**Workshop 2 Answer sheet**

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Part 3

Consider the problem statement of the online book store in the Laboratory Exercise 2.

The Pearl River Book Company is developing an online book store system through which its customers can buy books and sell their used books.  Public users are those who are not registered customers of the system.

Public users or registered customers can search books by entering keywords, which may appear in the title, author, or the book description.  The system displays a list of books that matches the keywords.  Each entry of the book list consists of the book title, author(s), the price for a new copy and the price range for used copies.  The user can select a book from list to display more detail information about it (availability, price for new copy, prices for used copies, table of contents, author, ISBN).  The user can add a copy of the book (either new or old) to the shopping cart.  The user can then continue to search for another book.  When the user finishes searching, the user can check out the books (Buy Book) in the shopping cart.  The system asks the user to login his/her account by entering the user’s email address and the account password.  If the user has not registered yet, the user can register for a new customer account at that point.  The user enters the email address, the home address and the password.  The system verifies that the email address has not been used by an existing customer before confirming the creation of the new customer account through an email message.  The system then asks the user to select the shipping option (express, priority, or ordinary).  Different shipping options have different prices.  The user can then select the payment method (credit card or the user account of the book store).  If the user selects the credit card payment method, the user enters the card number, type, and expiry date. The system then sends the credit card information and the amount charged to the external payment gateway.  The amount is calculated by adding the prices of the selected books and the selected shipping option. If the credit card transaction is approved, the external payment gateway will send back an approval code. Otherwise, the systems will ask the user to re-select the payment method and re-enter the payment information.  If the user selects payment by his/her account with a sufficient balance, the system charges the amount to the customer account.  Otherwise, the system asks the user to re-reselect the payment method.  Upon completion of payment, the system arranges delivery of the ordered books.  An external shipping agent is responsible for the delivery of the ordered books.  If an order involves new books, the system sends a shipping request to notify the shipping agent to collect the books from the book store. New books in the same order are shipped together.  If a used book has been ordered, the system sends a delivery request to notify the seller of the book and a shipping request to the shipping agent of the book store.  The shipping agent collects the book from the seller and delivers the book to the buyer.  Used books of the same order from the same seller are shipped together. After the book(s) has/have been delivered to the buyer, the shipping agent sends a shipping completion message to the system.  Upon receipt of this message, the system updates the seller’s customer account by adding the price of the used book minus the commission charge for the service.

A public user or a registered customer who wants to sell a used book can go through the above process in searching a book and displaying its information.  The user can then post a used copy for sale.  The system will ask the user to enter the price and the general condition of the used book.  Then the system further asks the user to enter the email address and password of his/her customer account for login.   If the user does not have a customer account, the user can create a new customer account as described in previous paragraph.

(Use the Food Ordering Example for Reference)

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| --- | --- | --- |
| Base Use Case 1 | | Register Account |
|  | Actor a | Public User |
|  | Actor b | Customer |
|  | Actor c | Payment Gatewy |
|  | Actor d | Shipping Agent |
|  |  |  |
| Base Use Case 2 | | Search Book |
|  | Actor a | Public User |
|  | Actor b | Customer |
|  | Actor c | Payment Gatewy |
|  | Actor d | Shipping Agent |
|  |  |  |
| Base Use Case 3 | | Buy Book |
|  | Actor a | Public User |
|  | Actor b | Customer |
|  | Actor c | Payment Gatewy |
|  | Actor d | Shipping Agent |
|  |  |  |
| Base Use Case 4 | | Sell Used Book |
|  | Actor a | Public User |
|  | Actor b | Customer |
|  | Actor c | Payment Gatewy |
|  | Actor d | Shipping Agent |
|  |  |  |
| Base Use Case 5 | | Send Shipping Completion Message |
|  | Actor a | Public User |
|  | Actor b | Customer |
|  | Actor c | Payment Gatewy |
|  | Actor d | Shipping Agent |

**Identify FOUR major actors.** (foodOrdering-ppt13)

1. Public User (primary actor)

2. Customer

3. Payment GateWay

4. shipping Agent

**Identify FIVE use cases** (foodOrdering-ppt21)

1. Search Book

2.  Register Account

3. Buy Book

4. Sell Used Book

5. Send Shipping Completion Message

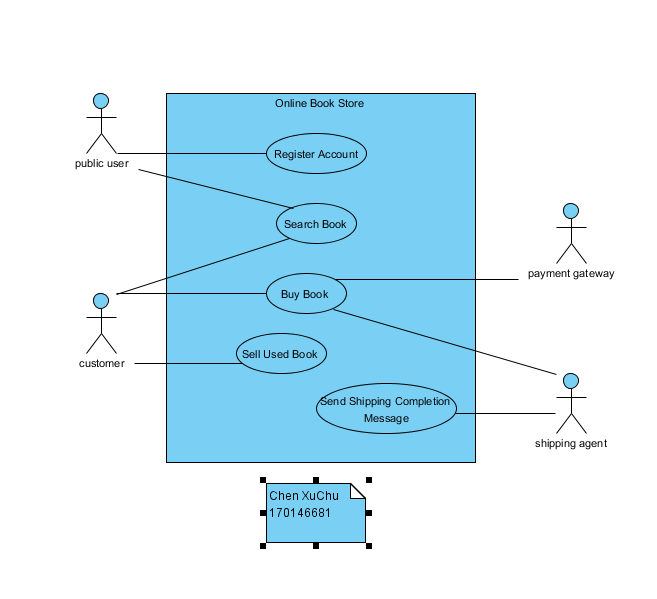
**Examine the roles of each actor and identify the use cases** (foodOrdering-ppt22)

Public user: Register, Search book

Customer: buy book, sell used book

Shipping agent: send hipping complete shipping

**Draw initial use case diagram** (visual paradigm) (foodOrdering-ppt22)



**Actor Descriptions** (foodOrdering-ppt15)

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| **Actor specification** |
| **Actor name:** Public User |
| **Description: A public user can be a registered or un-registered customer of the book store. The public user can search for books** |

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| --- |
| **Actor specification** |
| **Actor name:** Customer |
| **Description:** a customer can search and buy the book store. And then Selling used book |

|  |
| --- |
| **Actor specification** |
| **Actor name:** Payment Gateway |
| **Description:** a customer can buy book through the payment gateway |

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| **Actor specification** |
| **Actor name:** shipping agent |
| **Description:** a customer can send hipping complete shipping to the shipping agent |

**Use Case Brief Descriptions** (foodOrdering-ppt24)

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| --- |
| **Use Case:** Register Account |
| **Use Case ID:** UI - 100 |
| **Actor:** public User |
| **Description:** A public user provide email address, home address, password to resgister a customer account |

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| --- |
| **Use Case:** search book |
| **Use Case ID:** UI - 200 |
| **Actor:** public user, customer |
| **Description:** the public user and customer can search book at the online book store system. |

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| --- |
| **Use Case:** Buy Book |
| **Use Case ID:** UC - 300 |
| **Actor:** Customer |
| **Description:** the customer searches for and select a book. The system display the price of a new copy and used copy . the customer adds the book to the shipping cart. The customer check out the book. The system asks the customer to login. The customer select the shipping option. The System dispays the total amount. The customer select the payment method and enters the required information. The system change the amount to the customer’s credit card account or account. The system confirms the transaction and sends the shipping request to the shipping agent. If the order has used book, the system also sends a message to the books seller. |

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| **Use Case:** sell book |
| **Use Case ID:** UC-400 |
| **Actor:** customer |
| **Description:** the customer searches for and select a book. The system display the price of a new copy and used copy. the customer adds the book to the shipping cart. The customer check out the book. The system asks the customer to login. The system store the sales order of the book. |

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| **Use Case:** send shipping completion message |
| **Use Case ID:** UC - 500 |
| **Actor:** Shipping agent |
| **Description:** The shipping agent sends a shipping completion message to the system. The system updates the seller’s account(if any) and the buy order’s status to “completed |

**Develop the base case descriptions**

[Shift] + [Enter] in **Flow of Event**

|  |  |
| --- | --- |
| **Use case name** | Register Account |
| **Use case ID** | UC-100 |
| **Primary actor** | Public user |
| **Secondary actor(s)** |  |
| **Preconditions** | The public user does not have an account in the system |
| **Flow of events** | 1. The public user enter the email address, home address and password   2.the system creates the account and sends an acknowledgement to the user via email. |
| **Post-conditions** | A new customer account is created |
| **Alternative flows and exceptions** | 1. If an account already exists, the execution of the use case terminates. |
| **Non-behavior requirements** |  |
| **Assumptions** |  |
| **Issue** |  |
| **Source** |  |

|  |  |
| --- | --- |
| **Use case name** | Search Book |
| **Use case ID** | UC-200 |
| **Primary actor** | Public user, customer |
| **Secondary actor(s)** |  |
| **Preconditions** |  |
| **Flow of events** | A user or customer can searc for books by entering keywords 2.  3.  4.The system displays detailed information of the book |
| **Post-conditions** |  |
| **Alternative flows and exceptions** |  |
| **Non-behavior requirements** |  |
| **Assumptions** |  |
| **Issue** |  |
| **Source** |  |

|  |  |
| --- | --- |
| **Use case name** | Buy Book |
| **Use case ID** | UC-300 |
| **Primary actor** | Customer |
| **Secondary actor(s)** | Payment gateway, shipping agent |
| **Preconditions** | The customer has a valid account |
| **Flow of events** | A customer enters keywords of the book  1. The system displays a list of book matching the keywords. 2. 3the customers selects a book. 3. The system displays detailed information of the book. 4. The customer adds a copy of the book to the shopping cart 5. The system display the books in the shopping cart. 6. The customer checks out the book 7. The system asks the customer to login 8. The customer enters the email address and password. 9. The system displays login successful and asks the customer to select the shipping option 10. The customer selects the shipping option 11. The system displays the total amount 12. The customer selects the payment method and enters the required information 13. The system confirms the transaction and sends the shipping request to the shipping agent |
| **Post-conditions** | A new buy order is created and stored in the system. The amount is charged to the customer`s account or credit card |
| **Use case name** | Buy Book |
| **Use case ID** | UC-300 |
| **Primary actor** | Customer |
| **Secondary actor(s)** | Payment gateway, shipping agent |
| **Preconditions** | The customer has a valid account |

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| --- | --- |
| **Use case name** | Sell Book |
| **Use case ID** | UC-400 |
| **Primary actor** | Customer |
| **Secondary actor(s)** |  |
| **Preconditions** | The customer has a valid account |
| **Flow of events** |  |
| **Post-conditions** | A new sell order is created and stored in the system |
| **Alternative flows and exceptions** |  |
| **Non-behavior requirements** | 7. if the user has not been registered, the user interface allows the user to choose to register when the user is prompted to login |
| **Assumptions** |  |
| **Issue** |  |
| **Source** |  |

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| --- | --- |
| **Use case name** | Send Shipping Completion Message |
| **Use case ID** | UC-500 |
| **Primary actor** | Shipping agent |
| **Secondary actor(s)** |  |
| **Brief description** | The shipping agent sends a shipping completion message to the system, the system updates the seller`s account and the but order`s status to completed. |
| **Preconditions** | A shipping request has been submitted to the shipped agent |
| **Flow of events** | 1. The shipping agent sends a shipping completion message to the system |
| **Post-conditions** | The order status is updated to the “completed” status and the amount minus the commission is credited to the sellers account |
| **Alternative flows and exceptions** |  |
| **Non-behavior requirements** |  |
| **Assumptions** |  |
| **Issue** |  |
| **Source** |  |

**Iteratively elaborate the base use case description and determine the *extend*, *include* and *generalization relationships.* Refine the use case diagram and the use case descriptions to reflect the use case relationships.**

|  |  |  |
| --- | --- | --- |
| Base Use Case 1 | | Register Account |
|  | Abstract Use Case |  |
|  | Abstract Use Case |  |
|  |  |  |
| Base Use Case 2 | | Search Book |
|  | Abstract Use Case |  |
|  | Abstract Use Case |  |
|  |  |  |
| Base Use Case 3 | | Buy Book |
|  | Abstract Use Case |  |
|  | Abstract Use Case |  |
|  |  |  |
| Base Use Case 4 | | Sell Used Book |
|  | Abstract Use Case |  |
|  | Abstract Use Case |  |
|  |  |  |
| Base Use Case 5 | | Send Shipping Completion Message |
|  | Abstract Use Case |  |
|  | Abstract Use Case |  |

Refined Use Case Diagram (visual paradigm) (foodOrdering-ppt29)

**Refined Base Use Case Descriptions**

**(Only need to do the *Buy Book and its related use cases*)**

**Buy Book**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Use case name:** | Buy Book | | | | | | |
| **Use case ID:** | UC-300 | | | | | | |
| **Primary actor:** | Customer | | | | | | |
| **Secondary actor(s):** | Payment gateway, shipping agent | | | | | | |
| **Preconditions:** | The customer has a valid account | | | | | | |
| **Flow of events:** | 1. | | | | Include (Search Book) | | |
| 2 | | | | The Customer adds a copy of the book into the shopping cart | | |
| 3 | | | | The system displays the books in the shopping cart | | |
| 4 | | | The customer check out the book | | |
| 5 | | | The system asks the customer to login | | |
| 6 | | | the system asks the customer to login | | |
| 7 | | | The customer asks the customer to select the shipping option. | | |
| 8 | | | The customer selects the shipping option. | | |
| 9 | | | The system display the total amount | | |
| 10 | | | The customer selects the payment method (Account or credit card) | | |
| 11 | | | The system confirms the transaction and sends the shipping request to the shipping agent | | |
|  | | |  | | |
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|  | | |  | | |
| **Post conditions:** | A new buy order is created and stored in the system. The amount is charged to the customer`s account or credit card. | | | | | | |
| **Alternative flows and exceptions** | 2 | | | | No book matches the keywords | | |
| 9 | | | | Login failed | | |
| 13 | | | | Insufficient fund in Account | | |
| 13 | | | | Credit Card Payment Rejected | | |
| **Non-behavior requirements:** | If the user has not been registered, the user interface allow the user to choose to register when the user is prompted to login | | | | | | |
| **Assumptions:** |  | | | | | | |
| **Issue:** |  | | | | | | |
| **Source:** |  | | | | | | |
| **Use case name:** | | Buy Book | | | |
| **Use case ID:** | |  | | | |
| **Primary actor:** | |  | | | |
| **Secondary actor(s):** | |  | | | |
| **Preconditions:** | |  | | | |
| **Flow of events:** | | 1. | Include (search book) | | |
|  |  | | |
|  |  | | |
|  |  | | |
| **Post conditions:** | |  | | | |
| **Alternative flows and exceptions** | |  |  | | |
|  |  | | |
|  |  | | |
| **Non-behavior requirements:** | |  | | | |
| **Assumptions:** | |  | | | |
| **Issue:** | |  | | | |
| **Source:** | |  | | | |

**Search**

|  |  |  |
| --- | --- | --- |
| **Use case name:** | Search | |
| **Use case ID:** | UC-200 | |
| **Primary actor:** | Public user, customer | |
| **Secondary actor(s):** |  | |
| **Preconditions:** |  | |
| **Flow of events:** | 1. | **Flow of events:** |
| 2 |  |
| 3 |  |
| 4 |  |
| **Post conditions:** |  | |
| **Alternative flows and exceptions** |  | **Alternative flows and exceptions** |
|  |  |
|  |  |
| **Non-behavior requirements:** |  | |
| **Assumptions:** |  | |
| **Issue:** |  | |
| **Source:** |  | |

**Login**

|  |  |  |
| --- | --- | --- |
| **Use case name:** | Login | |
| **Use case ID:** | UC-20 | |
| **Primary actor:** | The customer logins the system | |
| **Secondary actor(s):** |  | |
| **Preconditions:** |  | |
| **Flow of events:** | 1. | **Flow of events:** |
| 2 |  |
|  |  |
|  |  |
| **Post conditions:** | The email address and password are verified | |
| **Alternative flows and exceptions** | 1 | **Alternative flows and exceptions** |
|  |  |
|  |  |
| **Non-behavior requirements:** |  | |
| **Assumptions:** |  | |
| **Issue:** |  | |
| **Source:** |  | |

**Develop instance scenarios. For each use case, develop the instance scenarios to cover all possible paths of execution of the use case.** (foodOrdering-ppt30)

**(only need to do the *Buy Book*)**

|  |  |  |
| --- | --- | --- |
| **Parent Use case name:** | Buy Book | |
| **Parent Use case ID:** |  | |
| **Instance name:** | A customer buys a used book using a Credit Card | |
| **Instance ID:** | A customer has a valid account and the credit card transaction is approved | |
| **Environmental conditions and assumptions :** | The client enters “Java Programming” as keyword  Choose to buy a book an introduction to java  Login using email :ab@gmail.com  The customer selects express shipping  The customer enter credit card number 22272222 22222 2255 visa, expiry date 12/03 | |
| **nputs:** |  | |
| **Instance flow description:** | 1. | A user or customer search book relating to java programming |
| 2 | The System display s a list of book matching the keywords |
| 3 | The user selects a book an instruction to java |
| 4 | The system display the detail information of the book |
| 5 | The customer adds a copy of book in the shopping cart |
| 6 | The System display the books in the shopping cart |
|  | 7 | The customer check out the book |
|  | 8 | The system asks the customer to login |
|  | 9 | The customer enters the email address [abc@gmail.com](mailto:abc@gmail.com) and password 1234 |
|  | 10 | The system asks the customer to select the shipping option(Express, priority or ordinary |
|  | 11 | The customer select express |
|  | 12 | The system display the total amount |
|  | 13 | The customer select the credit card to pay for the purchase and enter credit card number 2232 1232 1323 1323, visa , expiry date 12/03 |
|  | 14 | The system confirm the transaction and send the shipping request to she shipping agent |
| **Output:** | The new buy order is created and stored. | |