CPT203 Software Engineering I

Coursework 1 – Case study and Report

Release date	8th Oct 2024
Submission date	8th Nov 2024
Coursework type	1. enter your answers into the two templates; 2. save the completed templates into ONE pdf file; 3. one group member per team submits this PDF for the team.
Percentage in final marks	15%
Submission method	CPT203 of Learning Mall Core
Late submission policy	5% of the awarded marks shall be deducted for each working day after the submission date, up to a maximum of five working days. Late submission for more than five working days will be not accepted.
Important notes	• Any use of Generative AI is not allowed. • Plagiarism results in award of ZERO mark; all submissions will be checked by TurnItIn. • The formal procedure for submitting coursework at XJTLU is strictly followed. Submission link on Learning Mall will be provided in due course. The submission timestamp on Learning Mall will be used to check late submission.

This document contains

Section 1. Introduction

Learning Outcomes to be assessed

A. Appreciate and describe the issues and methods involved in designing and building computer systems to meet business goals.

B. Understand how user requirements are elicited and incorporated into the design of a computing system while being able to identify and analyse relevant legal, social, ethical and professional concerns informed by professional codes of conduct.

D. Apply an object-oriented approach to the design and development of software systems and their components.

E. Adopt a holistic and proportionate approach to the mitigation of security risks using a risk management process to identify, evaluate and mitigate and risks associated with a software engineering activities.

General instruction

1. Read the case study in Section 2

2. We will facilitate grouping on the learning mall. Students will be self-grouped or allocated to a team of 5 students.

3. Write a report to answer the following questions in Section 3, using the template provided in Section 4 and using the peer review form in Section 5.

4. Student contribution and marking.
   The submission is a group work as in Section 3. The total mark is 100. In a team, each member may contribute differently to the submission. Therefore, students are required to fill up, sign, and submit the peer review form in Section 5. The contribution (%) in the form indicates the overall contribution of a team member on their submission. The team should arrange a meeting to discuss and complete the peer review form in the presence of all members. The contribution percentage for everyone must be agreed upon by all team members. In the case where a contribution cannot come to an agreement, the team could seek help from the module leader.

Section 2. Case study

Proposed Web-based Book Distributor: BookMaster

User Requirements

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 Coursework 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 the books 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.

Section 3. Coursework tasks with marking scheme

Your team has been hired to conduct a system requirements study based on the provided case. You are required to discuss the case in detail as a group to initiate the system requirements study. The case is intentionally presented as simple user requirements, which, like in the real world, are often incomplete and ambiguous, as opposed to exact functional specifications. Your team should work together methodically, as developers would in a real-world software project, to analyze and formalize the system requirements.

Interview sessions with stakeholders are scheduled for the 15th and 22nd of October 2024. Prior to these sessions, familiarize yourselves as much as possible with the case so that you can ask constructive questions. The engineer in your team has produced an initial use-case diagram, which is illustrated on the next page. Use the diagram as a starting point for your work, but remember to refine it as you gain more insight. Work in group to produce the following: -

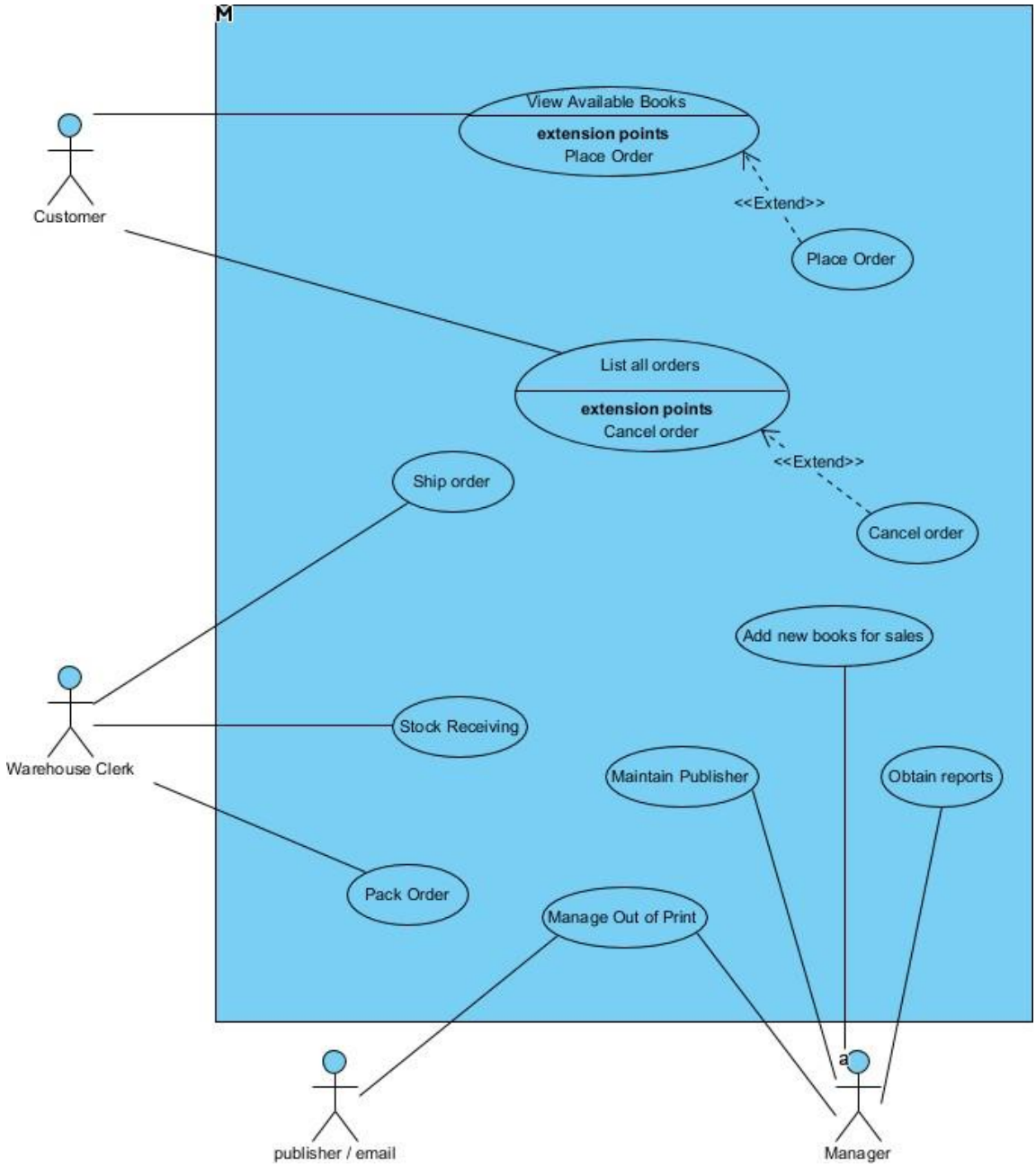
1. System requirements modeling (50%)

2. Report (50%)

Part 1: System requirements modelling (50 marks and no page limit)

As part of the system requirements study, produce the following system requirements model, using the template in Section 4.

1. Produce a use-case description for “Stock Receiving” and “Pack Order” use



cases. (10 marks). The diagram is below and please write a description.

2. Draw a sequence diagram for the ‘Place Order’, and ‘Cancel Order’ use cases. (10 marks)

3. Draw an activity diagram for the ‘Stock Receiving’ and ‘Manage Out-of-Print’ use case. (10 marks)

4. Draw a class diagram for the system. (10 marks)

5. From the class diagram, identify the classes with potentially complex states. Draw state machine diagrams for these classes. (10 marks)

Part 2: Software engineering analysis (50 marks and 3 pages)

The 2nd part of the coursework writes a max THREE-page group report (excluding the cover page and appendices). The part should answer the following questions:

1. Which software process is most suitable for the project described in the case? Justify your answer. (10 marks)

2. Identify and analyze ethical concerns for the case study and make reasoned ethical choices. (10 marks)

3. What are the non-functional requirements that might impact the system, and how might they do so? (10 marks)

4. What challenges might arise when working in collaboration, and what do you propose to overcome these challenges? (10 marks)

5. What measures can BookMaster take to ensure that the warehouse interface is user-friendly for employees of all backgrounds, including those with different levels of technical proficiency? (10 marks)

Section 4. Submission notes and submission template:

Submission notes:

- You must submit the report in PDF format via Learning Mall by the above submission date. Name the report as CPT203-CW1-groupnNumber.pdf
- Use font size 11.

Submission template

Students are encouraged to copy the template below and enter your answers.

CPT203
Coursework 1

2024/2025 Semester 1
<Date>

Group number: < x >
Student 1 Name: <Shang Zhang> Student 1< ID: 123456> who submits this coursework on the learning mall

Student 2 Name: Student 2 ID:
Student 3 Name: Student 3 ID:
Student 4 Name: Student 4 ID:
Student 5 Name: Student 5 ID:

Part 1: System requirements modelling (50 marks and no page limits)

1. Produce a use-case description for "Stock Receiving" and "Pack Order" use cases. (10 marks)
   < max 3 pages>

2. Draw a sequence diagram for the 'Place Order', and 'Cancel Order' use cases. (10 marks)
   <to insert the diagram>

3. Draw an activity diagram for the 'Stock Receiving' and 'Manage Out-of-Print' use case. (10 marks)
   <to insert the diagram>

4. Draw a class diagram for the system. (10 marks)
   <to insert the diagram>

5. From the class diagram, identify the classes with potentially complex states. Draw state machine diagrams for these classes. (10 marks)

   <list the classes>
   <to insert the diagram>

Part 2: Software engineering analysis (50 marks and max 3 pages)

Enter your answers to the following questions:

1. Which software process is most suitable for the project described in the case? Justify your answer. (10 marks)

   <to insert your answer>

2. Identify and analyze ethical concerns for the case study and make reasoned ethical choices. (10 marks)

   <to insert your answer>

3. What are the non-functional requirements that might impact the system, and how might they do so? (10 marks)

   <to insert your answer>

4. What challenges might arise when working in collaboration, and what do you propose to overcome these challenges? (10 marks)

<to insert your answer>

5. What measures can BookMaster take to ensure that the warehouse interface is user-friendly for employees of all backgrounds, including those with different levels of technical proficiency? (10 marks)

<to insert your answer>

Section 5. Peer review form template

CPT203 Coursework
Peer review
Individual Contribution for Group Report

Group Number: <x>

Name	**ID Number**	**Contribution (%)** Please enter an integer, for example 15% contribution, please enter 15. The sum of this column should be 100	**Signature**
1. <my name>	<123456>	<15>	
2.			
3.			
4.			
5.			

END