Software Design Specification

For

G5 Online Bookstore

Version 1.0 Approved

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1.2 Purpose

The purpose of this document is to provide a high level design and implementation framework for the development of an online bookstore, G5 Online Bookstore. This document provides thorough guidelines for the requirements of UI-based high priority end user use cases. Class, state, and sequence diagrams along with appropriate use case scenarios will provide guidelines for the implementation of all relevant systems involved in the handling of all user needs for the G5 Online Bookstore.

1.3 Naming Conventions

This document will use generic UML standard naming conventions to allow for efficient translation into any programming language used by the developers. Software produced from this document will adhere to the naming conventions of the language or languages used.

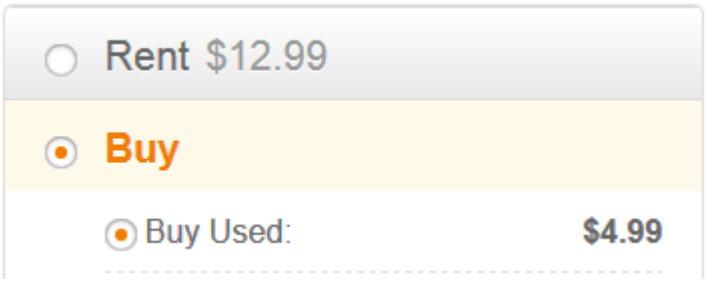
2. User Interfaces

All user interface constructs are presented to the user in the form of dynamic web pages. The user will begin to interface with the system from "http://www.g5onlinebookstore.com". All subsequent pages will be navigated to via this home page. A search bar and search button as well as a "Login", "Create Account", and "Shopping Cart" link will appear at the top of every page, as well as the "Contact" link at the bottom of every page. The user will primarily interact with the system by navigating links to various pages, as well as inputted text data when necessary. The system will provide relevant feedback to the user for incorrect inputs or unexpected behaviors.

2.1 Use Case: Book Purchase

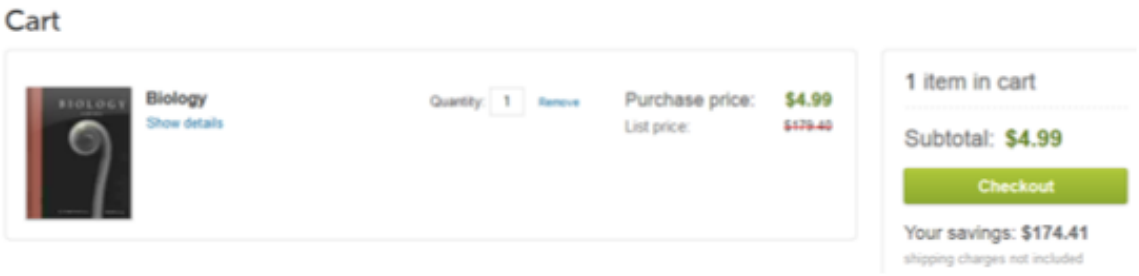
The user will begin the process of book purchase by navigating to "http://www.g5onlinebookstore.com" in their browser. At this point the user will be presented with the name of the site as well as a search bar, search button, shopping cart button, and login button at the top of the page. The user will select the search bar and enter their desired search terms into the text field. Search terms are accepted in the form of book title, author name, or ISBN. Upon entering the desired data into the search bar, the user will either press the "Enter" button on their keyboard or click on the "Search" icon to begin searching.

The user will then be redirected to a search results page, containing 20 matches per page populated from the database. Upon selecting the desired book, the user will select the book and then select from options of "Buy New", "Buy Used", or "Rent", which will add the appropriate book of the appropriate type into the user's shopping cart. The user is free to repeat this process as many times as desired to add books to their shopping cart.



When the user has added all desired books they will click on the “Shopping Cart” button at the top of the page, taking them to the shopping cart page. The shopping cart page will display all selected books as well as their prices and a subtotal.

The user will then click the “Checkout” button and be prompted for their desired shipping method. Upon selecting a shipping method, the subtotal will be updated and the user will select the “Proceed With Checkout” link. The user will be prompted for relevant shipping and billing information, which will be input into appropriate text fields and then select the “Confirm Transaction” link. Upon confirming the transaction, payment is processed and the user is presented with a page confirming the transaction.



3. UML Design diagrams

3.1 Class Diagram

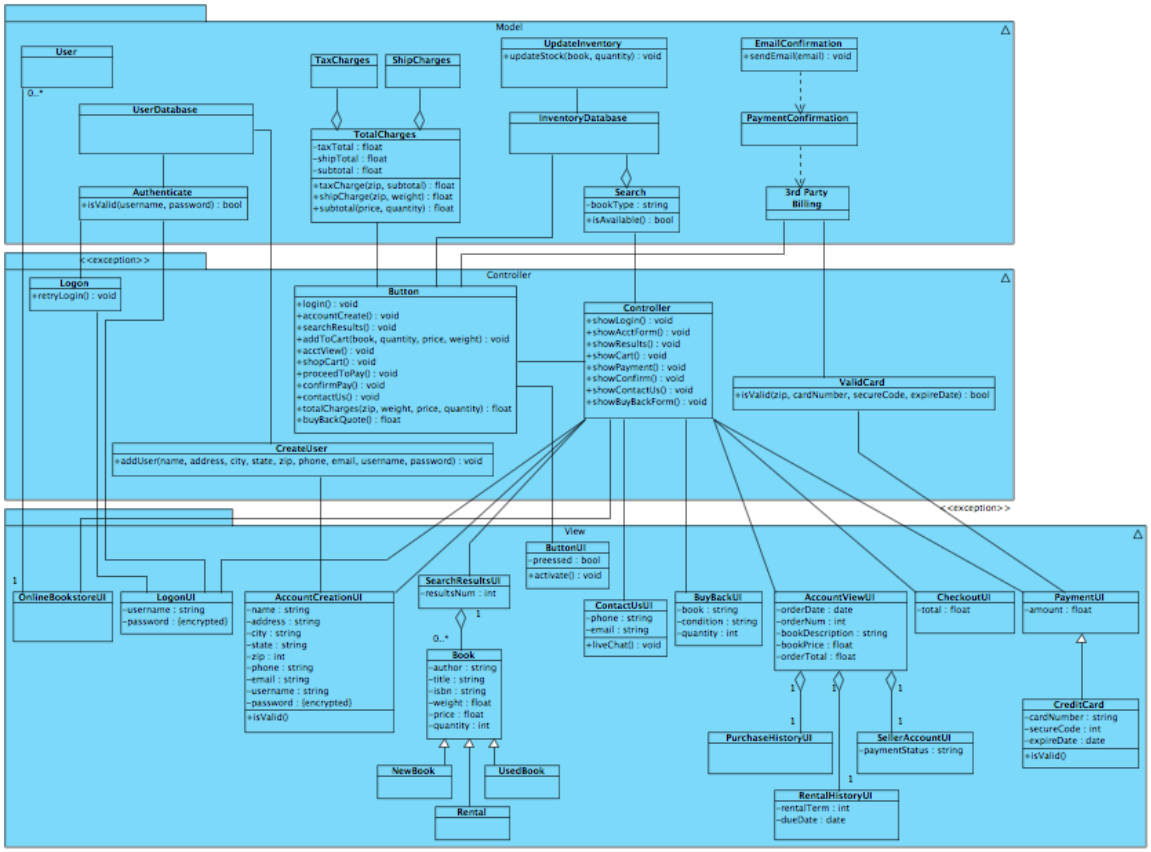


Figure 1. Class Diagram

3.2 Use Case Diagrams

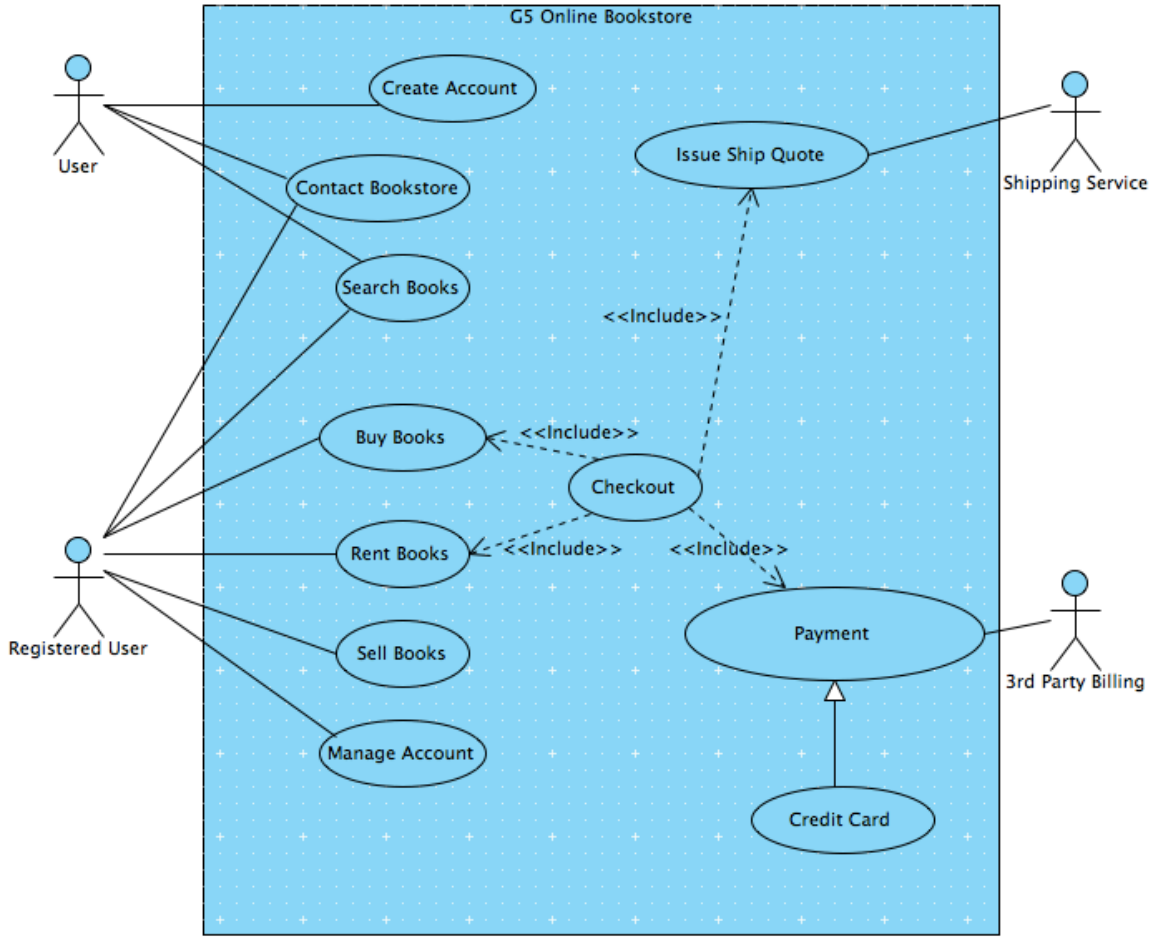


Figure 2. Use Case Diagram

3.3 Normal and Abnormal Scenarios

3.3.1 High Priority Case: Purchase Textbook

Name of Use Case:	Purchase Textbook
Super Use Case:	None
Author(s):	User
Brief Description:	The user navigates website, determines what textbook to buy, adds textbook to cart and purchases the book by completing the transaction.
Pre-	G5 Online Bookstore is connected to their databases. The user is

Conditions:	connected to G5 Online Bookstore. The user starts in Online Bookstore State.
Post-Conditions:	The user purchases the correct book and is mailed the book in the time frame decided at checkout. The user ends in Checkout State
Normal Course of Events:	1. The user starts in the Online Bookstore state and begins the process by clicking the "Login" button located on every page. Upon clicking the login button a "Username" and "Password" text fields appear with the cursor focus in the Username field. 2. The user enters their full email address associated with the account in the username text field. Next the user enters the password associated with the account in the password field. The user clicks enter to activate the login process. 3. The information is validated against G5 Online Bookstore's database. The screen will display success or failure based on the input given. 4. The user is granted permission to their account and can use all privileges of a registered user. Login is complete. The user enters the Log On State. 5. The user accesses G5 Online bookstore and navigates their way to the search bar located on every page. The user begins the search by clicking the text field within the search bar. 6. Next the user inputs the ISBN, Author or Title of their book. The user presses enter or clicks the "Search" button to activate the search. G5 Online Bookstore's inventory database is queried with search input and matches are found, enumerated, and passed to a results page. 7. The user is redirected to the results page. The user clicks the correct textbook and is redirected to a unique textbook webpage. The user enters the selected book state. 8. The user is given a description of the book, a picture, as well as all the identifying information. The user selects the choice to buy the book used or new. The user must still be logged into their account before preceding to the next step. 9. The book is then added to the cart and the user is then redirected to the updated Shopping Cart page. The Shopping Cart page contains all the items in the cart and the user is able to edit their cart before completing the transaction. The user is then Shopping Cart State. 10. The user clicks the "Checkout" button at the bottom of the checkout page and is transported to the select shipping address. The user selects the shipping address they wish to have the package sent to. At this point forward the user is in the Checkout State. 11. The shipping address information is then sent to an external shipping

	system (USPS) along with the weight of the order (determined by the weight of books in the users shopping cart, kept on file by an internal database). 12. The shipping options that are returned and presented to the user on the “Select Shipping” page. Only one shipping option may be chosen: Priority, First class or Standard mail. The user selects a shipping method. Upon selection, the shipping cost shall be instantly updated and added to the “Checkout” total, visible to the user. 13. The system shall proceed to the Payment Information page after the user clicks the “Proceed to Payment” button. 14. The user is prompted to enter credit card information. The user is able to pay through two options. The user pays through a card that is saved within the account profile. The user also selects the appropriate billing and shipping address based on what is on file. 15. The credit card and shipping (if different) information is then encrypted and sent to the user's bank for verification of the account and verification of available funds. 16. Upon successful bank validation show an “Order Confirmation” screen to the user to solidify his or her order. User presses the “Confirm Order” button. The user's credit card is charged. Confirmation email is sent to the user.
Alternative flow and Exceptions:	3a. The user inputs invalid input information such as: the password, username, or both do not match database records. 3b. The login process is restarted and the user is notified of their failed attempt with an error message above the username text field.
Alternative flow and Exceptions:	3c. The user determines that they do not know their password and the user clicks the “Reset password” button, located under the login fields. 3d. The user inputs their email address and an email is sent to the registered users address with an email containing a link to reset their password.
Alternative flow and Exceptions:	6a. The user inputs invalid input information. 6b. The user is redirected to the results page. The results page displays the “invalid search” error message. 6c. The user is able to insert another string of text in the search bar, restarting the search process.

Alternative flow and Exceptions:	8a. The user selects the book to be a rental. The rental price is given on the textbooks webpage. 8b. The expected return date is located on the textbook webpage and goes by semester. The user must abide by the stated rental policy agreement.
Alternative flow and Exceptions:	9a. The user is able to add more books to their cart. The clicks the "Continue Shopping" button. 9b. The user is redirected back to the last textbook webpage and is able to search more books in the search bar. During this time the cart remains current and correct.
Alternative flow and Exceptions:	9c. The user is able to edit the existing contents of the cart. The user can do one of two things: i. Change the quantity of an object within the cart making it greater or lesser then the number already in the cart. ii. Or remove the item entirely. Leaving the cart with everything but the object removed.
Alternative flow and Exceptions:	14a. The user does not wish to use a card on file. The user selects the new card option. 14b. Next the user fills out the necessary credit card fields as well as the billing and shipping address that is going to be linked to that account. The billing and shipping address can be chosen from past account information. 14c. The user then clicks confirm once the information has been entered. If successful the user is then asked if they would like to save the credit card to their account.
Alternative flow and Exceptions:	14d. The credit card information is verified to ensure the card is among one of the listed companies that G5 Online Bookstore processes. 1e. The account number is checked to ensure that the number is 16 digits long. As well that the verification code is three digits. In addition it confirms that the Expiration date must be in a MM/YY format. 14f. If the users entry does not follow the correct format then they are redirected back to the blank payment page to try again with an error message as to what went wrong.
Alternative flow and Exceptions:	15a. The credit card information and the billing address do not match bank records. The transaction is denied processing. 15b. The user is redirected back to a fresh payment page to try again. In addition, the user is alerted through an error message on the payment page that the billing and credit card information did not match.

Priorities:	High
Assumptions:	The user has an intent to purchase a product from G5 Online Bookstore.

3.3.2 Secondary Case: Logoff

Name of Use Case:	Logoff
Super Use Case:	None
Author(s):	Registered User
Brief Description:	The user disconnects from their account with G5 Online Bookstore, making it inactive until the next valid login.
Pre-Conditions:	The authorized user is logged into their account. The user is in Log On State.
Post-Conditions:	The user is no longer logged into their account. The user is in Log Off State.
Normal Course of Events:	1. The user who is logged in and accessing G5 Online bookstore clicks the “Logoff” button located on every page. 2. The user is logged out of their account and is redirected to the homepage.
Alternative flow and Exceptions:	1c. For security purposes, if the user remains inactive for 15 minutes the user is logged off.
Priorities:	Low
Assumptions:	The user is the authorized user on the account.

3.3.3 Secondary case: Buyback

Name of Use Case:	Buyback
Super Use Case:	None
Author(s):	Registered User
Brief Description:	A user selects the buyback option, is briefed with the standard instructions and submits a book through the buyback process.
Pre-Conditions:	The user must be logged into their account. G5 Online Bookstore must be connected to their database. The user starts in Log On State.
Post-Conditions:	The user is given a shipping label and instructions. As well as an idea of what price range is to be expected for payment. The user ends in Buyback State.
Normal Course of Events:	1. The user accesses G5 Online bookstore in Log On State and clicks the "Buyback" button located on every page. The user is then directed to the buyback page and is briefed with instructions about how the buyback process works. 2. Next the user selects their book by searching for it in the text box located on the buyback page. The text box acts like the search bar and returns the top five matches back to the buyback page. The user selects the correct book. 3. Directly after the user selects the condition of the book (poor, fair, good, excellent) located within the condition slot. 4. The user hits the "Enter" button and the buyback process is activated. The Pricing Database is contacted and a price range based on the condition of a unique book is returned to the webpage. At this point the user is in the Buyback State. 5. The user is given the quote of the book and presses the "Accept" button starting the final phase of selling the book to G5 Online Bookstore. 6. Upon hitting accept two printable forms are download to the computer. The first is a pre-paid shipping return label that can be adhered to a box. The second is a form that is filled out with the authorized users account information. 7. After both pages are printed the textbook and the completed form are placed in a box and sealed. Next the user tapes the pre-paid shipping

	label to the box and delivers the box to a USPS store for deliver to G5 Online books. 8. G5 Online bookstore receives the package and processes the contents after which the user is compensated the value of the textbook via check through USPS standard mail.
Alternative flow and Exceptions:	1a. The user determines at any time not to continue with the buyback process. Either after they have been quoted the value of the book or while they are still navigating the web.
Alternative flow and Exceptions:	2c. The user searches for a textbook and the results are displayed but no results are a correct match for the book in question. The book itself is not in the current G5 Online Bookstore inventory. 2d. User is able to insert another string of text in the text box, restarting the search process.
Alternative flow and Exceptions:	3a. The user selects poor for the condition of the book. 3b. The user is informed by an error message that poor quality books are not accepted at G5 Online bookstore and that any attempt to sell a poor quality textbook to G5 Online Bookstore will result in a returned product. 3c. After the error message has been displayed for 30 seconds if the user has not navigated from the page the user will be redirected to the homepage.
Alternative flow and Exceptions:	4a. The user attempts to sell a book that is not currently accepted by G5 Online Books buyback process. 4b. The user is returned to the buyback page and is returned an error message explaining that the book is currently not accepted.
Alternative flow and Exceptions:	5a. The user receives the quote for the book and selects the “Decline” button refusing to sell their book to G5 Online Bookstore. 5b. The user is then redirected to the buyback screen for an additional query.
Priorities:	Medium
Assumptions:	The email address given by user is valid and registered with the site.

3.4 Acceptance Test Cases

3.4.1 High Priority Case: Purchase Textbook

Name of Use Case:	Purchase Textbook
Super Use Case:	None
Author(s):	Registered User
Brief Description:	The user navigates website, determines what textbook to buy, adds textbook to cart and purchases the book by completing the transaction.
Pre-Conditions:	G5 Online Bookstore is connected to their databases. The user is connected to G5 Online Bookstore. The user starts in Online Bookstore State.
Post-Conditions:	The user purchases the correct book and is mailed the book in the time frame decided at checkout. The user ends in Check Out State.
Normal Course of Events:	1. The user accesses G5 Online Bookstore in the Online Bookstore state. and clicks the "Login" button located on every page. Upon clicking the login button a "Username" and "Password" text fields appear with the cursor focus in the Username field. 2. The user enters tt9302@txstate.edu in the username text field. Next the user enters the ********* in the password field. The user clicks enter to activate the login process. The user enters the Log On State. 3. The information is validated against G5 Online Bookstore's database. The screen will display success or failure based on the input given. The screen displays "Welcome back Tyler – lets read some books!". 4. The user is granted full access to their account and can use all privileges of a registered user. Login is complete. 5. The user accesses G5 Online bookstore and navigates their way to the search bar located on every page. The user begins the search by clicking the text field within the search bar. 6. Next the user inputs the ISBN of the book they wish to purchase – 9780071240468. The user presses enter or clicks the "Search" button to activate the search. G5 Online Bookstore's inventory database is queried with search input and matches are found, enumerated, and passed to a results page.

7. The user is redirected to the results page. The results page displays: 9780071240468, Object Oriented Technology, Tsang, Curtis. The results page shows no other books because the search was conducted by the item specific ISBN code. The user clicks the correct textbook and is redirected to the unique textbook webpage. The user enters the Selected Book State.

8. The user is given a description – 9780071240468, Object Oriented Technology by Curtis Tsang, and a picture of the book. The user selects to buy the book new. The price for the new book is slightly more expensive than the used book - $65.00

9. The book is then added to the users cart and the user is then redirected to the updated shopping cart page. The shopping cart page contains the Object Oriented Technology book that they intend on purchasing. The user on the shopping cart page is able to edit their cart before completing the transaction. At this point the user is in the Shopping Cart State.

10. The user clicks the “Checkout” button at the bottom of the checkout page and is transported to the select shipping address. The user selects their shipping address that is saved onto their personal account. The user is in the Checkout State.

11. The shipping address information is then sent to an external shipping system (USPS) along with the weight of the order (determined by the weight of books in the users shopping cart, kept on file by an internal database).

12. The shipping options are returned and presented to the user on the “Select Shipping” page. The user selects the Standard shipping method. Upon selection, the shipping cost shall be instantly updated and added to the “Checkout” total, visible to the user.

13. The system shall proceed to the Payment Information page after the user clicks the “Proceed to Payment” button.

14. The user is prompted to enter credit card information. The user pays through a card that is saved within the account profile by clicking the “Pay With Card On File” button. The user also selects the appropriate billing and shipping address based on what is saved within their profile.

15. The credit card and shipping (if different) information is then encrypted and sent to the user's bank for verification of the account and verification of available funds.

16. Upon successful bank validation the user is shown an “Order Confirmation” screen. This screen shows the user the contents of the order as well the total. The user presses the “Confirm Order” button. The user's credit card is charged. A confirmation email is sent to the user and their order history is updated. The transaction process is complete.

Alternative flow and Exceptions:	3a. The user inputs invalid input information where either the password, username, or both do not match database records. 3b. The login process is restarted and the user is notified of their failed attempt and the error message "Your Password, Username or Both are incorrect – Please try again".
Alternative flow and Exceptions:	3c. The user determines that they do not know their password and the user clicks the "Reset password" button, located under the login fields. 3d. The user inputs their email address tt9302@txstate.edu and an email is sent to the registered users address with an email containing a link to reset their password. 3e. The user sees a message displayed to the screen "An email with a new password has been sent to your email."
Alternative flow and Exceptions:	6a. The user searches by the Author (Curtis Tsang) or the Title (Object Oriented Technology) instead.
Alternative flow and Exceptions:	7a. The user inputs invalid input information. In the search bar the user types "^^^^^^^3221#3#8" 7b. The user is redirected to the results page. The results page displays "Sorry, but your search returned no viable results – Please try again". 7c. The user is able to insert another string of text in the search bar, restarting the search process.
Alternative flow and Exceptions:	8a. The user selects the book to be a rental. The rental price is given on the textbooks webpage $35.00. 8b. The user is told that the expected return date is December 18th, 2014 – the end of the fall semester. The user is also briefed with the rental policy – explaining that the book must be returned on time and in good condition.
Alternative flow and Exceptions:	9a. The user clicks the "Continue Shopping" button. 9b. The user is redirected back to the last textbook webpage "Object Oriented Technology" and searches for their second book – Introduction to Probability and Statistical Inference by Robert V. Hogg. 9c. At this time the user adds the book to their cart and is redirected back to the end of step 3. 9d. This step is repeated as often as needed – the books added are subject

	to change.
Alternative flow and Exceptions:	9e. The user is able to edit the existing contents of the cart. The user can do one of two things: i. Change the quantity of one of the books within their cart - The user changes the quantity of Object Oriented Technology to two by pressing an upward arrow next to the quantity. ii. Or remove one of the books entirely. Leaving the cart with everything but the object removed. The user clicks a downward arrow next to the quantity of Object Oriented Technology.
Alternative flow and Exceptions:	12a. The user selects one of the alternative speeds of delivery – Priority or Express. Both of these result in a higher cost of shipping.
Alternative flow and Exceptions:	14a. The user does not wish to use a card on file. The user selects the new card option and manually enters their credit card information. 14b. Next the user fills out the necessary credit card fields with their first and last name as well as the billing address that is going to be linked to that credit card account. The billing and shipping address can be chosen from past account information. Lastly the security code is entered into the appropriate text field. 14c. The user then clicks confirm once the information has been entered. The user is then asked if they would like to save the credit card to their account.
Alternative flow and Exceptions:	14d. The credit card information is verified to ensure the card is among one of the listed companies that G5 Online Bookstore processes. 14e. The account number is checked to ensure that the number is 16 digits long. As well that the verification code is three digits. In addition it confirms that the Expiration date must be in a MM/YY format. 10f. If the users entry does not follow the correct format then they are redirected back to the blank payment page to try again with an error message as to what went wrong.
Alternative flow and Exceptions:	15a. If credit card information and the billing address do not match bank records the transaction is not allowed to be processed. 15b. The user is redirected back the to the payment page. In addition, the user is alerted through an error message on the payment page that states, “The billing and credit card information did not match – Please try again”.

Priorities:	High
Assumptions:	The user has intent to purchase a product from G5 Online Bookstore.

3.4.2 Secondary Case: Logoff

Name of Use Case:	Logoff
Super Use Case:	None
Author(s):	Registered User
Brief Description:	The user disconnects from their account with G5 Online Bookstore, making it inactive until the next valid login.
Pre-Conditions:	The authorized user is logged into their account. The user starts in Log On State
Post-Conditions:	The user is no longer logged into their account. The user is in Log Off State.
Normal Course of Events:	1. The user who is logged in and accessing G5 Online bookstore clicks the "Logoff" button located on every page. 2. The user is logged out of their account and is redirected to the homepage.
Alternative flow and Exceptions:	1a. For security purposes, if the user remains inactive for 15 minutes the user is logged off.
Priorities:	Low
Assumptions:	The user is the authorized user on the account.

3.4.3 Secondary case: Buyback

Name of Use Case:	Buyback
Super Use Case:	None
Author(s):	Registered User
Brief Description:	A user selects the buyback option, is briefed with the standard instructions and submits a book through the buyback process. The user starts in Log On State.

Pre-Conditions:	The user must be logged into their account. G5 Online Bookstore must be connected to Pricing database. The user ends in Buyback State.
Post-Conditions:	The user is given a shipping label and instructions. As well as an idea of what price range is to be expected for payment.
Normal Course of Events:	1. The user accesses G5 Online bookstore in the Log On state and clicks the "Buyback" button located on every page. The user is then directed to the buyback page and is briefed with instructions about how the buyback process works. 2. Next the user searches for their book by searching for it in the text box located on the buyback page. The user types "Object Oriented Technology, Tsang". The book Object-Oriented Technology, From Diagram to code with Visual Paradigm for UML, by Curtis Tsang appears as the main result. The user selects that book. 3. Having looked at the pictorial instructions the user selects the condition of the book to be good. 4. The user hits the "Submit" button and the buyback process is activated. The user enters the Buyback State. The Pricing Database is contacted and a price range of "20-25" based on both the good condition and the book that it is (Object Oriented Technology – Curtis Tsang) is returned to the webpage. 5. The user is given the quote and chooses to click the "Accept" button starting the final phase of selling the book to G5 Online Bookstore. 6. Upon hitting accept two printable forms begin downloading on the users computer. The first is a pre-paid shipping return label that can be adhered to a box. The second is a form that is filled out with the sellers account information. 7. After both pages are printed both the users textbook – Object Oriented Technology, Curtis Tsang, and the completed form are placed in a box and sealed. Next the user tapes the pre-paid shipping label to the box and delivers the box to the closest USPS store in his home city. 8. G5 Online bookstore receives the package at their headquarters and the receiving team evaluates the condition of the book and makes sure that it is reusable. Upon confirming the user is compensated the value of the textbook via check through USPS standard mail.
Alternative flow and Exceptions:	1d. The user determines at any time not to continue with the buyback process – either by stopping after they are quoted or

	before.
Alternative flow and Exceptions:	2a. The user searches for the textbook “Starting out with C++ - Tony Gaddis” but the textbook is not within G5 Online Bookstore’s inventory and the correct match does not appear. 2c. User is able to insert another string of text in the text box, restarting the search process.
Alternative flow and Exceptions:	3a. The user selects poor for the condition of the book. 3b. An error message pops to the screen right after the selection - “Poor quality books are not accepted at G5 Online bookstore. Any attempt to sell a poor quality textbook to G5 Online Bookstore will result in a returned product”. 3c. After the error message has been displayed for 30 seconds the user was redirected to the homepage.
	4a. The user’s book “Starting Out with Java – Tony Gaddis – Edition 1” is in G5 Online Bookstores current inventory but is not being accepted by G5 Books at this time – either because of overstock or because it is outdated. 4b. The user is displayed the following error message “Book is not currently being accepted at this time”. 4c. User is able to insert another string of text in the text box, restarting the search process.
Alternative flow and Exceptions:	5a. The user receives the quote for the book and selects the “Decline” button refusing to sell their book to G5 Online Bookstore. 5b. The user is then redirected to the buyback screen for an additional query.
Priorities:	Medium
Assumptions:	The email address given by user is valid and registered with the site.

3.5 System-Level Sequence Diagram

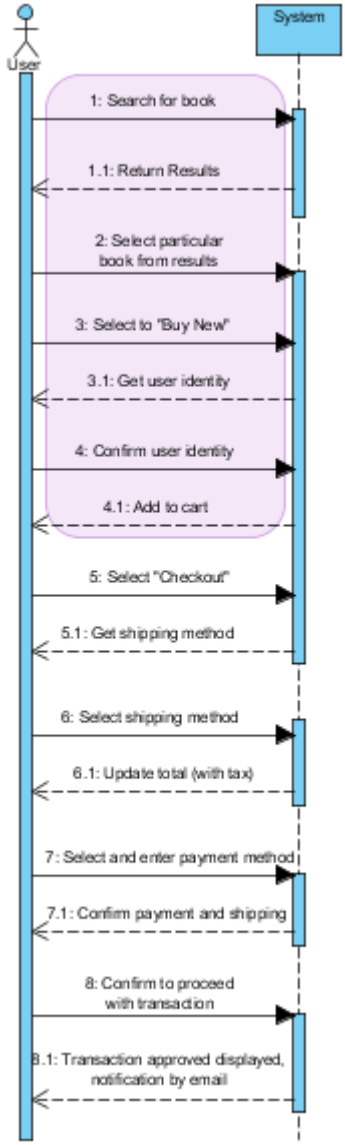


Figure 3. System-Level Sequence Diagram

3.6 Subsystem-Level Sequence Diagram

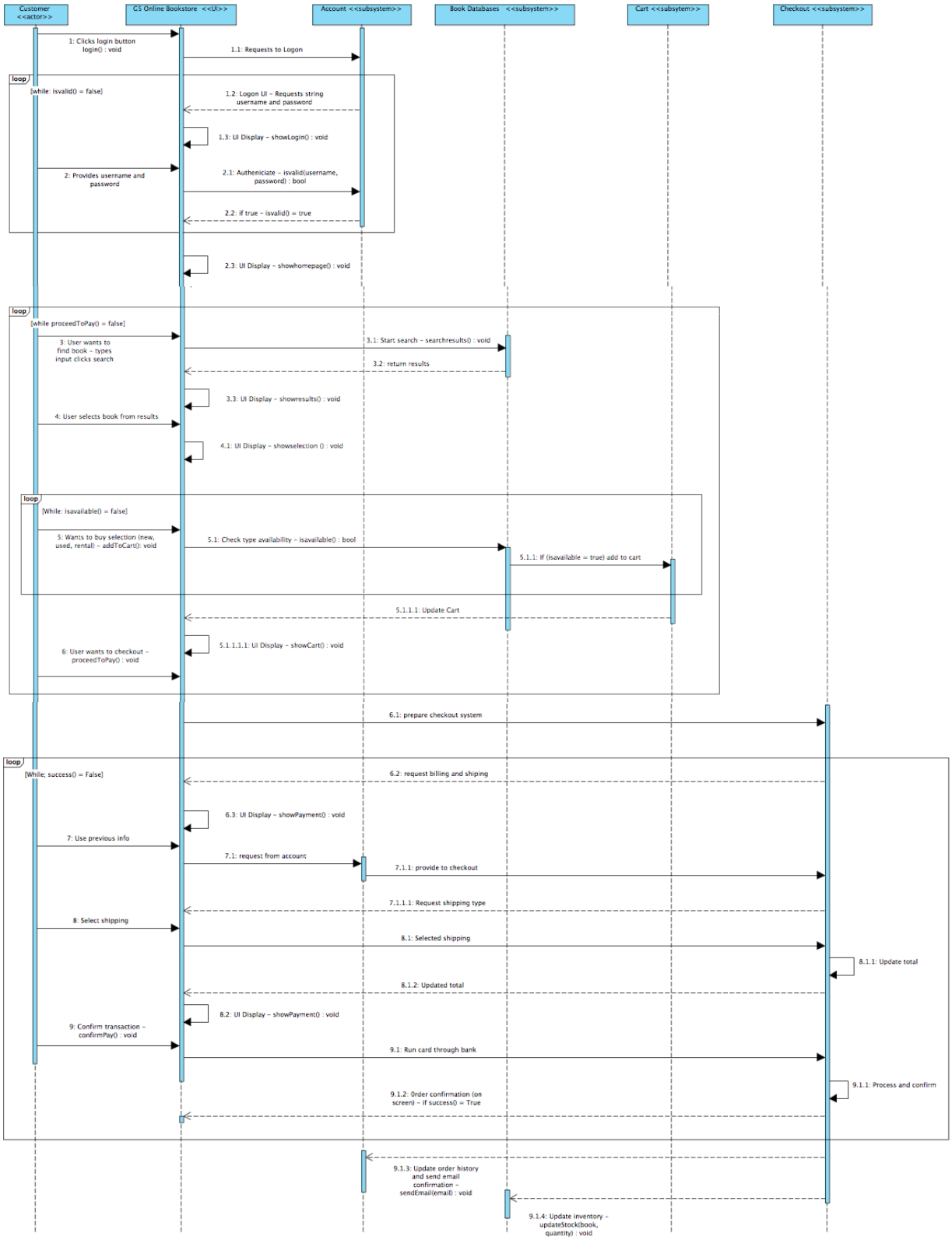


Figure 4. Sub-System Sequence Diagram for Purchase Textbook

3.7 Three-Tier Sequence Diagram

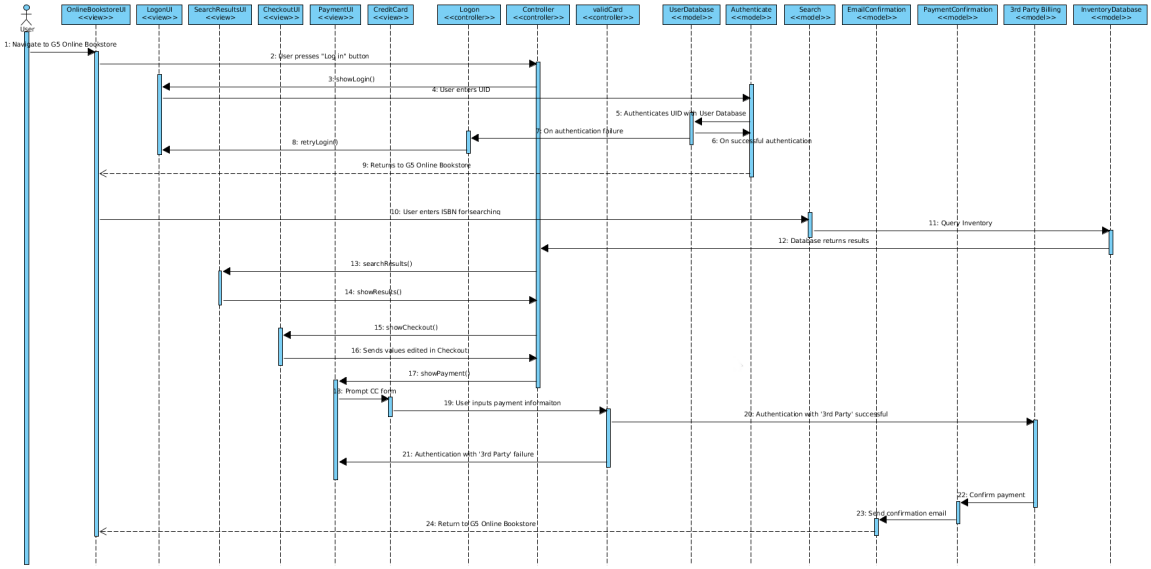


Figure 5. Three-Tier Sequence Diagram

3.8 System-Level Statechart Diagram

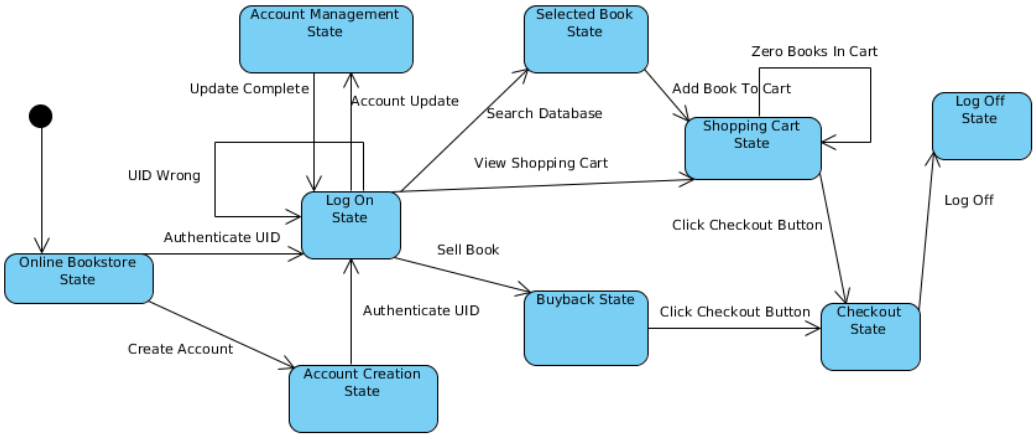


Figure 6. System-Level Statechart Diagram

3.9 Statechart Diagrams for Controller Classes

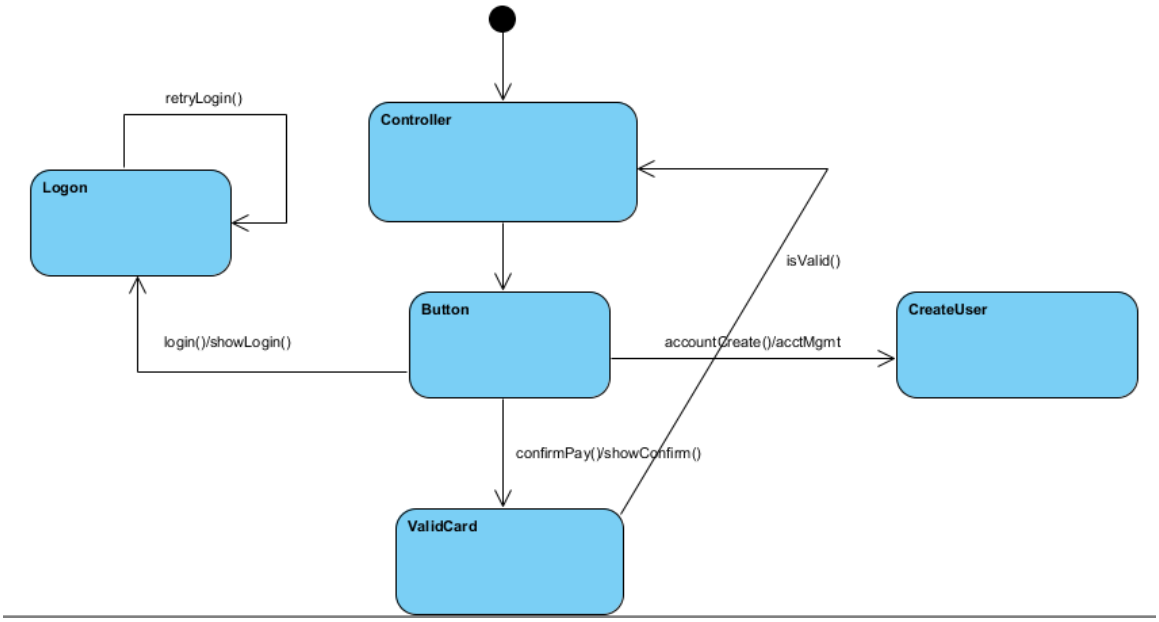


Figure 7. Statechart Diagram for Controller Class

3.10 Unit Test Cases for Controller Classes

Button/Controller

login()/showLogin()

1. The user will press the “Log on” button.
2. The controller shall receive the call.
3. The system shall display the proper “Log on” page and wait for the user to enter in their information.

Button case1 & case 2/showAcctForm()

Case 1: accountCreate()

1. The user will press the “Account Creation” button.
2. The controller shall receive the call.
3. The system shall display the proper “Account Form” page and wait for the user to enter in their information.

Case 2: acctMgmt()

1. The user will press the “Account Management” button.
2. The controller shall receive the call.
3. The system shall display the proper “Account Form” page and wait for the user to enter in their information.

searchResults()/showResults()

1. The user will press the “Search” button.
2. The controller shall receive the call.
3. The system shall display the proper “Results” page for the desired search that was entered.

Button case1 & case 2/showCart()

Case 1: shopCart()

1. The user will press the “Checkout” button.
2. The controller shall receive the call.
3. The system shall display the proper “Cart” page and wait for the user to proceed to pay or continue shopping.

Case 2: addToCart()

1. The user will press the “Add To Cart” button.
2. The controller shall receive the call.
3. The system shall display the proper “Cart” page and wait for the user to proceed to pay or continue shopping.

proceedToPay()/showPayment()

1. The user will press the “Proceed to pay” button.
2. The controller shall receive the call.
3. The system shall display the proper “Checkout/payment” page and wait for the user to enter in their payment information or select any payment methods saved on the user’s account.

confirmPay()/showConfirm()

1. The user will press the “Confirm Payment” button.
2. The controller shall receive the call.
3. The system shall display the proper “Confirm” page.
4. If the payment is denied, the proper error shall notify the user of the problem and ask for another payment information.

contactUs()/showContactUs()

1. The user will press the “Contact Us” button.
2. The controller shall receive the call.
3. The system shall display the proper “Contact Us” page and wait for the user to select their desired action.

buyBackQuote()/showBuyBackForm()

1. The user will press the “Buy Back” button.
2. The controller shall receive the call.
3. The system shall display the proper “Buy Back Form” page and wait for the user to enter in their information.

Logon

1. The user will enter their required “Log On” information.
2. If the user information does not match with stored information inside the user database, the controller shall receive the retryLogin() call.
3. The system shall display the proper “Log On” page and wait for the user to re-enter the required information.

CreateUser

1. The user will have entered in the required information on the “Account Creation” page.
2. The controller shall receive the addUser() call.
3. The user information shall be added to the user database and the user’s account shall now exist in the system.

ValidCard

1. The user will have entered in the required information on the “Payment” page and pressed the “Confirm Payment” button.
2. The system will communicate with the third-party system to confirm the credit card is valid.
3. The controller will receive the isValid() call once payment if confirmed.
4. The system shall display the proper “Confirm” page.

4. Implementation Constraints

Any code created from compliance with this document may be implemented in the languages and structures of the developers’ choice so long as the product adheres to all requirements specified in this document. Additionally, any database, web, and other frameworks needed will be at the discretion of the developers. All implementations must follow the guidelines presented in this document and are otherwise unrestrained.

5. Definitions

3rd Party Billing - refers to an external entity which is responsible for validating and processing payments

Account – personalized container that holds the information of the user. The account pertains to the online functions: account management, login, logoff, previous orders, and purchasing options.

ButtonUI - a button user interface placeholder meant to resemble multiple buttons

Buyback process – the process of selling used books back to G5Books for a portion of the original price.

Cart – a digital basket that contains the products that the user intends on purchasing.

Inventory database – A company database that is accessed to determine the number of books that are on hand for any given book. When accessed the database returns the number of new/used/rentable books that are on hand.

ISBN – International Standard Book Number – an unique thirteen digit number that identifies the exact copy of the book in question.

Pricing database – A company database that is accessed during the buyback option to determine the value of a used textbook. The buyback database's result is based on the expected condition and the ISBN number.

Rent – the ability to check a textbook out from G5 Online Bookstore for an allotted amount of time. Each rental is provided with an expected return date.

Used/New – the condition of the textbook is categorized as New (perfect condition) or Used (gently worn).

6. References

Lau, S.W. C., Leung, K. Y., Tsang, H.K. C. (2005). Object-Oriented Technology. Singapore: McGraw-Hill.

Paradigm, Visual. (2008). Writing Effective Use Cases. Retrieved from http://www.visual-paradigm.com/tutorials/writingeffectiveusecase.jsp

Paradigm, Visual. (2010). Develop UML Sequence Diagram with UML Class Retrieved from http://www.visual-paradigm.com/tutorials/constructseqdiagram.jsp