browser window for the 'Gator BnS' project. The address bar indicates the site is not secure (54.219.192.219). The page title is 'Gator BnS'. The navigation menu includes 'About', 'Create a Post', 'My Page', 'Register', and 'Sign In'. A search bar with the placeholder 'Enter search keyword...' is present. The main content area features a horizontal navigation bar with links: 'Anish' (underlined), 'Annie', 'Jimmy', 'Kyle', 'Matthew', and 'Nyan'. Below this, a section titled 'About Us' is shown. Under 'Anish', there is a heading 'Anish Somisetty' and a brief bio: 'Hi! I'm Anish Somisetty from Team 7. I am part of the backend team, responsible for hosting the AWS cloud server and maintaining the RDS database.' To the right of the bio is a cartoon-style portrait of a man with dark hair, glasses, and a red shirt.

➤ Viewing all post with no specific category selected and no search key

The screenshot shows the Gator BnS website homepage. At the top, there is a navigation bar with links for "About", "Create a Post", "My Page", "Register", and "Sign In". Below the navigation bar is a search bar with dropdown menus for "All" and "Enter search keyword." A "Sort by: Most Recent" button is also present. The main content area is titled "Viewing all posts" and displays 24 results. Each result is presented in a card format with an image, item name, price, and a "Contact Seller" button. Below the main grid, there is a row of five smaller, partially visible images.

Item Image	Item Name	Price	Action
	Nexus Shampoo and Conditi...	\$20	Contact Seller
	Principles of Chemistry text...	\$70	Contact Seller
	New Oakley Skiing Tc Gunn ...	\$210	Contact Seller
	Giraffe Painting	\$20	Contact Seller
	Polo Cologne Intense	\$90	Contact Seller

➤ Viewing all posts with category “Books” selected

The screenshot shows the Gator BnS website homepage with the "Books" category selected. The interface is identical to the previous screenshot, featuring a navigation bar, search bar, and sorting options. The main content area is titled "Books" and displays 4 results. Each result is shown in a card format with an image, item name, price, and a "Contact Seller" button. The items listed are books related to science and engineering.

Item Image	Item Name	Price	Action
	Principles of Chemistry text...	\$70	Contact Seller
	Used World War Z	\$5	Contact Seller
	New Physics for scientists a...	\$80	Contact Seller
	Calculus Early Transcendent...	\$60	Contact Seller

- Viewing all post with sort by “Price: High to Low” selected

Not Secure — 54.219.192.219

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS

About Create a Post My Page

Register Sign In

All Enter search keyword.

Viewing all posts
24 results

Sort by: Most Recent
Price: Low to high
✓ Price: High to low

				
New Xbox Series X \$550	Used PS4 slim \$260	Used Original Nintendo Swit... \$220	New Oakley Skiing Tc Gunn ... \$210	New Black and Red Jordan ... \$200
Contact Seller	Contact Seller	Contact Seller	Contact Seller	Contact Seller
				

- Viewing all post with specific keyword “oakley”

Not Secure — 54.219.192.219

SFSU Software Engineering Project CSC 648-848, Section 3 - Team 7, Spring 2022. For Demonstration Only

Gator BnS

About Create a Post My Page

Register Sign In

All Oakley

Sort by: Most Recent

Oakley
1 results


New Oakley Skiing Tc Gunn ... \$210
Contact Seller

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About Us Terms of Services Privacy Policy

➤ User's My Page - Posts

The screenshot shows the 'My Page' section of the Gator BnS application. At the top, there are navigation links: 'About', 'Create a Post', and 'My Page'. A search bar is also present. Below the header, there are two tabs: 'Posts' and 'Inbox'. The 'Posts' tab is selected, displaying four items:

- New Oakley Skiing Tc Gun... \$210
- Polo Cologne Intense \$90
- Used Original Nintendo Sw... \$220
- Used World War Z \$5

Each item has a 'Delete' button at the bottom.

➤ User's My Page - Inbox

The screenshot shows the 'My Page' section of the Gator BnS application, specifically the 'Inbox' tab. At the top, there are navigation links: 'About', 'Create a Post', and 'My Page'. A search bar is also present. Below the header, there are two tabs: 'Posts' and 'Inbox'. The 'Inbox' tab is selected, displaying three messages:

- From: Matthew May 14, 2022
Post name: Used World War Z
Message: Hello I am interested in the book. Can you call me if it is still available. (916) 151-7234
- From: Jimmy May 14, 2022
Post name: Used Original Nintendo Switch
Message: Hello, I am interested in the switch. Is there any games available. Contact my cell (861) 654-1655
- From: [User] May 14, 2022
Post name: New Oakley Skiing Tc Gunn Shell 2L Jacket
Message: Hello, I need a jacket for a trip. Can you contact my cell as soon as you can if it is still available. (861) 654-1655

- Specific product's detail view

The screenshot shows a web browser window for the 'Gator BnS' website. The title bar indicates 'Not Secure — 54.219.192.219'. The page header includes 'Gator BnS', 'About', 'Create a Post', 'My Page', and 'Sign Out'. A search bar with 'All' dropdown and 'Enter search keyword...' placeholder is present. The main content area displays a product titled 'Paint brushes' with a price of '\$18'. The item was posted by 'Annie' on May 13, 2022. The description reads: 'These are really good brushes! I really loved using them for my art class but I'm not sure if I'll paint anymore that's what I'm selling them. Contact if interested!' A blue 'Contact Seller' button is visible. To the left of the product details is a large image of a wooden stool with a red cup holding several paintbrushes.

- Contact the seller regarding specific product

The screenshot shows a modal dialog box titled 'Contact Annie' overlying the previous product detail page. The dialog contains the following information:

- Item name: Paint brushes
- Item Price: \$18
- Type message here for the seller. Please include your contact information.

A message from the seller is also visible: 'May 13, 2022 These are really good brushes! I really loved using them for my art class but I'm not sure if I'll paint anymore that's what I'm selling them. Contact if interested!' At the bottom of the dialog are 'Cancel' and 'Send' buttons.

Database Organization:

➤ Users' Table

	id	username	password	email	created
▶	29	Matthew	\$2b\$14\$jvW8JzxoAVUKFcQIuyME.M5aG1FmEp...	mmcauley@mail.sfsu.edu	2022-05-13 23:06:05
	30	Jimmy	\$2b\$14\$Iaa0RfEcxi14k79r5mN/e5vXUygmDY/...	jnguyen47@mail.sfsu.edu	2022-05-13 23:06:40
	31	Anish	\$2b\$14\$QL2hWTB0XEWJQLw8J5Mj3ustZ1lSqKh...	vsomisetty1@sfsu.edu	2022-05-13 23:07:16
	32	Nyan	\$2b\$14\$XYiF0aCPNDM4STBAjGwe9OIYhm2cEr...	ntun@mail.sfsu.edu	2022-05-13 23:07:51
	33	Annie	\$2b\$14\$RR7sIuhrUOZgFJlAGUtB3.vj8qYPluK8O...	aliao2@mail.sfsu.edu	2022-05-13 23:12:12
*	34	Kyle	\$2b\$14\$oPBWrKGpxdEYt7H3.1zd3uQUXFJ3s.q...	kchen11@mail.sfsu.edu	2022-05-13 23:12:42
	NULL	NULL	NULL	NULL	NULL

➤ Post Table

	id	approval	created	description	title	photopath	price	fk_userid	fk_categoryId
▶	53	1	2022-05-13 23:20:43	This desk is brand new. I bought it from IKEA lo...	Desk	images/48338e2888f778270b5e0dcde3e23286...	25	33	5
	54	1	2022-05-13 23:24:32	This old laptop is definitely quite old but it's still ...	Hp laptop	images/71e3e9c324a0b5f10b6e7f28867ffab...	30	33	3
	55	1	2022-05-13 23:27:36	I am selling a used Calculus book which was use...	Calculus Early Transcendentals 9th	images/e1c02a3627d5a740015a86b4d58264...	60	29	1
	56	1	2022-05-13 23:31:39	I am selling a brand new Jordan Hoodie. It has ...	New Jordan Hoodie	images/0b581ccfc03dcde962da3629cdbaa17c5...	80	29	2
	57	1	2022-05-13 23:35:00	Selling a USED PS4 Slim. Complete with box. Will...	Used PS4 slim	images/dec164bd0e11765195c824ca523df47a...	260	29	3
	58	1	2022-05-13 23:35:12	I have a lot of unused paint and paint brushes t...	Acrylic, water color and set of brushes	images/1f6e7c299d8c3565dda8e71274e4f32d...	60	33	6
	59	1	2022-05-13 23:38:01	I have a old computer chair I am trying to get r...	Used Computer Chair	images/f10fc53ed6591215bc7e54d1660d17445...	50	29	5
	60	1	2022-05-13 23:39:30	These are really good brushes! I really loved usi...	Paint brushes	images/f29eeaaeacc3ab5c32131a8f92c1a5024...	18	33	6
	61	1	2022-05-13 23:42:38	I managed to get an extra Xbox Series X and wi...	New Xbox Series X	images/0fcab54ebaad6af2a37a96fb7524b34...	550	30	3
	62	1	2022-05-13 23:42:39	These notebooks are really light and handy to u...	New notebooks	images/ccc917719d78abd35ceb37d8d49494bdf...	2	31	6
	63	1	2022-05-13 23:45:48	Beautiful plant decor . Just for 6 dollars. I can ...	Plant decor	images/0addbb55e8ba0d8d4183faa9f5895bb93...	6	31	5
	65	1	2022-05-13 23:54:11	Good daily moisture lotion that I always use. Th...	Lubriderm	images/591bfdd19f147532782fefa5ad31eb5e...	5	31	4
	66	1	2022-05-13 23:54:53	I am selling pair of Jordan Retro 9 for MSRP. Ne...	New Black and Red Jordan Retro 9	images/66dc0080a2201157c13f6effca87f787f...	200	30	2
	67	1	2022-05-13 23:58:22	Have a new copy for Physics: The Nature of Thi...	New Physics for scientists and enginee...	images/10a5370c187abd5098803f9eedf0cdf9f...	80	30	1
	68	1	2022-05-14 00:00:33	I am selling a new Label Maker I got as a gift. B...	New Brother P-touch PTD210 Label Ma...	images/b17c98c2ada083c4595c5102282cf93...	30	30	6
	69	1	2022-05-14 00:02:38	I have worn this before but I kept the condition...	Adidas Hoodie	images/4f71d68ce0dad9f35f90e55ef2ba24...	50	31	2
	70	1	2022-05-14 00:08:24	Trying to downsize my book collection. The boo...	Used World War Z	images/19399c076d9d95f3b099652f10f3acfc9d...	5	32	1
	71	1	2022-05-14 00:12:33	Used Nintendo Switch for sell, complete with ch...	Used Original Nintendo Switch	images/6763ff45e2955e7f40a0ca061c52f43...	220	32	3
	72	1	2022-05-14 00:14:27	Prevents sunburn and it's also water proof.	Sunscreen Mist	images/f5982a4004783f5f85e0ee6f2910e080...	40	34	4
	73	1	2022-05-14 00:14:40	New and unopen Polo Cologne Intense.	Polo Cologne Intense	images/14777cd7fb27497f4014954776c23019...	90	32	4
	74	1	2022-05-14 00:17:36	Beautiful giraffe painting. I used water color an...	Giraffe Painting	images/e15b8ab6dd8e0e1202327fb53a6862...	20	34	5
	75	1	2022-05-14 00:18:24	Brand New Oakley Skiing jacket. Size: Medium C...	New Oakley Skiing Tc Gunn Shell 2L Ja...	images/b755046521563fa0ccbf0f71e8fb8dff69...	210	32	2
	76	1	2022-05-14 00:27:04	Principles of Chemistry is a mastery-learning, int...	Principles of Chemistry textbook	images/b71ae37cff3f9acefb96ac1d3ac2051...	70	34	1

➤ Category Table

	id	name
▶	1	Books
	2	Clothing
	3	Electronics & Media
	4	Health & Beauty
	5	Home
	6	Supplies
*	NULL	NULL

➤ Message Table

	id	message	created	fk_from_userId	fk_postId	fk_to_userId
▶	59	Hello I am interested in the book. Can you call ...	2022-05-14 00:25:22	29	70	32
	60	Hello I am interested in the J's. Can you call me ...	2022-05-14 00:26:04	29	66	30
	61	Hello I am interested in the Painting for my mom...	2022-05-14 00:26:42	29	74	34
	62	Hello, I am interested in the switch. Is there an...	2022-05-14 00:28:08	30	71	32
	64	Hello, I need a jacket for a trip. Can you contac...	2022-05-14 00:29:56	30	75	32
	65	Hello, I am very interested in the Xbox. I have ...	2022-05-14 00:31:57	32	61	30
	68	Hey Anish, is this Adidas Hoodie still available? ...	2022-05-20 20:45:39	34	69	31
*	69	Hey Matthew. I'm taking a Calculus course this ...	2022-05-20 20:47:04	34	55	29
	NULL	NULL	NULL	NULL	NULL	NULL

Github organization:

- a) List main branches in your tam github and clarify who had access to master branch;
- main branch
 - Only team-lead, Nyan, and GitHub-master, Kyle have access to main branch who approve pull requests and merges
 - develop branch
 - All team member have access to develop branch but only-team lead, Nyan, and GitHub-master, Kyle, approve pull requests and merges
 - frontend branch
 - All team member have access to the branch but only push files that were worked by front end team
 - backend branch
 - All team member have access to the branch but only push files that were worked by back end team

b) Describe each top level folder in your github file organization

- Milestones
 - M0
 - M1 - contains Milestone 1 report
 - M2 - contains Milestone 2 report
 - M3 - contains Milestone 3 report
 - M4 - contains Milestone 4 report
 - M5 - contains Milestone 5 report
- application
 - bin - contains www app used in server deployment
 - config - contains “database.js” file which connects our application to the backend database schemas on MySQL Workbench hosted on AWS
 - Helpers - Contains helper js files involved in error validation.
 - debug - Debug file to test error validation.
 - error - Has js files that route based on if an error comes up for user or posts.
 - Middleware - Contains 5 important middleware files, each with functions important to routing, route protection, and communication between front-end and back-end, such as the search function.
 - Models - Contains MYSQL queries to fetch data from the database which are used for login, registration, creating a post, deleting a post, messaging, searching, user's posts and inbox.
 - Public - Folder containing supplemental files for our hbs files.
 - Css - Contains CSS files that style all our handlebar pages.
 - Images - Folder that stores image files which includes images used in the site and images that user's had uploaded when creating a post.
 - Js - Folder containing a js file dedicated to keep track of what page the user is on, and functions to control routing for search and sort.
 - Routes - Contains js files dedicated to routing from page to page, and error-checking routing via checking conditions, such as if the user is logged in.
 - Views - Contains all base skeletons of our pages in the form of hbs files.
 - Layouts - One file that decides how each page is laid out in order to reduce redundancy in making multiple pages.
 - Partials - Partials are handlebars templates that can be reused in other hbs files.
- credentials - Contains the SSH key file and instruction to access our database and application on AWS.

c) Screenshot of our team github home page

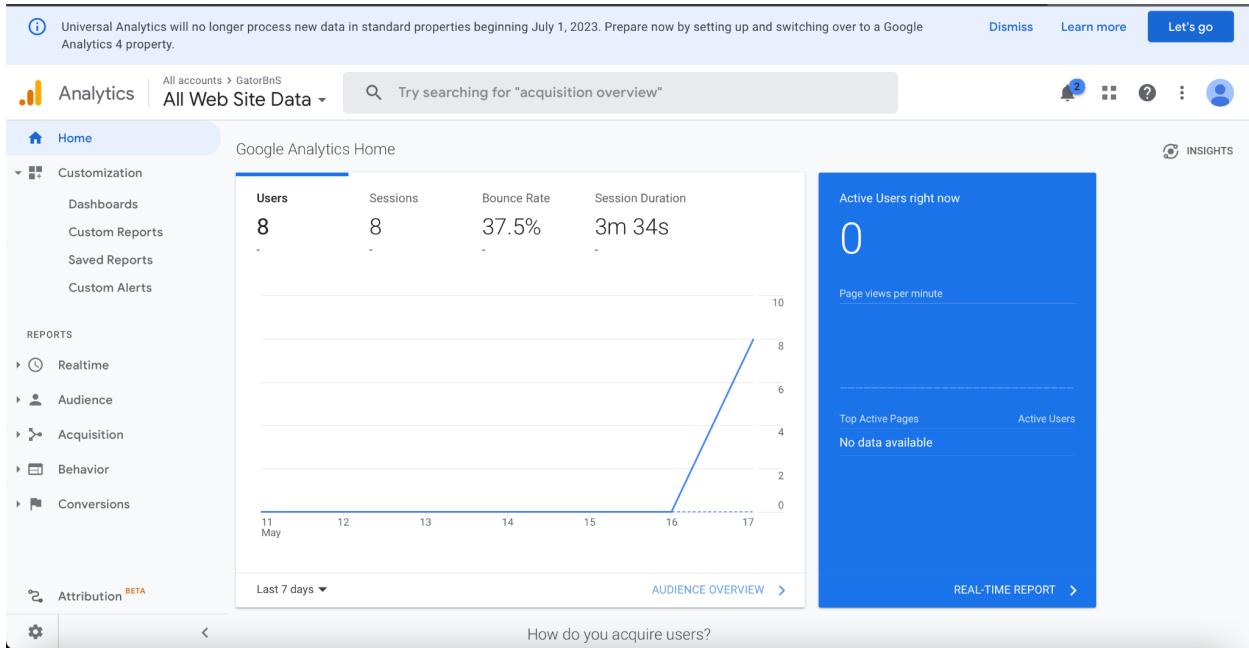
The screenshot shows the GitHub repository page for **CSC-648-SFSU / csc648-03-sp22-team07**. The repository is private. At the top, there are buttons for Watch (1), Fork (0), and Star (0). Below the header, there are tabs for Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The Code tab is selected.

Key statistics shown on the left sidebar include 7 branches and 0 tags. The main content area displays a list of recent commits:

- vsomisetty1 Merge pull request #74 from CSC-648-SFSU... 77e621b 33 minutes ago 187 commits
- Milestones m4 report 3 days ago
- application Implemented Google Analytics 44 minutes ago
- credentials final front-end version 3 months ago
- .gitignore Updated .gitignore with Node gitignore template 21 days ago
- LICENSE Initial commit 3 months ago
- README.md Update README.md 3 months ago

The README.md file is open in the editor. On the right side, there is an **About** section for the repository, which states it was created by GitHub Classroom. It also shows metrics like 0 stars, 1 watching, and 0 forks. There are sections for Releases (no releases published) and Packages (no packages).

Google analytics stats plot for your WWW site:



Project management:

We used the “Trello” project management tool from Prof. Petkovic’s recommendation to keep track of our tasks and milestones for our project assignment. Everyone of us has the ability to move the tickets/boxes to the corresponding statuses and we designed each task to be completed in the maximum of one week with a pair-programming method. It was a great tool to keep track of our tasks and milestones as we are all working on not only this project but also our own individual classes.

The image contains two screenshots of the Trello application interface, demonstrating its use for project management.

Screenshot 1: Dev Sprint Board

This screenshot shows a Trello board titled "Dev Sprint" for workspace "CSC648-TEAM07". The board is organized into four lists: "Backlog", "To Do", "Testing", and "Done".

- Backlog:** Contains cards for "Messaging/contact seller/user", "Search Details and maps", and "Database Photopath - Anish".
- To Do:** Contains a card for "Milestone 3 Report" with a due date of "Apr 13".
- Testing:** Contains a card for "Performance (e.g. display of results list) - QA".
- Done:** Contains several completed cards:
 - "Milestone 3 Presentation - Prep" (due Apr 13)
 - "Needs to add the revised mockups to the M2 report - Annie"
 - "Finalize Milestone 2 Report - Nyan"
 - "Search & Search Results - Annie&Kyle" (due Apr 9)
 - "Dashboards (user) - Jimmy" (due Apr 9)
 - "UI responsiveness (resize the browser) - Jimmy & Mat" (due Apr 6)
 - "Post Page (Data Upload/POST) UI - Jimmy&Mat" (due Apr 6)

Screenshot 2: Backlog-Tickets Board

This screenshot shows a Trello board titled "Backlog-Tickets" for workspace "CSC648-TEAM07". The board is organized into five lists: "Project Resources", "Questions For Next Meeting", "To Do", "Blocked", and "Done".

- Project Resources:** Contains a card for "AWS Billing - RDS".
- Questions For Next Meeting:** Contains a card for "Next Meeting Sunday - 1PM".
- To Do:** Contains a card for "Milestone 3 Due 13 April" with a due date of "Apr 13".
- Blocked:** Contains a card for "+ Add a card".
- Done:** Contains a card for "Email Prof - Thumbnail column on database & User Login".

Team member self assessment and contributions:

➤ Nyan Tun

Milestone 5 - Team Member Self Assessment

 **Nyan Lin Tun** ↳ ↲ ↴ ↵ ...

To: Jimmy Nguyen; Anish Somisetty; Annie Liao; Matthew McAuley; Kyle Chen Fri 5/20/2022 3:01 PM

Hello team,

I had the privilege of being the team lead/project manager of Team 07 for our project and I'm very glad to have each and one of you as my teammates. There were lots of varieties and things have happened during our 4-month journey with our project ranging from technical aspects to scheduling and teamwork perspectives. From the perspective of being the team lead, I try to keep track of our project milestones and checkpoints. I'm responsible to check in with each development team as we split our team into front-end and backend teams to work simultaneously and cross-functional to keep our project moving synchronously. I'm also responsible to resolve any questions or conflicts of technical perspectives from my team and checking in with our CEO Prof. Petkovic and CTO Prof. Souza to ensure we are on the right track with the project requirements of our product. I'm also responsible for merges on GitHub and ensuring all GitHub branches are working and no conflicts within branches. From the perspective of a developer, I'm involved in the backend team led by Anish. I was mainly involved in setting up our server and remotely accessible with the AWS. I was extensively involved in defining researching and setting up AWS with our product compatibility using Nginx which was very foreign to all of us at the very start of our project. Our back-end team members, Anish and Kyle, were also actively involved in the discussion of choosing our technical specifications and implementations to ensure all the aspects are working.

On our GitHub commits, I roughly made about 9 commits ranging from our backend codes and other non-technical commits. I was responsible to review all of our milestone reports and committing them to our designated folder on GitHub. I also try to keep track of our team's commitments and make sure all the changes are committed to our set deadline.

There were many challenges and changes encountered along working on our project. All of us have to adapt to the changes quickly as we are short on time with our deadlines to keep up with our milestones. One of the biggest challenges I face as we work on our project is how to define the best technical specifications that would align with the available resources and skills of our team members. When we started this project in January, not many of us have the experience of working with AWS or setting our project on a server running remotely. First, we wanted to use PHP to support our product on the remote server. But as we try to research more and more, we encounter a better option which is Nginx. Same situation with our technical specifications such as we use React as our mainframe to build our product at the very first. But React has become limited to our expectations and we had to switch over to handlebars which our team members are more experienced working. Adapting to new changes and implementing those changes to meet the originally set deadlines was the main challenge that I encountered as I work on this project. I believe this is a great experience for all of us we need to have options for all the decisions we make for the project and possible rollback options as well if we encountered more obstacles from the new changes.

One of the things that I would have done differently was I would try to be more involved with our development in the frontend team and bring both the frontend and backend team to more discussion for both teams before making decisions separately. As we split our team into two sub teams, our targets and tasks became a bit more divergent. From time to time, we would have to make sure the frontend team knows what the backend teams have worked on and the architectures of our product's backend. Similar to the backend team, we were sometimes flying blindly to ensure the requirements without much input from the frontend team to ensure the frameworks are set and ready for the frontend team to work on. If we had more time and resources, I would try to bring both teams together more in the discussions to set up solid plans and more communication from each team.

I appreciate each and one of our team members. I'm really proud of what we have created and done with our product. Thank you all for the best semester, excited for every one of us for what's coming and believe every one of us will thrive on our upcoming new journey.

Best Regards,
Nyan Tun.

➤ Jimmy Nguyen

Milestone 5 - Team Member Self Assessment - Jimmy

JN

Jimmy Nguyen

To: Nyan Lin Tun

Cc: Matthew Mcauley; Annie Liao; Anish Somisetty; Kyle Chen



Thu 5/19/2022 1:12 PM

Hello Team,

I was designated Front-End lead, where I was originally dedicated to keeping track of our schedule and communicating with the back-end team and team lead while also working on pages of the project itself. As time went on, my contributions ended being mostly a communicator to touch base and update while the Front-End team ended up being equals in regards to what tasks got done. While I did deviate from my role, I felt this sort of equal discussion of task designation was more effective for my partners and myself. I primarily worked on constructing and designing the page skeletons and styling them in a basic way for my teammates to further style or improve upon the structure. In addition, I introduced the team to bootstrap and used it extensively to help create a basis for our page, and subsequently work our mock-ups into reality.

By the end of the project, I had 18 commits, all of which consisted of coding our front-end branch. I mostly worked on HTML and CSS with some minor dabbling into javascript, but Annie covered most of the legwork on javascript if I'm being honest.

Over the course of it all, the biggest challenges were adapting to a bigger workload with a larger scope. Generally, I didn't consider myself an expert but I dabbled a bit into Front-End prior to this class. It was a rude awakening when we had to create so many pages with complex functionality, so it was hard for me to adapt. In particular, the Software Stack presented an issue where I had to adapt to unfamiliar techniques. Fortunately, my teammates were in the same boat and we studied together to get used to Bootstrap, Handlebars, and initially React before we decided to use a different framework. We also covered each-other's weaknesses. I was not great at styling but could figure out fundamentals, whereas Matthew is the opposite, and Annie's forte was styling in the first place.

My two biggest flaws this project were not splitting the workload evenly, and lack of scope. Annie really helped me out, but I didn't learn as much as I could have if I gave myself a more fair share of work instead of letting her do much of the styling. In addition, I wasn't very ambitious and didn't strive for a very high quality website at first due to my own inexperience, and could not have delivered a quality product without the help of my teammates. Overall, I just need to be more organized and put my best foot forward next time instead of being sheepish like I had been.

Thank you for the opportunity to work with you all and grow.

Best,
Jimmy

[Reply](#)

[Reply all](#)

[Forward](#)

- e) From the standpoint of team lead, Jimmy is very communicative with the team and always available to help not only for the frontend team but also the backend team. Jimmy helped the frontend team to understand React and he laid the foundation for the website and the user experience. I do agree with Jimmy that this was a very fast paced project and many milestones and checkpoints due in a short amount of time. Overall, Jimmy did a great job helping me and frontend team to be on schedule with the scope of our product and we wouldn't have been able to wrap our project smoothly without Jimmy.

➤ Anish Somisetty

Milestone 5 - Team Member Self Assessment - Anish

AS

Anish Somisetty



To: Nyan Lin Tun; Jimmy Nguyen; Annie Liao; Kyle Chen; Matthew Mcauley

Fri 5/20/2022 7:53 PM

Hello team,

For my role as backend lead, I worked with Kyle and our team lead Nyan to configure our application to run on AWS servers. My team and I were also in charge of configuring the MySQL database and implementing Google Analytics to track site data. Most of our work was done collaboratively using Live Share on Visual Studio, and Kyle and I would meet extensively to code the backend of our application. Nyan was also regularly involved in our meetings and helped us decide on our technical stack. I took part in writing and debugging JavaScript code for login/registration, create post, and contact seller. I was involved in manually testing our site to make sure everything listed above worked with our MySQL database. I was also tasked with adding Google Analytics Tracking compatibility to our application so that we are able to analyze our web traffic.

By the end of the project, I had 3 commits. I had also co-committed with Kyle several times. Our backend team collaborated exclusively using Visual Studio's Live Share and we had one person make the official commits to GitHub.

The main challenge I faced during this project was having to learn different backend technologies such as MySQL and Nginx, and making them work with each other so that our application would function seamlessly. Picking a software stack was difficult at first, and Nyan, Kyle and I had to experiment with multiple options before we came to a consensus. Frontend team also kept us updated frequently so that we could choose the best tools for the job. Another difficulty I faced was using GitHub. I am not well-versed in the functionalities that GitHub provides, so I required the help of our GitHub Master Kyle and other members of our team to make sure I was using it correctly and not messing up our repository.

For next time, I will try to contribute more by making more commits on GitHub. From this project, I have learned about the concept of micro-commits, so in the future I would make smaller commits to the develop branch instead of writing all the code and making one big commit. Another improvement I would make is managing my time more efficiently and using free time to learn more about the technologies we were using instead of having to learn it as I am implementing them.

A big thank you to each and every one of our team members for helping each other learn and grow as we developed this impressive product. Also, thank you to our CEO Prof. Petkovic and CTO Prof. Souza for clarifying our doubts every step of the way. I wish you all good luck for your future endeavors.

Kind regards,
Anish Somisetty

Reply

Reply all

Forward

- e) From the standpoint of team lead, Anish is very helpful and shares his knowledge on how backend architecture could be set up and communicate with the frontend team. He was the man behind the codes who are always there to resolve and come up with ideas that could help resolve the problem that we face. He also help setting up the server and google analytics which are vital requirements of our product. Since backend is more of the architecture and setting up framework,

there was not many times where we needed to code purely. Overall, Anish was very helpful and always there during meetings to come up with ideas to resolve the problem.

➤ Kyle Chen

Milestone 5 - Team Member Self Assessment - Kyle



Kyle Chen

To: Nyan Lin Tun; Anish Somisetty; Annie Liao; Jimmy Nguyen; Matthew Mcauley



Fri 5/20/2022 11:56 PM

Greetings Team,

I worked on the backend team with Anish and Nyan to set up the AWS server and configure our application to run on it. In addition, we decided to set up the MySQL database on RDS for an added layer of security and ease of maintenance. Due to the pandemic, most of our collaboration was achieved through Visual Studio Code Liveshare, and meetings on Discord and Zoom instead of in-person. The bulk of our work that followed the server and database setup, was the implementation, and testing/debugging of the backend portion of the login/registration, post creation, and one way messaging. In addition, there was a lot of cross-collaboration in terms of manual site testing with the frontend team, to make sure that every component, from the frontend handlebars framework, the backend JavaScript, to the database, were interfacing and working together without issue. As the GitHub Master, I was responsible for maintaining the repository, working with the team to help maintain good commit practices, keeping the main branch clean, and providing assistance with Git as needed.

By the end of the project, I have contributed with 22 commits to the repository, the majority of which pertained to the backend.

One of the main challenges faced in this project was the learning curve with AWS, Nginx, and MySQL, as I did not have experience with these backend technologies prior to this project. I am very grateful to my teammates for getting me up to speed with the technologies that they were familiar with, and their patience in learning with me about technologies that they weren't as familiar with. Another challenge was deciding on which software stack to use. We found it necessary to make changes to the stack we were using, but the transition went smoothly thanks to frequent updates from the frontend team and helped us to fine tune which technologies to use. As a result, our switch from React to Handlebars was seamless and had minimal impact on our site.

In future projects, I would take more time to understand my strengths and weaknesses, and touch up on what I need to improve on more during my free time, so that I can take a more active role in contributing to the team. Furthermore, I will make more micro-commits rather than fewer larger commits, so that each commit allows for a graceful retreat in the not so unlikely event that something goes wrong. I will definitely touch up on my skills, so that I could help to provide more input next time.

It has been an honor to work with CEO Professor Petkovic, CTO Professor Souza, and every team member. Thank you all for this wonderful semester, and I would be honored to work with you all in the future.

Best,
Kyle Chen

e) From the standpoint of team lead, Kyle was very proactive and very communicative with the team. Kyle was always there, being the lead coder of our backend team. Kyle was also the GitHub master of our team and he is very knowledgeable and very passionate about working with the industry standard when it comes to GitHub commits. He showed us how we could more utilize the GitHub to keep our project more fluid and less risks. Overall, Kyle was super proactive and always willing to help and work together on resolving the problems.

➤ Annie Liao

Milestone 5 - Team Member Self Assessment - Annie

AL

Annie Liao

To: Nyan Lin Tun

Cc: Jimmy Nguyen; Matthew Mcauley; Anish Somisetty; Kyle Chen



Fri 5/20/2022 3:02 PM

Hello Team,

My role as a frontend team member was to focus on the UI design and components of our website, Gator BnS. I was the one who designed the website along with all the mockups. For every mockup I created, I asked my team members for opinions and adjusted them accordingly. I also contributed to coding all pages and components of our website along with my frontend team members, Matthew, and Jimmy. I mainly focused on styling the pages while I had Jimmy and Matthew to work on the basic skeletons of the pages without CSS. I have art experience, so we agreed to have me focus on styling the pages. Aside from my role as a frontend team member, I was also contributing to the backend team. I personally had most experience with handlebars, MYSQL and Express.js, therefore, when the backend team was struggling with MYSQL queries, I stepped in to try my best and explain how queries work and how we could fetch data from MYSQL workbench using JavaScript. I contributed to implementing the search and sort functionality with the help of Kyle from the backend team. I also helped a little here and there for the other priority functions which included Create a Post, Messages, Login and Registration.

By the end of the project, I have contributed with 31 commits.

Overall, I believe the main challenge was that this was my first time working with a group of students who I do not know. For every other project I worked on in other classes, I was working with friends who I knew personally. I know my friends to the extent that I know their weaknesses and I know what adjustments need to be made to cover each other's weaknesses. Most importantly, I trusted them. So, when I was put in a group with strangers, it is normal to question their ability and work ethics. Thankfully, as time pass, my group became more comfortable working with each other. We make sure to understand each other's ability and step in when someone is struggling solving an issue.

If there was a next time, I think I could do better on designing the website. Due to the limited amount of time for us to implement the priorities, we just did the bare minimum of making the website look nice enough for it to be acceptable. I personally think I could do better styling if we had more time. Aside from that, I wish we had the time to learn and touch upon React. Originally, we wanted to work with React but due to the amount of work load each team member had, we weren't confident we would have enough time to learn React and complete the milestones on time. Therefore, we decided to stick with Handlebars, Express.js which we had more familiarity with.

Best,
Annie

- e) From the standpoint of team lead, Annie is very proactive and very knowledgeable from both frontend to backend. Annie is our main coding expert and she took on the role of fullstack developer of our team. I do agree with Annie how we first have not much idea of our technical stack and we had to make several changes as we work along the project. Thankfully, it went better than we all expected, migrating from one technical aspect to another because of Annie's knowledge and persistence in making sure all aspects of our project is working. Overall, Annie was a very proactive and very enthusiastic in her creation and she was the main creating our

website's layouts and CSS. We wouldn't have been able to complete a lot more smoothly of our project without Annie's expertise and persistence.

➤ Matthew McAuley

Milestone 5 - Team Member Self Assessment - Matthew



Matthew Mcauley



Fri 5/20/2022 2:54 PM

To: Nyan Lin Tun

Cc: Jimmy Nguyen; Annie Liao; Anish Somisetty; Kyle Chen

Hello Team,

1) I worked on the front-end with Annie and Jimmy to work on the UI components of the website. I worked on creating the skeletons of the various pages of the website and provided some styling to said pages. I also helped test the responsiveness of the pages when it came to scaling of the grid. I also my teammates on the project such as review use cases, doing code review, and to have a populate website with different sellers selling various items. In the end I mostly provided support to the rest of my team help testing various aspect of the website.

2) I made a total of 6 commits which were mostly dealing with the front-end branch.

3) I believe the main challenges I dealt with from the front-end was learning the different a different software stack. We initially used React for the software stack of the front-end which Jimmy was a good teacher trying to teach us how to use it. After trying out React, we all decided to switch to handlebars. Handlebars was a software we were all familiar with and was more straightforward to accomplish the goals for the project. Another challenge for me personally was being more active in the group. I was very passive in the group and would work on tasks assigned to me and mainly supported the efforts of the other members in my group like Annie and Jimmy.

4) Next time when working on a project like this I would be more active in the group. I would try to be more active when it came to task to spread the workload more evenly. This would help ease the workload of others and to have more commit opportunities for myself. I would also try to learn new frameworks like React so when working on a new project we would not need to change the framework. That said we change the framework early on, so it was not a big issue.

Thank you, team for the great semester and hope to work with you all in the future.

v/r,

Matthew McAuley

e) From the standpoint of team lead, Matthew was always willing to help and work on the task he is being delegated. He was very helpful to Jimmy and Annie when we had to migrate a

different technical stack. Matthew was also our main QA and tester for usability. His evaluation and responses were very helpful to us while curating our website's interface. He also suggests design changes and patterns for a better usability and to improve our user experience. Overall, Matthew was very helpful and help us keep track of our project tasks.