SW Engineering CSC648/848 Spring 2022

Gator Express

Team 3

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Milestone 2

04/09/2022

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

1. Executive Summary

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

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

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

2. List of main data items and entities

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

        - Price
        - Classes it was used for

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

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

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

Database Organization

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

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

3. Initial list of functional requirements

Priority 1

Anonymous Users:

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

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

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

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

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

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

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

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

(18.1) Shall contain name, email id.

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

(18.3) Shall contain terms and conditions.

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

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

Registered Users:

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

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

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

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

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

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

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

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

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

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

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

Admin:

(23) Admin shall manage the posts.

(24) Admin shall view requests to add posts.

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

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

Priority 2

Admin:

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

Priority 3

Anonymous Users:

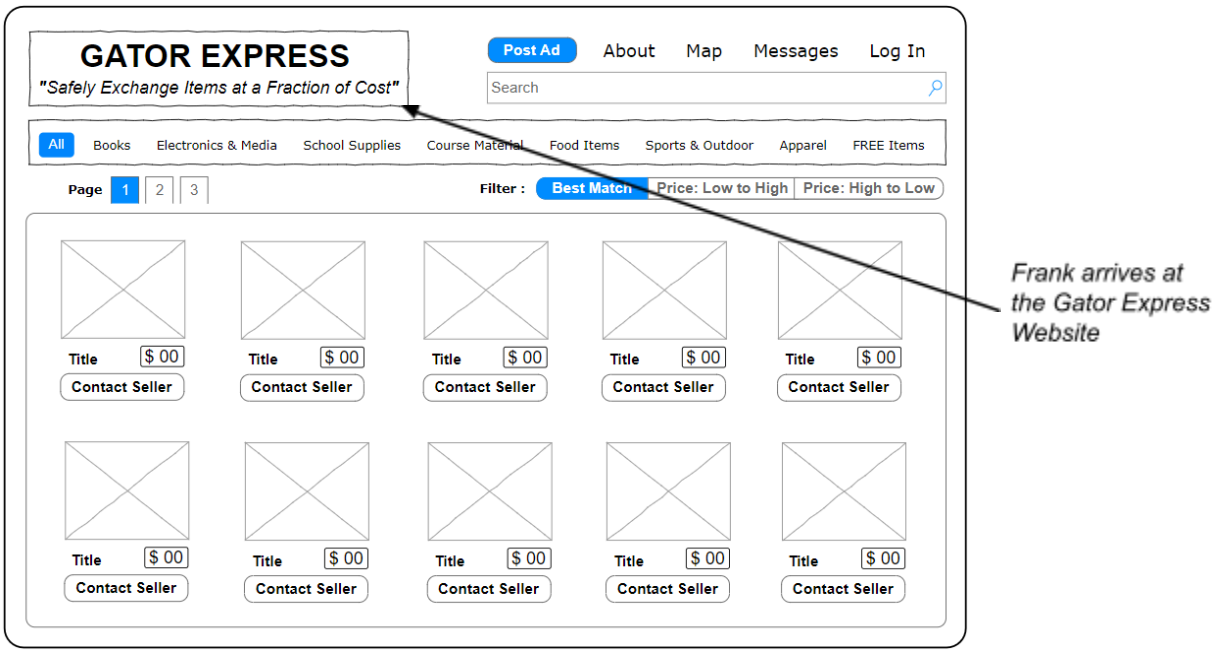
(29) Anonymous users shall be able to sort search results based on similarity.

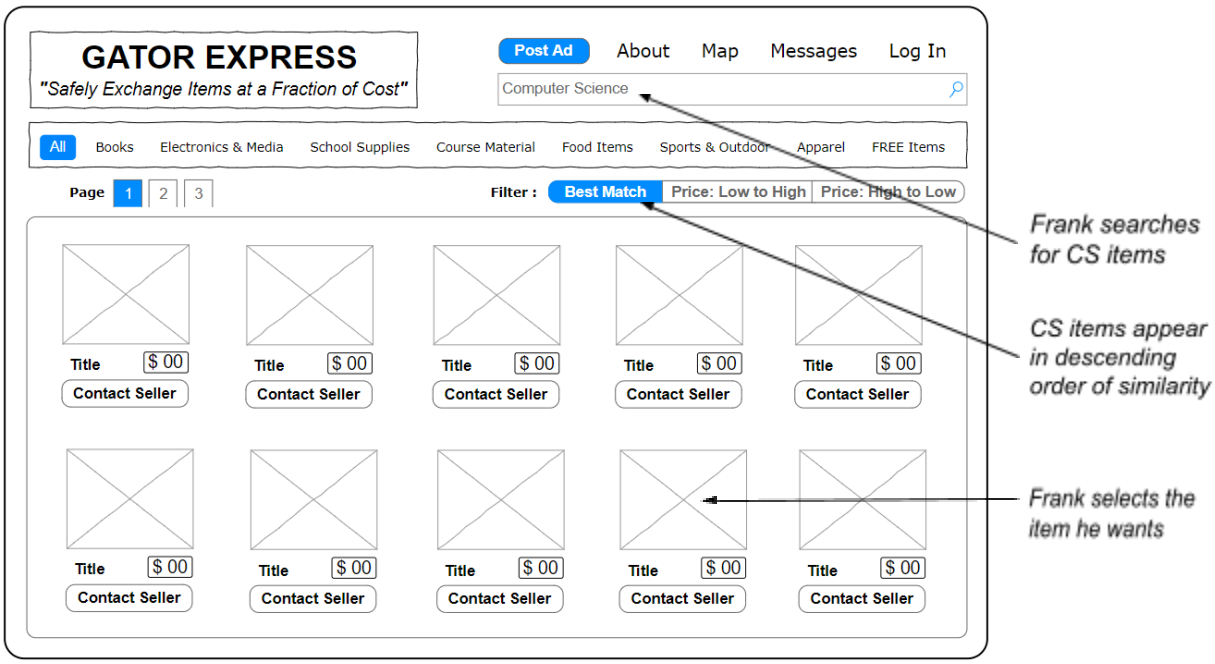
Revisions to UI will be directly implemented into the application to meet the deadline for M3.

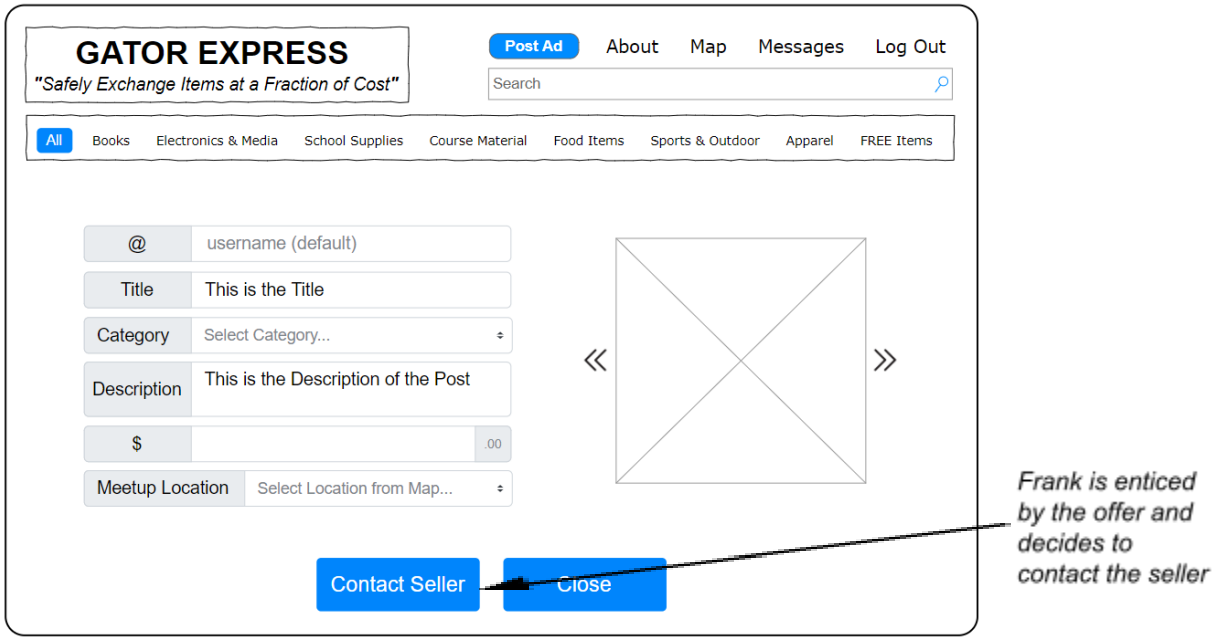
4. UI Storyboards for each main use case

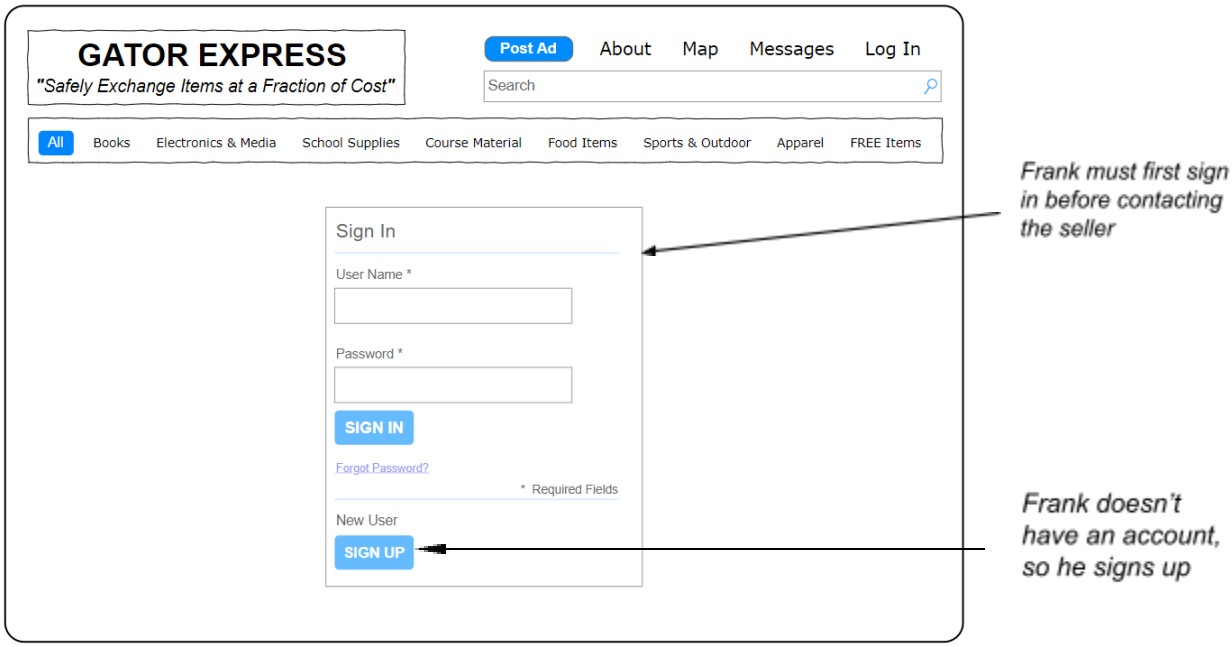
I. First-Time Buyer: Frank is a computer science major, taking two CS courses and three GE courses. Frank has no school supplies and is looking for an easy way to get them while meeting other students at the same time. However, he is unemployed with very little money to spend. Also, he does not know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

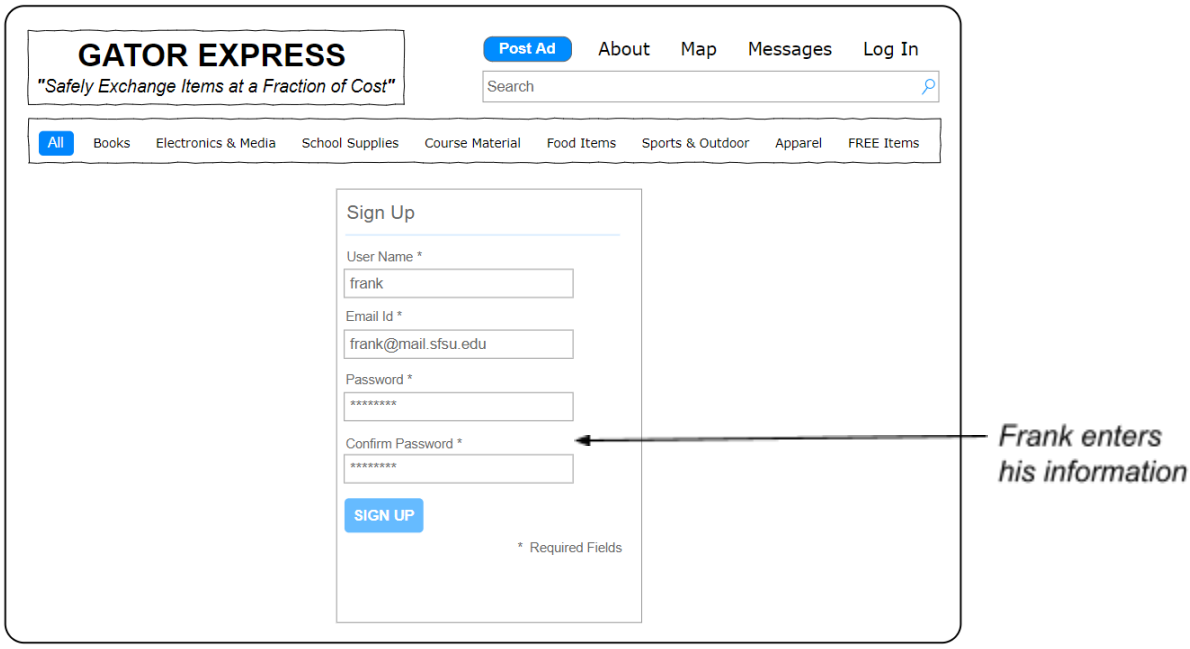
On Gator Express, Frank can choose to browse and buy items from other SFSU affiliates. Frank can also choose to post and sell any items that he owns to any interested buyers. Either way, an exchange must be made in-person on the SFSU campus for the purpose of maintaining reliability and security. In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




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


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


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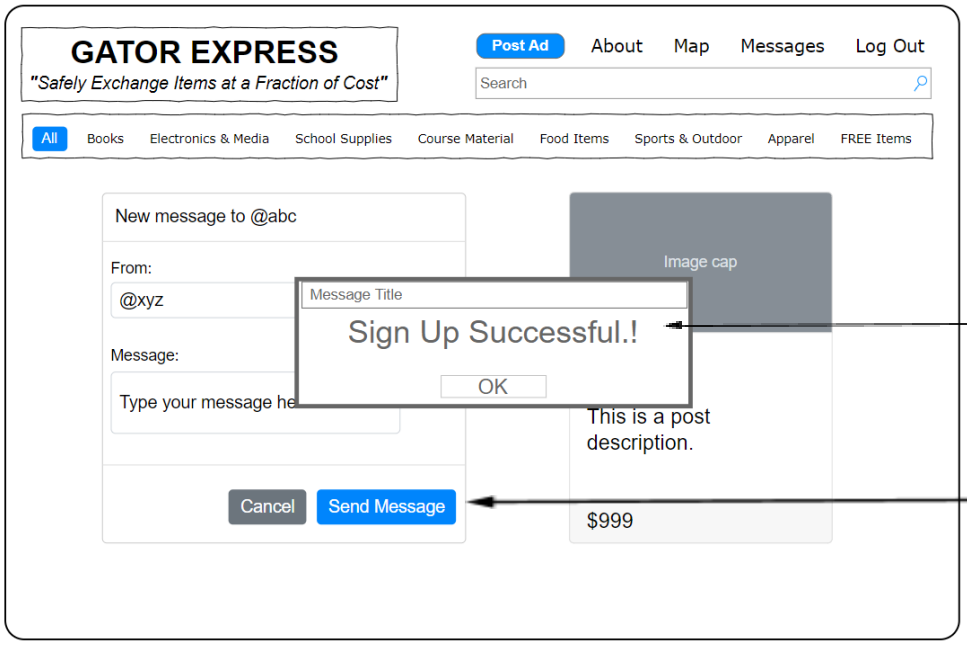
Post Ad
About
Map
Messages
Log In
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Sign Up
User Name *
frank
Email Id *
frank@mail.sfsu.edu
Password *
****
Confirm Password *
****
SIGN UP
* Required Fields
Frank enters his information



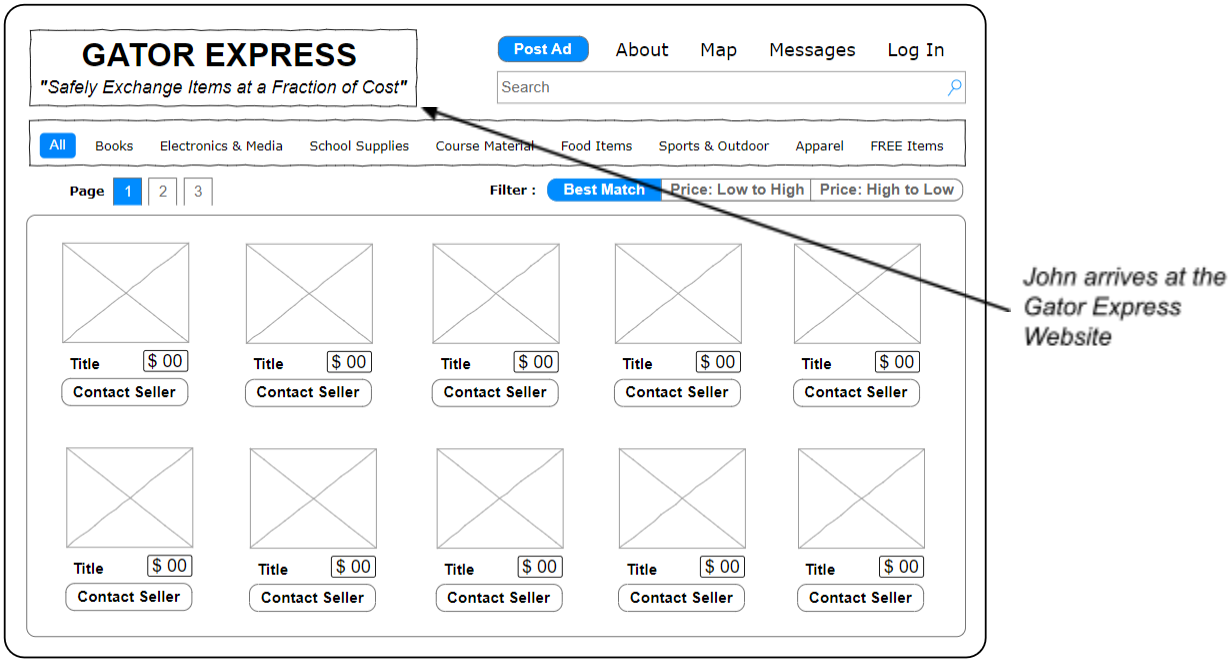
Having used his SFSU email, Frank successfully creates his Gator Express account

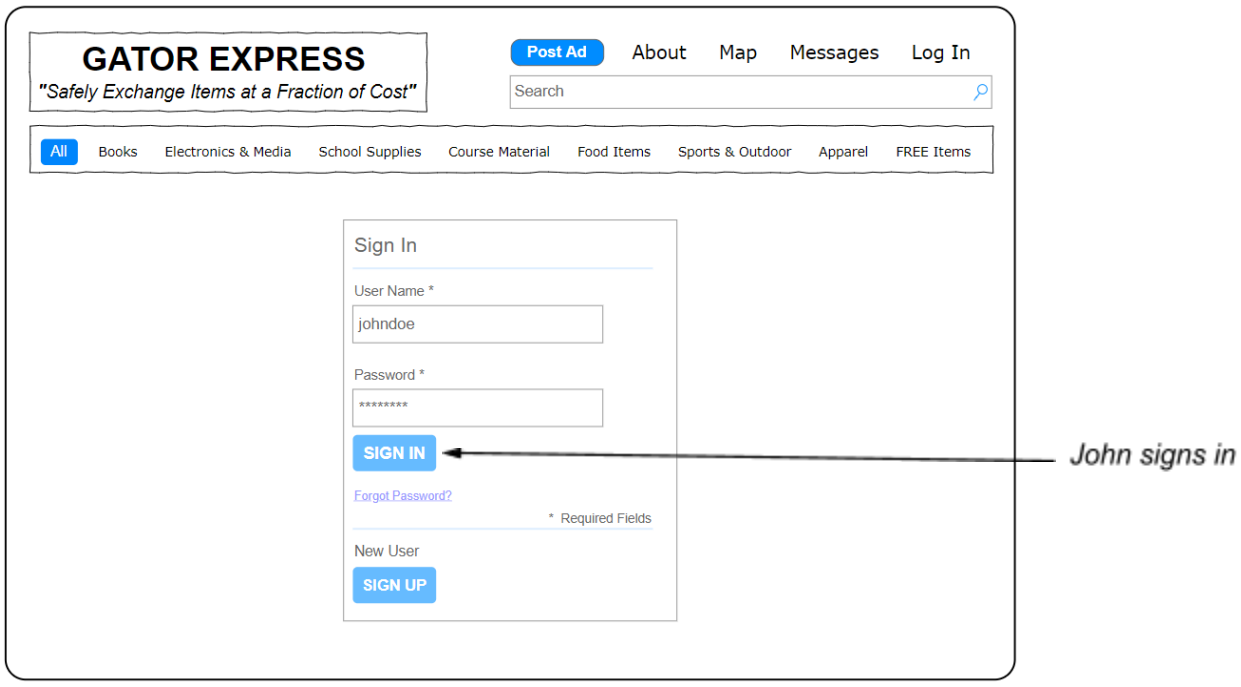
Frank sends a message to the seller expressing his interest in the item along with his contact information and a proposed exchange location

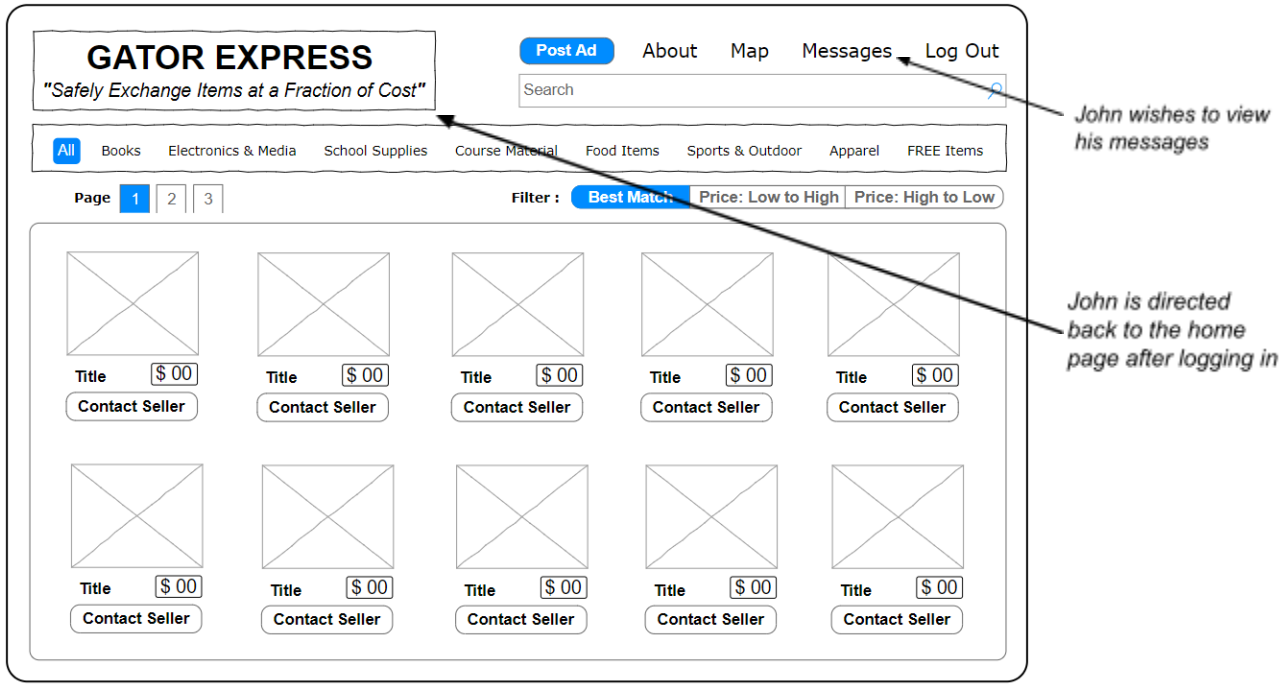
Frank can also view his posts though as a first-time buyer, this will be empty.

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

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




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


GATOR EXPRESS
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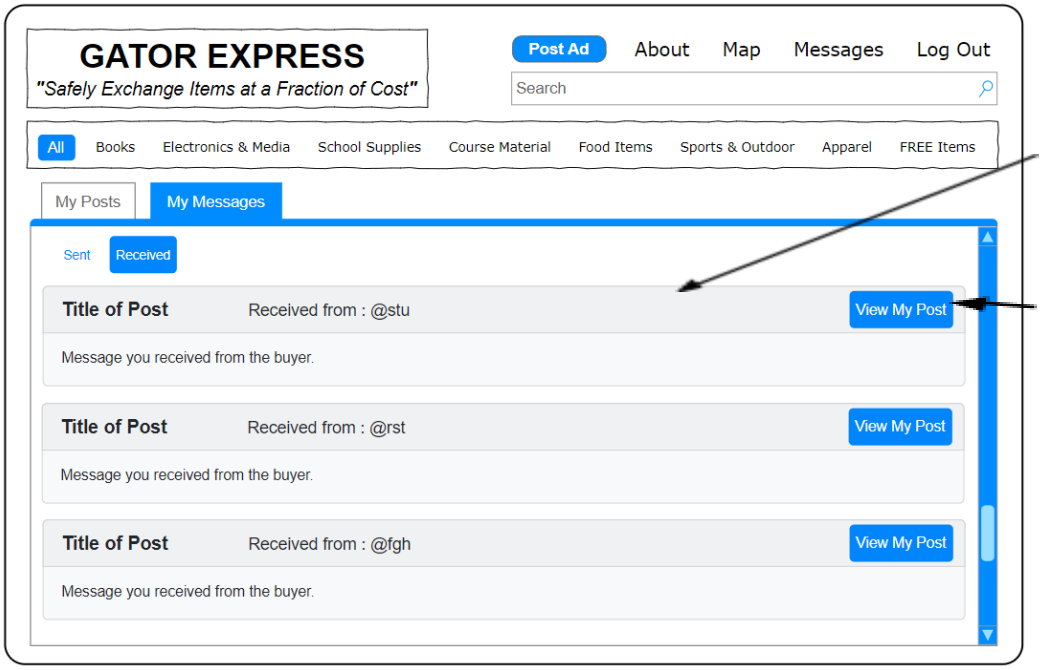
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Page
1
2
3
Filter :
Best Match
Price: Low to High
Price: High to Low
Title
$ 00
Contact Seller
John wishes to view his messages
John is directed back to the home page after logging in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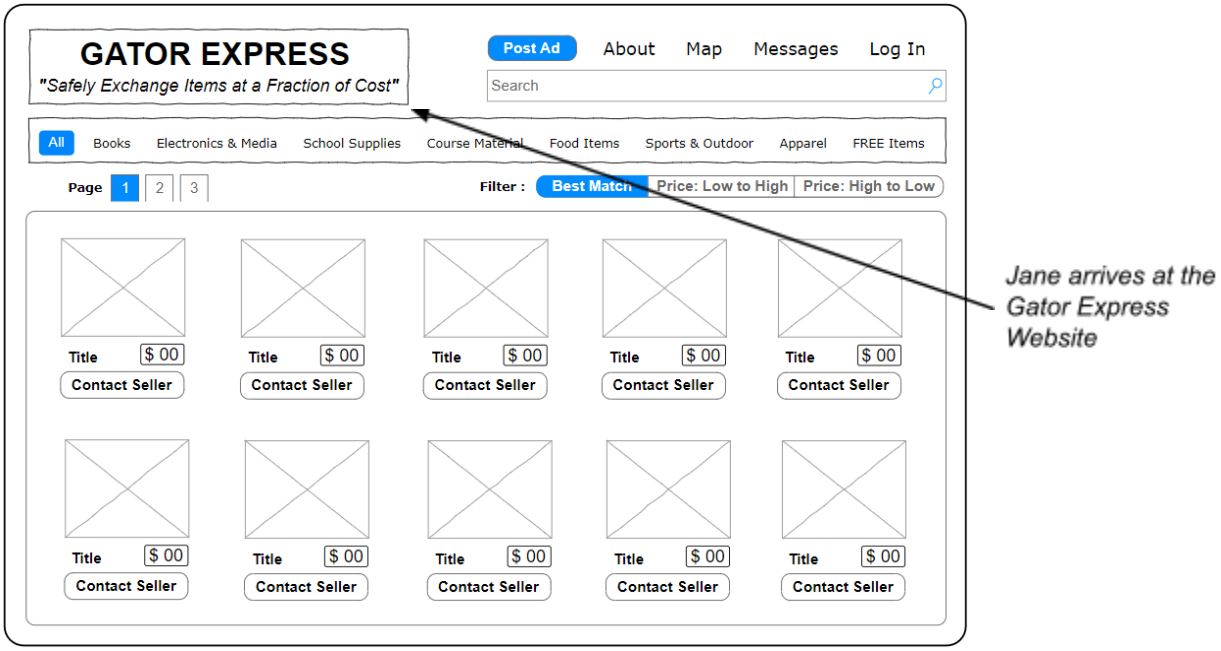
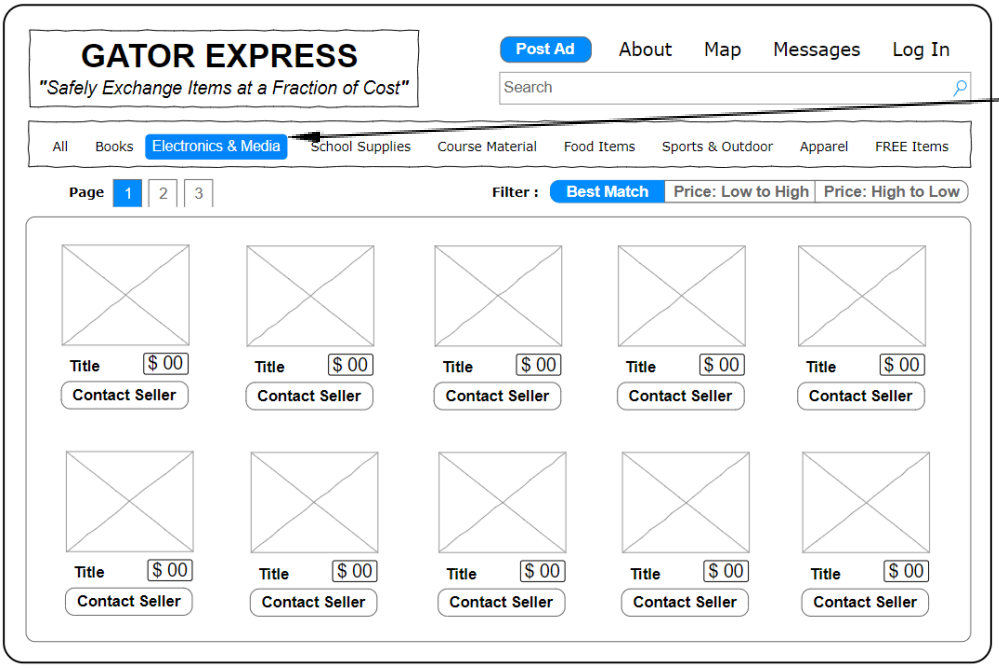
"Safely Exchange Items at a Fraction of Cost"
Post Ad
About
Map
Messages
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
My Posts
My Messages
Sent
Received
Title of Post
Received from : @stu
View My Post
Message you received from the buyer.
Title of Post
Received from : @rst
View My Post
Message you received from the buyer.
Title of Post
Received from : @fgh
View My Post
Message you received from the buyer.
John can view messages he's received from prospective buyers
John can also click here if he wants to review the item that he is selling

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

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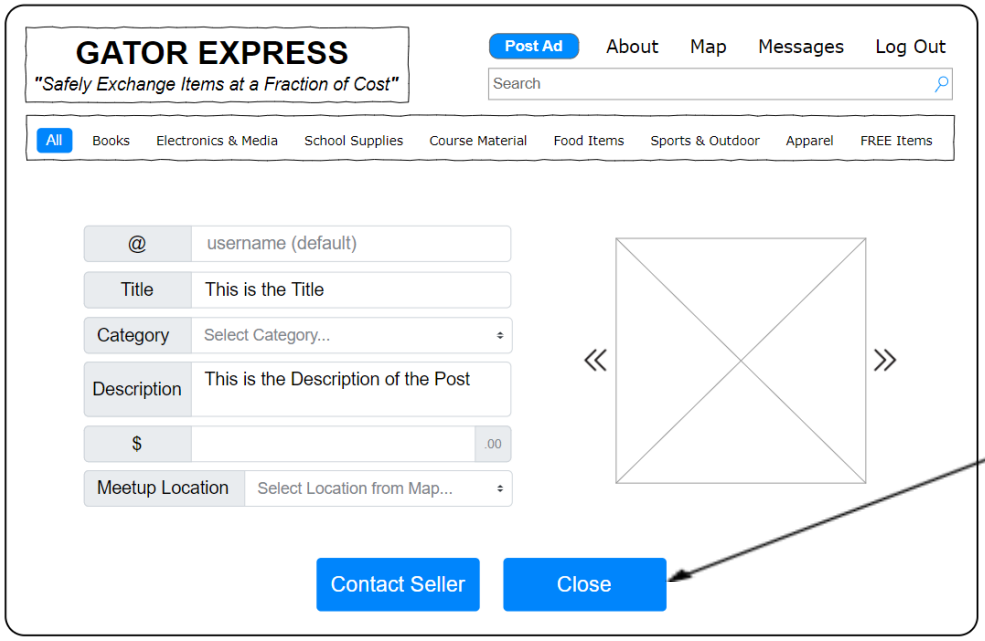
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
Page
1
2
3
Filter :
Best Match
Price: Low to High
Price: High to Low
Title
$ 00
Contact Seller
Jane narrows search to Electronics & Media only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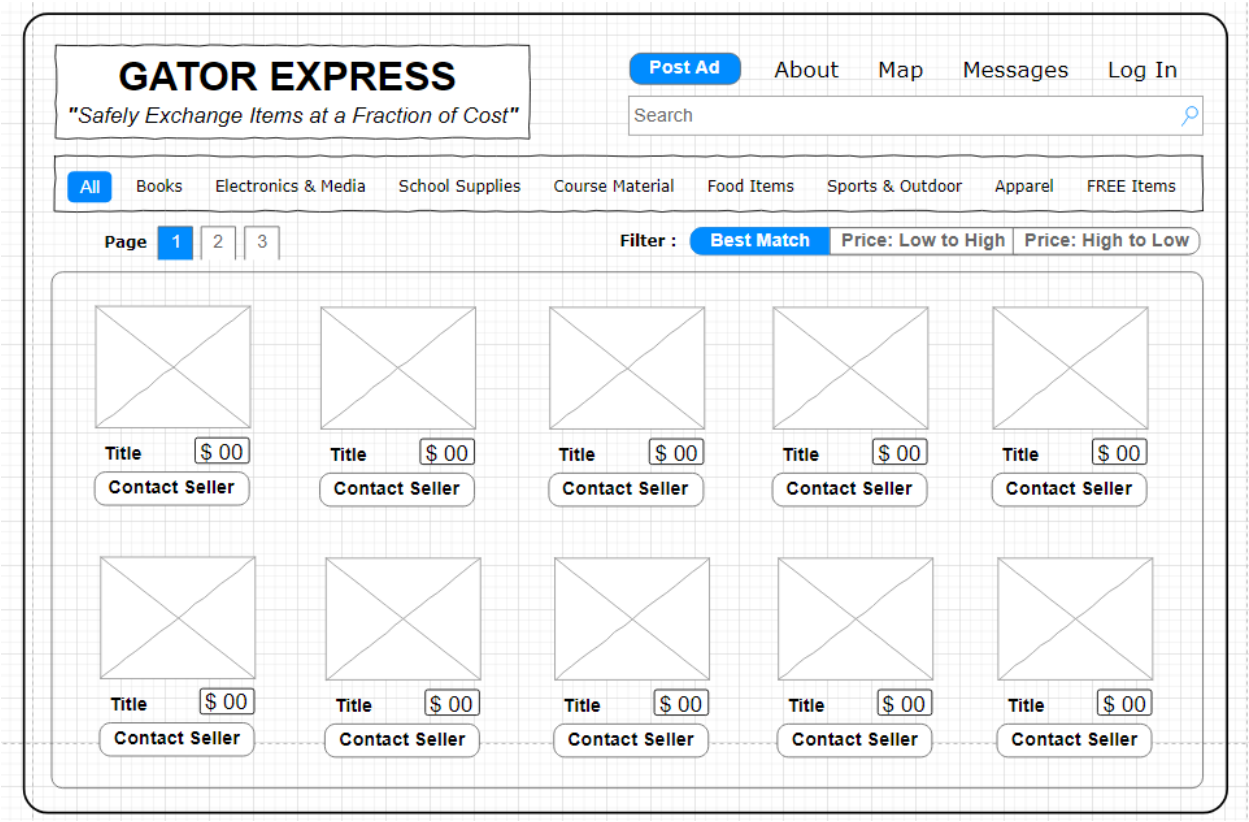
Log Out
Search
All
Books
Electronics & Media
School Supplies
Course Material
Food Items
Sports & Outdoor
Apparel
FREE Items
@
username (default)
Title
This is the Title
Category
Select Category...
Description
This is the Description of the Post
$
.00
Meetup Location
Select Location from Map...
Contact Seller
Close
Jane is not interested in offer and returns to search

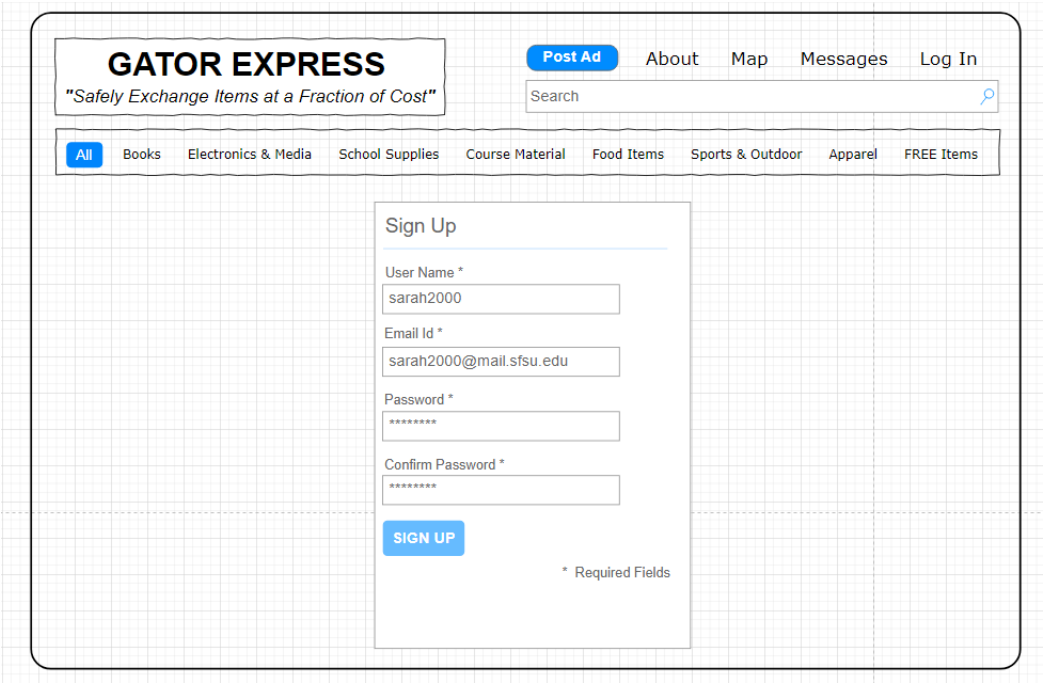
IV. New Buyer Purchase Process: Sarah is a SFSU freshman who is starting her first week of classes on campus. Her professors assign texts that she must acquire in order to pass the class because her homework is dependent on it. When she looks up the textbooks online she finds that they're a bit pricey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

Figure 1.



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

Figure 2.



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

Figure 3.

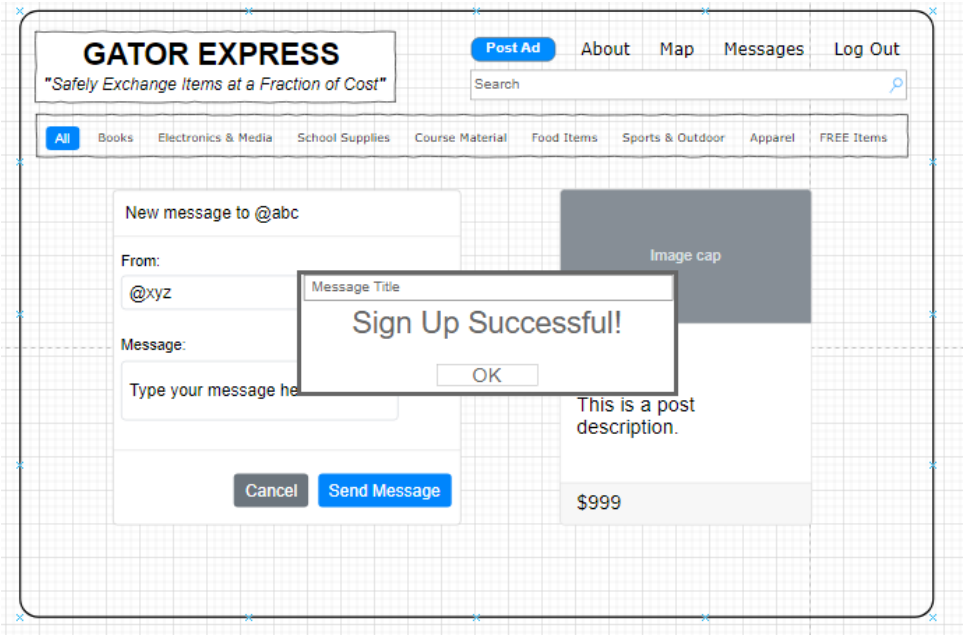
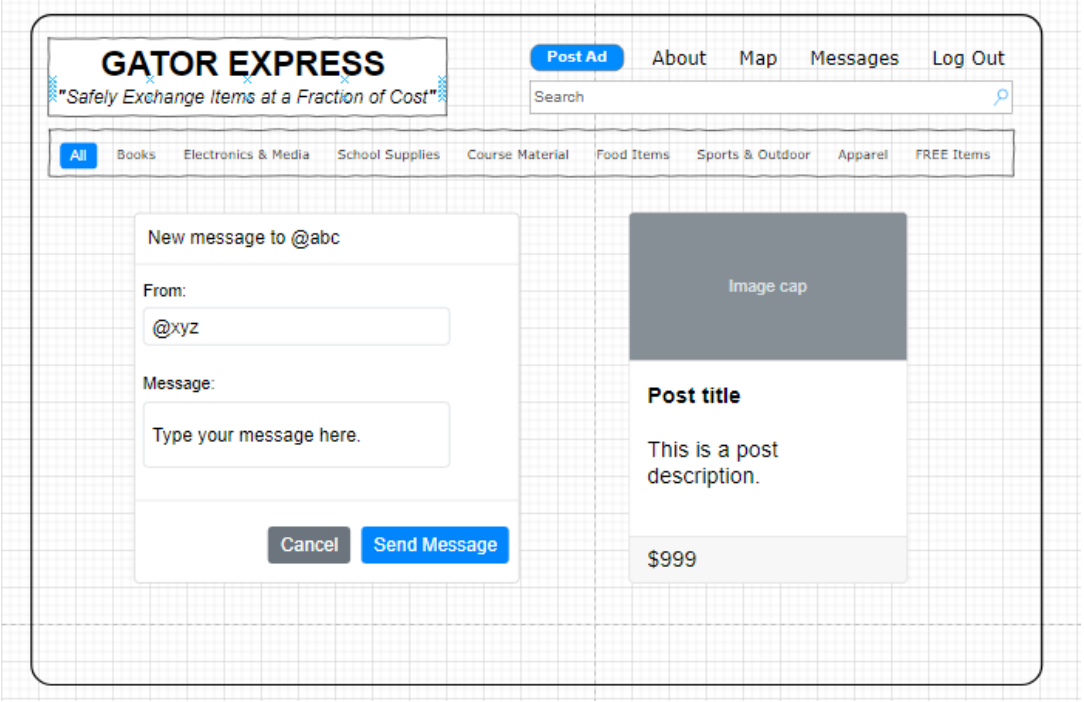
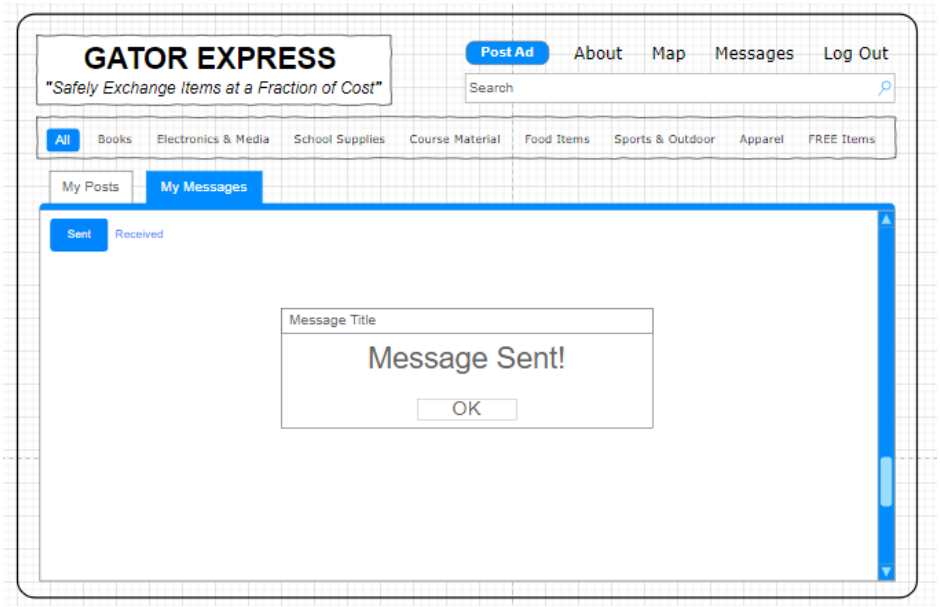


Figure 4.



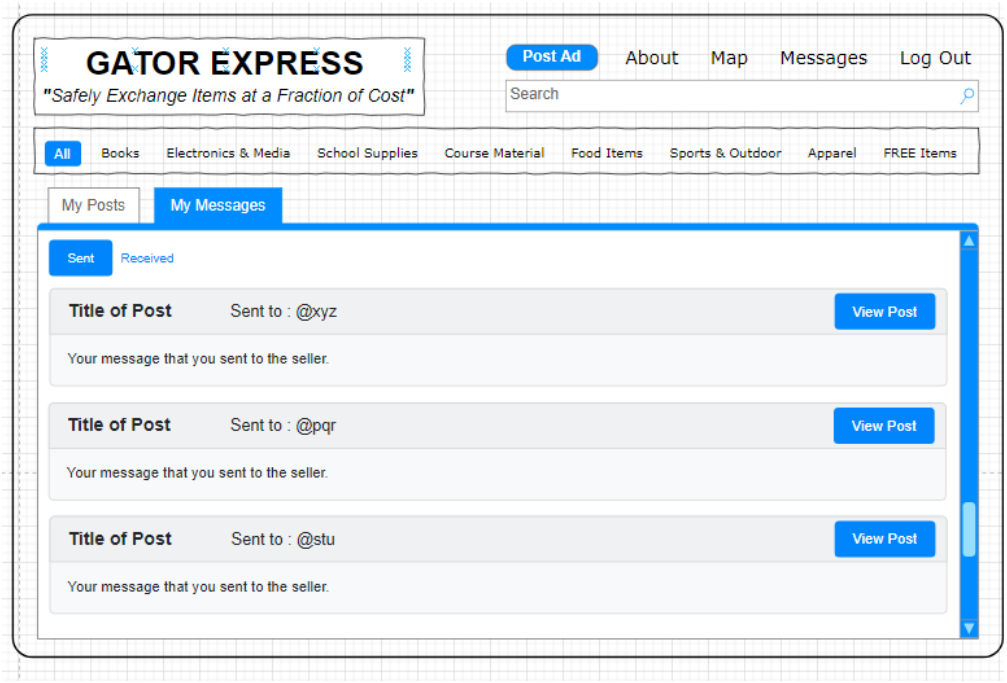
After clearing the notification Sarah will see the full page to contact the seller for the listing.

Figure 5.



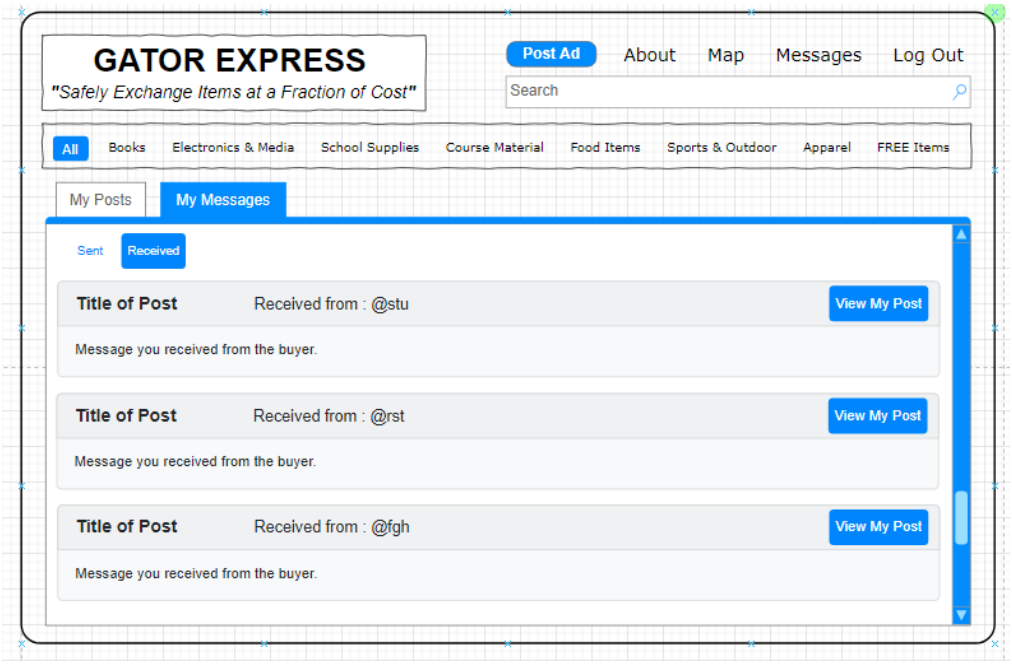
After contacting the seller, Sarah will see a message confirming her message was sent.

Figure 6.



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

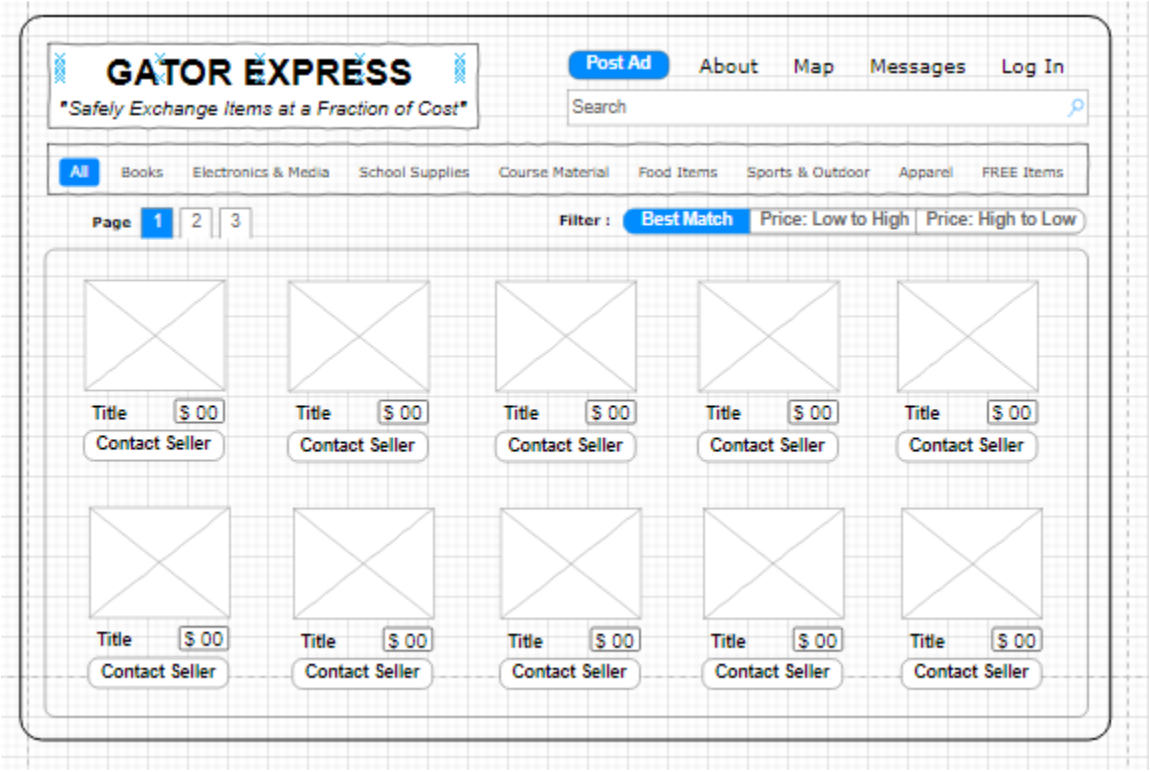
Figure 7.



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

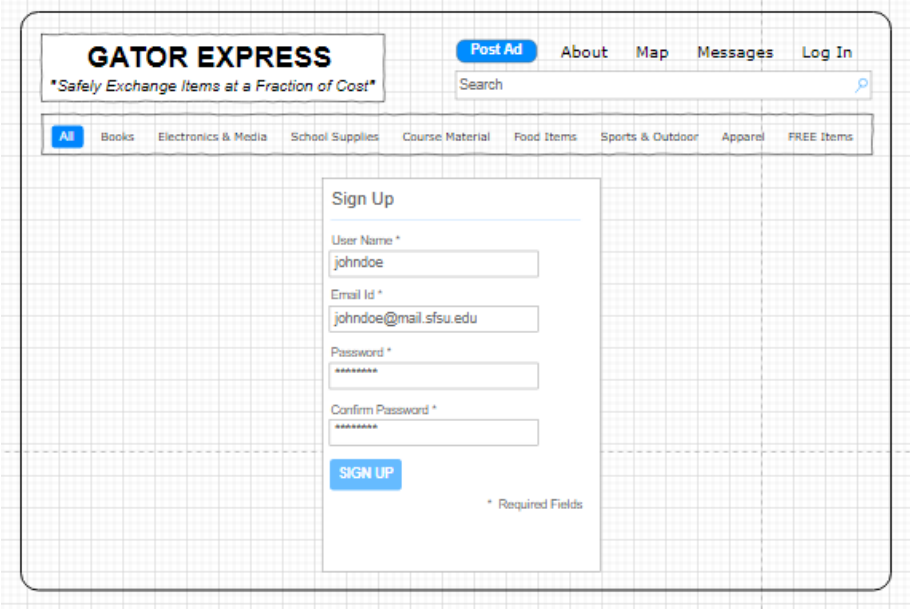
V. New Seller Process: Professor Vera is looking to upgrade to an updated, more modern calculator. The one he has right now is in perfect working condition. He thinks updating his calculator is a waste of money because he would just have to toss his old one. He explains this to his TA and the TA brings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

Figure 1.



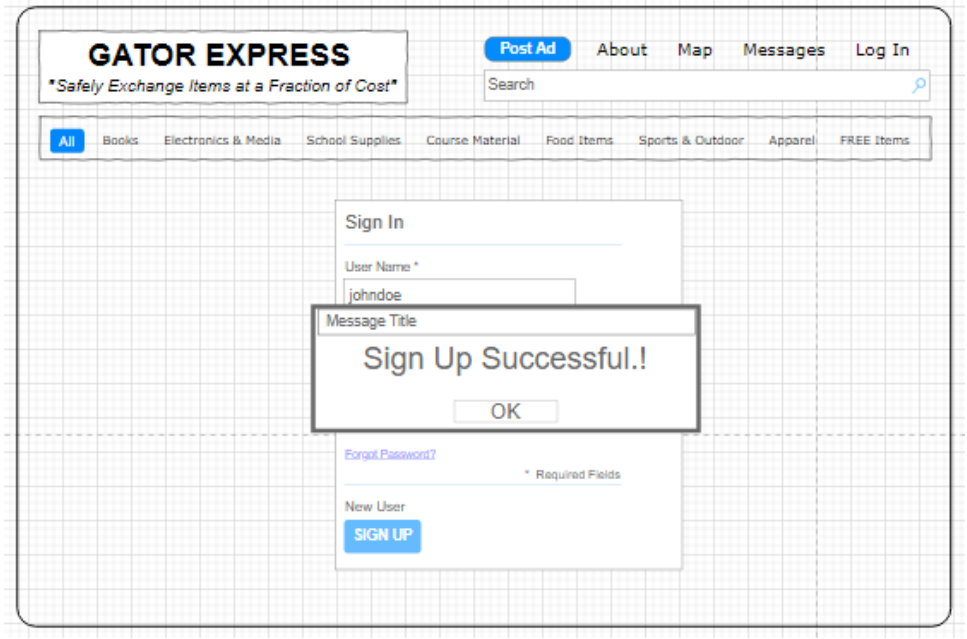
Professor Vera finds his way to our website where he is greeted with our homepage.

Figure 2.



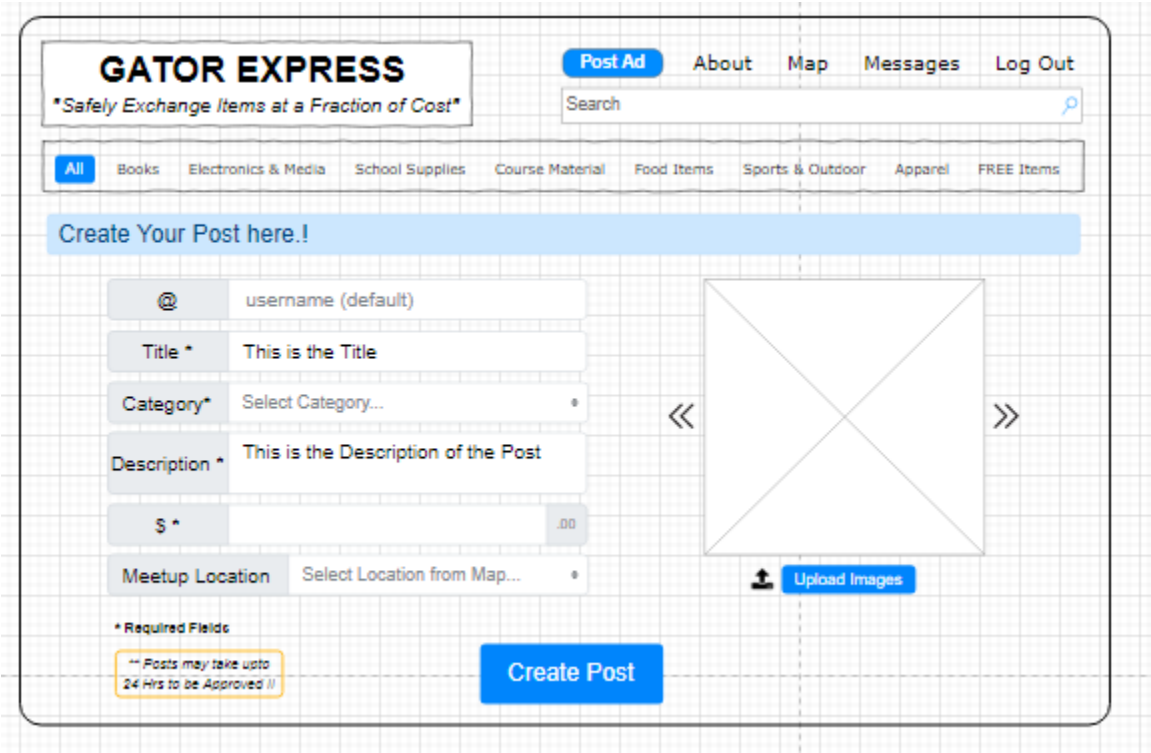
Professor Vera aims to sell his current calculator, so he will click on "Post Ad" where he will be redirected to the sign up page since he is not logged in with any credentials.

Figure 3.



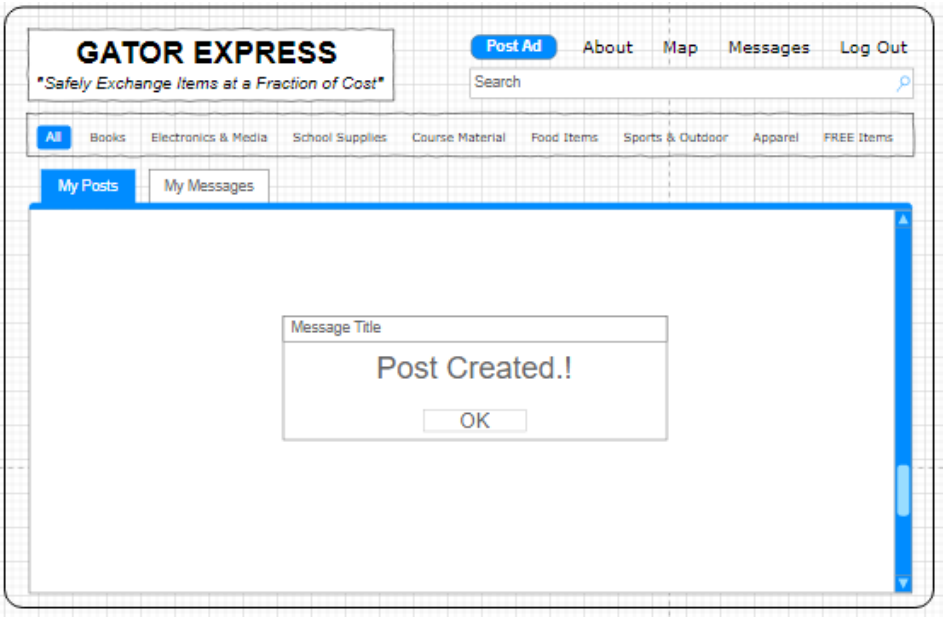
Here Professor Vera will receive the notification for signing up successfully.

Figure 4.



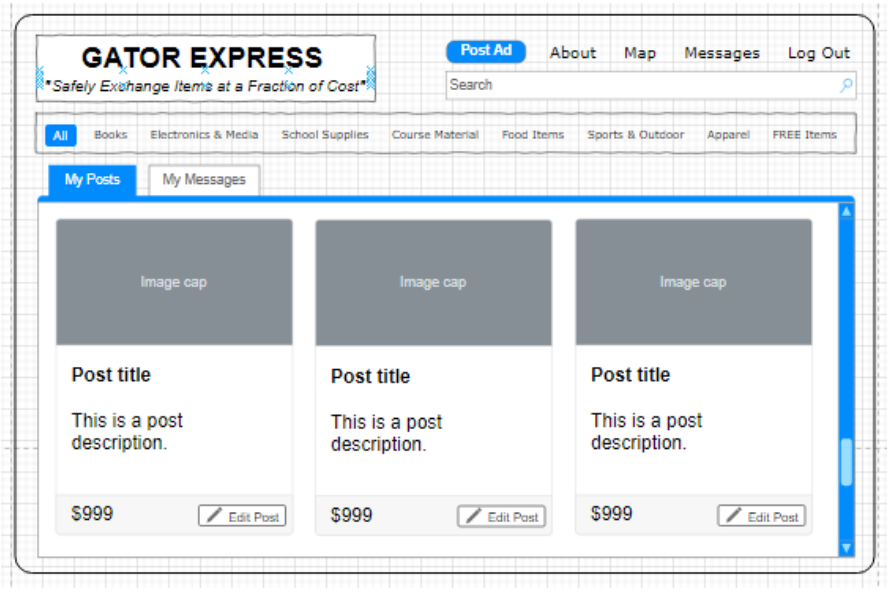
Now Professor Vera will be redirected back to the Post Ad page where he will be able to fill out the required fields to have his post go live.

Figure 5.



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

Figure 6.



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

5. High level Architecture, Database Organization

Database Organization

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

Media Storage

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

Search/Filter

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

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

Software Used

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

6. Key Risks

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

7. Project management

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

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