Assignment 1

CPT 203 Software Engineering 1

Assignment Format: Case study + Multiple Choice Question

Release/Test Date: Week 8, 2nd Nov

Preparation Period: Starts from 18th Oct

Duration: 40 MIN (2nd Nov 2022, 1:45PM – 2:25PM)

This assignment requires your ability not only in the understanding of the software requirement but also the understanding and ability on the application of UML. You will be given a case study prior (18th Oct) to the actual testing date indicated as Release/Test Date. You are expected to understand the case study and draft the sequence diagram, state machine diagram, activity diagram, and class diagram by yourself during the preparation period. You are not required to submit the diagrams but your preparation of the diagrams will help you in answering the MCQ.

The MCQ is to be hosted in Learning Mall's CPT203 module page. You are given 40 minutes to answer **20 multiple choice questions**. Please take note that each student will get the questions and options to the answers in **random order**. This is to avoid you from comparing answers with friends. **You must NOT skip any questions presented to you because you are NOT permitted to re-visit the questions that you have answered/skipped**.

All students must complete the test on 2nd Nov 2022 between 1:45PM and 2:25PM. If you start your test late, you will have less time available to complete it. It is advisable to be available and get ready **10 minutes** before the test starts. You may complete the MCQ at home. However, 6 computer labs (306 seats available) are available on First Come First Serve basis. If you need to use the computer in the lab to complete the MCQ, please go to one of the following labs **at least 15 minutes** in advance to secure your seat. We have more students than the available seats, **be informed**: -

Labs: EB369 (52 seats)**,** EB441 (50 seats), EE305 (40 seats), EE309 (52 seats), EE311 (56 seats), SC375 (56 seats)

Preparation (IMPORTANT!!!)

Read and understand the case study during the preparation period. You are expected to: -

- Understand the requirements, including functional and non-functional requirements.
- Understand the scope and responsibility of each use cases and actors.
- Understand the purpose of the use case, what a use case should and shouldn't document.
- How to use Extends and Includes relationship in use cases.
- Understand how to write normal and an exception scenario.
- Draw an initial sequence diagram, state machine diagram, activity diagram, and class diagram from the use case scenario.

Case Study

Proposed Web-based Book Distributor: BookMaster

System Overview

BookMaster is a web-based book distributor. The software requirement act as a preliminary version of the software to demonstrate the basic concept, much of the full functionality of a real system is left out so you can finish the assignment in a reasonable time. Examples of functionality intentionally left out include:

- *Creating, deleting, modifying customers*
- *Creating, deleting, modifying publishers*
- *Creating, deleting, modifying books*
- *Partial orders (both to the customer and from the publisher) Promising delivery dates to the customers*
- *Returned merchandise and refunds Credit card vs. cash payment*
  And much, much more

BookMaster's customers will use a web browser to view the list of available books and place orders. Customers will also be able to check on the status of their orders as well as cancel orders (up to the point that the order has been packed and shipped, in which case the cancellation must be ignored).

People in the BookMaster warehouse will interact with the system (also web based) to: -
- find which orders they should start the packing process,
- tell the system that some customer's order has been packed and is on the dock ready to ship.

Packing is a manual process. The warehouse worker gets the detail order from the system, they pick the ordered items from the warehouse and pack them into shippable form. The worker will send the shippable orders to the dock waiting for the transport.

The managers will use the system, through dedicated terminals on their desks, to define the list of books that will be offered for sale. They will also need to maintain the list of publishers that the titles are obtained from. The manager's most important use of the system is to obtain the monthly inventory report and the monthly sales/profit report.

When a customer orders some books, the system needs to record that order. The order will consist of information like date ordered, a ship-to address, and the quantity of each title ordered. The order will be packable by the warehouse people when the stock on hand for each title in the order is greater than the quantity of that title ordered. Of course, the order can't be packed until there is a sufficient amount of stock on hand for each title ordered (remember, no partial orders in this preliminary version).

When a warehouse person marks an order as packed and ready for shipment, the stock on hand for each title ordered needs to be reduced by the quantity that was packed. If the stock on hand falls below the reorder limit for that title, then a replenish order is created for the publisher of that book. BookMaster will specify a reorder amount for each title, that's the quantity to order from the publisher.

The warehouse people will use their web GUI to tell the system when a replenish order was received. When this happens, the system needs to go through the received order and increase the stock on hand for each received title by the amount ordered (remember, no partial replenish orders in this version). They will use the same GUI to tell the system when a batch of customer orders have been picked up by the shipper.

Publishers will send eMail to the address notice@BookMaster.com using the following format to tell the system that a book has just been declared out of print:

Subject: out-of-print
Contents of the message: *<book title>*

The publisher's computer systems can format the message so that this system will never have to worry about spelling errors and the like. Once a title goes out of print, BookMaster managers will manually go through the orders and figure out how to handle them based on how old the orders are, how many copies were ordered, and how many are left in stock.

Customers should be able to browse by Title, Author, and Subject. This needs to be a glitzy page with lots of bells and whistles to make the customer want to buy books from BookMaster. The warehouse people will need their GUI to be as absolutely simple as possible. Likewise, an easy-to-use interface for the managers is also a definite requirement. And since the managers are used to the format of some existing monthly sales and profit reports, you'll need to use exactly this same format (assume you will get a copy real soon).

End.

Requirement Study (Partial)

Use Case Model

Use Case Diagram
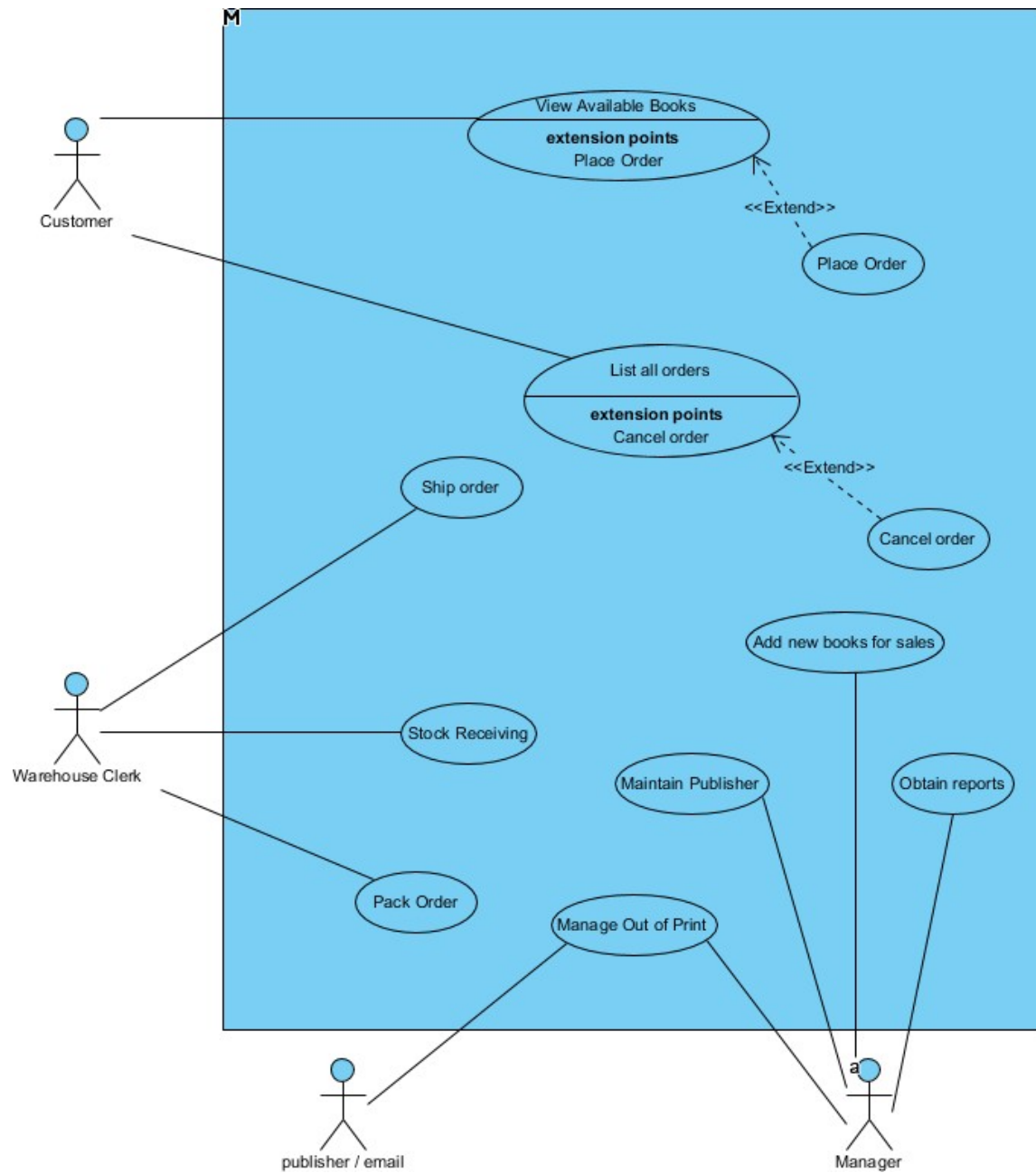
Use Case Description (Partial)

Use Case UC1: View Available Books

Primary Actor: Customer
Preconditions: Customer must login to the system.

Post conditions: A list of all available books is display for viewing
Main Success Scenario:

1. A logged in customer request a list of available books
2. The system returns a list of books that is offers by the company
3. The list of books is sortable by Title, Author, and Subject

Exception Scenarios:

Exception 1:
1. A logged in customer request a list of available books
2. The system has zero books offer by the company
3. The system will display "More books will be available soon!"

Use Case UC2: Place Order

Primary Actor: Customer
Preconditions: Customer must login to the system. Customer view the available books list (UC1).

Post conditions: An order record is captured
Main Success Scenario:

1. The customer chooses a book from the list (UC1).
2. The information of the chosen book is display on the book detail screen.
3. The customer enter the number of books to purchase and add it to the order.
4. The customer may repeats steps 1 to 3 until all the books he want to purchase is added to the order.
5. After the customer satisfy with the order, he enters the address where the books have to ship to.
6. The customer checks through the items in the order and confirm the order.
7. The system adds current date to the order and update the order as Confirmed.
8. The system will display the place order confirmation message to the customer.

Exception Scenarios:

Exception 1:

1. The information of the chosen book is display on the screen.

2. The customer enter the number of books to purchase.
3. When the customer enters the number of books less than 1, the system requires the customer to re-enter the quantity
4. Continue with step 3 of the main success scenario.

Use Case UC3: List All Orders

Primary Actor: Customer
Preconditions: Customer must login to the system.

Post conditions: A list of orders belonging to the logged in customer is presented
Main Success Scenario:

1. A logged in customer request a list of his orders
2. The system returns a list of orders belonging to the logged in customer
3. The list containing the following details: -
    - Order date
    - Total amount
    - Order status
4. Each entry of the list is expandable to show the detail items of the order. When the entry is expanded, it will show the following details: -
    - Book title
    - ISBN
    - Quantity ordered
    - Unit price
    - Sub-total

Exception Scenarios:

Exception 1:

1. A logged in customer request a list of his orders
2. The logged in customer has zero order in the system
3. The system will display "No order is available!"

Use Case UC4: Cancel Order

Primary Actor: Customer
Preconditions: Customer must login to the system. Customer view the list of all orders (UC3).

Post conditions: A chosen order is updated as CANCELLED.
Main Success Scenario:

1. The customer chose an order from the list in UC3 to cancel. He presses the Cancel button next to the order listed in UC3.

2. Not all orders listed in UC3 has a Cancel button. Only the orders that have not been updated as PACKED has a Cancel button and hence allowed to cancel.
3. After the customer presses the Cancel button, the system displays the detail of the order for the customer to view and confirm the cancellation.
4. Once the customer confirmed the cancellation, the system updates the order as CANCELLED.
5. The system successfully updates the order as CANCELLED, the system will display a confirmation message, "Your order with order number # is successfully cancelled".
6. The CANCELLED orders will not be listed in UC3.

Exception Scenarios:

Exception 1:

1. The customer carried out Step 1 to 4 in the main success scenario.
2. The order, at this point, locked and updated by the warehouse people as PACKED, it is not cancellable. The system will display a dialog box with message, "Order is not cancellable, it has already been packed and ready to ship."
3. The customer read the message and press "OK" button to exist the current operation.