**Team Deliverable 5 – CSCE 5430 Software Engineering**

1. **Requirements:**

## **Shopping Cart**

The shopping cart is used by the buyer when browsing products on the websites. The buyer adds items of interest into the shopping cart.

* + 1. The system shall allow a user to add items to his/her shopping cart
    2. The system shall also permit the user to remove items from the shopping cart
    3. There will be no limit on the number of items that can be added to the shopping cart
    4. The system shall save the items added to the shopping cart so that users will not lose them if they log off.

## **3.7 User Messaging**

The message functionality allows sellers and buyers to communicate after a buyer expressed interest in buying or collecting a product from the seller.

* + 1. The system shall allow two users to exchange messages through the message box.
    2. The system shall allow the user to receive messages to be saved and the user will be able to access them when the user logs in.
* All the requirements of this phase and the previous phases have been met.
* **Requirement Modification:** We made a slight modification to the requirements in user messaging, instead of sending the message to the seller inside the website, we provided a feature to send the message to the seller by the email provided by him, we modified this feature because it is a more efficient way to communicate with the seller since email is more responsive than in-site messaging. Moreover, the user wouldn’t have to login to get buyer’s messages, which makes an email more efficient option for the users to communicate.

**B. UML Diagrams**

1. **Class Diagram**

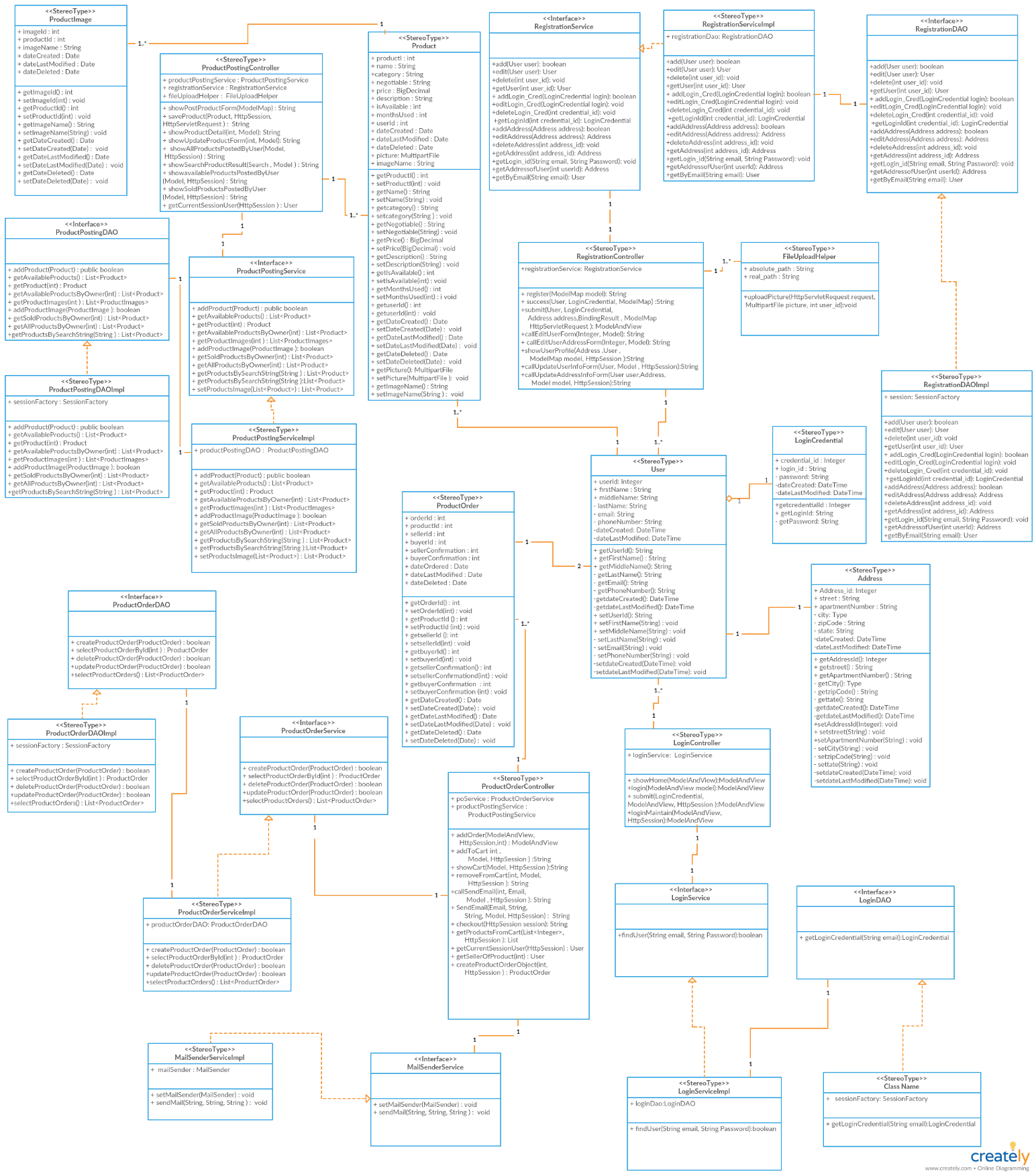
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Figure 1: Class Diagram for whole system including Phase 3 (Diagram created on creately.com)

1. **Use Case Diagram**

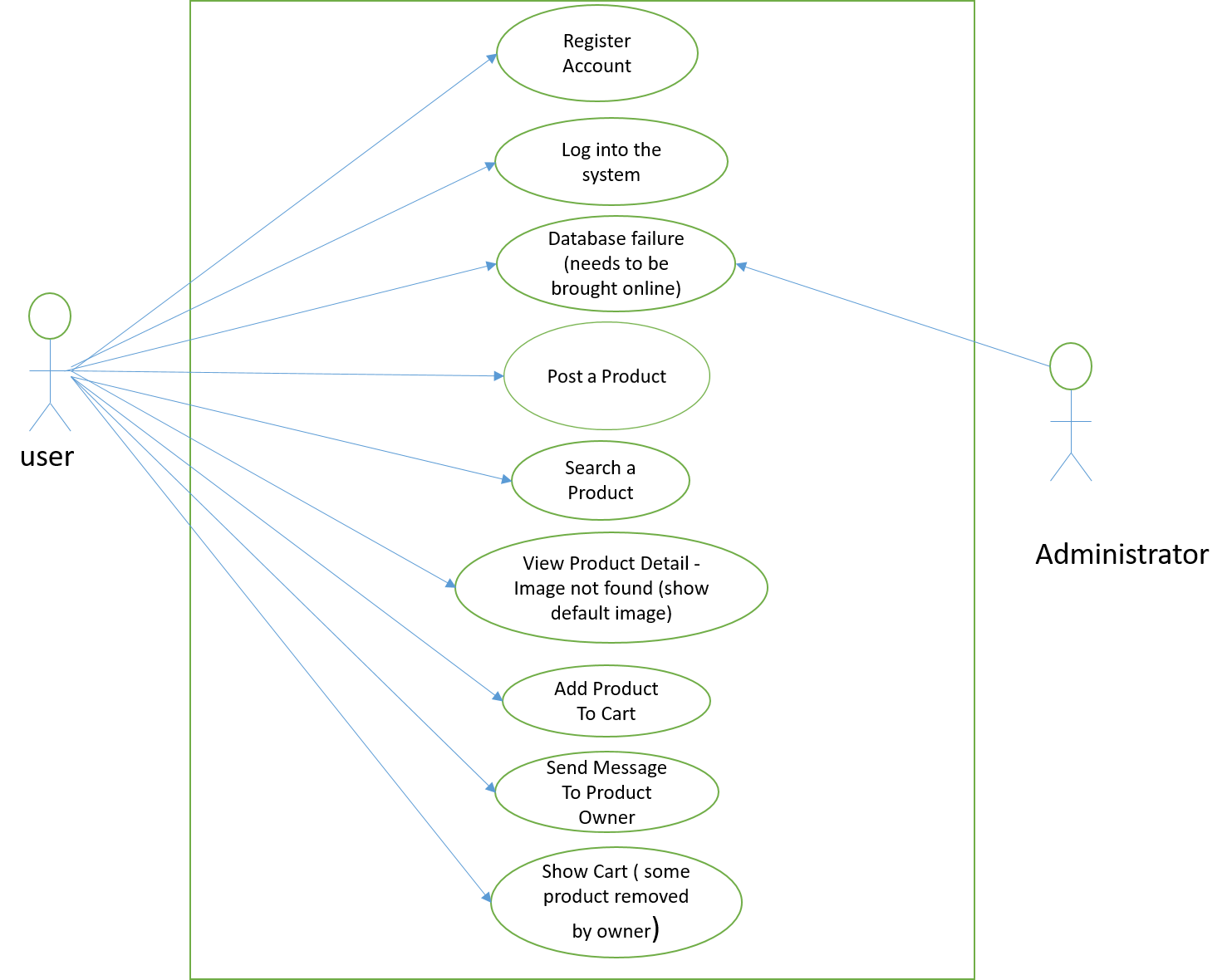


Figure 2: Use Case Diagram of whole system including Phase 3

**Use case of phase 3**

1. **Add Product to Cart**

Main Success Scenario

1. User successfully Logs into the system (Use Case III in Deliverable 3)
2. On a product, user clicks Add To Cart button
3. System Processes user’s request and adds the product to user’s cart
4. Cart content is displayed to user

Extension

1a) User is not logged into the system. Clicking Add To Cart button has no effect

4a) Product added by user is removed by owner. Product is not displayed in cart content

1. **Send Message (email) to Product owner**

Main Success Scenario

1. User successfully Logs into the system (Use Case IX)
2. On a product, user clicks the Send Message Icon
3. Send message form is displayed to user
4. User types in the message and clicks send
5. System processes the submission
6. Systems sends email to the owner of the product
7. User is redirected to home page

Extension

1a) User is not logged into the system. Send message icon is hidden.

1. **Show Cart (when some products removed by owner) – Error case use case**

Main Success Scenario

1. User clicks to view his/her cart content
2. Systems checks if all products in the cart are still available
3. Systems removes unavailable products
4. Cart content is displayed to the user

Extension

1a) if cart is empty, no content is displayed to the user

3a) if all products in cart are no longer available, no content is displayed to the user

**Previous use cases**

1. **Post a Product**

Main Success Scenario

1. User successfully Logs into the system (Use Case IX)
2. User clicks on Post a Product Button
3. Post Product Form is displayed
4. User enters product details and optionally selects a picture for the product
5. User submits the Form
6. Form data is processed by the system
7. Submission is received and user taken to home page and added product is displayed

Extension

1a) User is not logged into the system. Post Product Button hidden for this user

4a) User does not enter product details. Clicking on submit button remains on the same page

6a) processing fails because of invalid form fields

6b) User is returned to post product form with error message

1. **Search a Product**

Main Success Scenario

1. User enters search string in search box
2. User clicks on search button
3. System queries the database of products
4. Products with matches are returned in a list

Extension

1a) user does not enter text in search box. Clicking the search button has no effect

3a) System does not find any match

3b) a no result found message is displayed to user

1. **View Product Detail – Image not found (Show default image)**

Main Success Scenario

1. User clicks on a product to view details
2. Systems retrieves product but image is not found
3. System attaches a default image to the product
4. Product details is displayed on new page with default image

Extension

3a) Default image is not found. An alternative text (product name) is displayed

1. **Register Account**

Main Success Scenario

1. User clicks on Sign up button
2. Registration Form is displayed to the user
3. User types his/her information in the respective form fields
4. User clicks on the submit button
5. Submission is processed by the system
6. User is taken to home page with success message

Extension

3a) User does not complete mandatory form fields. Clicking on submit button displays the

Empty fields and form is not submitted

5a) Data processing fails because of validation error is form fields

5b) User stays on registration page and error messages displayed for invalid form fields

1. **Database Failure (bring online) use case**

Main Success Scenario

1. Admin turns on the database server
2. Provides a username and password
3. Restores the database from backup files
4. Database is online and ready

Extension

3a) database backup file corrupted. Recovers data to the most recent stable version

3b) Informs users of the data loss.

1. **Log into the system**

Main Success Scenario

1. User clicks login button
2. Login form is displayed
3. User types username and password
4. User clicks submit button
5. User is authenticated and taken to home page.

Extensions

4a) user does not fill in password or username or both. Clicking on submit button displays errors to user.

5a) User authentication fails because of incorrect password and/or username. User stays on login form and is requested to check password and or username.

1. **Sequence Diagram**
2. **Add product to cart (Use case I)**

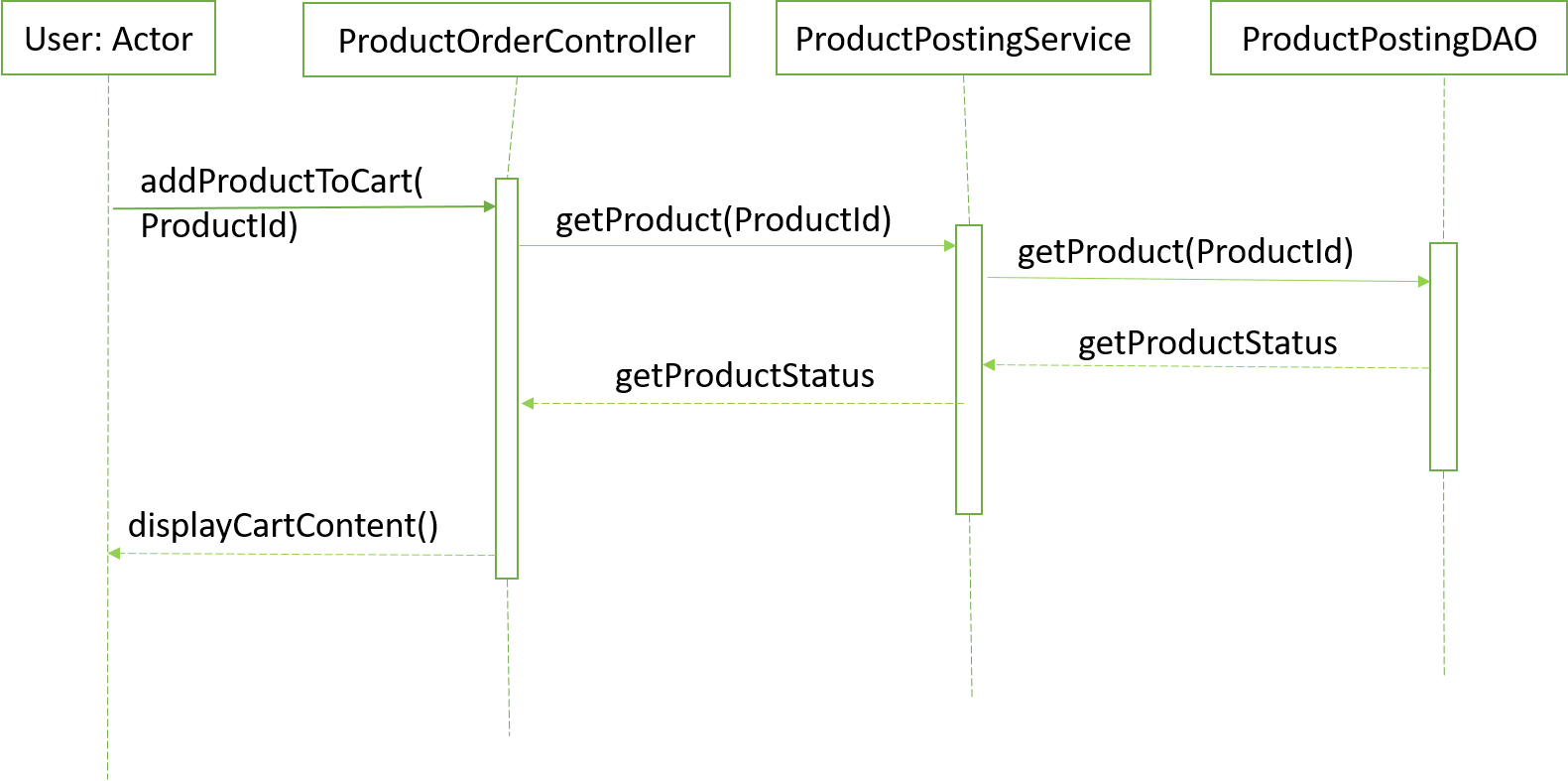
****

Figure 3: Sequence Diagram for Add Product to cart use case

1. **Show Cart (some products removed by owner) – error case (Use case III)**

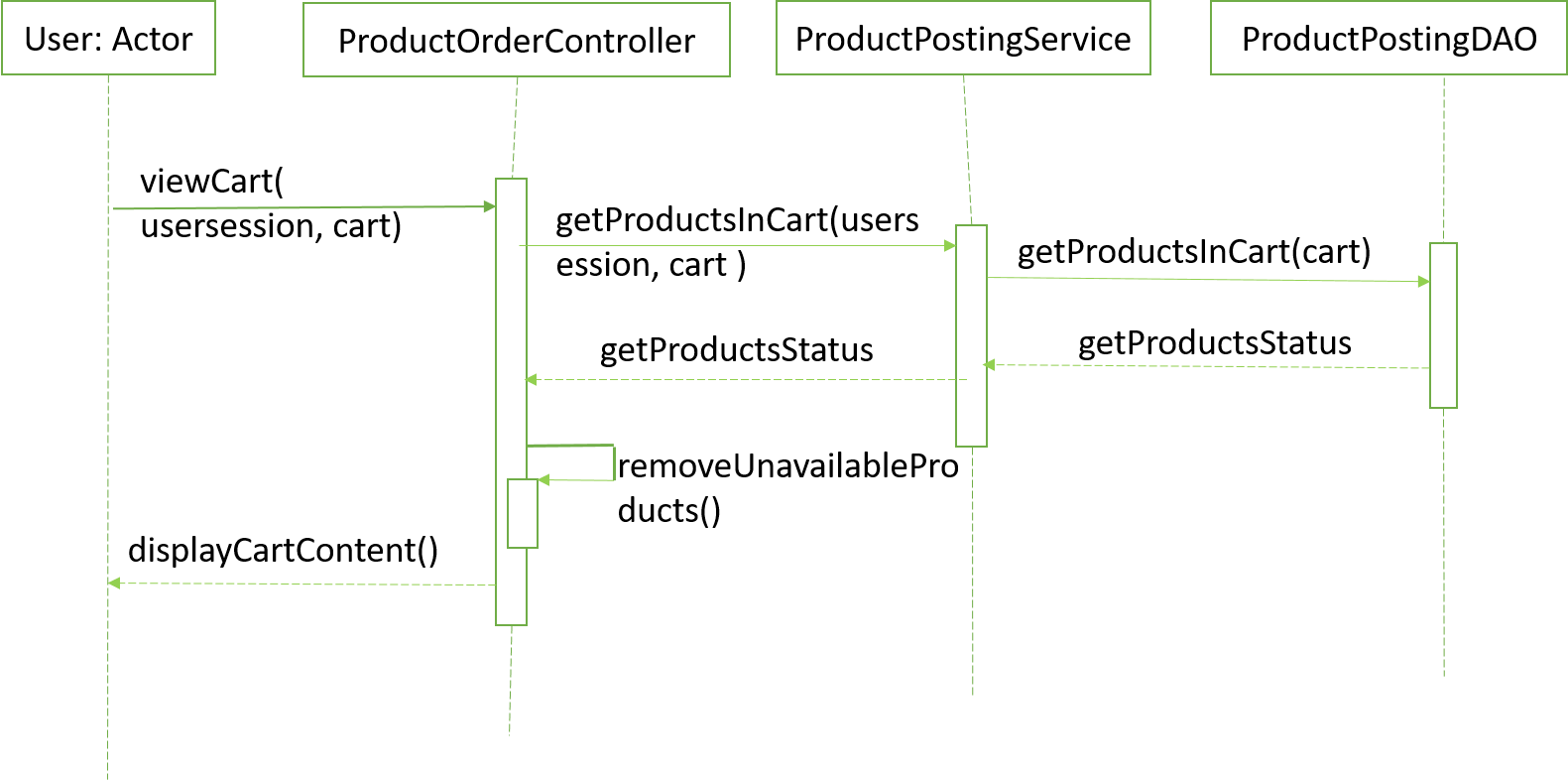
****

Figure 4: Sequence diagram for the show cart use case (error case)

1. **Post A product (Use case IV)**

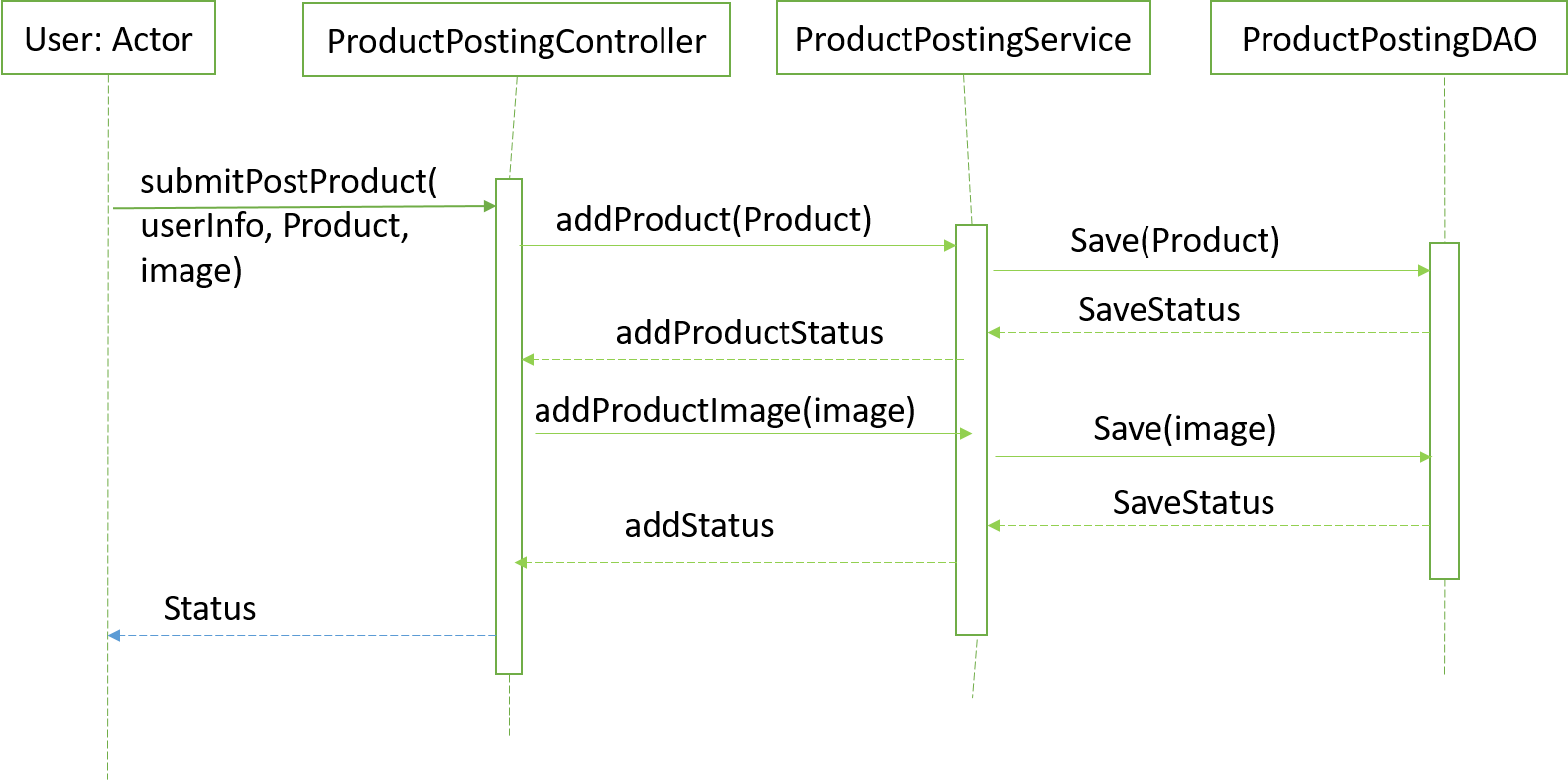


Figure 5: sequence diagram for post a product case

1. **View Product Detail – Image Not found (Show Default Image) – Error Use Case**

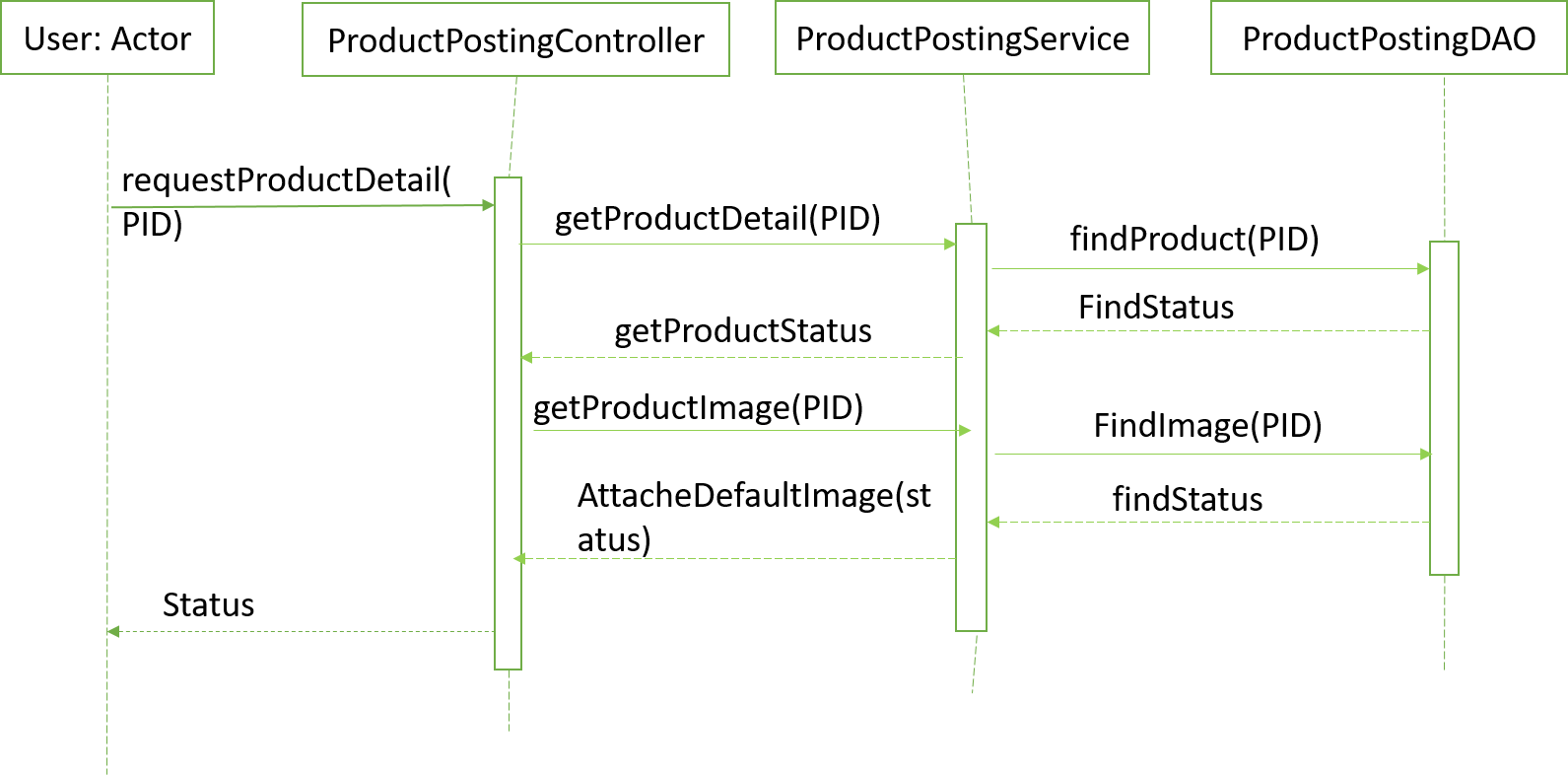


Figure 6: Sequence diagram for View product use case

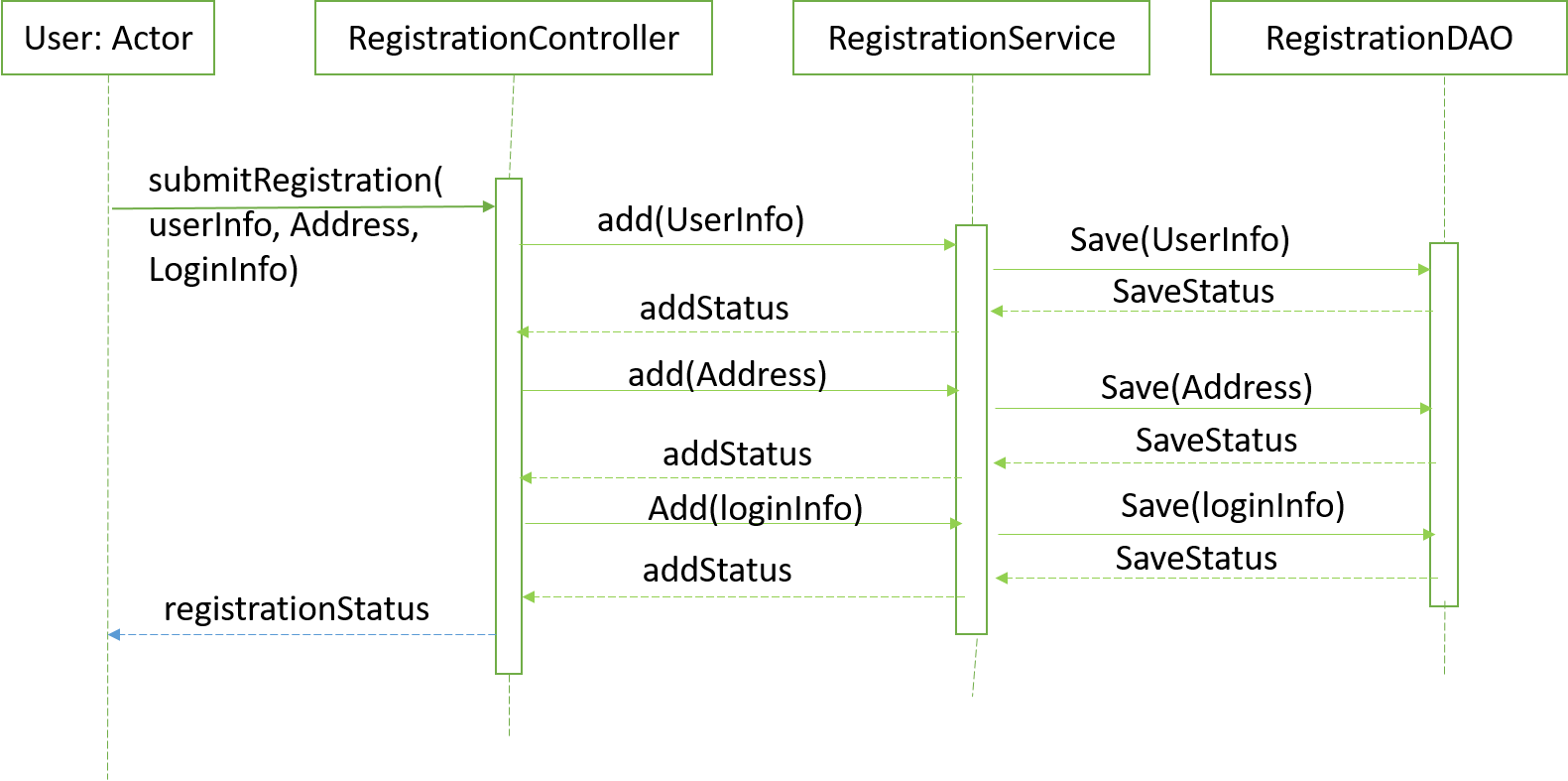
1. **Register Account (Use case VII)**

Figure 7: Sequence diagram for Register account use case

1. **Database Failure (bring online) (Use case VIII)**

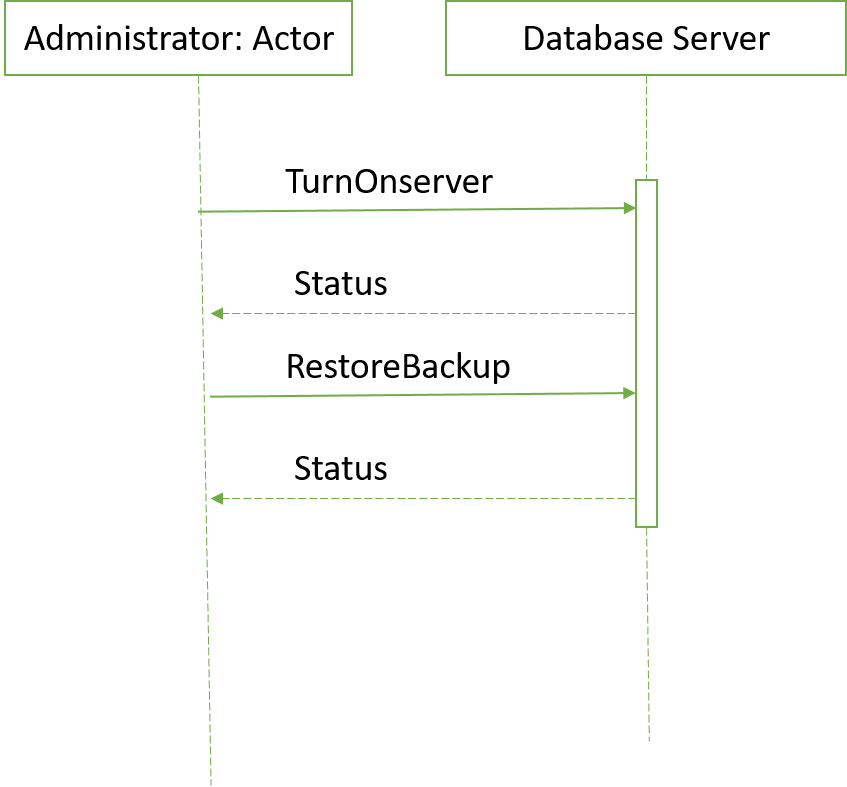


Figure 8: Sequence diagram for database failure use case

**C. Test Cases:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** | | studentsurplus | | | **Module Name** | | | | | | | Login | | | |
| **Created By** | Haidi Chen | **Created Date** | | 2018/10/28 | **Tested By** | | | | Haidi Chen | | | **Tested Date** | | | 2018/10/29 |
| **Test Scenario 1 – Verify the Functionality of Login Page** | | | | | | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | | **Preconditions** | | **Test Input** | | | | **Expected Output** | | | **Actual Output** | | **Status** |
| 01 | enter valid login\_id & valid password | 1. Enter login\_id 2. Enter password 3. Click on sign in button | | Valid URL,  Test Data | | login\_id =  [nick@gma.com](mailto:nick@gma.com)  password =  888888 | | | | home page | | | home page | | pass |
| 02 | enter valid login\_id & invalid password | 1. Enter login\_id 2. Enter password 3. Click on sign in button | | Valid URL,  Test Data | | login\_id =  [nick@gma.com](mailto:nick@gma.com)  password =  888 | | | | show error message: invalid username or password | | | invalid username or password | | pass |
| 03 | enter invalid login\_id & valid password | 1. Enter login\_id 2. Enter password 3. Click on sign in button | | Valid URL,  Test Data | | login\_id =  [nick@gmail.com](mailto:nick@gmail.com)  password =  888888 | | | | show error message: invalid username or password | | | invalid username or password | | pass |
| 04 | enter invalid login\_id & invalid password | 1. Enter login\_id 2. Enter password 3. Click on sign in button | | Valid URL,  Test Data | | login\_id =  [nick@gmail.com](mailto:nick@gmail.com)  password =  888 | | | | show error message: invalid username or password | | | invalid username or password | | pass |
| 05 | click “Register Here” to registeration page | 1. Click on “register here” link | | Valid URL, | | N/A | | | | registration page | | | registration page | | pass |
| **Created by** | | | **Date** | | | | **Module Name** | | | | **Registration** | | | | |
| **Sri Sravya Tirupachur Comerica** | | | **10/28/2018** | | | | **Tested by** | **Sri Sravya Tirupachur Comerica** | | | **Date** | | | **10/28/2018** | |
| **Test Scenario 2 – Verify the Functionality of Registration Page** | | | | | | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | | **Preconditions** | | **Test Input** | | | | **Expected Output** | | | **Actual Output** | | **Status** |
| 06 | enter all information on the page and agree the terms and conditions | 1. Enter all the fields 2. Check “agree to terms and conditions” 3. Click on “submit” button | | Valid URL,  Test Data | | FirstName=  Hellen  MiddleName=  J  LastName=  Li  email=  [hellen@gma.com](mailto:hellen@gma.com)  phonenumber=  9409993333  street=  123 stocken  apartment No.=  201  city = Denton  state = TX  zipcode = 76201  profile picture = null  password =  hellen123  confirm password =  hellen123 | | | | home page | | | home page | | pass |
| 07 | required information is not provided | 1. Enter part of the fields 2. Check “agree to terms and conditions” 3. Click on “submit” button | | Valid URL  Test Data | | FirstName =  Khai  LastName =  Steven | | | | show warning | | | Show warning | | pass |
| **Test Scenario 3 – Verify the Functionality of Profile Management Page** | | | | | | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | | **Preconditions** | | **Test Input** | | | | **Expected Output** | | | **Actual Output** | | **Status** |
| 08 | change profile information | 1. Click on edit button on the upper right side of page 2. Enter new information 3. Click on submit button | | Valid URL  Test Data | | MiddleName =  KK  phoneNumber =  1991998888 | | | | back to profile page with modified information | | | profile page with  modified  information | | pass |
| 09 | change address information | 1. Click on edit button on the right side of Address section 2. Modify information 3. Click on submit button | | Valid URL  Test Data | | Street = 102  Apartment No. =  394 | | | | back to profile page with new information | | | profile page with new information | | pass |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** | | studentsurplus | | **Module Name** | | | | ProductPosting | |
| **Created By** | Haidi Chen | **Created Date** | 11/11/2018 | **Tested By** | | Haidi Chen | | **Tested Date** | 11/12/2018 |
| **Test Scenario 4 – Verify the Functionality of Home Page (after login)** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 10 | hit “home” icon | 1. Click on the “home” icon | Valid URL, | | N/A | | home page | home page | pass |
| 11 | hit “Sell” icon | 1. Click on the “Sell” icon | Valid URL, | | N/A | | product posting page | product posting page | pass |
| 12 | hit “My products” icon | 1. Click on the “My Products” icon | Valid URL, | | N/A | | My products page | My products page | pass |
| 13 | hit “cart” component | 1.Click on the “cart” icon | Valid URL, | | N/A | | cart page | cart page | pass |
| 14 | search specific products via search bar | 1. Type in the search bar 2. Click on the “Search” icon | Valid URL,  Test Data | | type “chair” in search bar | | Related product list | Related product list | pass |
| 15 | navigate the picture zone | 1. Click on the arrow left or right | Valid URL | | N/A | | show next or previous picture | next/previous picture | pass |
| 16 | edit user profile | 1. Click on the “user” icon to get a dropdown list 2. Click on the “edit profile” label | Valid URL | | N/A | | profile editing page | profile editing page | pass |
| 17 | logout function | 1. Click on the “User” icon to get a dropdown list 2. Click on the “Logout” label | Valid URL | | N/A | | login page | login page | pass |
| 18 | show products owned by user | 1. Click on the “User” icon to get a dropdown list 2. Click on the “My Products” label | Valid URL | | N/A | | My products page | My products Page | pass |
| 19 | view details of product posted on home page | 1. Click on product label “View Details” | Valid URL | | N/A | | product details page | Product details page | pass |
| **Test Scenario 5 – Verify the Functionality of Home Page (before login)** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 21 | hit “Login/Register” icon | 1. Click on the “Login/Register” icon | Valid URL, | | N/A | | Login page | Login page | pass |
| 22 | view details of product posted on home page | 1. Click on product label “View Details” | Valid URL | | N/A | | product details page | Product details page | pass |
| **Test Scenario 6 – Verify the Functionality of Product Posting Page** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 23 | enter valid information for all fields | 1. Fill in the fields 2. Click on the “Submit” button | Valid URL,  Test Data | | Name = landscape  Category = Others  Months Used = 1  Price = 0  Negotiable = yes  Description = a landscape  img = xxx | | Success message | Success message | pass |
| 24 | enter valid information in fields except for the field “Months Used” | 1. Fill in the fields except “Months Used” with valid input 2. Fill in the field “Month Used” with string instead of integer 3. Click on the “Submit” button | Valid URL  Test Data | | Name = mattress  Category = Furniture  Months Used = test  Price = 30  Negotiable = yes  Description = a second-hand mattress  img = xxx | | show error message and stay at current page | Error page | pass |
| 25 | enter nothing in the fields and submit | 1. Click on the “Submit” button directly | Valid URL  Test Data | | all fields left as blank | | show warning message and stay at current page | Warning message | pass |
| **Test Scenario 7 – Verify the Functionality of My Products Page** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 26 | delete the product | 1. Click on the “Remove” button | Valid URL | | N/A | | refresh current page without the product which is deleted | Refresh current page without product which is deleted | pass |
| 27 | Remove sold products | 1. Click on the “Sold” button | Valid URL | | N/A | | Refresh the current page without the product which is sold | Refresh the current page without the product which is sold | pass |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** | | studentsurplus | | **Module Name** | | | | Item Buying | | |
| **Created By** | Haidi Chen | **Created Date** | 11/25/2018 | **Tested By** | | Haidi Chen | | **Tested Date** | 11/25/2018 |
| **Test Scenario 8 – Verify the Functionality of Home Page (after login)** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 28 | Adding product to cart | 1. Click on the “Add to cart” icon | Valid URL, | | N/A | | cart page | cart page | pass |
| 29 | Viewing product details | 1. Click on the “View Details” button | Valid URL, | | N/A | | product details page | product details page | pass |
| **Test Scenario 9 – Verify the Functionality of Home Page(before login)** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 30 | Viewing product details | 1. Click on the “View Details” button | Valid URL, | | N/A | | product details page | product details page | pass |
| **Test Scenario 10 – Verify the Functionality of Cart Page** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 31 | remove specific product from the cart | 1. Click on the “Remove from cart” button | Valid URL, | | N/A | | cart page without deleted product | cart page without deleted product | pass |
| **Project Name** | | studentsurplus | | **Module Name** | | | | Messaging | |
| **Created By** | Haidi Chen | **Created Date** | 11/25/2018 | **Tested By** | | Haidi Chen | | **Tested Date** | 11/25/2018 |
| **Test Scenario 11 – Verify the Functionality of Home Page (after login)** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 32 | Prepare to Send email to the product owner | 1. Click on the “envelope” icon next to the “View Details” button | Valid URL, | | N/A | | email sending page | email sending page | pass |
| 33 | Prepare to send email when browsing the details | 1.click on the “View Details” button  2.click on the “Send an email” button on the new page | Valid URL | | N/A | | Email sending page | Email sending page | pass |
| 34 | Prepare to send email after adding products to cart | 1.click on “Add to cart” button  2.click on the “Send an email” button on the new page | Valid URL | | N/A | | Email sending page | Email sending page | pass |
| **Test Scenario 12 – Verify the Functionality of Email Sending Page** | | | | | | | | | | |
| **Test Case ID** | **Test Case Description** | **Test Steps** | **Preconditions** | | **Test Input** | | **Expected Output** | **Actual Output** | **Status** |
| 35 | Sending email to the product owner who provides a valid email address | 1. Write email content 2. Click “Send Email” button | Valid URL,  Test Data | | email content: hello, this is a test email from a website | | success message | success message | pass |

Table 1: Test Cases for all the phases

**The path of test case implementation:**

* SourceCode\unt.cse.studentsurplus\src\test\java\unt\cse\studentsurplus\service\MailSenderServiceImplTest.java SourceCode\unt.cse.studentsurplus\src\test\java\unt\cse\studentsurplus\controller\ProductOrderControllerTest.java

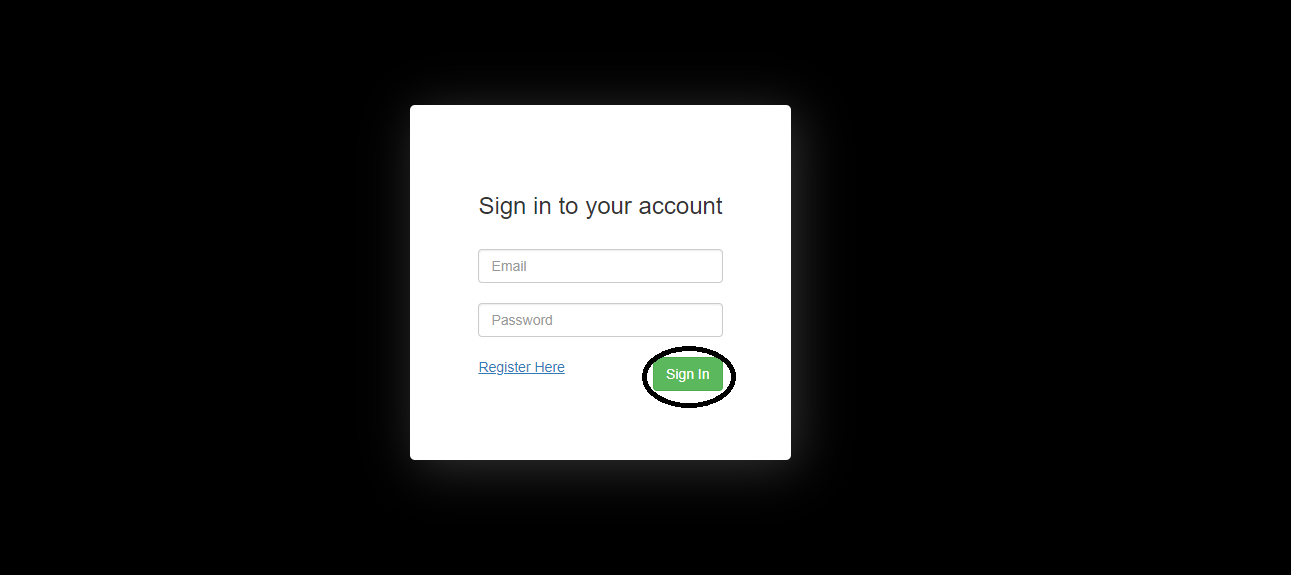
**D. Components:**

|  |  |
| --- | --- |
| **Components** | **Developed By** |
| Front End Pages for updating product and sending an email, Back-End Implementation for sending an email. | Sri Sravya Tirupachur Comerica |
| Back –End Implementation for adding, deleting items from the cart and deleting a product posted by the user. | Aboubakar Mountapmbeme |
| Unit test cases and System testing. | Haidi Chen |
| Front page for cart functionality and View details functionality. | Amisha Gadhia |

**E. User Manual:**

**Login:**

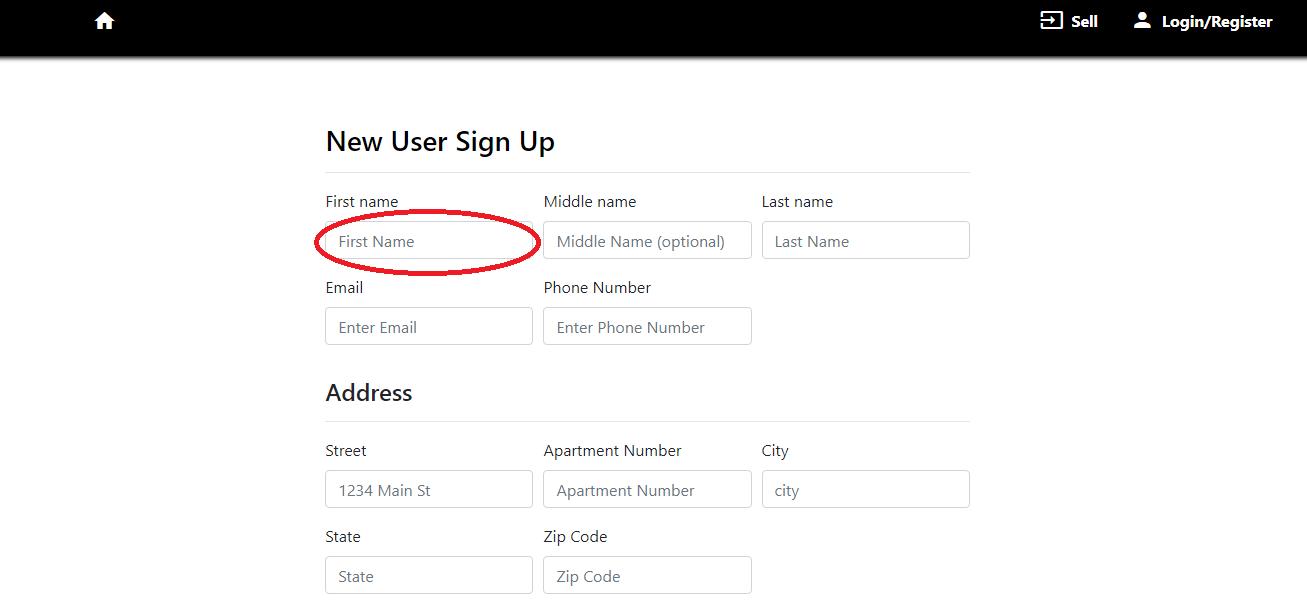
* By clicking on the register here link on the page, the user will be redirected to the registration page.
* If already registered, he can simply login using his username and password. [1]

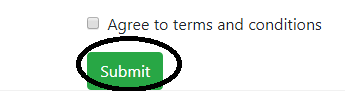
****

Picture (i) Login Page

**Registration:**

* A user can register by filling in the fields that are provided below.
* By clicking on the submit button given below, the user will be successfully registered. [1]

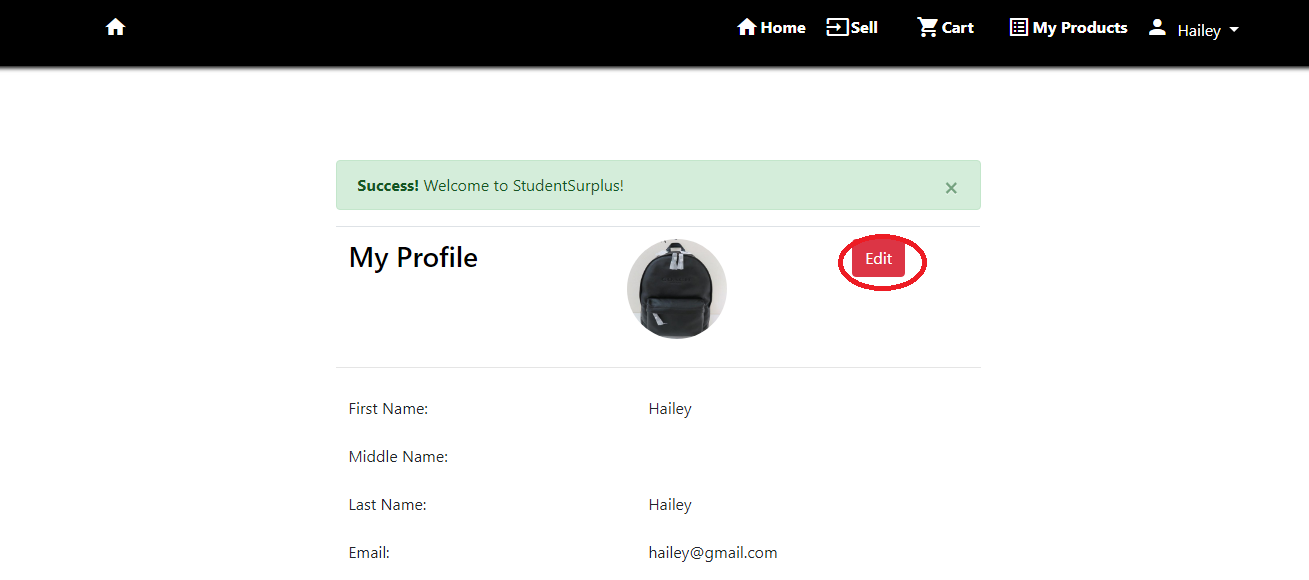
****

****

Picture (ii) Registration Page

**My Profile:**

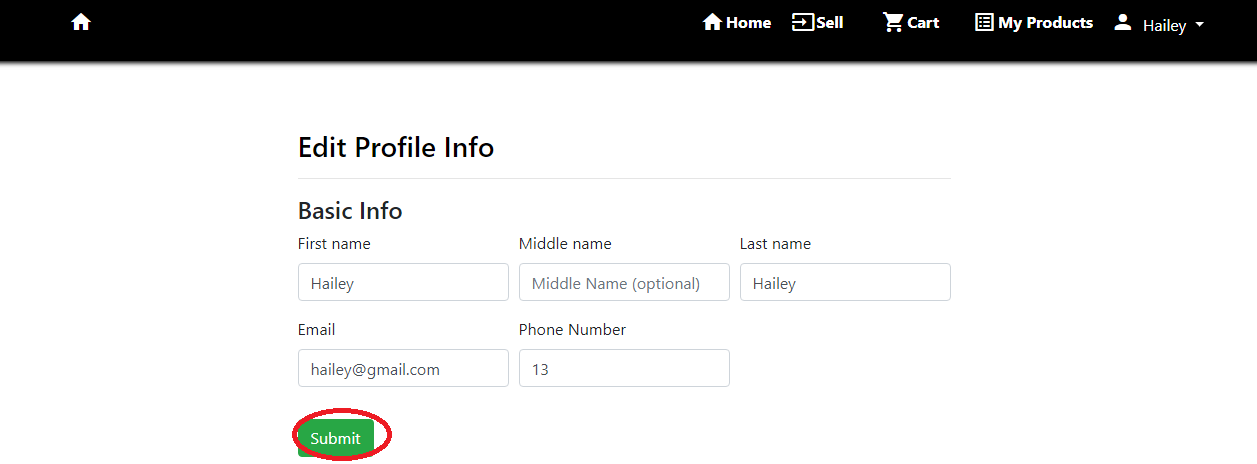
* This user profile page will show the details of the user and they can also change their details by clicking on the edit button. [1]

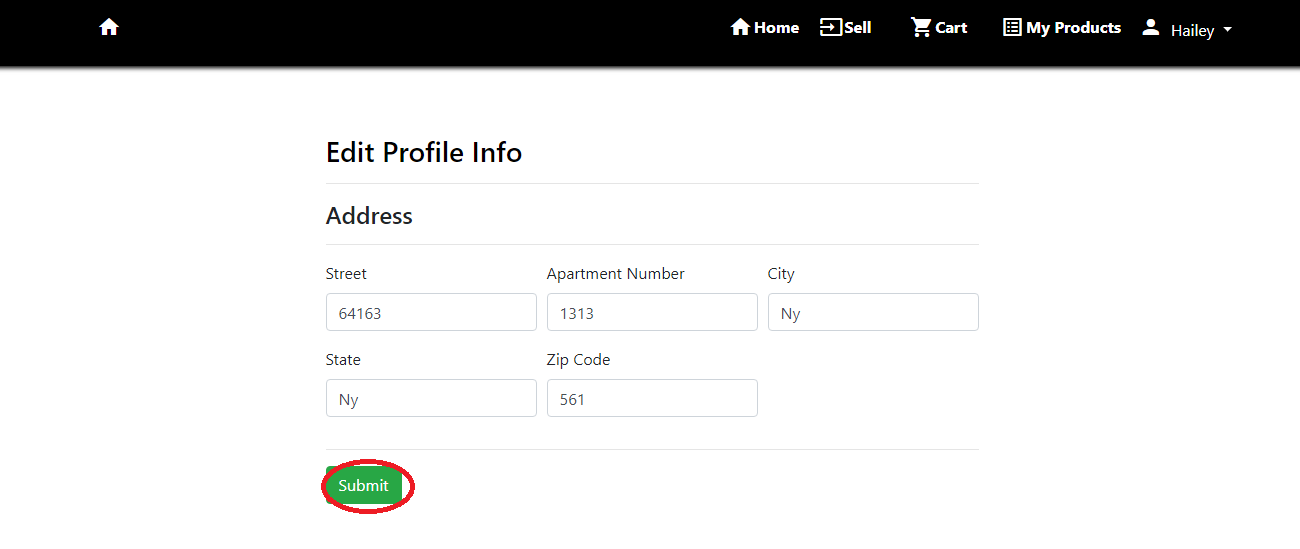
****

Picture (iii) Profile Info Page

**Profile update:**

* After clicking the edit button the user will see fields where he can manually edit his details
* Clicking on the submit button will change the user details and display it to him on the user profile page. [1]

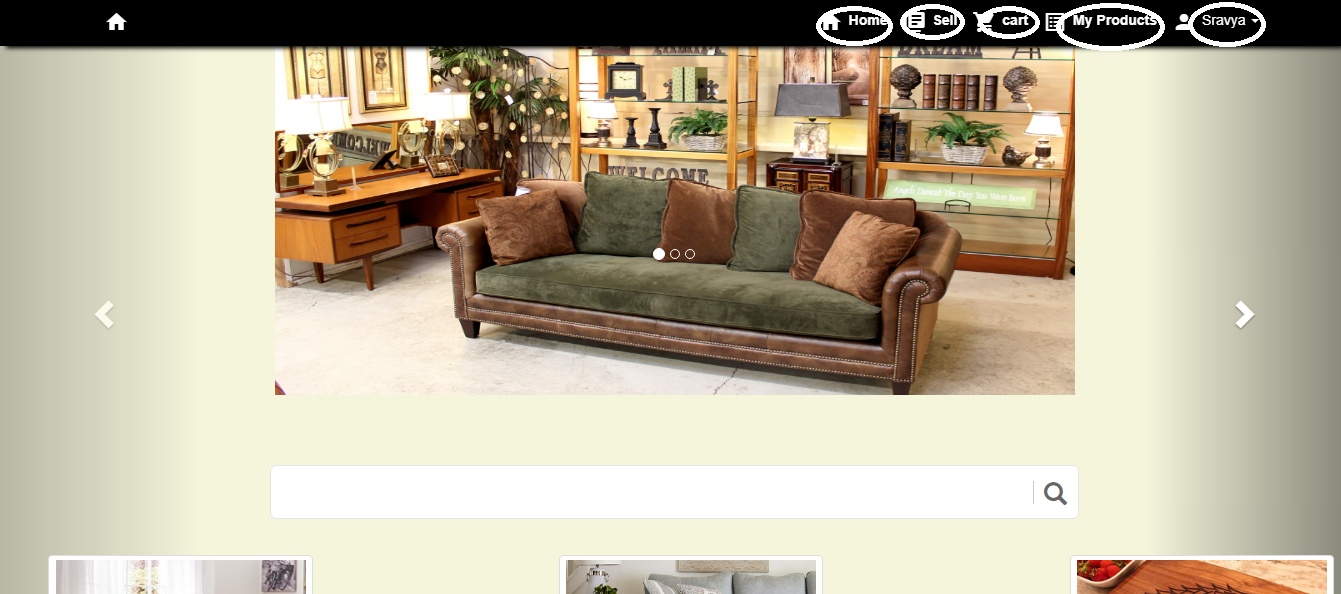
****



Picture (iv) Profile Update Page

**Home Page:**

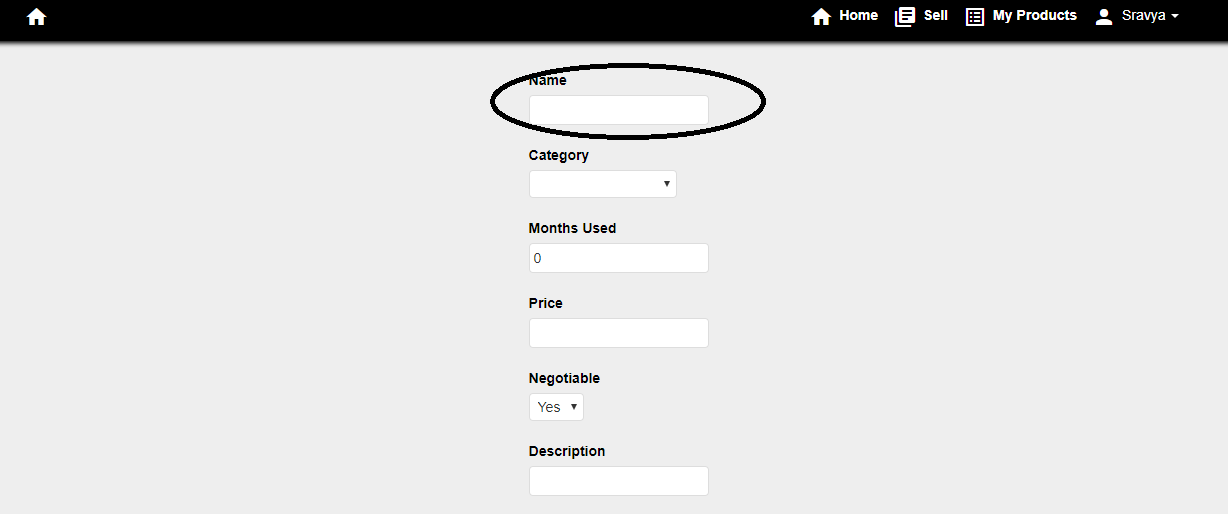
* Home will provide options for the user to sell, view his products, edit his profile and also to logout of his account.
* **Sell**: By clicking on sell on navigation bar the user will be redirected to a page where he can post the products.
* **My Products**: By clicking on sell on navigation bar the user will be redirected to a page where he can view the products posted by him.
* **User Name**: By clicking on the user name on navigation the user will see a dropdown where he can edit his profile and logout of his account.
* **Cart**: By clicking on the cart icon user will be redirected to his cart.
* **Home**: By clicking the on the user can return back to home page. [1]



Picture (v) Home Page

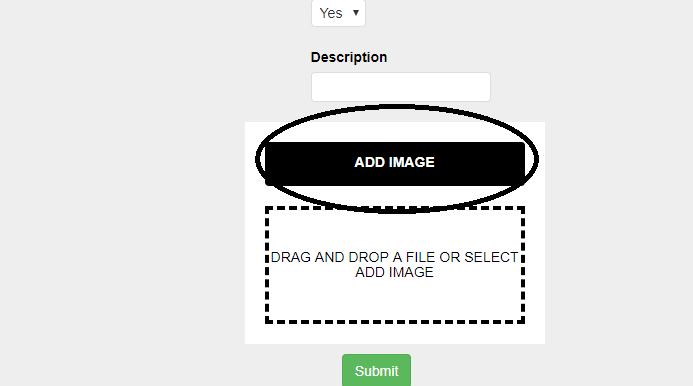
**Post a Product Page:**

* This page has the features where a user can post a product through the provided interface, he will have to fill in the details such as name, category, months used, negotiable and its description. [1]



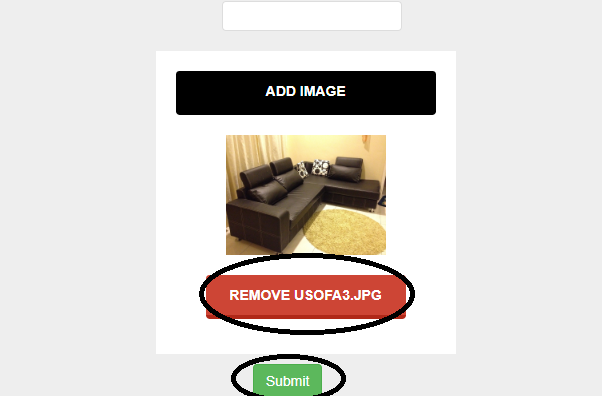
Picture (vi) Post Product Page

* The user will be given an option to upload the image, by clicking on the Add Image button as shown below.



Picture (vii) Add Image Feature

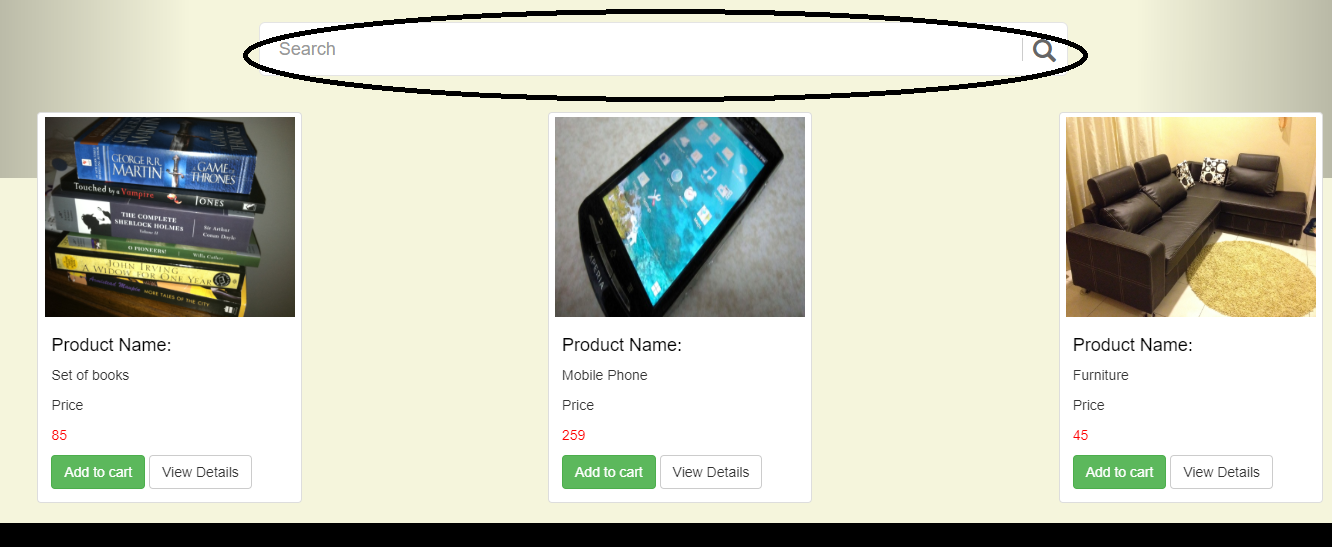
* The user will also be shown a preview of the image and a feature to remove the image by clicking on remove image icon as shown below.
* Finally, by clicking on the submit button his product will be posted in the website and will appear on the home page. [1]



Picture (vii) Remove uploaded image feature

**Search Feature:**

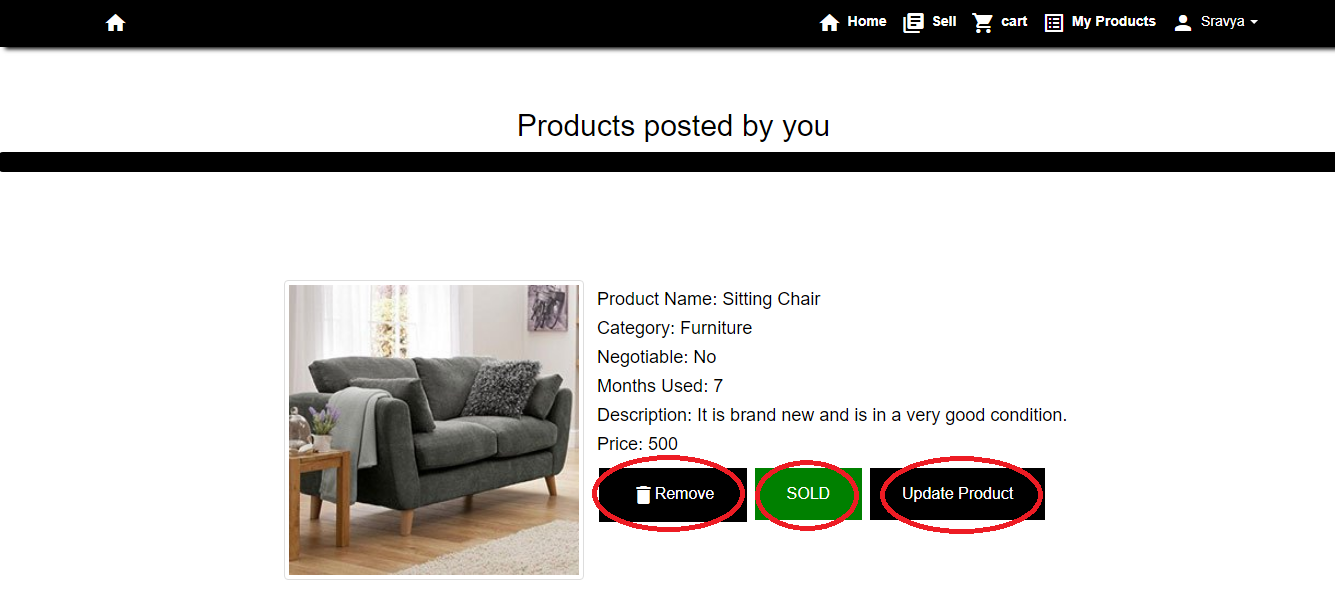
* The search feature, enables a user to search an image based on the category or keywords the provided in the description. And the page will return the results matching the search keyword. [1]



Picture (vii) Search Feature

**View My Products Feature:**

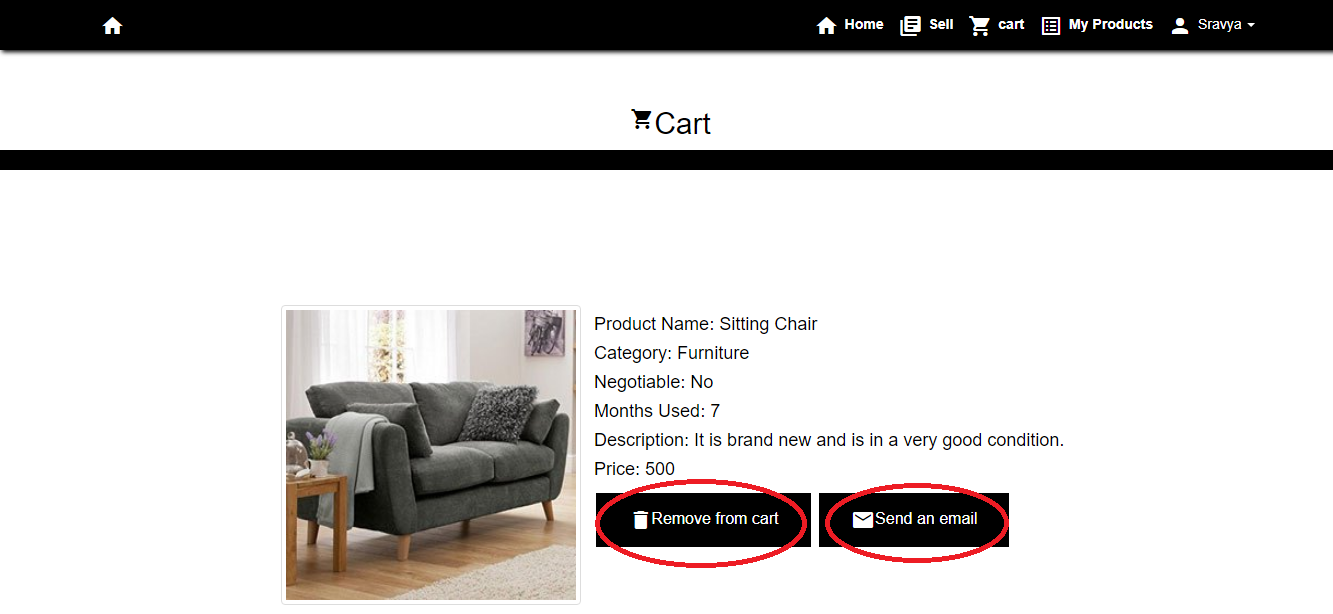
* By clicking on my products page on the navigation bar the user will be redirected to my products page, wherein he can view and edit products posted by him/her. [1]

****

Picture (viii) Edit Feature

**Cart Feature:**

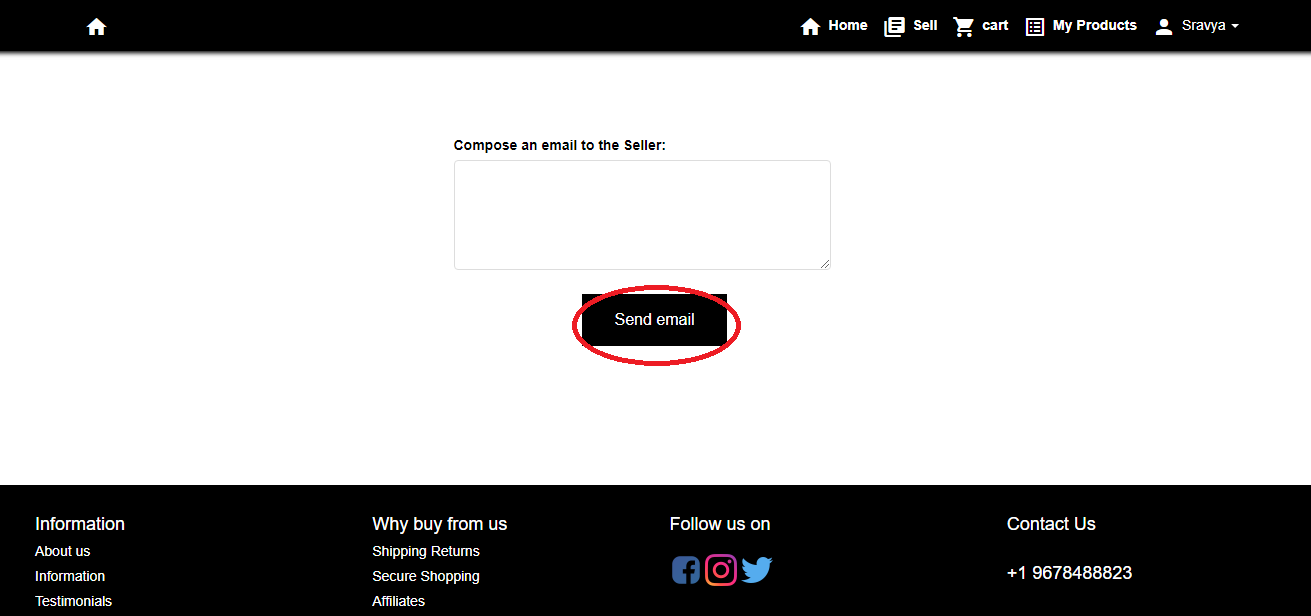
* By clicking on the “Remove from cart” button, user can remove the product from his cart. Or by clicking on the send an email button, the user can send an email to the seller of the product. [1]

****

Picture (ix) Cart Feature

**Message Feature:**

* By clicking on the “Send an email” button from the cart, home page or view details page. The user will be redirected to the Email page, where he will be able to send an email to the seller of the product. [1]

****

Picture (x) Message Feature

**F. Instructions on how to compile and run:**

Software Required: Tomcat Server 9, MySql Database and Eclipse IDE.

* Program:

1. Open the project file in Eclipse IDE.
2. Open MySql.
3. Open the studentsurplus.xml file and set the data source values of username and password to your local database’s username and password.
4. unt.cse.studentsurplus-> run as-> Maven Build
5. unt.cse.studentsurplus->run as-> run on server

* Test Cases

1. unt.cse.studentsurplus->src/test/java-> ProductOrderControllerTest.java

2. ProductOrderControllerTest.java-> run as-> JUnit Test

**G. Code Inspection:**

* **Feedback**: Add comments and author names.
* **Actions**: Based on the review received from the code inspection phase, we have added the comments and the author names for the classes.

**H. Features:**

* **Registration:** The registration feature enables the user to successfully register into the application using his email.
* **Profile Update and Maintenance:** The profile maintenance and update enables user to update their details that they entered during the registration.
* **Login:** Login feature enables user to successfully login into the application after successful registration.
* **Search:** Search enables the user to search for a product he/she is looking for by keyword.
* **Post a product:** This feature enable user to post a product that he/she is wishing to sell on the website.
* **View Details:** This feature enables the user to view the full details of the product and add to cart or send an email to its seller.
* **Cart:** The cart feature enables the user to add or remove products from his/her cart.
* **Modify/Edit products:** This feature enable the seller of a product to modify his product, delete it or set it to sold on the website.
* **Message:** The message feature enables a user to send an email to seller of the product from the application.

**Limitations:**

* **Payment:** The application does not implement an electronic payment feature to process online monetary transactions between end-users.
* **Delivery:** The application does not provide a logistics management feature to handle shipping, tracking or delivery of product packages between buyers and sellers.

**Peer Review:** As per the feedback received from the peer review, we have implemented a message feature in this application for the users to communicate to each other, also we have added an option where the seller can set his product status to sold, so that unavailable products are not on the site.

**Plans for the next phase:** In the next phase of our project we would like to implement the following features.

* **Making the website responsive:** We would want to make our application more responsive so that it fits the mobile’s dimensions as well, to make it more user friendly for the users viewing it form the mobile.
* **Notifications:** The notifications feature, which notifies the user when a product that he is been looking for is available on the application.
* **Multiple images for a product:** A feature where a user can provide multiple images for a product. Which provide a better view of the product for the buyer.

**I. Member Contribution Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Member name | Contribution description | Overall Contribution (%) | Note  (if applicable) |
| Sri Sravya Tirupachur Comerica | **Coding:** Registration Module, Profile Update Module, Front End Pages for posting a product, home page posted products, Search bar, Email Module, Front End Pages for updating product and sending an email.  **Report:** User manual and requirements review for all the reports. | 25% | NA |
| Amisha Gadhia | **Coding:** Home Front End view, Login View, Front page for user to view his/her products, Front page for cart functionality and View details functionality.  **Report:** Compile and run instructions and updated plan for next phase for all the reports | 25% | NA |
| Aboubakar Mountapmbeme | **Coding:** Registration Front- End View, Profile View, Profile Update view, Product posting module, search module, update product module and cart module.  **Report:** UML diagrams for all the reports. | 25% | NA |
| Haidi Chen | **Coding:** Login Module, Session Maintenance Module, product order module and unit tests for all phases.  **Report:** Test cases and unit test for all the reports. | 25% | NA |

Table 2: Member Contribution Table

**References:**

1. https://www.bridgemaneducation.com/documents/how-to-guide.pdf

Group Name: **DASH**

Project: **Student Surplus**