SW Engineering CSC 648/848 Fall 2020
SFSU Market

Team # 03

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"Milestone 2"

Due Date: October 15, 2020

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1. **Executive Summary**

The goal of this product is to streamline the currently spread-out method by which students, faculty, and staff exchange items and services at SFSU. As of now, there is no real hub to do this, with transactions being spread across many platforms. For instance, a student might post a used textbook on a Facebook group, a tutoring offer on a bulletin board, or an old couch they do not need anymore on Craigslist. Our goal is to consolidate all of this by creating a versatile platform on which all services and goods that could be exchanged in this way can be advertised and sold.

Users will also be able to tag their listings by the classes their items are used in, and search using these tags. This feature is in many places on the internet and is very useful when it is used. This project will be no exception to that. For example, if a student is buying several textbooks for a class, this prevents students from having to look for each book individually. If they are in a class with five textbooks required, for example, they can simply search using that class name and see all listings that have been marked as related to the class..

Our team consists of five undergraduate students in the computer science department. Several of us have completed general education requirements at SFSU, and all of us have had to get books for a class here. Since this is true, we are all aware of the challenges in this process and have been able to develop a manner in which we would like to address them. The team also contains people who have switched majors from a BA to a BS and therefore are more able to approach this problem from both of these angles.

2. List of Main Data Items and Entities
1. User
    a. Two types of possible users (stored as bool)
        i. REGISTERED
        ii. ADMIN
    b. Registration Record
        i. Name
        ii. Email (used to verify SFSU member)
        iii. Password (Encrypted)
        iv. Avatar (Possibly upload their own or select from various possibilities)
2. Chat
    a. A collection of messages that can be accessed by either of the two involved users.
    b. Contains sent and read times.
3. Message
    a. The messages for each user that they can access.
    b. These messages are used for communication within the app so that users can ask questions pertaining to listings and set up meetings for exchanges.
4. Listing
    a. Will contain the following elements
        i. Key: Randomly generated ID
        ii. Title: String
        iii. Description: String
        iv. Category: List of Categories
        v. Price: Int
        vi. Images: List of Images
5. Item
    a. Will contain the following elements
        i. Name: String
        ii. Class: If there is one
        iii. ISP: If there is one
6. Category
    a. The category of the item for sorting purposes.
7. Image
    a. This entity will contain the following elements
        i. Key: Randomly generated ID
        ii. Name: String
        iii. Url: String (location in S3 bucket)
8. Class
    a. Contains all class names and numbers. Used for sorting as well.

3. Functional Requirements - prioritized
(Priority ratings: (1) → *must have,* (2) → *desired,* and (3) → *opportunistic*)
(Types of users: **U** → unregistered, **R** → registered, and **A** → Admins)

(1) → *must have:*
1. Unregistered users shall be able to create accounts on the application. (1)**U**
- Creating an account on the application will secure personal data of buyers and sellers and only allow SFSU students or related facility members to buy and sell.
2. Registered users shall be able to log in to their preexisting accounts. (1)**R**
- Users do not have to create a new account each time they want to buy or sell, allowing them to easily buy and sell in the future.
3. Registered users who have logged in shall be able to log out through the application. (1)**R**
- Users may log in and out as they desire without any complications.
4. Registered, logged-in users shall be able to list an item or service for sale on this application and attach images to that listing. (1)**R**
- This feature is important because it will give a complete review to users who would want to buy the item. It will only allow registered and approved SFSU students to create listings while unregistered users may view the item but cannot purchase until they register.
5. Registered, logged-in users shall be able to message other users privately. (1)**R**
- This function is very important as there is no shipping the item to the user in our application. Therefore, users must contact each other using a private messaging system, allowing them to discuss the price, meet up location and time and other questions they might have for each other.
6. Registered, logged-in users shall be able to mark an item as sold once sold out. (1)**R**
- This is important because it allows the users to see which items are no longer available, so they do not contact the users for an item that is unavailable.
7. Site admins shall be required to verify all listings before they are made public. (1)**A**
- This is to ensure that our application stays professional where there are no listings upsetting or harming anyone and to reduce the chances of any scams that may occur.
8. Site admins shall be able to delete or lock posts made by registered users. (1)**A**
- This allows our admins to have control of what is being shared on our application and ensure that the listings made on our application are appropriate to the intended platform.
9. Site admins shall be able to delete comments made on posts. (1) **A**
- If there are comments that are intended to hurt other users, then admins have the authority to delete comments that are not appropriate and offer negative feedback.
10. All users shall be able to view posts. (1)**U, R, A**
- An important function to allow all registered and unregistered users to see listings made by other users at SFSU.

11. All users shall be able to search for listings by title and other criteria such as location, price and tags. (1)
   - This function makes it easy for users to find items. They may search an item by the specific name or they may make a broad search to find the item they are looking for.

(2) → *desired:*
12. Unregistered users shall not be prompted to register until the final stages of performing an action on the website. Unregistered users shall be able to begin an action that requires the user to be logged in to an account. They will be unable to finish these actions without registering. (2)**U**
   - This allows the user to stay on the application without having an account and will prompt them to a registration page once they are ready to buy or sell. This creates an opening inviting doors experience for the users.
13. On load, the site shall display the most recent posts made on the application. (2)**U, R, A**
   - This is to grab the users attention as soon as they open the application.
14. Site admins shall maintain a list of locations that are designated as safe for exchange, which will be publicly available for both registered and non-registered users to access. (2)**A**
   - One of our main goals with this application is to create an environment that is both safe and convenient for our SFSU users. This function ensures a level of safety when it comes to the transactions between a buyer and seller. It also takes the question of meet up location since we offer designated safe locations.

(3) → *opportunistic:*
15. Registered, logged-in users shall be able to add tags to their listings. (3)**R**
   - This feature is rated as opportunistic because you can still find items without using their tags, but with this feature it will simplify finding certain items when you filter them out using specific tags to that item. Makes the users job in searching for items quick and easy.
16. Registered, logged-in users shall be able to make public comments on listings. (3)**R**
   - This function allows the user to post comments as a review of their experience with the seller and their item. This function answers some questions that another user may have for the item and allows users to completely understand the item before they continue with the purchase.
17. Registered, logged-in users shall be able to rate other users they have made transactions with. (3)**R**
   - Similar to the function of posting comments on the listings of other users, this function is also public and allows other users to rate their experience with other users they have had business with. Ultimately, this function creates an environment with credibility and decreases the chances of being scammed.

4. UI Mockups and Storyboards

Inexpensive Resources-Jennifer is worried she is going to spend too much on one textbook and iClicker. Her roommate told her about the website where SF State students can sell and buy used school materials. She uses the search toolbar to look up the clicker and her textbook. She finds her specific matches and reaches out to the seller, after which she is prompted to register as a user first. They then decide a meet up place and time through the private chat between Jennifer and the seller. This is very convenient for Jennifer because she lives on campus and ended up finding someone with her book and iClicker that also lives on campus. Now Jennifer is ready for her semester as a first year Bio student.
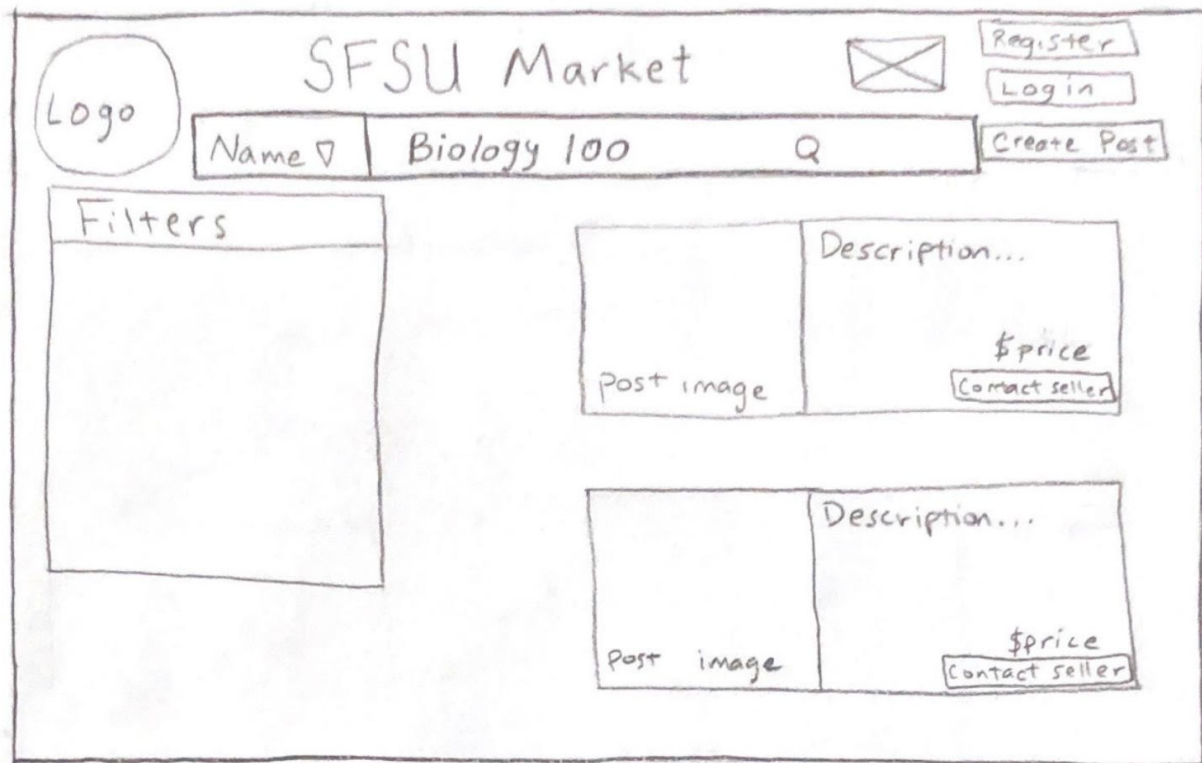
Quick Resources-Edgar needs a Physics textbook very soon for completing his first assignment that is due next week. He found out that some students are selling their old textbooks on a website. He used the search bar on top of the page to search for books he's looking for. He found the exact textbook, and after clicking on the textbook it took him to the description page that he could see the bigger picture of the item, price, category, and item description.
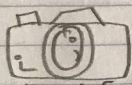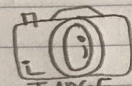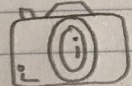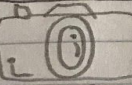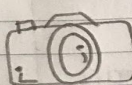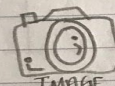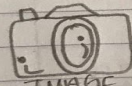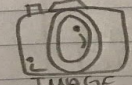
Online Textbooks-Monica works eight hour days and travels from city to city for her job so school for her is remote. At the end of her day she needs her electronic textbooks to be easily accessible and ready for download. Monica did some research and found a website through SFSU where students can buy and sell a variety of items. She browsed the website and was able to pick out what she needed very easily by searching by title and tags. Once her browsing was concluded, she was able to message the seller and purchase the link to her online textbook receiving it in minutes. Monica is now ready for the semester and knows at any time she can easily purchase anything she needs from SFSU Market.

Sketch 1

SFSU Market

Logo | Name | Search 🔍 | Log in / Register / Create post

✉️

Filter ⌃
- Books ⌄
- Tutoring ⌄
- Housing ⌄
- Electronis ⌄

IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]

Sketch 2

SFSU Market

Logo | Name | Search 🔍 | Hello, Monica! / Create post

✉️

Filter ⌃
- Books ⌃
  - Math ☐
  - Science ☐
  - English ☐
  - E Books ☑
- Tutoring ⌄
- Housing ⌄
- Electronics ⌄

EBOOKS

IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]
IMAGE	Description
	$price [Message]

Reading List-Samuel assigns several textbooks and recommends SFSU Market to his students. Several users on SFSU Market are selling copies of these books. They can all be found by searching for the tag corresponding to the class name. His students are all able to find the books required for the class within a week using this application and the tag search feature.

SFSU MARKET

Tag ∨ philXXX

Make Post   Log In   Register

Filters

filter list here

Varieties of Relgious Exp. (used)

(list of tags)

(price)

CONTACT SELLER

post image

Republic (used)

(list of tags)

(price)

CONTACT SELLER

post image

more posts loaded if scrolled down

SFSU MARKET

Name ∨ Search...

Make Post   Log In   Register

Varieties of Relgious Exp. (used) $XX

Tags: philXXX, etc.   CONTACT SELLER

Description: description here

post image

other post images

Site Administration-It is after a long day of classes and Sasha hops on her admin portal for the website she helped create. She starts by scanning through the requested listings and approved most while denying some that do not fit the criteria of the site. She then notices a listing that displayed a student's address made it past her previous scans. Sasha deletes that listing and then goes on to delete the user that made that listing as it is not the first time they have posted sensitive information about other students.
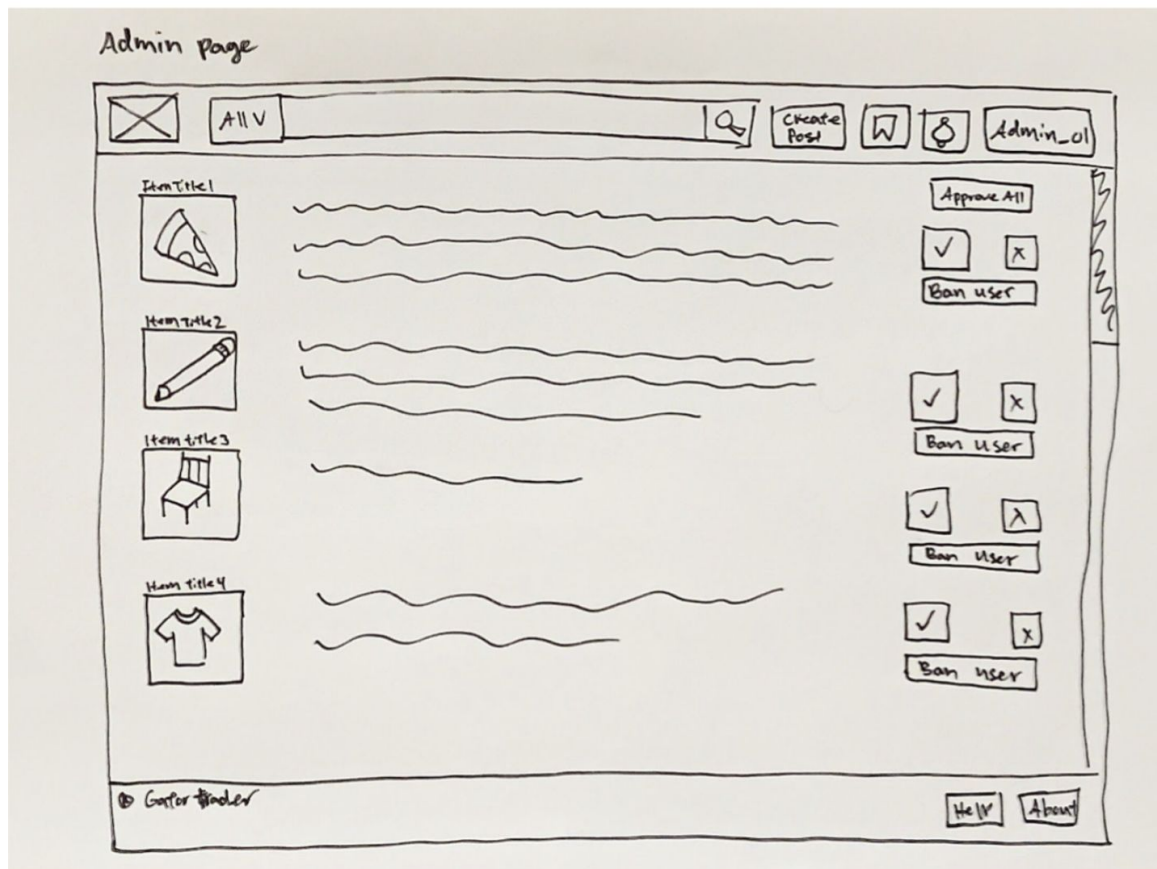
5. High level Architecture, Database Organization summary only

- DB organization:
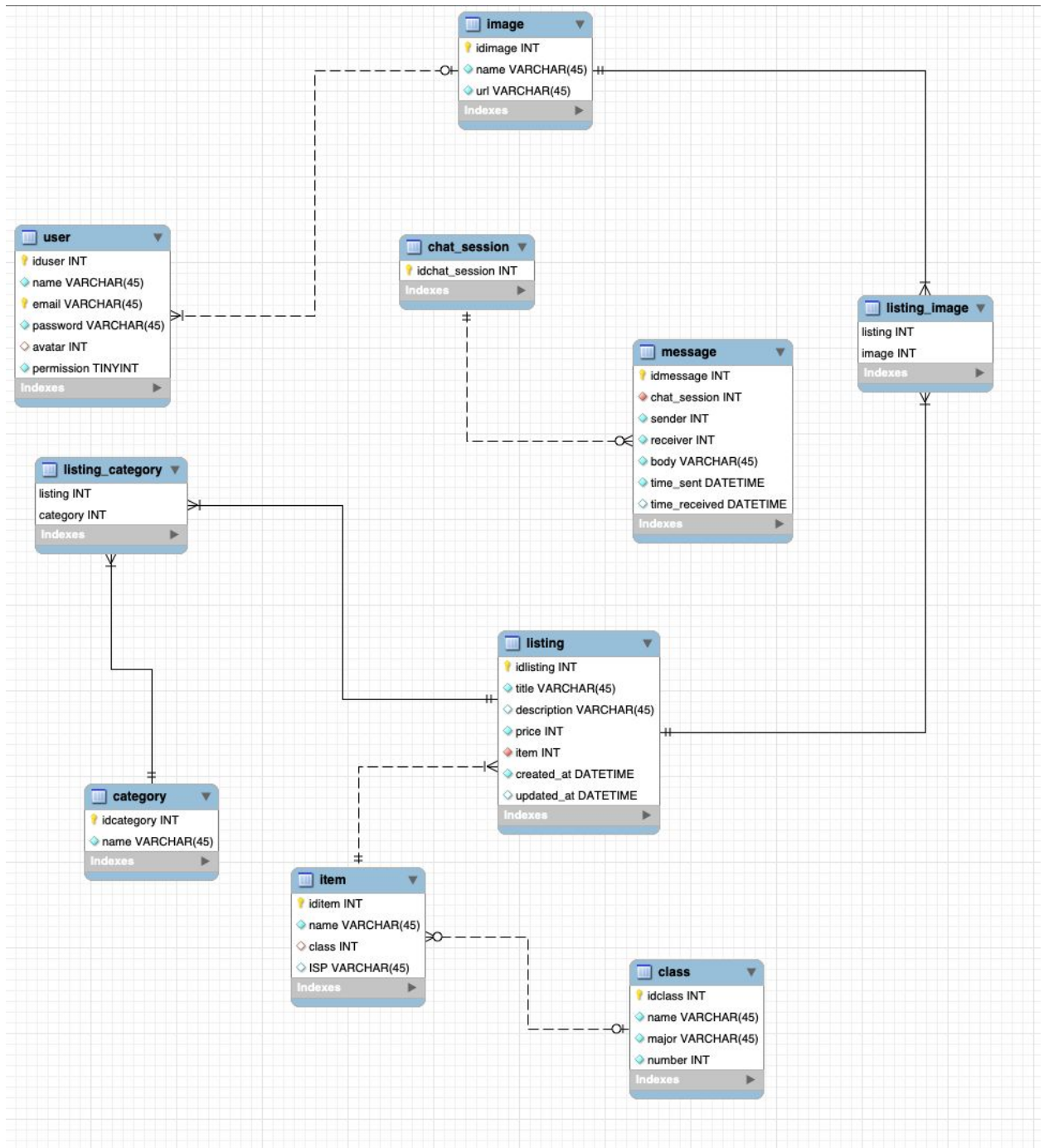
- The white diamond indicates that they can be null

- Media storage:
- The current plan is to use the AWS javascript sdk functions to allow users to upload images to an s3 bucket and have it auto generate a public url to be accessed.

- Then that URL will be saved within the image -> url entity.

- Search/filter architecture and implementation:
- Will definitely be implementing the SQL %like for "fuzzy" searching terms.
- There will also be filters that the user can categorize their searches by. For instance, if the user just wants to find books, then we query the db to return all instances of a listing_category that includes a book as its category foreign key. It will then return all the listings that are attached to the initial joint table query.
- The user will also have an option to filter their results by price and date-added. These will be simple enough to filter using SQL query params that are built in.

- Your own APIs (if any):
- There will be no other APIs being created other than the one that will be used by the frontend to interface with the backend.

- Describe any significant non-trivial algorithm or process if any (like rating, ranking, automatic prioritizing of items etc.)
- There will be a system in place to keep track of repeated offenders of our terms for making listings. Perhaps a separate table that will hold user Ids and how many offenses they have that will only be added to when a user reaches over 3 offenses.

- If you have changed SW tools and frameworks or added any new one please describe it.
  -The only potential change that we would like to make is to use typescript on the backend and thus something like typeORM as our ORM.

6. Project Risk Assessment
Upon review of the organization of the SFSU Market application and its development team, the following risks have been identified:

● Skills Risks: The majority of the team is unfamiliar with the given development stack (ReactJS/Node/Express) for the project, and may need to accommodate time to gather and learn from various resources.

● Schedule Risks: As the development team is composed of senior level undergraduate students, scheduling conflicts may emerge due online school and pandemic.

● Legal/Content Risks: This project requires the use of media (uploaded images) which may potentially infringe upon the rights of its owners.

- In order to resolve the skills risk, while we might not have the depth knowledge necessary for our project, we are all motivated students, we will seek out help either from other team members, the internet, or our CTO, to learn particular skills and continue developing the application.

- In order to resolve the identified risks, meetings will be held between the team lead and the rest of the team weekly online to discuss any issues with the application development. At scheduled extended meetings, we will periodically review the coding procedures that need to be done and research the methods of accomplishing them within the chosen framework and development stack. Code reviews will be conducted within the smaller teams to resolve any coding issues.

- During the weekly meeting, we discuss availability for the week and plan for any scheduling conflicts that may arise with any of the members. To ensure deadlines are met, tasks are assigned with soft deadlines depending on the availability discussed. An extended weekly meeting is typically scheduled to discuss issues in depth at these meetings.

- For demo purposes, in order to avoid any legal issues, all images must be reviewed by team leads before being pushed to the live project site. The sources will be checked for the distributive rights of the images - only commercial-free (and no attribution required) images will be approved for demo use.

7. Project Management

For both milestone 1 and 2, tasks were assigned to each individual on the team based on their area of expertise. Front and back end leads handled those parts of the milestones that required more technical knowledge. This was done to prevent confusion and make the tasks more efficient. There could in the future be a problem with this, as other team members have not had an opportunity to learn about the technical aspects of this project.

The tasks so far have all been related to documentation. Soon, more tasks will arrive relating to writing code for the application. The goal for these tasks is to have front and back end teams consisting of those leads and one other group member, with the team lead moving back and forth between the two teams to ensure that everyone understands the current task and neither team moves so far away from the other team that the two sides of code cannot work together. The team leader started a Trello page for this group shortly after milestone 2 was assigned. From that point forward, assigned tasks have been kept track of on that platform. All five members have access to it and are able to access and edit the team Trello page.