

CSE 360 Project Phase 2

Group 23

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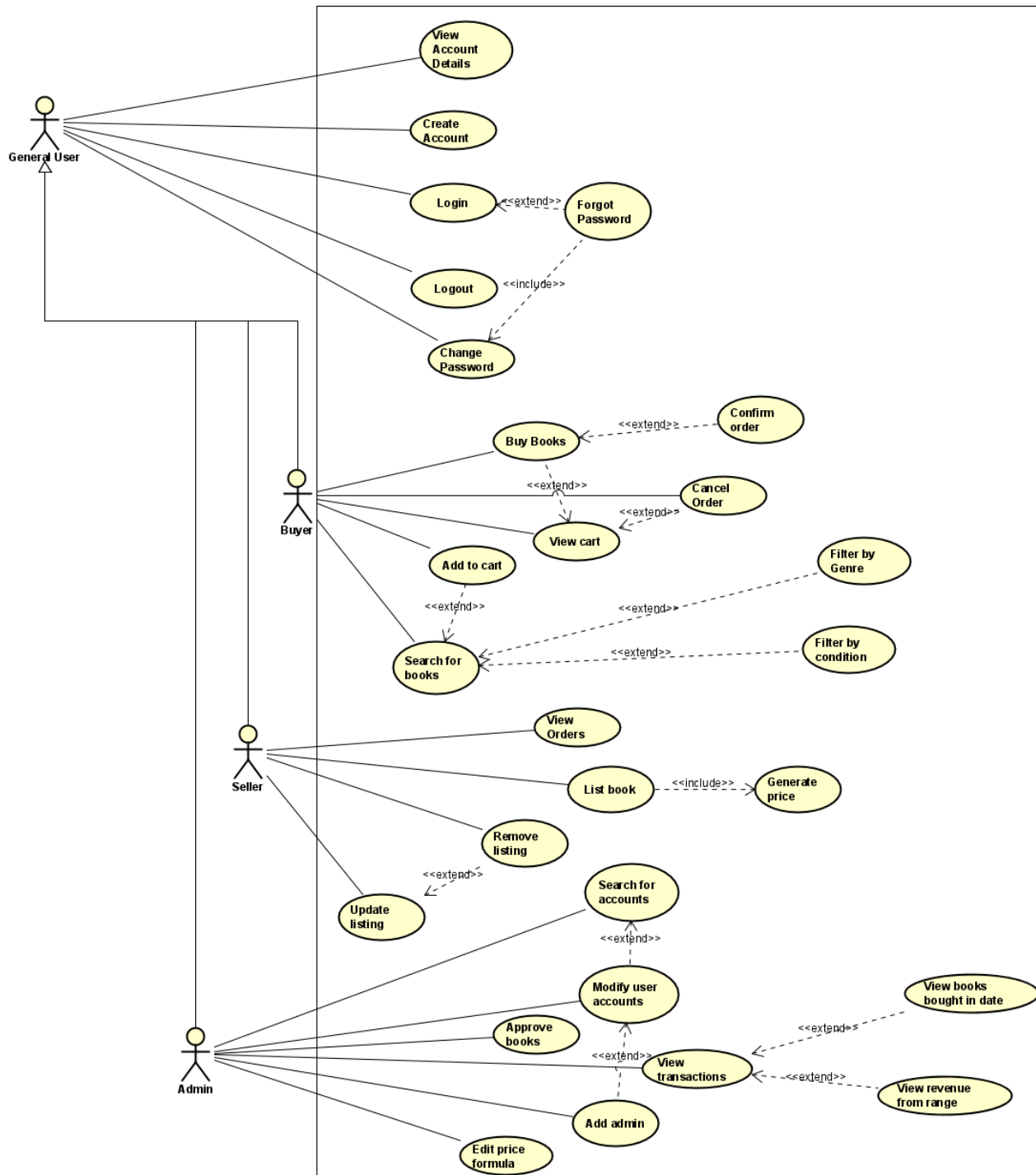
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1. Use Cases and the Use Case Diagram (30). Copy and paste your use case diagram from Astah

Use Case Diagram made in Astah

Phase2UseCaseDiagram / UseCase Diagram



Use Cases:

Buyers' Use Cases

Cancel: Buyers can cancel their order if they choose not to purchase any books

Buy: Buyers can purchase all the books in their cart

Add to Cart: Buyers can add any book that they come across while searching to their cart

Search Books: Buyers search for books by filtering

Filter by genre: Buyers can filter books of a specific genre

Filter by Condition: Buyers can filter books by their condition

View cart: Buyers can view the items in their cart

Remove from cart: Buyers can remove some items in their cart

confirmOrder: After buyer selects "buy", they get a popup confirming the order

Use Case Scenario: Buying books or Canceling Order	
Actors	Buyer
Description	To buy books, the user has to first search for the books based on their criteria. Then, they have to add their favored books to the cart. Once they have added all of their books to their cart, then they have to buy the books and confirm the purchase. If they want to cancel their order, then they have to select "cancel".
Data	Books user has selected
Stimulus	"Add to Cart" button click, "Buy" button click, "Cancel" button click, "Confirm Order" button click
Response	A message showing that books have been bought, or a message that the order has been canceled
Comments	Once an order has been made, the admin user should be able to view the transaction from their end. Also, a transaction ID and a date should be assigned to each order. This scenario includes the use cases: buy, cancel, confirm order, and add to cart

Use Case Scenario: Searching for Books	
Actors	Buyer

Description	To search for books, the buyer must enter the required information: condition and genre. Then, the books that match the criteria should be displayed.
Data	Genres from checkboxes and condition from radio buttons
Stimulus	“Search” button click
Response	The books that match the specification should be shown to the user, and they should be able to add any book to their cart.
Comments	The “Searching for Books” use case scenario includes “search books”, “filter by genre”, “filter by condition”

Use Case Scenario: Shopping Cart Use Cases	
Actors	Buyer
Description	The buyer should be able to view their current cart. The buyer should be able to add and remove from their cart.
Data	Books that the user has selected
Stimulus	“Add to Cart” button, “Remove” button, and “View Cart” button
Response	System should do whatever the user selects. For example, it should add a certain book that when the user selects add, etc.
Comments	None

Sellers’ Use Cases

View orders: Sellers can view orders that were made for their listings

List book: Sellers can list a book for sale

Update listing: Sellers can update a listing for a book they’ve listed

Remove listing: Sellers can remove a listing for a book they’ve listed

priceGenerated: This runs the formula that calculates the price for a book

Use Case Scenario: Listing a Book	
Actors	Seller
Description	The seller user will be able to create a new listing with the condition, author, picture of book, title, and genre(s). When the book is listed, the formula will calculate the price of the book and display it.
Data	Condition, author, picture of book, title, genre(s)
Stimulus	“List my Book” Button
Reponse	The Book will be listed in the database for all of the users to find.
Comments	This scenario includes the following use cases: list book, price generated.

Use Case Scenario: Updating a Listing	
Actors	Seller
Description	The seller user can update an existing listing by selecting “update listing” for each book. There, they can edit details about the product. The seller can also remove a listing
Data	Existing listing
Stimulus	“Update listing” button
Response	Gives options to then re-enter details about the listing
Comments	This scenario includes the update listing and remove listing use cases.

Use Case Scenario: Viewing Orders	
Actors	Seller
Description	The seller can view all of their orders that they have placed on the platform.

Data	Existing orders placed by a specific seller user
Stimulus	“View my Orders” button
Response	A tab will display all of the orders that the seller has placed along with their metadata.
Comments	None

Admins’ Use Cases

Account Search: Admins can search for a specific buyer or seller account

Modify User Accounts: Admins can modify user accounts by converting them from buyer to seller or vice versa

Buyer to seller: Admins can convert a buyer account into a seller account

Seller to buyer: Admins can convert a seller account into a buyer account

View transactions and sales info: Admin can view transactions that were made and view sales statistics

Add and delete users: Admins can add and delete users if they wish

Add admin: Admins can add another user as an admin

Edit price formula: Admins can edit the formula for generating prices for books that sellers list

Approve books: Admins have to approve books before they are listed

viewBooksBoughtInDate: Admin can view what books are bought in a specified date

viewRevenueFromARange: Admin can view generated from sales in a specified date range

Use Case Scenario: Modifying User Accounts	
Actors	Admin
Description	To modify a user account, an admin must first search for the user. Then, the admin can modify the account by changing their role from buyer to seller or from seller to buyer.

Data	Account Details, Account Roles
Stimulus	Account search function and “Modify” button
Response	The actor’s role is changed so that their view and roles are rebranded to their new role.
Comments	This scenario contains the modify user account, account search, buyer to seller, and seller to buyer use cases.

Use Case Scenario: Adding and Deleting users	
Actors	Admin
Description	The admin has the sole responsibility of adding a buyer or seller to the system. Admins can use the “add user” option, and they must provide the required information about the new user. They can also delete users from the system by entering their username. Admins can also add other admins to the system
Data	New user username and password, To-be-deleted user username
Stimulus	“Add user”, “Delete User” buttons
Response	New user can be seen in system or deleted user cannot be seen in the system
Comments	This scenario includes “add and delete users” and “add admin” use cases.

Use Case Scenario: Viewing Transactions	
Actors	Admin
Description	The admin user will be able to see a list of recent transactions made on the system, including their transaction ID and date. The admin user will also be able to see the revenue from books bought in a date range. And, the admin will be able to see the number of books bought in a single day.

Data	Date Range, transaction ID
Stimulus	Transaction ID will be present when admin logs in. The revenue and date range info can be accessed by entering them into a user statistics section of admin page
Response	The according information will be displayed
Comments	This scenario includes the use cases: view transactions, view Revenue from a range, and view books bought in date range.

Use Case Scenario: Editing price formula and approving books	
Actors	Admin
Description	The admin users should be able to edit the price formula, and they should be able to approve a purchase when a buyer chooses to purchase a book. The admin can edit the price formula by choosing “Edit price Formula”. They can approve purchases by approving them in their main menu
Data	Price Formula, Book Purchase Requests made by buyers
Stimulus	“Edit price Formula” button, “Approve Purchase” button
Response	The purchase request should be transferred to the transaction history column. The new price formula should be working properly.
Comments	This scenario includes the “Edit price Formula” and “Approve Books” use cases.

Shared Use Cases

Login: Users can login and it will direct them to their respective pages (Admins are directed to admin’s page, buyers to buyer’s page, and sellers to seller’s page)

Forgot Password: Users can change their password if they forgot it

Create account: Users can create account to login to the system

View Account Details: Users can view their account details in “My Account”

Change password: Users can change their password under “My Account”

Logout: All of the users have an option to logout

Use Case Scenario: Logging in and Other Options	
Actors	Buyer, Seller, Admin
Description	Firstly, all of the users should be able to login to the system with their username and password. If the person logging in does not have an account, then they can select “create account”. If the user has forgotten their password, they can select “forgot password” and reset their password. Any account after logging in can view their own account details by selecting “My Account” on the system. Any logged-in user can select “change password” under “My Account” to change their password. After logging in Finally, all users can logout of their account by selecting “logout”.
Data	Username and Password
Stimulus	Selecting “Login”, Selecting “Logout”, Selecting “Forgot Password”, “Selecting “Create Account”
Response	User is authenticated and logged in.
Comments	This scenario includes the use cases: login, forgot password, create account, view account details, change password, logout

Non-Functional Requirements for Use Cases

1. Implementation of data structures with fast sorting times to ensure that transaction can be done efficiently
2. Implementation of many error handling mechanisms for logging in and for when input is required from the user. This will prevent the system from crashing when incorrect inputs are made.
3. Allowing a large number of users to create an account on the platform without any limit
4. Security of system is implemented by making admin users approve transactions after they have been made

2. Object Identification and CRC (20). List each object and CRC for each object.

Object Identifications:

These key objects are derived from the use-case scenario created with the system's requirements in mind and are vital to the development of this software.

Login Page

- Role: Handle login interactions for all users.
- Actor: Admin, Seller, Buyer
- Key Interactions: verify login, error handling, redirect to dashboard

Register Page

- Role: Handles for registration of new users.
- Key Interactions: handle registration

Book Catalog:

- Role: To view the list of books
- Actor: Buyer, Seller
- Key Interactions: search books, filter by genre, filter by condition, sort books

User:

- Role: User object represents all types of users in the system, with Buyers and Sellers extending from this class given unique responsibilities, and Admins given functionalities to manage the overall system.
- Actors: Buyer, Seller, Admin.
- Key Interactions: Login, logout, Create Account, change password, and view account details.

Buyer:

- Role: Specialized user object allowed to view the buyer's page letting the user search for books, add books to cart, purchase, and cancel orders.
- Actors: Buyer
- Key Interactions: Search Books, filter search by conditions or genre, add books to cart, purchase books, cancel orders, view cart, delete from cart.

Seller:

- Role: Specialized user object allowed to view the Seller's page letting the user manage their book listings, view orders, and update current listings.

- Actors: Seller
- Key Interactions: List books for sale, update or remove book listings, and view orders placed by buyers, generate price.

Admin:

- Role: Admin user object that manages user accounts, view transactions, and generates statistics and reports.
- Key Interactions: View transactions, manage user roles, add admin from the system, generate and view statistics, approve listing.

Book:

- Role: Object to represent the books listed in the system, given specific attributes such as title, author, genre, condition, and price.
- Key Interactions: Seller list books for the price assigned to it, Buyer's search for books using the attributes applied by the seller (i.e. title, author, genre, condition).

Transaction:

- Role: Represents the buying and selling interactions between buyers and sellers. Every time a book is purchased a transaction is recorded.
- Key Interactions: Keeps record of book sales, used for statistics and admins have access to view and monitor transactions.

Revenue:

- Role: Calculates the revenue in a particular data range.
- Actor: Admin
- Key Interactions: calculating revenue

Order History:

- Role: Maintains a history of each order.
- Actor: Admin, Seller, Buyer
- Key Interactions: view history of orders, view seller's order history

Order

- Role: A particular order for a book
- Actor: Buyer, Seller
- Key Interactions: Update order status, get order details

CRC Diagrams

Class: LoginPage - This is the page where the user logs in and their details get verified. A new account can also be created, and if they forget their password, there is a reset option.	
<i>Responsibilities</i>	<i>Collaborator</i>
Check user details	
Create an account	Register Page
Forget Password	

Class: Register Page - This is the page to which the user is redirected to if they don't have an account.	
<i>Responsibilities</i>	<i>Collaborator</i>
Handle registration	

Class Book Catalog - This is the object whose responsibility is to display book according to the filter applied and have the books sorted	
<i>Responsibilities</i>	<i>Collaborator</i>
Search book	
Filter by genre	
Filter by condition	
Sort book	

Class: User - General class used for storing user account information and managing user accounts based on the three different types of users (admin, buyer, sellers).	
<i>Responsibilities</i>	<i>Collaborators</i>
Login	

Logout	
Create Account	Register Page
Change password	
View account details	

Class: Seller - This is where the seller can list their books, manage their books and set prices	
Responsibilities	Collaborator
List Book	Book Catalog
View Order Details	
Manage Listings	Book Catalog
Generate Price	

Class: Buyers - This is where the buyer can order books, manage their card and search for available books	
<i>Responsibilities</i>	<i>Collaborator</i>
Search Book	Book Catalog
Cancel Order	
View Cart	
Filter Search	Book Catalog

Class: Admin - This is where the admin can perform their various functions	
<i>Responsibilities</i>	<i>Collaborators:</i>

View Transactions	
Add Admin	Statistics
Manage Accounts	User
Statistics	

Class: Book - Class for each book held in the system.	
<i>Responsibilities</i>	<i>Collaborators</i>
List books by seller	Book Catalog
List books bought by buyer	Book Catalog

Class: Transaction - This is where transactions are verified and confirmed	
<i>Responsibilities</i>	<i>Collaborators</i>
Record of Book Sales	Buyer
Statistics generation	
Monitor transactions	Admin

Class: Revenue - Calculates and stores revenue generate	
<i>Responsibilities</i>	<i>Collaborators</i>
Calculate Revenue	Admin

Class: Order History - Maintains a history of orders place	
<i>Responsibilities</i>	<i>Collaborators</i>
View buyer history	Buyer Page
View seller history	Seller Page

Class: Order - Class to manage order of a book	
<i>Responsibilities</i>	<i>Collaborators</i>
Update order status	
Get order details	

3. Class Diagram (40). Copy and paste your class diagram from Astah. Class in the class diagram need to have attributes, methods and classes need to be connected using appropriate UML class relationships.

Login Page

The login page facilitates user authentication, allowing buyers, sellers, and admins to login to their accounts. It verifies a user's credentials so that they can log in to their account. If a user logs in successfully, they get directed to their respective pages. Otherwise, the page shows an error.

LoginPage
- username : int - password : int
+ loginVerify(username : String, password : String) : boolean + loginError() : void + redirectToDashboard() : void

Register Page

The register page manages new user registrations, and stores essential details to create an account. It registers buyers and sellers, so that they can register and can log in to their accounts.

RegisterPage
- name : String - email : String - password : String
+ register(name : String, email : String, password : String) : void + registrationSuccess() : void + registrationError() : void

Book Catalog

The catalog displays all books available on the platform, with functionalities for buyers and sellers to search by title, genre, or condition, sort and add listings. The list of books shows the available books and sellers can add books to the list.

BookCatalog
- books : List<Book>
+ searchBooks(term : String) : List<Book> + filterByGenre(genre : String) : List<Book> + filterByCondition(condition : String) : List<Book> + sortBooks() : List<Book>

User

The user object is the base class for buyer, seller, and admin accounts encapsulating common actions like login, logout, registration, and account management. Buyers, admins, and sellers all extend user class.

User
- userID : int - name : String - email : String - password : String - role : String
+ login() : void + register() : void + updateAccountDetails() : void + resetPassword() : void

Buyer

The buyer class enables users to browse and filter books, add selections to their cart, and complete or cancel purchases. It manages the shopping cart's contents, allowing buyers to view, add, and remove items as they prepare for purchase.

BuyerPage
<ul style="list-style-type: none"> - cartItems : List<Book> - wishlist : List<Book> - orderHistory : List<Order>
<ul style="list-style-type: none"> + buy() : void + addToCart(book : Book) : void + viewCart() : void + viewOrderHistory() : void + addToWishlist(book : Book) : void

Seller

The seller class is responsible for book management, including listing new books, updating current offerings, and removing items. It also allows sellers to view and process buyer orders, and manage book pricing based on individual listing strategies.

SellerPage
<ul style="list-style-type: none"> - listedBooks : List<Book> - salesHistory : List<Order>
<ul style="list-style-type: none"> + priceGenerated() : double + listBooks() : void + currentOrders() : List<Order> + calculateSellingPrice() : double + updateListing() : void + removeListing() : void

Admin

The admin user manages user accounts, overseas transactions, and handles role assignments. They can add new admins, approve listings, and generate or view statistics and reports. The interactions include viewing transactions and managing user roles. The role emphasizes system oversight and reporting capabilities.

AdminPage
<ul style="list-style-type: none"> - salesHistory : List<Sale> - transactionHistory : List<Transaction> - buyersList : List<User> - sellersList : List<User>
<ul style="list-style-type: none"> + viewTransaction() : void + approveBook(bookID : int) : User + searchUser(userID : int) : void + modifyUserAccount(userID : int) : List<Transaction> + addAdmin(admin : User) : void + viewRevenue() : double

Book

The system includes a *Book* object with attributes: title, author, genre, condition, and price. Sellers can list books at assigned prices, while buyers can search for books using these attributes. Key interactions focus on sellers adding listings and buyers filtering by title, author, genre, and condition.

Book
- bookID : int - title : String - genre : String - condition : String - price : double - seller : SellerPage
+ getDetails() : void

Transaction

The role manages interactions between buyers and sellers, recording every book purchase as a transaction. It maintains a record of book sales, which can be used for statistical analysis. admins have access to view and monitor these transactions for oversight and reporting.

Transaction
- transactionID : int - order : Order - amount : double - paymentMethod : String - transactionDate : Date
+ processTransaction() : void

Revenue

The admin's role focuses on calculating revenue within a specific data range. They are responsible for selecting and analyzing data to accurately determine revenue for that period. Key interactions primarily involve executing revenue calculations. This role emphasizes precision in handling data to provide reliable financial insights.

Revenue
- totalRevenue : double - dateRange : Date[]
+ calculateRevenue(startDate : Date, endDate : Date) : double

Order History

In this system, the admin, seller, and buyer each have roles with access to specific order information. The admin maintains a comprehensive history of all orders, enabling them to oversee the system's order data. Sellers can view the history of their own orders, allowing them to track their transactions and manage sales effectively. Buyers also have access to view their past orders, providing them with a record of their purchases.

OrderHistory
<ul style="list-style-type: none">- buyer : BuyerPage- seller : SellerPage- orders : List<Order>
<ul style="list-style-type: none">+ viewOrderHistory(buyerID : int) : List<Order>+ viewSellerHistory(sellerID : int) : List<Order>

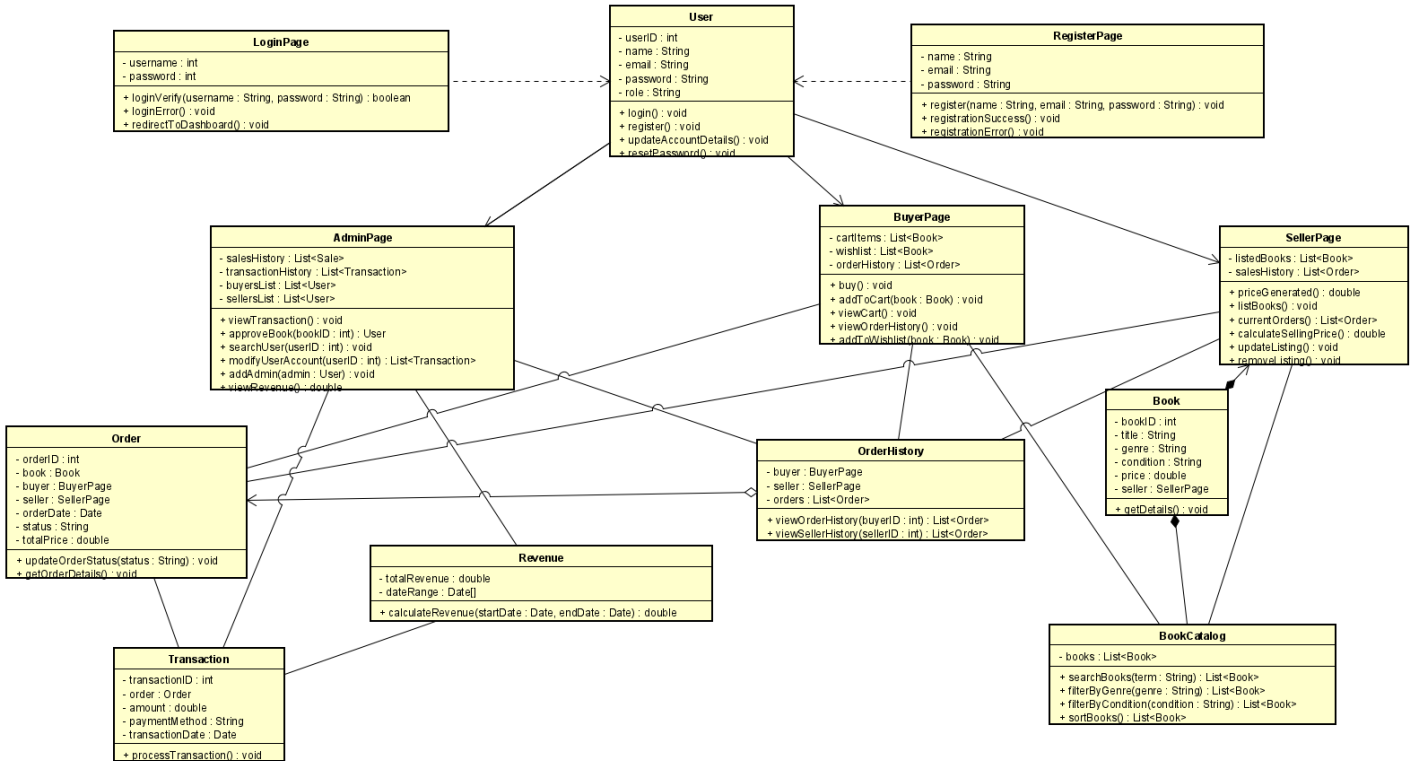
Order

In a book order scenario, two main actors interact: the Buyer, who places the order, and the Seller, who manages it. Key interactions between the Buyer and Seller include the ability to update the order status (such as processing, shipped, or delivered) and access details regarding the order. The Seller updates these statuses to keep the Buyer informed of progress. Additionally, the Buyer can check order specifics to track their purchase and anticipate delivery.

Order
<ul style="list-style-type: none">- orderID : int- book : Book- buyer : BuyerPage- seller : SellerPage- orderDate : Date- status : String- totalPrice : double
<ul style="list-style-type: none">+ updateOrderStatus(status : String) : void+ getOrderDetails() : void

UML Class Diagram of Entire System

pkg



4. Test Plan for Functional Testing (30)

Test Scenario 1: User logging in to Sparky's Book Service and is Redirected to Buyer's page

Test Case #	Scenario / Inputs	Expected Output
1. Login	<ul style="list-style-type: none">User enters the username and password and clicks login	<ul style="list-style-type: none">User is directed to their main buyer/seller page
2. Login failed	<ul style="list-style-type: none">User enters incorrect username or password and presses login	<ul style="list-style-type: none">User is given error message stating incorrect login
3. Create Account	<ul style="list-style-type: none">User does not have an account, so they have to create oneThey click create account and enter all their details (username, password, first name)	<ul style="list-style-type: none">User is directed to their page where they can start buying/selling
4. Forgot Password	<ul style="list-style-type: none">User clicks "forgot password" if they do not remember	<ul style="list-style-type: none">User will then be prompted to re-enter their password and click submitThey can then re-login with their new password

Test Scenario 2: Buyer logging into Buyer's page and utilizing features

Test Case #	Scenario / Inputs	Expected Output
1. Buying Books	<ul style="list-style-type: none">• Buyer logs in using their username and password• Buyer searches for books they're looking to purchase• Once buyer buys their book, the book is added to their shopping cart• Buyer presses the buy button leading them to their order total• After reviewing the order and filling out the payment method, the buyer presses the "confirm my order" button.	<ul style="list-style-type: none">• Buyer is authenticated and redirected to the buyer's page• Books are displayed based on the search options and filters the buyer has selected• Buyer's shopping cart is updated with books they selected.• Buyer's cart information is displayed with total price and prompted with asking which payment method they'll be using and a "confirm my order" button.• Order confirmation appears and the transaction is then recorded with the transaction ID and date in the system, able to be viewed by admins.
2. Canceling Order and Canceling specific books	<ul style="list-style-type: none">• Once the shopping cart has items in it, the buyer can cancel their order by clicking cancel order• The user clicks delete book in shopping cart	<ul style="list-style-type: none">• The shopping cart should then be cleared• If a specific book is deleted, then that book should be removed from the shopping cart.
3. Searching for books	<ul style="list-style-type: none">• Buyer logs in using their account username and password• Buyer selects preferred book conditions and genre and types title of book.	<ul style="list-style-type: none">• Buyer is redirected to the buyer's page showcasing the book search features such as filter by condition / genre, search by title, etc.• Books of the same title are listed matching the filtering options selected by the buyer.

Test Scenario #3: Seller logs into account and utilizes features

Test Case #	Scenario/Inputs	Expected Outputs
1. Listing a book	<ul style="list-style-type: none">• Seller logs into their account using their username and password.• Seller enters the conditions, genre, and book title that they're going to list.• Seller enters their price and selects the generate price button.• Seller presses the list my book button.	<ul style="list-style-type: none">• Seller is authenticated and redirected to the seller's page.• System records the condition, genre, and title in preparation to generate listing price• The generated price is output based on the seller's original price and the condition the book is in.• The book listing is then recorded in the system and sent to the admin's page for approval / disapproval
2. Updating a Listing	<ul style="list-style-type: none">• After the seller has made a listing, they click update listing to change details of the book	<ul style="list-style-type: none">• Seller is then redirected to the original listing page to then re-enter the author, condition, etc. of the book• They should then hit "List My Book" to confirm the update• Admin can then view new changes made to listing
3. Viewing Orders	<ul style="list-style-type: none">• Seller can view the previous orders placed by them• They can also view if their previous orders are approved or disapproved	<ul style="list-style-type: none">• Seller should be able to read all of their previous orders with all details included• If order is approved, then the listing should be seen under my orders• If order is disapproved, then a message should appear saying that the order is disapproved

Test Scenario #4: Admin logs in to the Admin Page utilizing the features

Test Case #	Scenario/Inputs	Expected Outputs
1. Viewing Transactions	<ul style="list-style-type: none">Admin logs in using their account username and password.Admin presses the statistics button at the top of the menu.Admin selects any specific transaction and presses the “Show Details” button.	<ul style="list-style-type: none">Admin is authenticated and redirected to the Admin account management page.Admin is redirected to the statistics extension of the account management page with all transactions listed on the right.Pop up appears with the transaction details such as the user who completed the transaction, price, cart details, etc.
2. Modifying User Accounts	<ul style="list-style-type: none">After admin logs in, the default page that they will view is the account search pageThey can enter an account name on the right to search for a particular account	<ul style="list-style-type: none">After searching for an account, the admin should then be given options to switch the user’s role from buyer to seller or vice versaThe role should be updated and their new permissions should be assigned

<p>3. Editing price formula and approving books.</p>	<ul style="list-style-type: none"> • Admin enters username and password and logs in. • Admin presses the system configuration button at the top of the menu. • Admin enters a new formula for each condition of the book and presses the update button. • Admin selects any pending listing details. • Admin approves or disapproves listing after selecting a pending listing from the list. 	<ul style="list-style-type: none"> • Admin is authenticated and redirected to the initial admin page which is the account management page. • Admin is redirected to the system configuration page displaying list of pending listings on the right and price formula editor on the left. • System is updated and each future price generation for every new listing will use the new formula. • Details of the seller's listing are displayed, showing the books being listed and their price. • If approved the listing is then confirmed and updated to show on the buyer's page, seller's can see the listing's approval on viewing their current listings. If disapproved the listing won't be on the buyer's page and the seller can see the disapproval of their listing by viewing their listings.
<p>4. Adding Admin</p>	<p>Adding admin user:</p> <ul style="list-style-type: none"> • After logging in, the admin user should see a textbox on the left where they can enter the admin username and password to be added 	<p>Adding Admin User:</p> <ul style="list-style-type: none"> • After entering the new username and password, the current user should hit "Add Admin" without any issues or errors • The new admin can then log in and have all of the admin permissions

Credit Sheet

Team Member Name	Contributions
Harsh Nirmal Dhiran	20%
Rahil Shaik	20%
Saikrishna Vinapamula	20%
Nandhini Gopireddy	20%
Robert Blanco	20%