

SW Engineering CSC648/848 Summer 2022

College Essentials

Team 4

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[Section I] Data Definitions

1. **General User:** A user who is not signed in or does not have an account with College Essentials. A general user has the minimum permissions on the website and can **register** for more permissions.
 - 1.1. **Registration:** A general user shall be able to create an account to get more permissions.
 - 1.2. **Account Contains:**
 - 1.2.1. **Username:** Needs a username to create an account
 - 1.2.2. **Password:** Needs a password that is encrypted to create an account.
 - 1.2.3. **Email:** Needs a unique edu email to create an account.
 - 1.2.4. **School:** Can choose to register a school to the account.
 - 1.2.5. **Accept Terms of Service:** Must accept the terms of service to create an account.
2. **Registered User:** A user who has signed up to use College Essentials. This user gains the extra permissions needed to access the other features on the website. A general user shall be able to **login** to gain access to all these features.
 - 2.1. Can login to the system.
 - 2.1.1. Username: Needs a unique username to login.
 - 2.1.2. Password: Needs a unique password to login.
 - 2.2. Has the ability to post Marketplace Posts.
 - 2.2.1. **Buyers:** All registered users are buyers by default. They can see and interact with Marketplace posts.

- 2.2.2. **Sellers:** All registered users can put up their own Marketplace posts to become a seller. Sellers will be differentiated on the Marketplace post that they have posted.
- 2.3. Has the ability to post forum Posts.
- 2.4. **Profile:** Contains username, school, ratings, private messaging section and marketplace posts.
 - 2.4.1. **Username:** Shows the unique username of the user.
 - 2.4.2. **School:** Shows the listed schools linked with the user.
 - 2.4.3. **Ratings:** Shows the ratings on the user posted by other users.
 - 2.4.4. **Private Message:** Has an area that allows users to private message other users.
 - 2.4.5. **Marketplace Posts:** Has a list of marketplace posts made by the user.
 - 2.4.6. **Service Listings:** Has a list of service listings made by the user.
- 3. **Admin:** A user who moderates content on the website. A moderator still has the same permissions that registered users have, but have additional **admin tools** on our website.
 - 3.1. **Admin Tools:** Contains the ability to delete posts, and temporarily restrict users.
 - 3.1.1. **Delete Posts:** Can choose to delete posts by other users.
 - 3.1.2. **Restrict Users:** Can restrict user accounts who break the terms of service.
- 4. **Guest:** This is a user who is unregistered or not logged in who is able to view all posts but not reply. Guests will be ghosts within the site, they are

able to search and look but not interact.

- 4.1. **Username:** Will show as a guest with numbers ie. Guest####
- 4.2. **Browsing:** A guest will be able to browse listings, and add them to cart but not complete the transaction
- 4.3. **Ads:** A guest shall be able to contact, and pay us to have their ads on the site.

5. Login / User Registration: This is the section that would allow users to login or register accounts with College Essentials.

5.1. Login Section: Users have the ability to login to their accounts here.

5.1.1. **Username:** Users will have to enter a unique username to login.

5.1.2. **Password:** Users will have to enter a unique password to login.

5.2. Registration Section: Users have the ability to register new accounts here.

5.2.1. **Username:** Needs a username to create an account

5.2.2. **Password:** Needs a password that is encrypted to create an account.

5.2.3. **Email:** Needs a unique edu email to create an account.

5.2.4. **School:** Can choose to register a school to the account.

5.2.5. **Accept Terms of Service:** Must accept the terms of service to create an account.

6. Private Message: This is the section that allows users to private message each other through their profiles.

- 6.1. **Contacting a Person:** Will allow the contacting of a user, client, seller, guest, etc.
 - 6.2. **Timestamp:** Shows when a message was sent.
 - 6.3. **Read Status:** Will show if a message was seen
-
- 7. **Forum Post Section:** This is where users are able to post miscellaneous forum posts that don't fit within the other categories. Users must be registered users to make a forum post.
 - 7.1. **Forum Posts:** Contains a post body and post replies.
 - 7.1.1. **Post Body:** A registered user will be able to post a forum post that contains username, post body, and timestamps.
 - 7.1.2. **Post Replies:** A registered user will be able to reply underneath the forum posts that contains a body, the replier's username, and a timestamp.
-
- 8. **Marketplace Listings:** A place for registered users to post if they want to buy or sell marketplace listings.
 - 8.1. **Marketplace Listing:** Contains title, location, photo, price, description, expiration date, bidding(If allowed by seller), and tags.
 - 8.1.1. **Title:** Gives a small description of the item at hand.
 - 8.1.2. **Location:** Gives the location of where the deal is to be held.
 - 8.1.3. **Photo:** If provided there will be a picture of the product.
 - 8.1.4. **Price:** Displays the price of the item being sold.
 - 8.1.5. **Description:** A body section that describes the listing.
 - 8.1.6. **Expiration Date:** Displays how long the listing is valid.
 - 8.1.7. **Bidding:** Shows the current minimum bid.

8.1.8. **Tags:** Key words appended to a listing to categorize for searching.

9. **Service Listings:** A place for registered users to post if they need or provide services.

9.1. **Service Listings:** Contains, a Title, Location, Photo, Price, Description, an expiration date, and tags.

9.1.1. **Title:** Gives a small description of the item at hand.

9.1.2. **Location:** Gives the location of where the deal is to be held.

9.1.3. **Photo:** If provided there will be a picture of the product.

9.1.4. **Price:** Displays the price of the item being sold.

9.1.5. **Description:** A body section that describes the listing.

9.1.6. **Expiration Date:** Displays how long the listing is valid.

9.1.7. **Tags:** Key words appended to a listing to categorize for searching.

10. **User Rating:** This is a section after completing a listing that will allow registered users to leave ratings for the sellers after a purchase. We will provide the section in order to fight against fraud.

10.1. **User Ratings:** Will contain the sellers username, the buyers username, a star rating on the seller, and a description body.

10.1.1. **Seller Username:** This is the username of the seller who provided the listing.

10.1.2. **Buy Username:** This is the username of the buyer who purchased the listing.

10.1.3. **Star Ratings:** This is the section where buyers are allowed to rate a seller out of 5.

10.1.4. **Description:** This is a description box with a body for a short description of the rating.

11. Payment System: The place where you choose your payment method for the services or items involved.

11.1. **Type:** type of the payment.

11.2. **Amount:** The shown amount needed to be paid.

[Section II] Prioritized Functional Requirements

Priority 1:

1. General User

- 1.1. A general user shall be able to register their own unique account(s) with a unique username.
- 1.2. A general user shall be able to register their own unique account(s) with a password.
- 1.3. A general user shall be able to register their own unique account(s) with an email.
- 1.4. A general user shall be able to register their own unique account(s) with a phone number.
- 1.5. A general user shall be able to register their own unique account(s) with their school.
- 1.6. A general user shall be able to browse forum posts.
- 1.7. A general user shall be able to browse items on the marketplace.
- 1.8. A general user shall be able to browse service listings.
- 1.9. A general user shall be able to search for their needed service.
- 1.10. A general user can search by college institution in the marketplace.
- 1.11. A general user can search by college institution in the service listing section.
- 1.12. A general user shall accept our terms of conditions.
- 1.13. A general user shall be able to submit their own ads to be promoted on our website.

2. Registered User

- 2.1. A registered user shall be able to log in using their user id.
- 2.2. A registered user shall be able to log in using their email.

- 2.3. A registered user shall be able to review another user.
- 2.4. A registered user shall be able to create their own profile with text.
- 2.5. A registered user shall be able to create their own profile with pictures.
- 2.6. A registered user shall be able to edit their own profile with text.
- 2.7. A registered user shall be able to edit their own profile with pictures.
- 2.8. A registered user shall be able to post a picture as their profile picture.
- 2.9. A registered user shall be able to post a service listing.
- 2.10. A registered user shall be able to list items for sale in the marketplace.
- 2.11. A registered user shall be able to post on the forums.
- 2.12. A registered user shall be able to edit a forum post.
- 2.13. A registered user shall be able to edit a service listing.
- 2.14. A registered user shall be able to edit a sales listing.
- 2.15. A registered user shall be able to log out.
- 2.16. A registered user shall be able to message other registered users.
- 2.17. A registered user shall be able to pay with different methods, ie. Cash, debit, etc.
- 2.18. A registered user shall have setting options
- 2.19. A registered user shall be able to pay to be on the top of the forums.
- 2.20. A registered user shall be able to report another user.
- 2.21. A registered user shall be able to block another user.

3. Admin

- 3.1. An admin shall be able to review reports.
- 3.2. An admin shall be able to ban registered users.

- 3.3. An admin shall be able to unban registered users.
- 3.4. An admin shall be able to delete forum posts of other users.
- 3.5. An admin shall be able to remove service listings from the website.
- 3.6. An admin shall be able to remove marketplace listings from the website.

4. Service Listing

- 4.1. A service listing shall have a title.
- 4.2. A service listing shall have the location of where the service will be needed.
- 4.3. A service listing post shall have characters in its content body.
- 4.4. A service listing post shall be able to have images in its content body.
- 4.5. A service listing post shall have basic information like time posted.
- 4.6. A service listing post shall be able to have its content body edited.
- 4.7. A service listing post shall be able to have its title edited.
- 4.8. A service listing post shall be able to be unlisted.
- 4.9. A service listing post shall be able to have filters.
- 4.10. A service listing post shall have optional tags.

5. Receipt

- 5.1. A receipt shall have the product bought.
- 5.2. A receipt shall have the price of the product bought.
- 5.3. A receipt shall have the time of the transaction.
- 5.4. A receipt shall have the email of the user involved.
- 5.5. A receipt shall have the method of contacting the seller via email.
- 5.6. A receipt shall have the method of contacting the seller via phone number.

6. Shopping Cart

- 6.1. A shopping cart shall remember what has been stored within it.
- 6.2. A shopping cart shall remember how many of one entity have been stored within it.
- 6.3. A shopping cart shall allow users to edit products within it.
- 6.4. A shopping cart shall allow for check out.
- 6.5. A shopping cart shall give descriptions of products stored within it.

7. Navigation Bar

- 7.1. A navigation bar shall have a section for students selling their products.
- 7.2. A navigation bar shall have a section for teachers to look for student assistants.
- 7.3. A navigation bar shall have a section for the student forums.
- 7.4. A navigation bar shall have a section for the about us page.

8. Marketplace Listing (Buy/Sell Listing)

- 8.1. A marketplace listing shall have a title.
- 8.2. A marketplace listing shall have the location of where the deal is going to be held.
- 8.3. A marketplace listing shall have a description.
- 8.4. A marketplace listing shall have a photo (or many).
- 8.5. A marketplace listing shall have a price.
- 8.6. A marketplace listing shall have an expiration date.
- 8.7. A marketplace listing shall have a bidding minimum.
- 8.8. A marketplace listing shall be able to be unlisted.

- 8.9. A marketplace listing shall have filters to categorize.
- 8.10. A service listing shall have optional tags.
- 8.11. A service listing shall have the option to be returned or not.

9. Checkout

- 9.1. Checkout shall prompt the user to provide an address for shipping.
- 9.2. Checkout shall prompt the user to provide a billing address.
- 9.3. Checkout shall prompt the user to provide a payment option.

10. Ratings

- 10.1. User ratings shall rate a profile on a scale of 1 to 5.
- 10.2. User ratings shall be visible on a registered user's profile.
- 10.3. User ratings shall be visible on a registered user's marketplace listing.
- 10.4. User ratings shall be visible on a registered user's service listing.
- 10.5. User ratings shall be able to be posted by registered users.

Priority 2:

1. General User

- a. A general user shall be able to search by item condition in the marketplace.
- b. A general user shall be able to rate other general users.
- c. A general user shall be able to leave comments on products/services.

2. Registered User

- a. A registered user shall do anything an unregistered user can.
- b. A registered user shall rate products they have used.

- c. A registered user shall be allowed to save payment information.
- d. A registered user shall be able to save products they like.

3. Admin

- a. An admin shall be able to view a chat log between two users.
- b. An admin shall be able to do all that a registered user can.
- c. An admin shall be able to see personal information of users.
- d. An admin shall be able to close group posts.
- e. An admin shall be able to re make posts.
- f. An admin shall be able to see IP's.

4. Receipt

- a. A receipt shall have a way to contact admin service support.

5. Shopping Cart

- a. The shopping cart shall have a button to relocate you to the marketplace

6. Navigation Bar

- a. The Navigation Bar shall have zip code search.

7. Messages

- a. A message shall have characters in its content body.
- b. A message shall have a timestamp.
- c. A message shall have a status (sent/received/read).
- d. A message shall allow a user to edit it.
- e. A message shall allow a user to delete it.

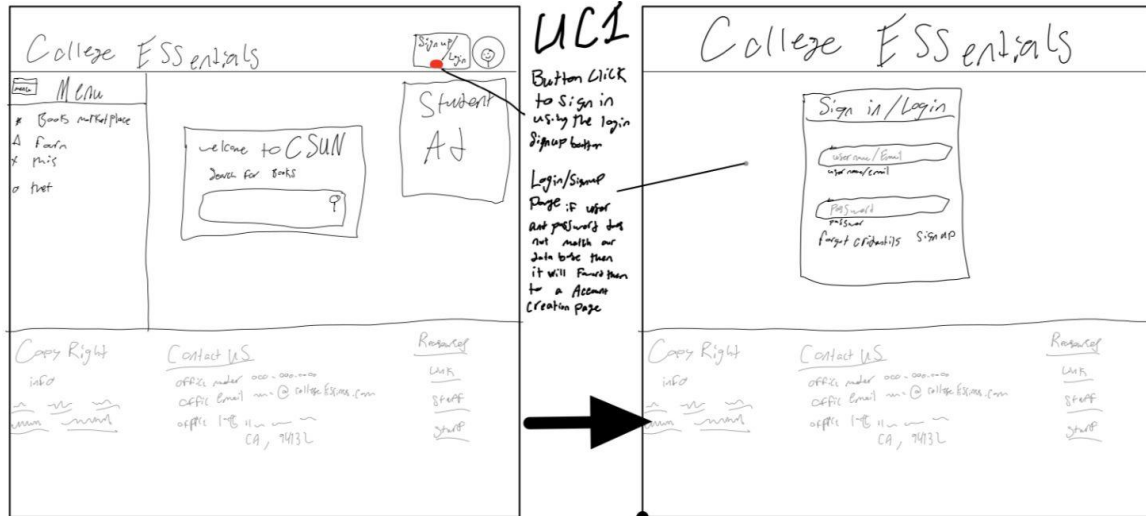
Priority 3:**1. Shopping Cart**

- a. A shopping cart will have a little number showing how many items are within it, while you are not on the checkout screen.

2. Checkout

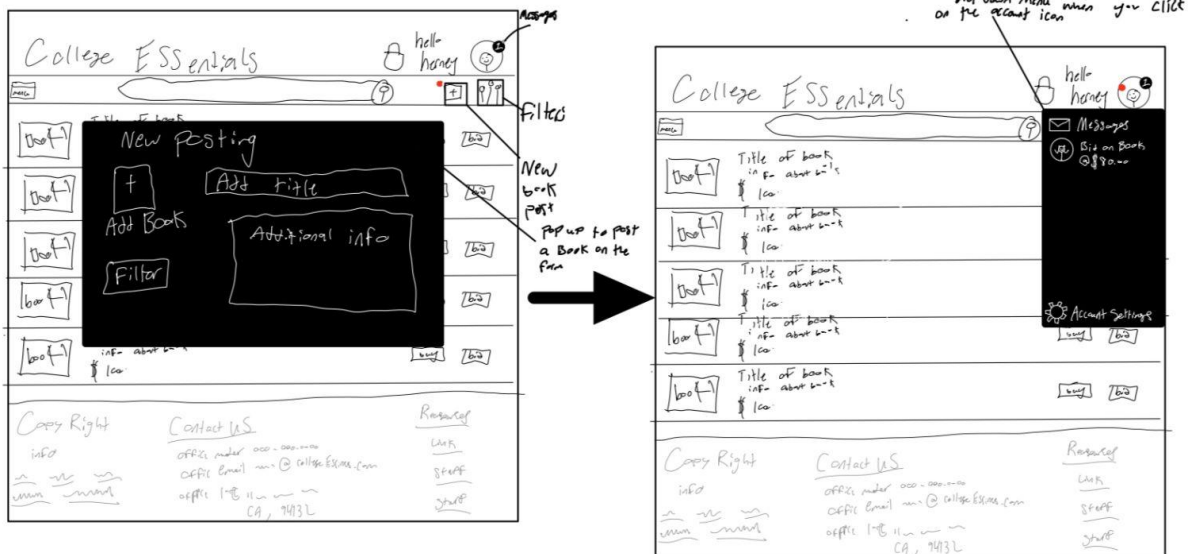
- a. Checkout shall prompt users to create an account if not yet registered.

[Section III] UI Mockups and Storyboards (High Level Only)



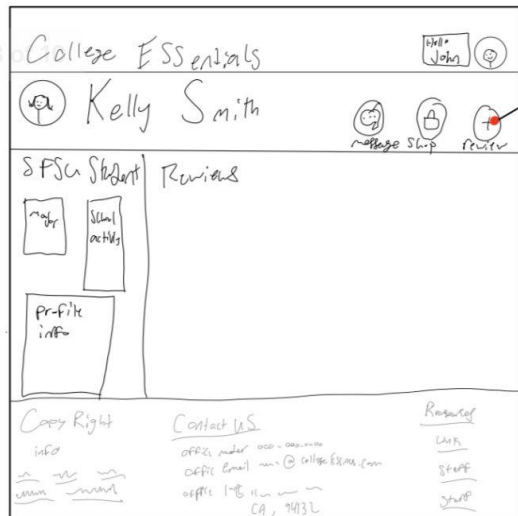
Henry decides to go to College Essentials instead to sell his textbooks. Clicks log in.

He logs into his account. In the sign up log in page

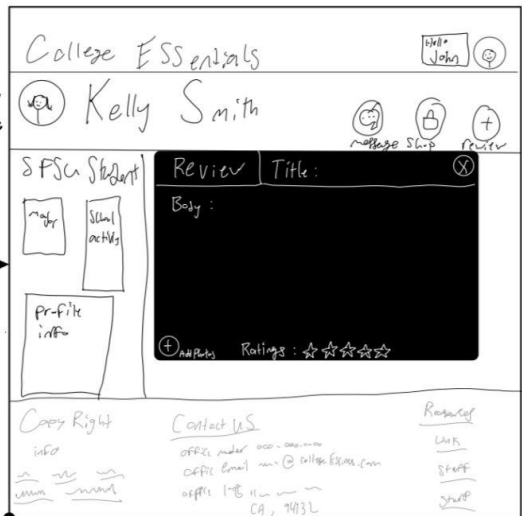


creates a new marketplace listing his textbooks at prices higher than what the bookstore was willing to offer him.

Lindsay privately messages Henry about an offer for two of the textbooks slightly below what he was looking for. He agrees, and they exchange the details of where to meet in their chat room

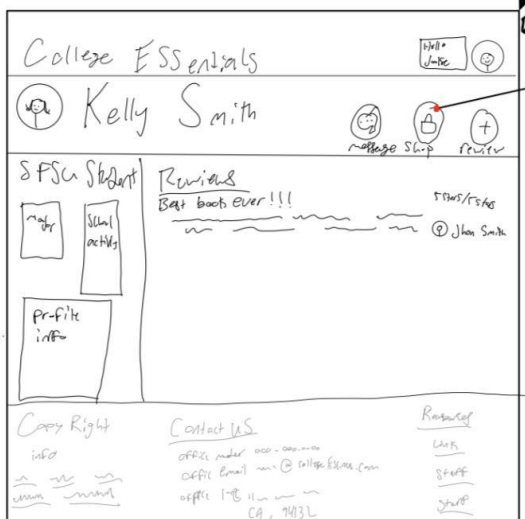


UC3
Button click
to review
on the profile
page

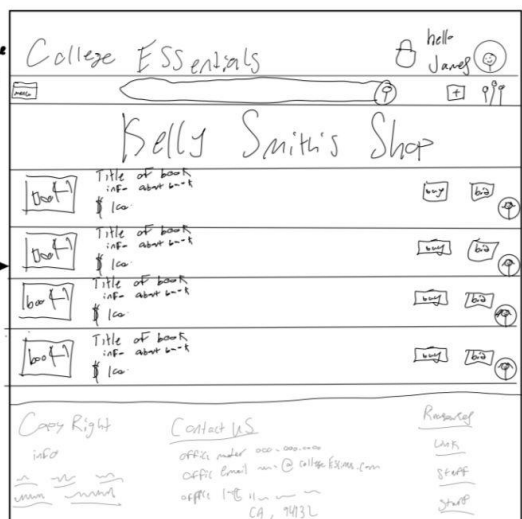


John is a freshman in college. He had been very satisfied with his textbook that he had just bought from another student, Kelly, from College Essentials. The textbook looked new inside, and out. There also didn't seem to be any graffiti or damage found within the book as well.

Since John was so happy with the condition of the textbook he had purchased, he decided to leave a review on Kelly's profile detailing the textbook's condition and how smoothly the transaction went.

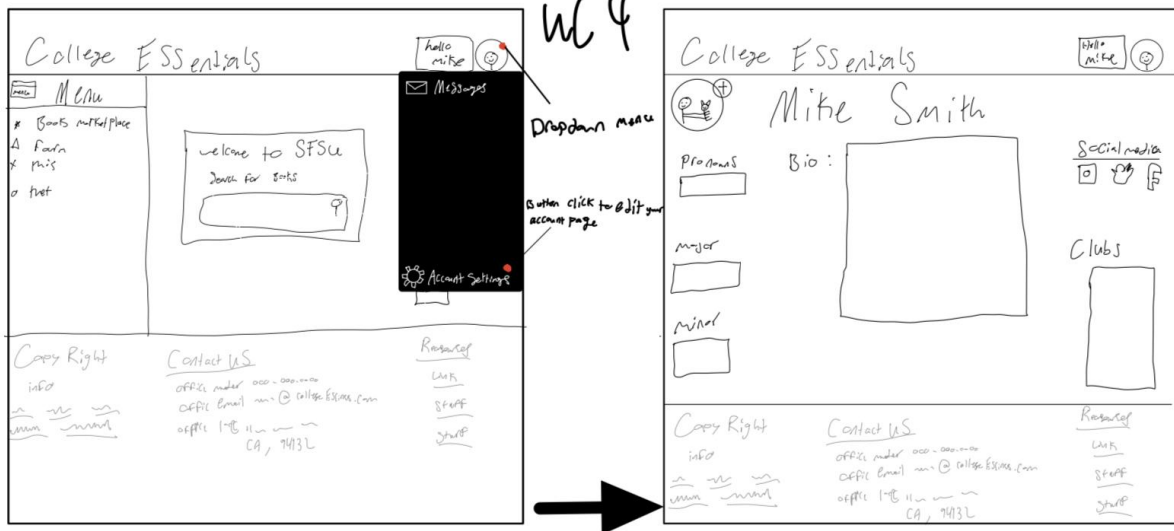


Button click
to shop more
of this profile



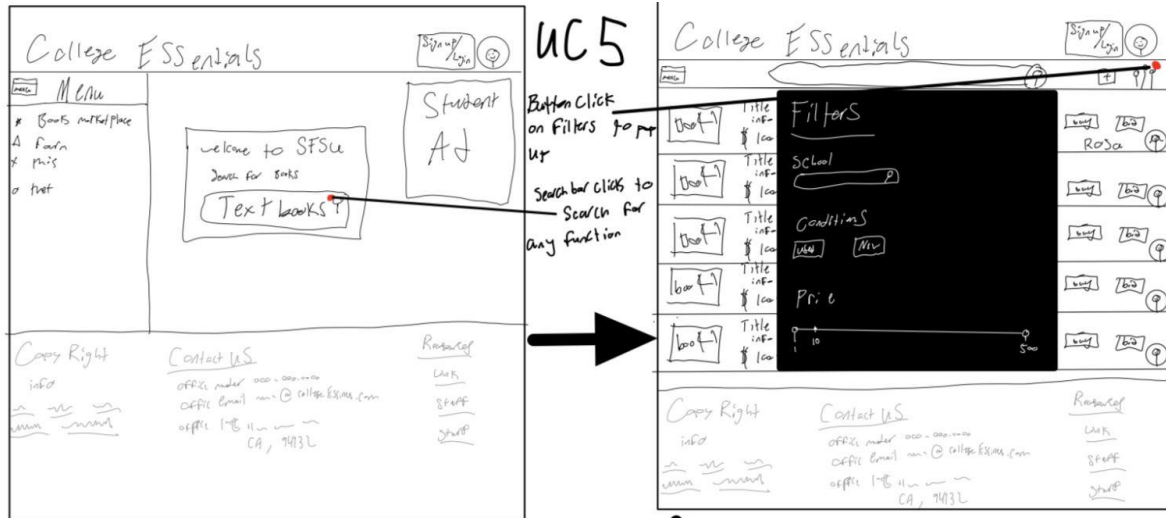
A few days later, Jake sees another one of Kelly's textbooks up for sale in the marketplace. He is skeptical of Kelly at first, so he goes to Kelly's profile to see if there are any ratings. Much to Jake's delight, he finds that John loved his textbook that he purchased from Kelly a few days ago.

This review is enough for Jake to think that Kelly is credible, and he buys that textbook moments later.



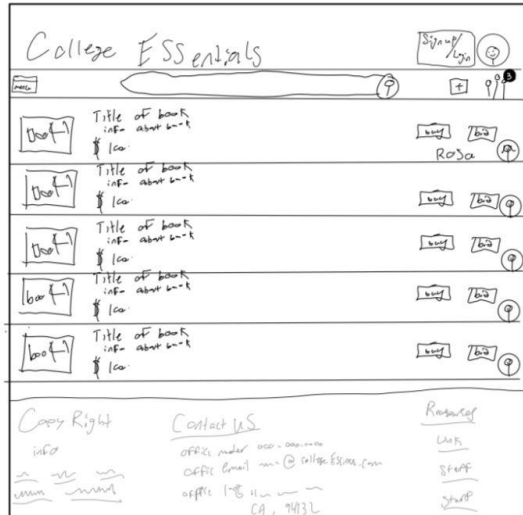
Mike then signs up for College Essentials in order to post a listing on the marketplace stating he wants to sell his books

Mike decides to update his bare profile on College Essentials in order to establish a greater sense of credibility. The last thing Mike would want is for potential buyers to think he is a scammer. In his profile, he writes about some information about himself, including his passions in life as well as his social media accounts. Mike follows it up by adding some pictures of him and his dog to his bio, as well as putting a picture of himself as his profile picture.

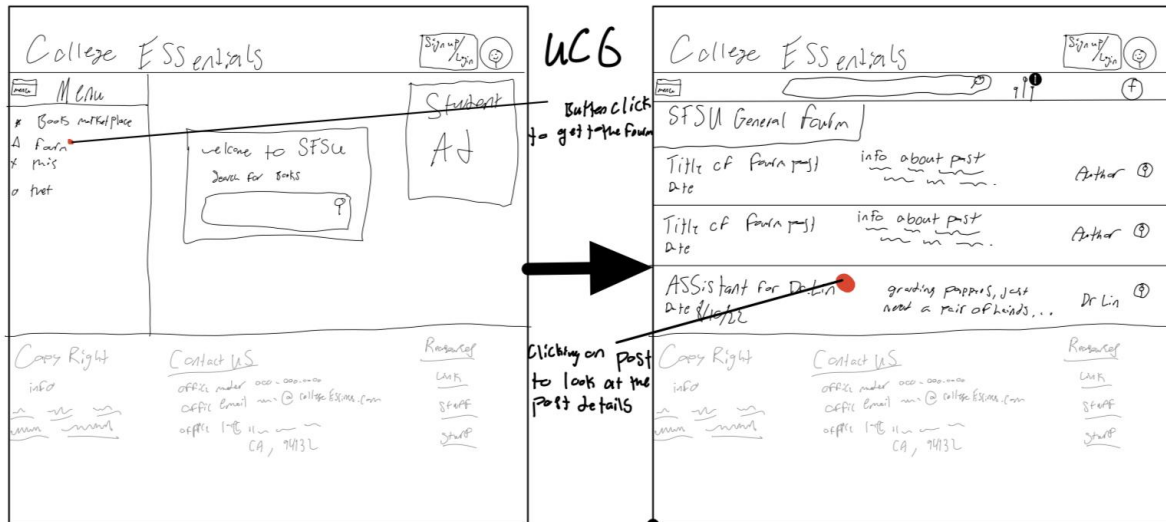


Jennifer needs to buy textbooks for her new classes, so she goes to her community college bookstore to look for the textbooks that she needs. Unfortunately, her community college doesn't offer any courses that use those textbooks. Jennifer doesn't want to buy a new condition textbook for a class that she would be taking once,

Jennifer decides to go to College Essentials's marketplace, where she is able to filter her search based on various universities as well as the condition of the textbook she needs.

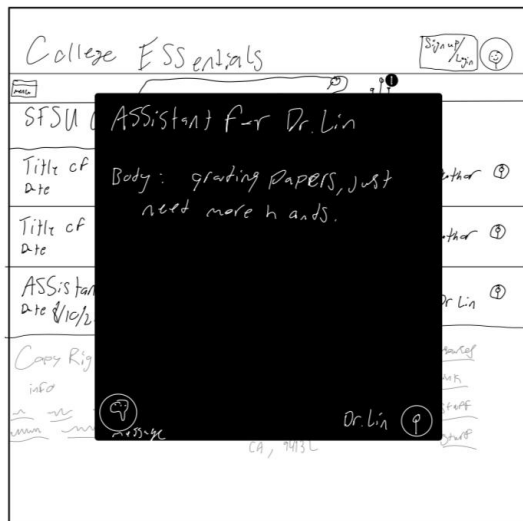


Because her local community college doesn't offer the textbooks she needs, our website would allow her to search different colleges in different cities to find someone who is selling those textbooks. If she wants to find the textbook from a closer city, she can search from schools that are closer to her. If she wants to find the textbook from her new school, she would be able to search from that school directly.

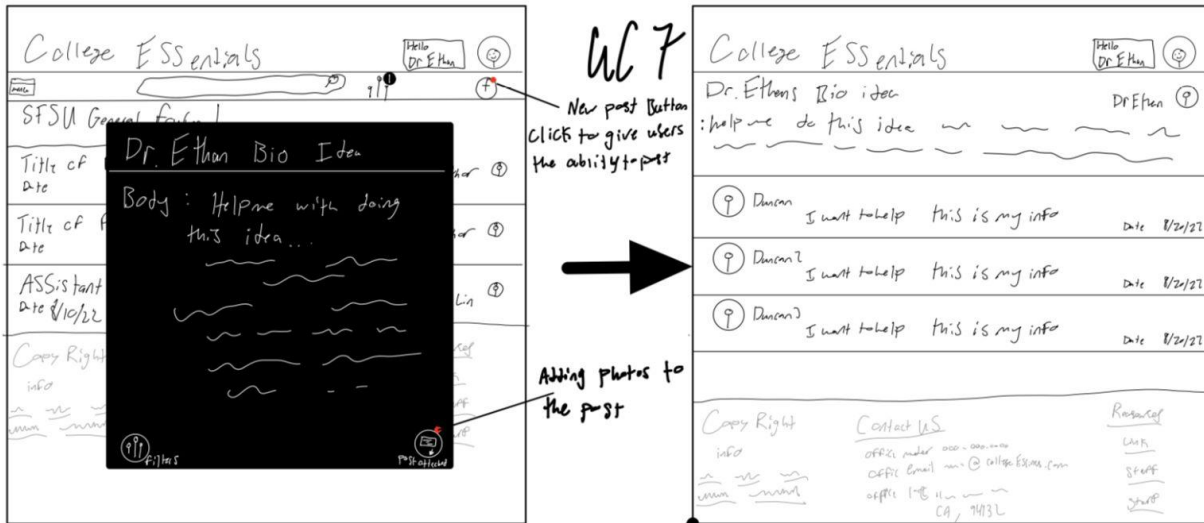


Ryan is looking for a possible opportunity to work under a professor at his college. Ryan has a poor experience with other websites, struggling to find opportunities for his university amongst the thousands of results that show for many other universities. However with College Essentials, he notices a menu that can easily return results from a specific institution.

He therefore enables the filter and gets new results that are all from his college that he is attending. He was able to find a post from one of his favorite professors and applied.

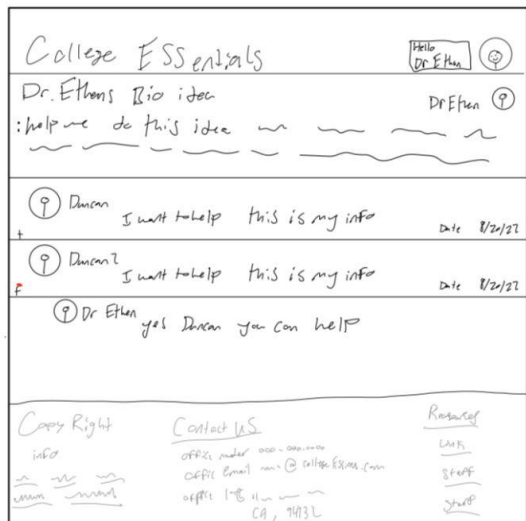


College Essentials will enable everyday users like Ryan to easily filter among many search results for services that are related to his university.

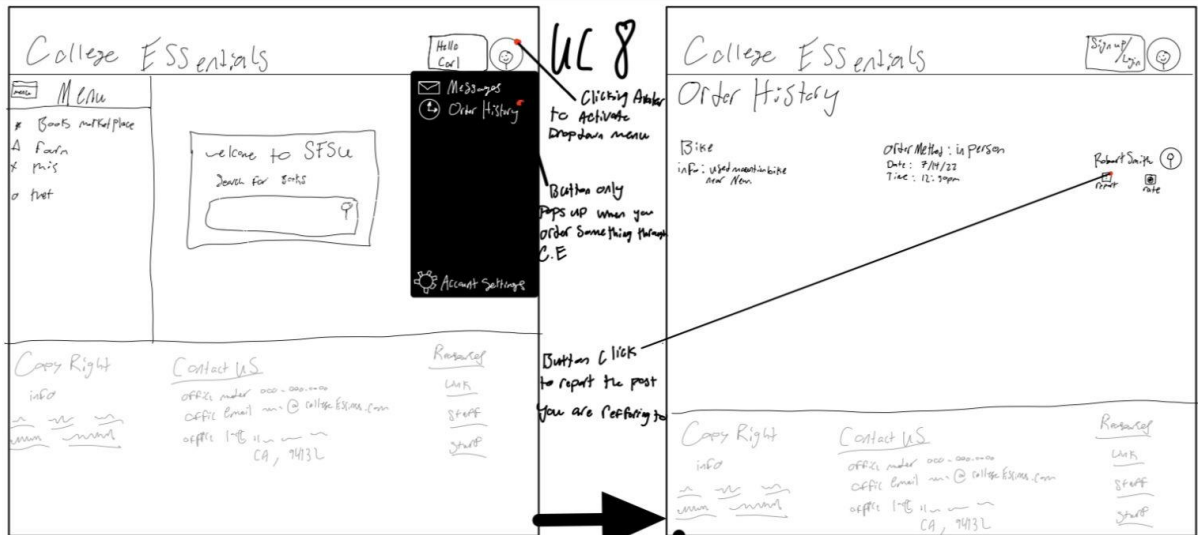


Dr. Ethan is a professor at San Francisco State University who teaches biology. He comes up with a brilliant idea and needs a few students to help him bring his idea to life. He decides to go on College Essentials and posts a job offer for students who are willing to help him with his experiments.

Students from all over the college reply to his advertisement for seeking help and he is able to choose the best qualified student to hire.

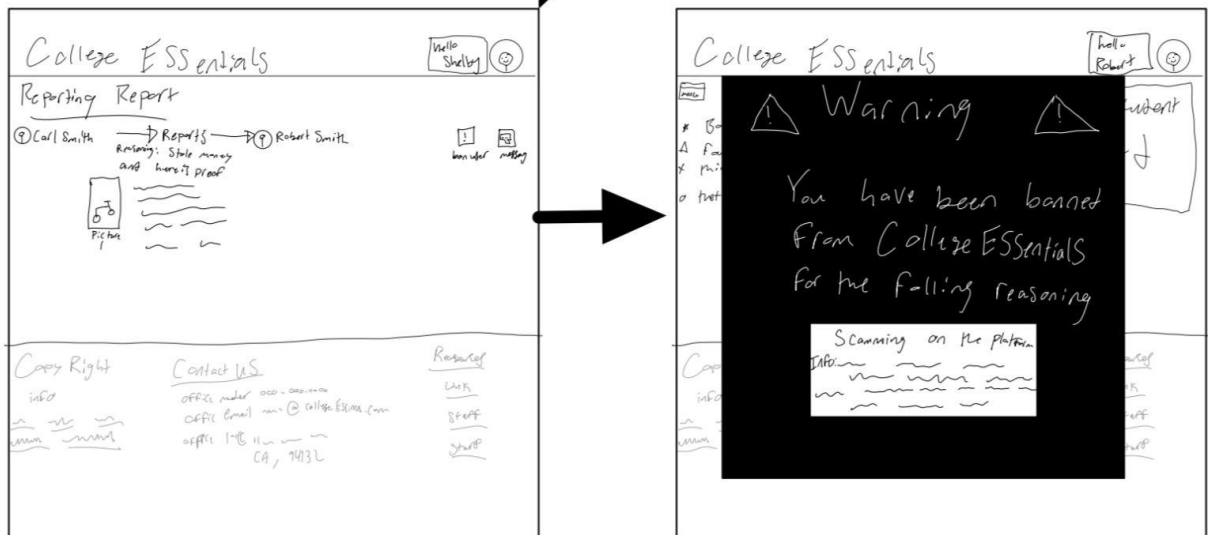


College Essentials will make it easier for Dr. Ethan to seek help for his upcoming research project. For any professor like Dr. Ethan, finding time out of his day away from holding lectures and grading work is already difficult as is.



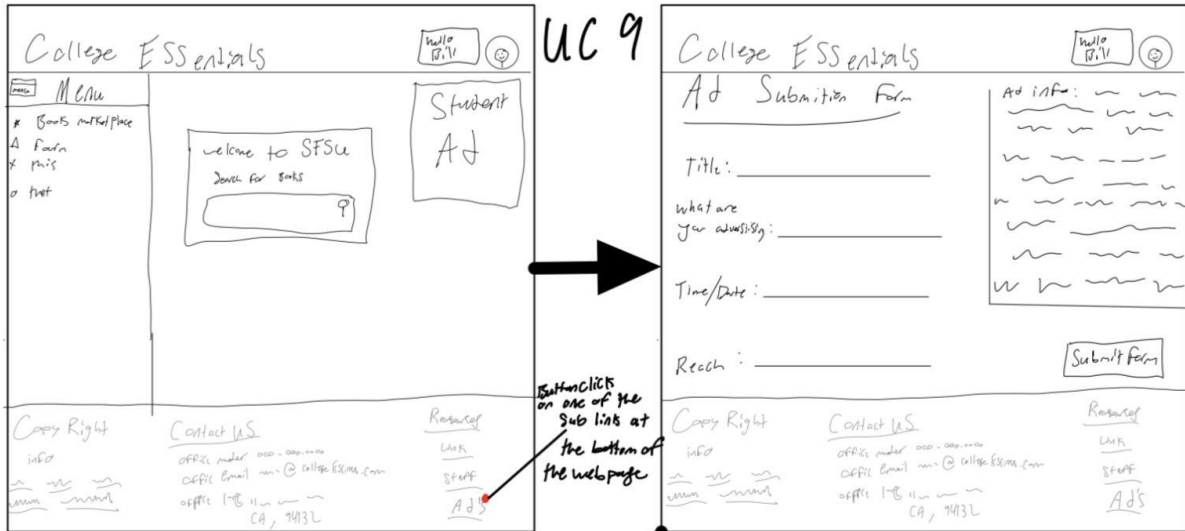
Robert is a scammer who is looking for some college students to scam. He posts an advertisement of a brand new bike for much cheaper than the average selling price

Shortly after, Carl decides to meet Robert, only to have his (Carl's) money taken without the bike he (Carl) was promised. Before Robert can scam someone else, Carl decides to report Robert.



Shelby, an admin at College Essentials, sees Carl's report, including proof about the scam,

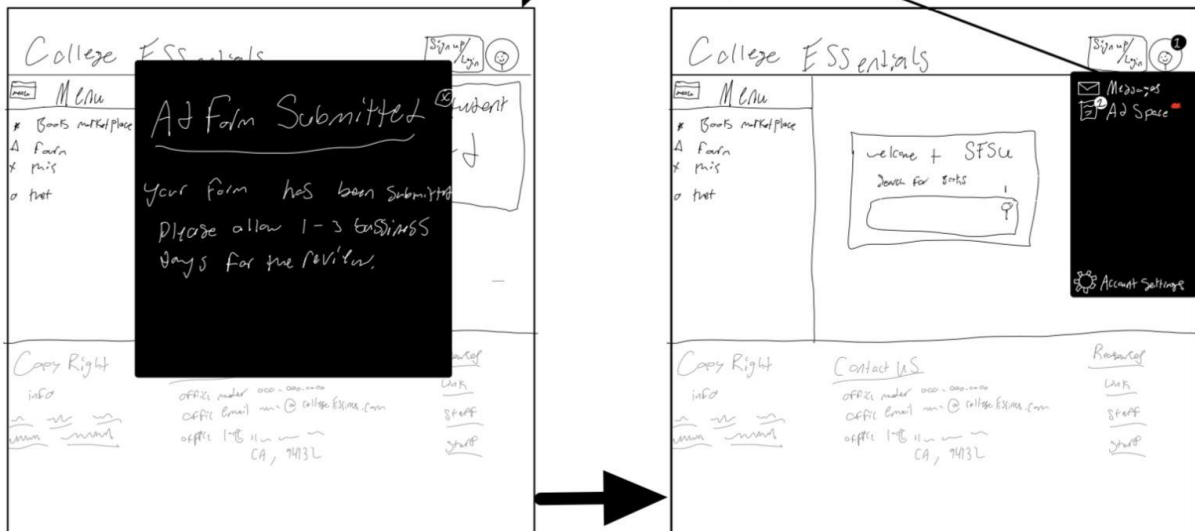
promptly bans Robert before he can commit more scams.



The user bill wants to purchase an Student Ad on the College Essentials website in order to promote his new YouTube video he made on his college

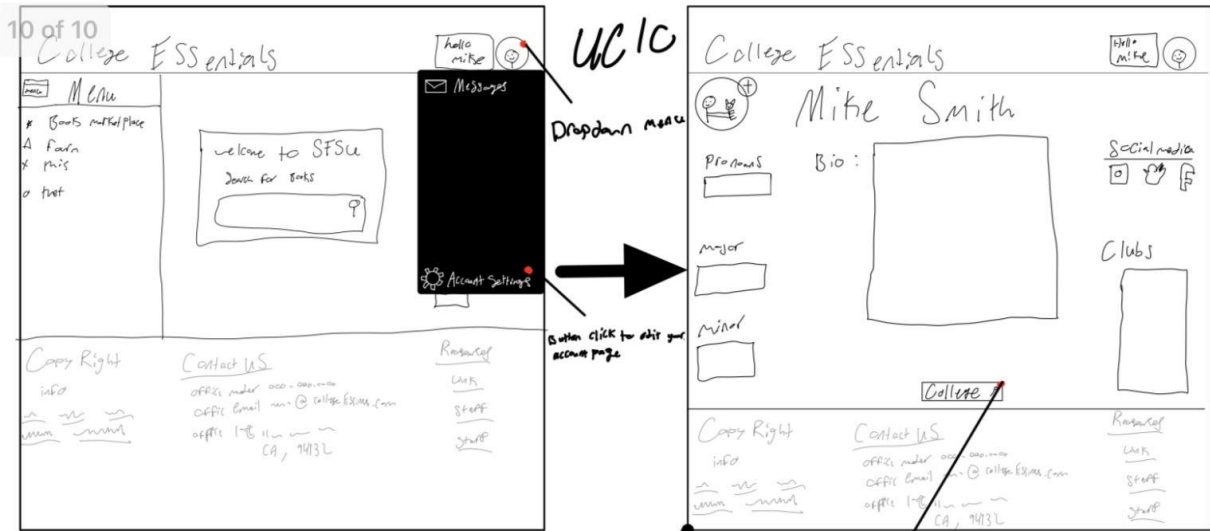
Bill clicks on our sib-link in order to purchase an Ad, adds all his ad information

Button shows up only when the user buys an ad only notifies the user when the Ad is viewed



submits his Ad for review to be posted

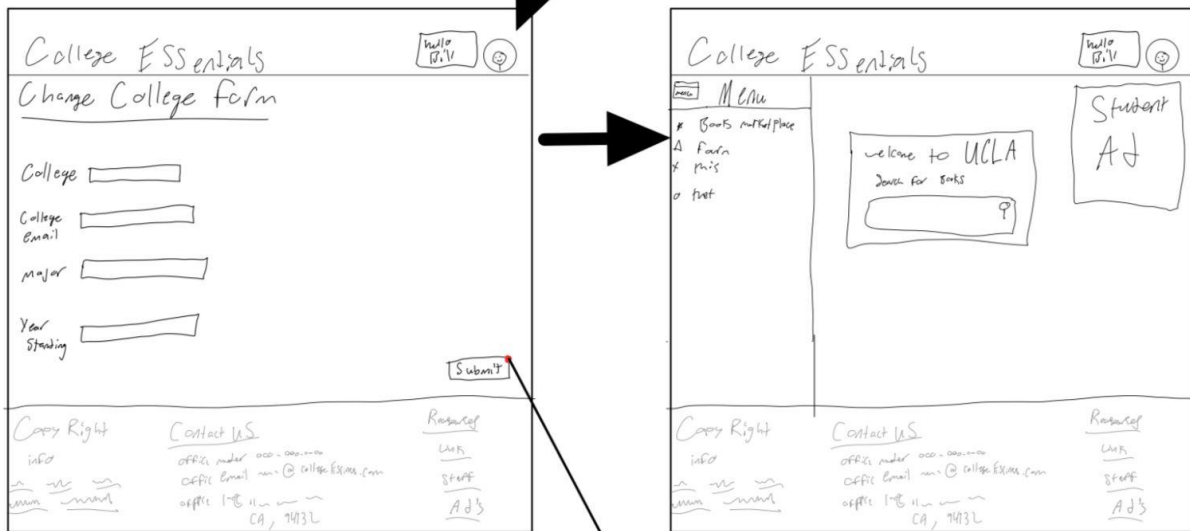
Bill gets a notification that his Ad got posted



The user Greg is transferring colleges and wants to change his account from SFSU to UCLA he clicks on his account drop down and clicks account setting

On his account setting page he clicks on the button to change his college which takes him to a different page

Button Clicks to go to a page to change your college on the website



After filling out the form to change his College essentials account to a different college

Button Clicks Submits the form and it loads your profile and changes

he presses the submit form and then he account is updated.

[Section IV] High Level Database Architecture Organization

1. Business Rules

a. GeneralUser

- i. A GeneralUser shall be able to log into a registered account (RegisteredUser)

b. RegisteredUser

- i. A RegisteredUser shall be a seller or buyer.
- ii. A RegisteredUser shall have one or many Colleges associated with their accounts.
- iii. A RegisteredUser shall be able to post zero or many ServiceListings.
- iv. A RegisteredUser shall be able to post zero or many ServiceReplies
- v. A RegisteredUser shall have zero or many Ratings.
- vi. A RegisteredUser shall be able to post zero or many Ratings.
- vii. A RegisteredUser shall be able to have a ShoppingCart

c. Rating

- i. A Rating shall belong to one RegisteredUser.
- ii. A Rating shall be posted by zero or many RegisteredUsers.

d. Buyer

- i. A Buyer shall be considered a RegisteredUser.
- ii. A Buyer shall have ordered zero or many Products.
- iii. A Buyer shall have zero or many Payment methods.

- iv. A Buyer shall receive a Receipt for their transaction.
- e. Seller
- i. A seller shall be considered a RegisteredUser
 - ii. A seller shall have posted at least one MarketplaceListing
 - iii. A seller shall receive a receipt for their Transaction.
- f. Admin
- i. An Admin shall be considered a RegisteredUser.
 - ii. An Admin shall be able to delete zero or many item listings.
 - iii. An Admin shall be able to delete zero or many service listings.
 - iv. An Admin shall be able to restrict zero or many RegisteredUsers.
- g. College
- i. A College shall be associated by many RegisteredUsers (e.g. college student or college faculty)
- h. Marketplace Listing
- i. A Marketplace Listing shall be listed by one Seller.
 - ii. A Marketplace Listing shall list at least one Product
- i. ServiceListing
- i. A ServiceListing shall be listed by one RegisteredUser.
 - ii. A ServiceListing shall be followed by many ServiceReplies
 - iii. A ServiceListing shall have one unique service ID.

j. ServiceReply

- i. A ServiceReply will be tied to many ServiceListings
- ii. A ServiceReply is posted by a RegisteredUser

k. Transaction

- i. A Transaction shall have many Receipts.
- ii. A Transaction shall be linked to one Payment method.
- iii. A Transaction shall be linked to a buyer
- iv. A Transaction shall be linked to a seller

l. ShoppingCart

- i. A ShoppingCart is tied to one RegisteredUser.
- ii. A ShoppingCart is linked to one Transaction.

m. Payment

- i. A Payment shall belong to one Buyer.
- ii. A Payment shall be linked to a Transaction.

n. Receipt

- i. A receipt shall be given to one Buyer.
- ii. A receipt shall be given to one Seller.
- iii. A receipt shall belong to one Transaction.

o. Product

- i. A Product is ordered by zero or many Buyers
- ii. A Product is added to many ShoppingCarts

2. Entities

a. GeneralUser (Weak)

- i. General_user_id: key, numeric; This is the unique id registered to each GeneralUser
- ii. ip_address: numeric; This is the IP address associated with a GeneralUser

b. RegisteredUser (Strong)

- i. registered_user_id: key, numeric; This is the unique id registered to each RegisteredUser.
- ii. first_name: alphanumeric; This is the first name registered to a RegisteredUser.
- iii. last_name: alphanumeric; This is the last name registered to a RegisteredUser
- iv. Password: alphanumeric; This is the unique password registered to each RegisteredUser.
- v. Email: alphanumeric; ; This is the unique username registered to each RegisteredUser.

c. Ratings (Weak)

- i. rating_id: key, numeric; This is the unique id given to the specific rating.
- ii. rating: numeric: This is a value between 0 and 5 given to the rating.
- iii. description: alphanumeric: This is a short description of the given rating.
- iv. transaction_id: key, numeric; This is the transaction linked to

the rating.

- v. registered_user_sender_id: key, numeric; This is the ID of the user giving/sending a rating
- vi. registered_user_receiver_id: This is the ID of the user receiving the rating

d. Buyer (Weak)

- i. Buyer_id: key, numeric; This is the unique buyer id used in a transaction.

e. Seller (Weak)

- i. Seller_id: key, numeric; This is the unique seller id used in a transaction.

f. Admin (Weak)

- i. admin_id: key, numeric; This is the unique id linked to an Admin account.

g. Colleges (Strong)

- i. college_id: key, numeric; This is the unique college id associated with each college
- ii. name: alphanumeric; This is the name for a college

h. MarketplaceListing (Strong)

- i. marketplace_listing_id: key, numeric; This is the unique id linked with the MarketplaceListing.
- ii. title: alphanumeric; This is the title given to the

MarketplaceListing.

- iii. body: alphanumeric; This is the body given to the MarketplaceListing.
- iv. marketplace_listing_created: timestamp This is the timestamp given to the MarketplaceListing.
- v. seller_id: key, numeric; This is the unique seller id used in a transaction.
- vi. created_at: timestamp; This is the timestamp given to the MarketplaceListing.

i. ServiceListing (Strong)

- i. service_listing_id: key, numeric; This is the unique id linked with the ServiceListing.
- ii. registered_user_id: key, numeric; This is the unique id linked the RegisteredUser who posted the ServiceListing
- iii. title: alphanumeric; This is the title given to the Service Listing.
- iv. description: alphanumeric; This is the description given to the ServiceListing.
- v. created_at: timestamp; This is the timestamp given to the ServiceListing.

j. ServiceReply (Weak)

- i. service_reply_id: key, numeric; This is the unique id linked with the ServiceReply.
- ii. registered_user_id: key, numeric; This is the unique id linked the RegisteredUser who posted the ServiceReply

- iii. description: alphanumeric; This is the description given to the ServiceReply

k. Transaction (Weak)

- i. transaction_id: key, numeric; This is the unique id of the transaction.
- ii. completed_at: timestamp; This is the timestamp of when a transaction is completed
- iii. payment_id: key, numeric; This is the unique id of a payment
- iv. seller_id: key, numeric; This is the unique id associated with the seller in the transaction
- v. buyer_id: This is the unique id associated with the buyer in the transaction

l. ShoppingCart (Strong)

- i. shopping_cart_id: key, numeric; This is the unique id for a ShoppingCart
- ii. registered_user_id: key, numeric; This is the unique id for a RegisteredUser

m. Receipt (Weak)

- i. receipt_id: key, numeric, This is the unique id of the receipt given in the transaction.
- ii. seller_id: key, numeric; This is the unique id of the seller in the transaction.
- iii. buyer_id: key, numeric; This is the unique id buyer in the transaction.

- iv. transaction_id: key, numeric; This is the unique id of the transaction.

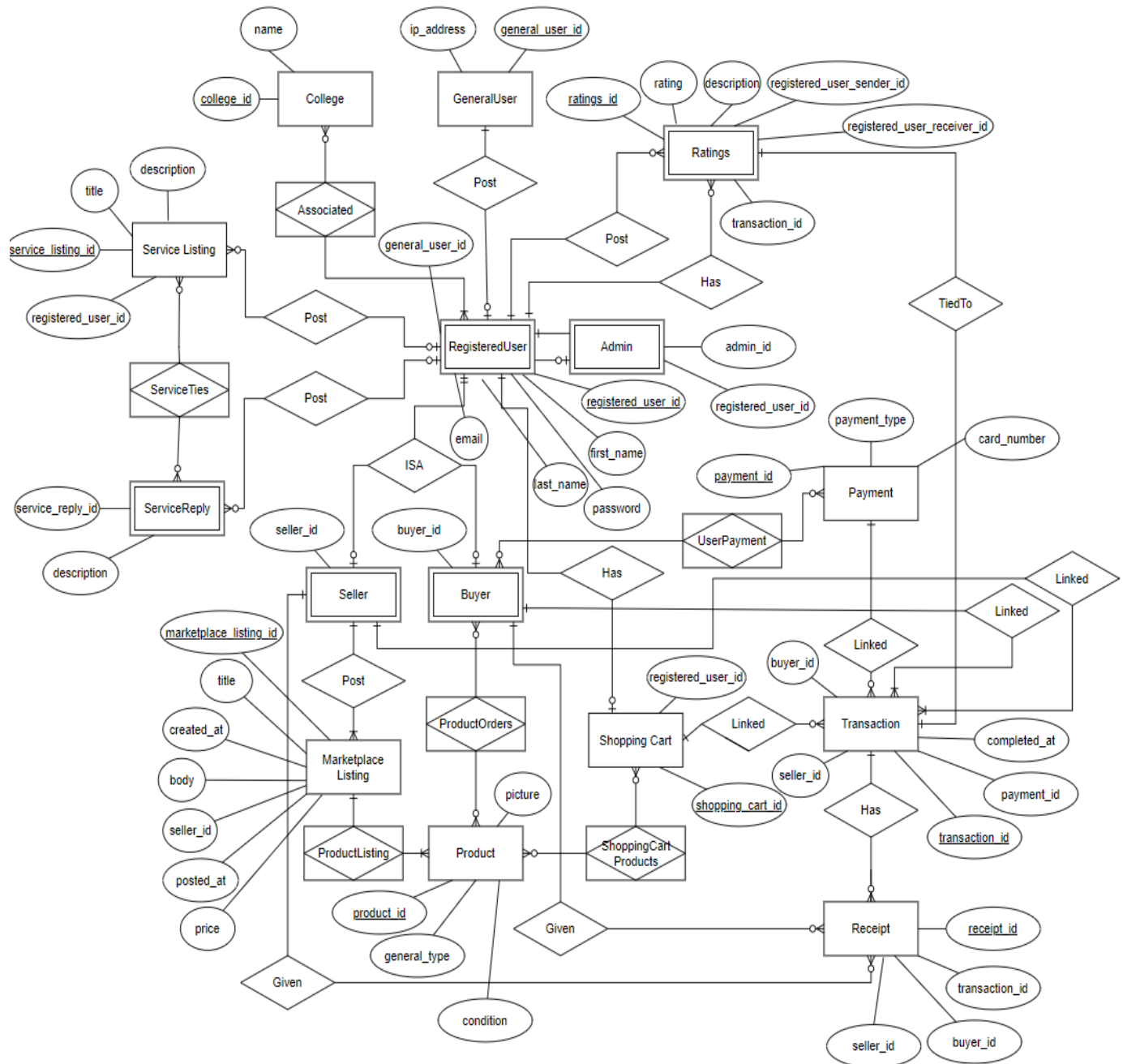
n. Payment (Strong)

- i. Payment_id: key, numeric; This is the unique id given to the payment.
- ii. payment_type: alphanumeric; This is the type of payment used by the buyer.
- iii. card_number: numeric; This is the number associated with a card

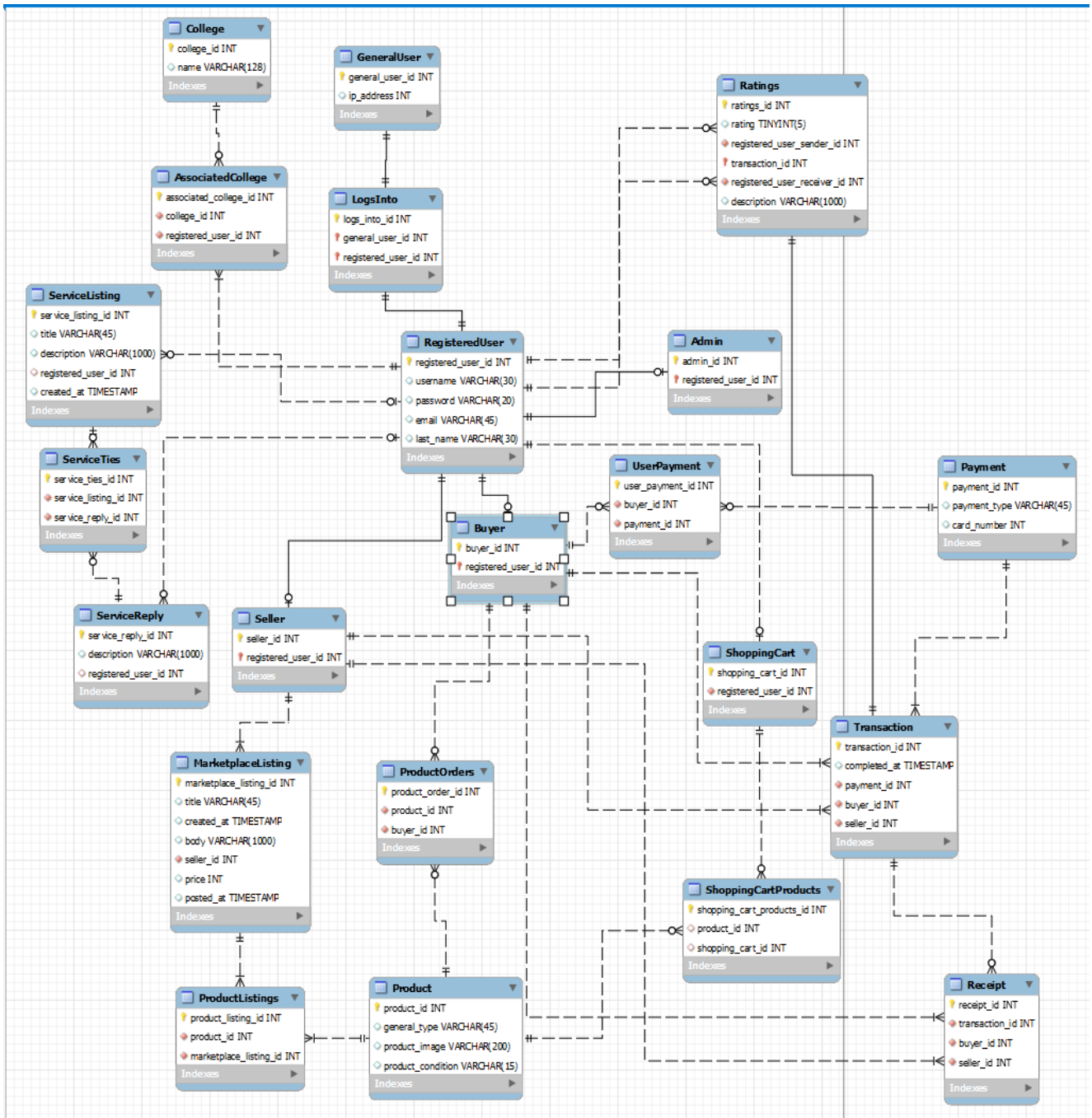
o. Product (Weak)

- i. product_id: key, numeric; This is the unique id of the product
- ii. general_type: alphanumeric; This is the general type of the product (e.g. a textbook, bicycle, furniture, etc.)
- iii. picture: alphanumeric; This the picture link associated with the product
- iv. Condition: alphanumeric; This is the condition associated with a product

3. Entity Relationship Diagram (ERD)



4. Database Model (EER)



5. DBMS

College Essentials will use MySQL as its DBMS, given its widely compatible and easy to use nature. MySQL has many tools available, such as MySQL Workbench, and continues to grow alongside cloud data platforms.

6. Media Storage

The College Essentials database will store images in links within the Product table, but the image and files themselves will be stored within the project's file system. This will allow us to keep the files in a consistent location, and allow us to easily be able to locate and reference these files. Because all files will be in the file system in a possible "uploads" folder, we would be able to just implement a path in the SQL database to be able to point to the file.

7. Search/Filter Architecture and Implementation

- a. Our search algorithm will allow the user to use a search bar for terms within a marketplace listing. There will also be a drop down menu for specifying the condition of a product that will work in tandem with the search bar. At this time, we have filters that allow the user to search based on condition, but we plan to allow users to search based on college as well.
- b. In order to implement the search filters, we will have a table in the database that would show the specific keywords linked to each marketplace listing. Here is an example of how the search would be implemented based on no filters, using SQL LIKE to search for the keyword within the title of the marketplace listings:

```
SELECT MarketplaceListing.title,  
Product.product_image FROM ProductListings  
JOIN MarketplaceListing ON  
ProductListings.marketplace_listing_id =  
MarketplaceListing.marketplace_listing_id
```

```
JOIN Product ON ProductListings.product_id =  
Product.product_id  
WHERE MarketplaceListing.title LIKE '%tes%';
```

- c. When searching for products using a condition filter, we will use a similar SQL LIKE to search for the specific keyword given, however, the product condition will be added using the drop down menu with the SQL AND function. A Query example would be:

```
SELECT MarketplaceListing.title,  
Product.product_image, Product.condition FROM  
ProductListings  
JOIN MarketplaceListing ON  
ProductListings.marketplace_listing_id =  
MarketplaceListing.marketplace_listing_id  
JOIN Product ON ProductListings.product_id =  
Product.product_id  
WHERE MarketplaceListing.title LIKE '%searchterm%'  
AND Product.condition = "NEW";
```

[Section V] High Level APIs and Main Algorithms

1. **Main Layout** : this is the main layout on most of the pages, this will be seen on buying, selling, form and home pages.
 - Login(): This method takes input from a button and brings the user to the login page.
 - Register(): this method take input from a button that bring the user to the registration page
 - Cart(): this method take the user to their shopping cart
 - logOut(): this method logs the user out and returns them to the home page
 - Menu(): this drop down menu allows the user to easily navigate to different features of the website such as buying or selling along with home views
2. **HomePage**: This page is the default page shown to all users upon entry, This is the title page of the website that allows users to navigate to where ever they want to go
 - a. SearchBarItem(): this method is a broad search feature that allows the user to search for any type of item that the site would have.
 - b. searchBarZip(): this method is for the zipcode of the user to get events or items related to their area or college
 - c. CategorySearch(): This drop down menu will allow the user to specify which quality of item they would like to look at
3. **LogInPage**: This page is our login page where users are able to sign in to their accounts

- a. Login(user): This method logs the user in and checks the db to see if they exist
- b. ForgotPassword(): this method allows the user to reset their password

4. **RegistrationPage:** The registration page is used to create new accounts for users, we take their data then store it within a db so they are able to login

- a. createAccount(User): This method takes in all the user info and checks if it follows the criteria for creating an account such as
- b. password length and creates an account and stores it within a db

5. **ShoppingCart:** The shopping cart is where items users want are stored. If they stored them. It also allows the user to check out

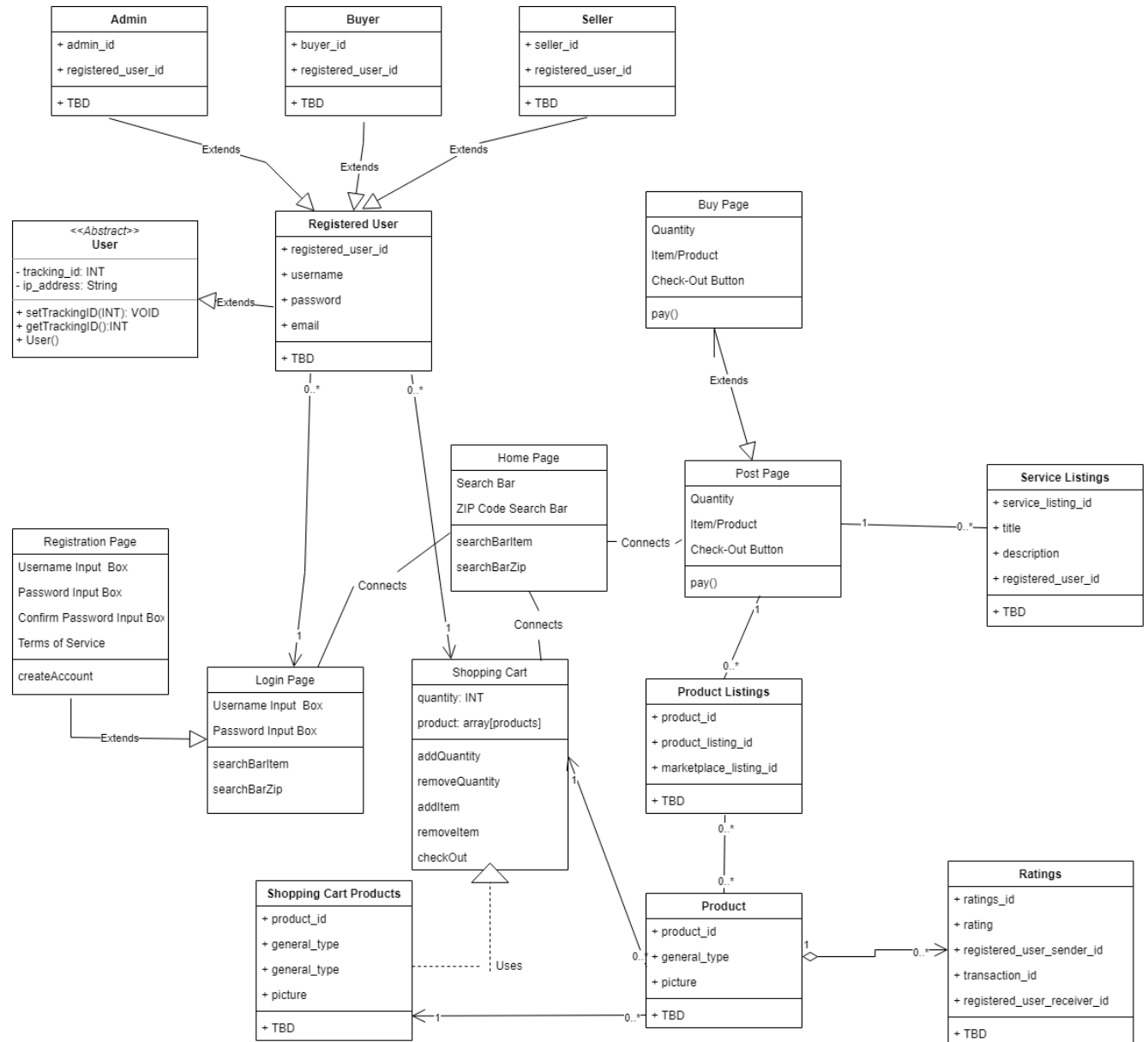
- a. AddQuantity(Item): This method adds the number of selected items within the cart, adds by one
- b. removeQuantity(Item): this method removed a selected item by one
- c. removeItem(Item): This method removes item from shopping cart entirely
- d. Checkout(): this method takes you to the checkout page for payment

6. **Checkout:** this page is where the user can put payment info in if desired for purchase of item

- a. Pay(): this take all the items within the cart and submits a payment
7. **MessagePage:** This page is where users can message each other for independent sales or joining study groups
- a. SendMessage(String, UserID): This method allows the user to send the message to the specific user
 - b. Delete(): Removes message link from page
8. **postPage:** This page is where users can post ads for items they want to sell or post study groups
- a. Post(item, category): this posts the item within the category selected
 - b. removePost(): allows user to remove posts they have created
 - c. editPost(): this will allow the user to change their posting without deleting it.
9. **BuyPage:** This page allows the users to look through items they want to add to their cart
- a. addItem(Item, quantity):this method adds the item and the quantity to the users cart
 - b. Search(Item): this method allows the user to search for the items they want
 - c. ClickItem(): this method allows the user to open the posting page where the description of the item the seller has created will be shown in detail
 - d. FillGrid(): this method will take items from the specified

category and display the image and the title of the product.

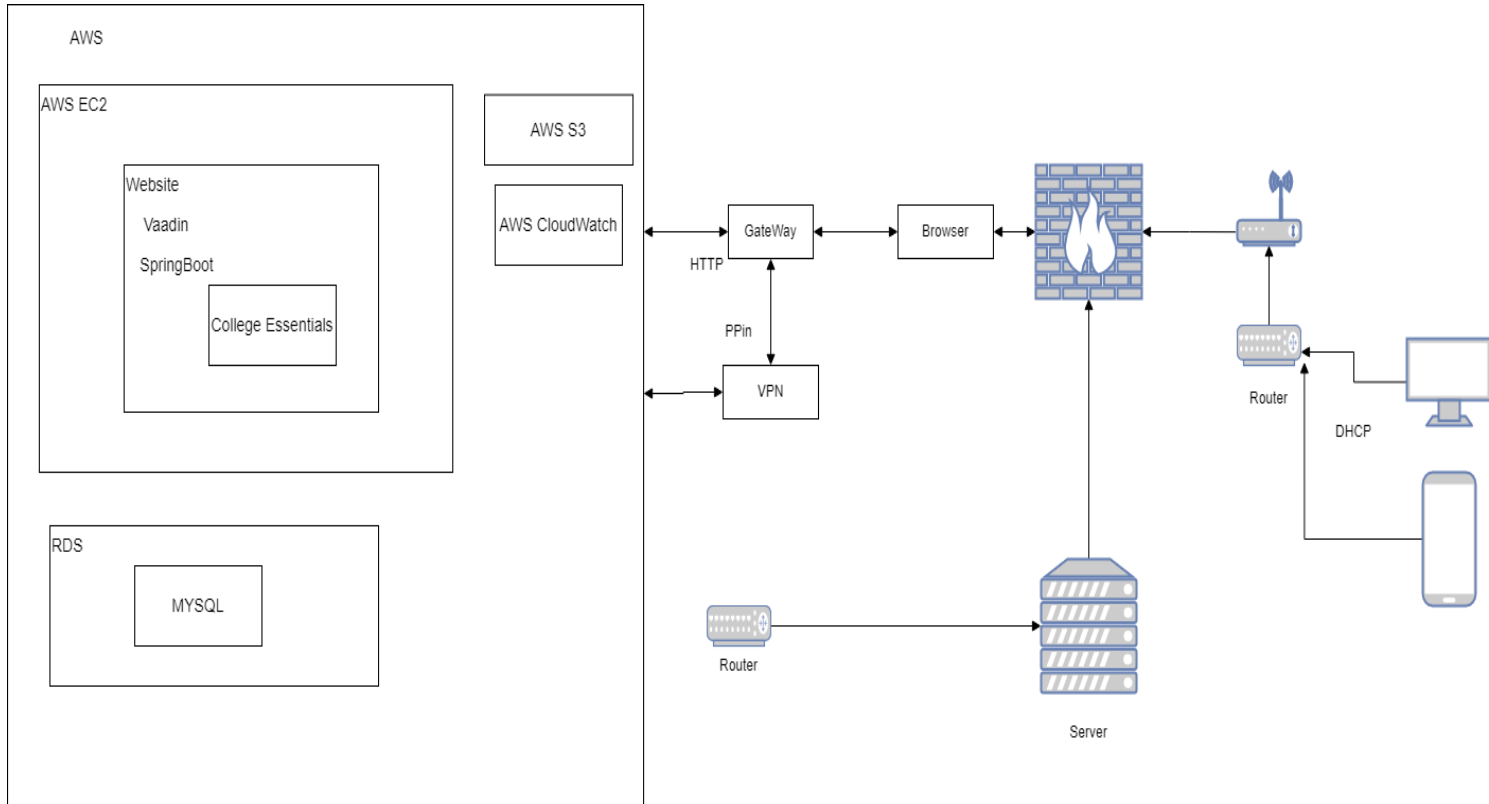
[Section VI] High Level UML Diagrams



[Section VII] High Level Application Network and Deployment Diagrams

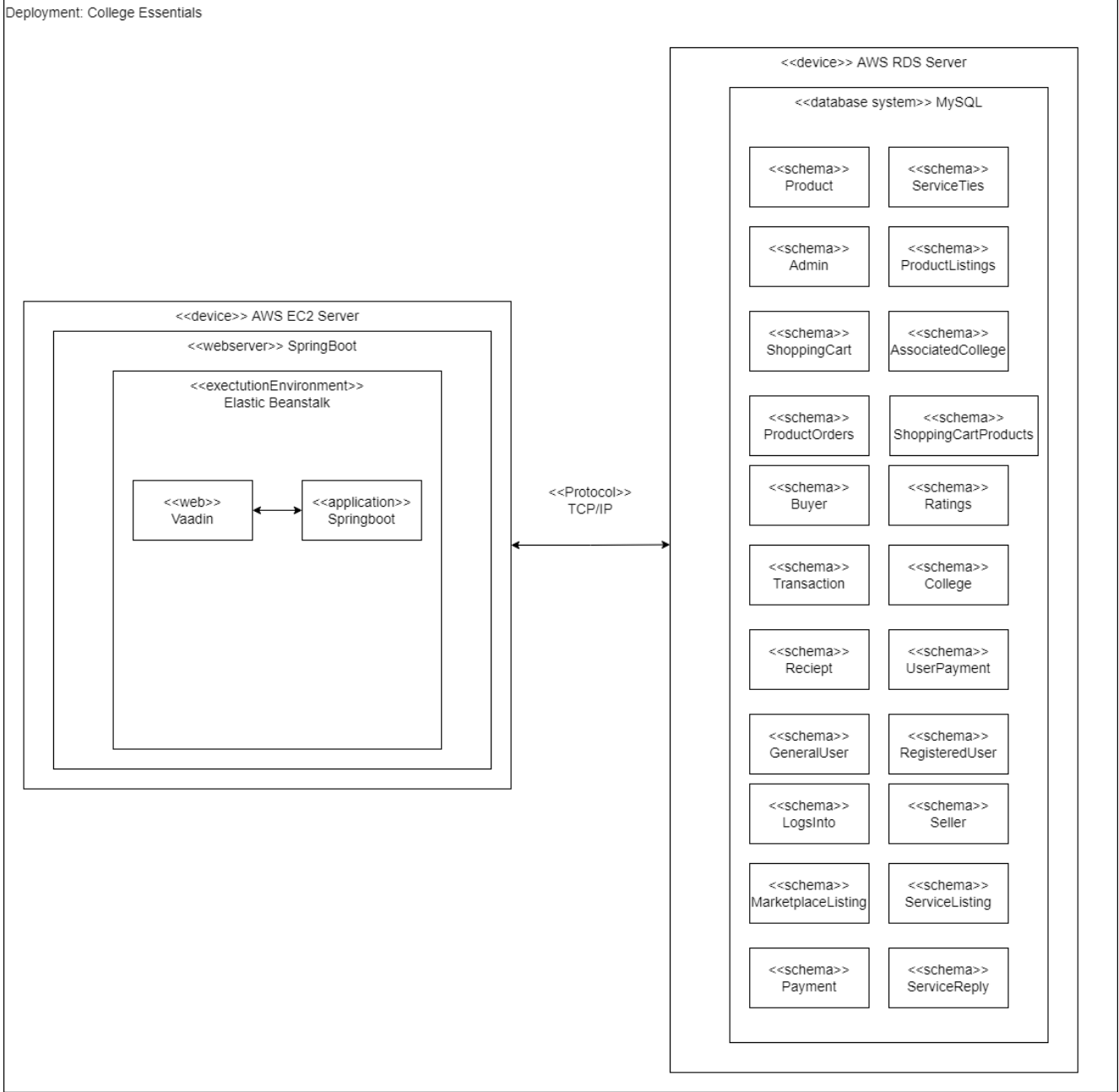
Diagrams

Network Diagram



Deployment Diagram

Deployment: College Essentials



[Section VIII] Identify Actual Key Risks For Your Project At This Time

1. Skills Risks

The main areas that we are whether or not our team are all on the same skill level when it comes to working on the code. We have two teams; one for front-end and one for back-end, and the risks that come with it are whether each member is on the same page.

To mitigate these risks, we are making sure that we all learn how to work with Vaadin and that all our team members are working with the same tech stack. We are making sure that we learn from each other to help the teammates that might have more skill risks than others.

2. Schedule Risks

There are two main problems that we face with schedule risks. The first main problem is whether the time schedules of each individual member lines up with one another. The second problem is whether or not we are able to allocate enough time to do the project.

To address these problems, we have shared our schedules with each other in order to determine the best times to meet as a group. We are working together to keep each other responsible for the work that needs to be done. We are also using Trello to keep track of which tasks need to be done, and when we should have it done by.

3. Technical Risks

The main areas that we are technical skill risks are related to the deployment of our app. The majority of our team has no experience with Vaadin, which is the development platform we are using to build our web app. Our other

points of risks are in regards to setting up the database, and our understanding of networking.

To address these issues, our team is putting in the effort to research each area on our own, while working together to teach each other how each section should be done. We continue to work as a group to learn how to use Vaadin properly, and will continue our research on how to set up the database and broaden our knowledge of networking.

4. Teamwork Risks

The only major risks that can be considered teamwork risks are making sure that each member of the team is putting in enough work. We all have our strengths and weaknesses, the only risk is whether each member is held accountable for the work that they should be doing.

Our solution to this is to have all the members hold each other accountable for the work that they should be doing. Our team shouldn't be afraid to make sure that we are all doing the work, and that we are comfortable telling each other if they have a task that they need to do.

5. Legal/Content Risks

Some of the Legal Risks that we face would be the risks of users abusing our website. The two major problems related to this would be suspicious service listings, and scamming other users.

To mitigate these risks, we have a moderation system where users would be able to report listings as suspicious, and then moderators would be able to delete these suspicious listings. We also have a rating system that would allow people to make sure that the people they are buying from are safe.

[Section IX] Project Management

As a team, we started using Trello in order to determine which tasks we needed to get done, and how we wanted to manage our time when doing so. We have trello split our tasks into three sections: TODO, in progress, and done. Along with this, we consistently met on Discord to discuss which sections we needed to work on, as well as how we wanted to split the work. Initially, we would all take a look at each task, attempt working on it as a group, and then split individually to finish up every task. After that, we would regroup and add our completed tasks Discord and Github, and then as a group we would go over final checks before fully submitting the task as completed. Then we would update Trello and continue on working with the other tasks. We used Discord to maintain communication, giving continuous updates on our own tasks and helping each other in areas that we needed help in. We shall continue to use Discord as our main way of communicating along with consistent meetings, and using Trello as our main checklist for which tasks we still need to complete.

[Section X] Detailed List of Contributions

Name	Contributions	Complaints
Ryan Murphy	Worked on sections 5, 7, 10. Proofread the milestone document. Worked on the front-end and back-end code.	
Duncan Forniss	Worked on section 3, and some of the priorities in section 2. Worked on some front-end code.	
Darren Wong	Worked on section 2, and section 4. Proofread the milestone document. Worked on setting up the database and troubleshooting back-end code.	
Brendan Leong	Worked on sections 1, 2, and 6. Created the guidelines for the UML diagrams.	
Justin Wong	Worked on sections 1, 2, 4, 6, 7, 8 and 9. Proofread the milestone document. Worked on the AWS deployment and some back-end code.	