

EXERCISE 3: FIRST CUT DESIGN CLASS DIAGRAM

CASE STUDY: MBSA E-SUMMON SYSTEM

Figure 1 shows a domain class diagram for part of MBSA E-Summon System based on the four classes listed that include attributes, association, and multiplicity. One of the use cases identified is “**record summon ticket**”. To **record a summon ticket**, the system will want to verify the officer, verify the driver information, and then record the ticket. The ticket should be responsible for recording itself. The officer and driver are only verification.

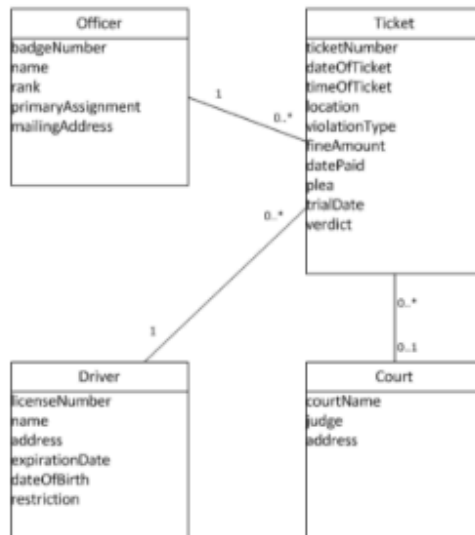


Figure 1: Partial of domain class diagram for E-Summon System.

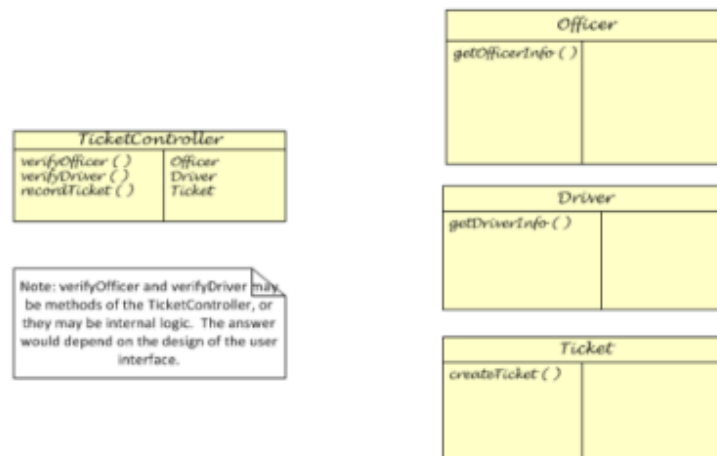
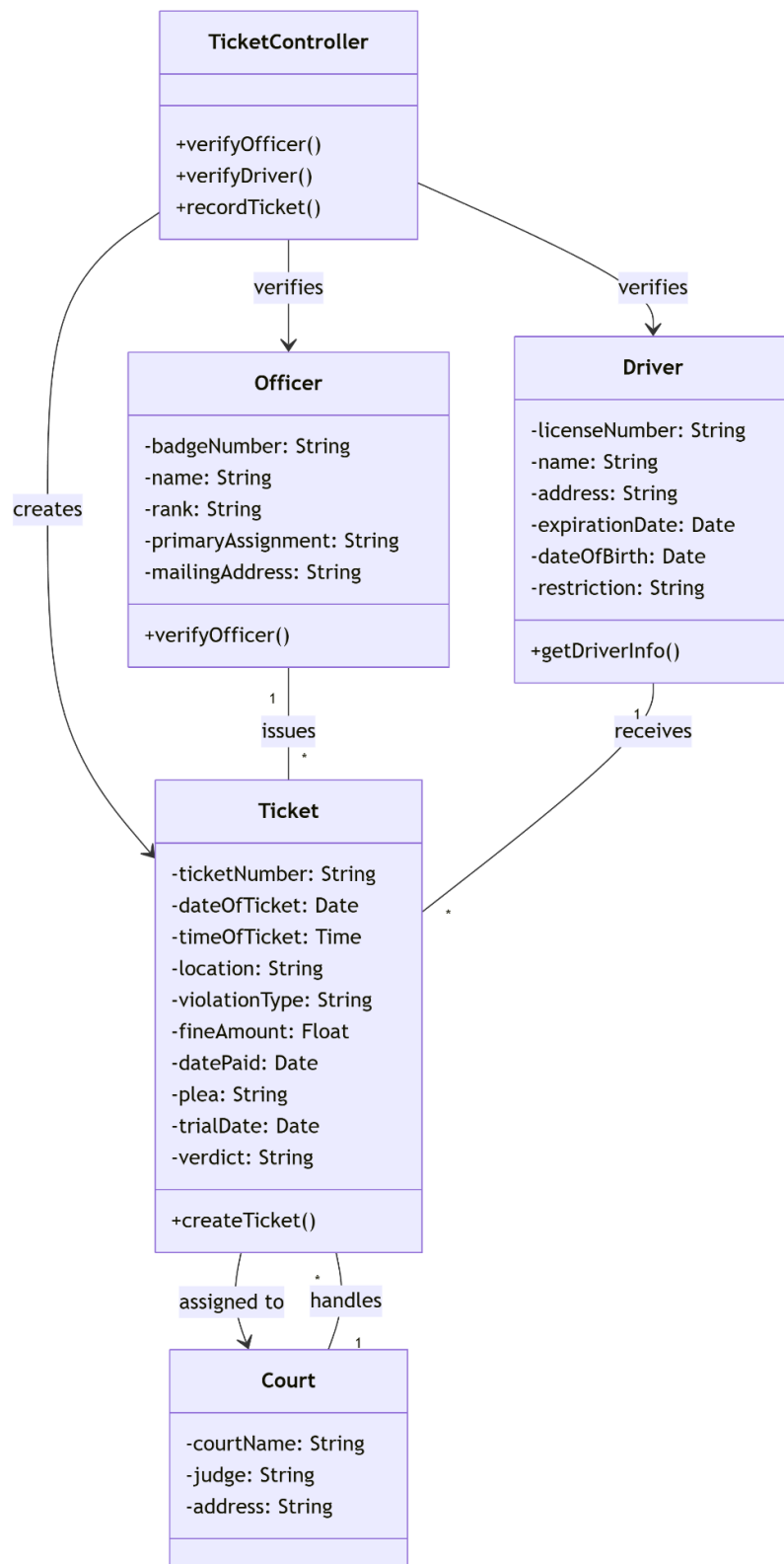
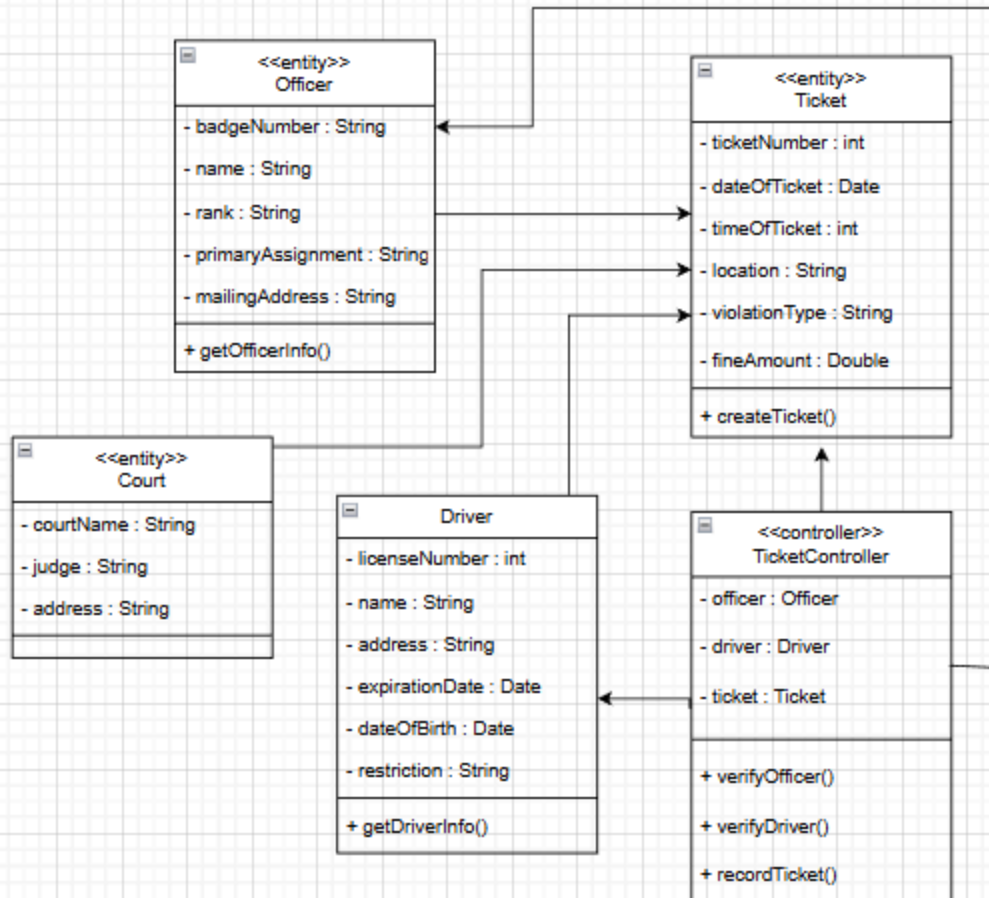


Figure 2: A Set of CRC Cards Showing These Classes, Responsibilities, And Collaborations for The Use Case.

Draw a first-cut design class diagram (DCD) for use case record summon ticket based on the case study description, Figure 1 and Figure 2 using starUML.





QUESTION 2

Draw the 1st Cut Detail Class Diagram for the checkout process based on Figure 1 (Domain Class Diagram for Library Management System) and Figure 2 (Checkout Books 1st Cut Sequence Diagram). You are free to state any assumptions for the created diagram.

(12 marks)

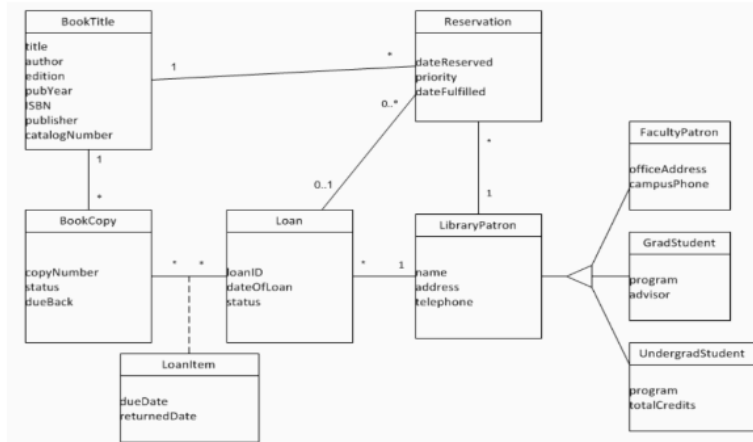


Figure 1 : Domain Class Diagram for Library Management System

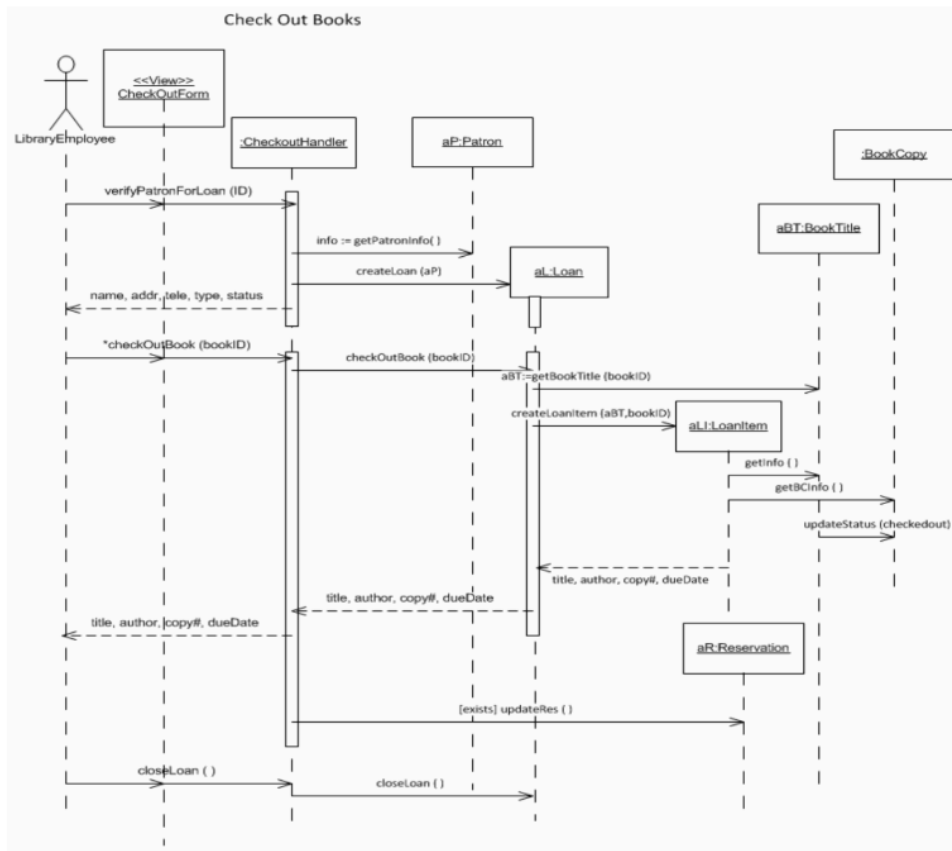
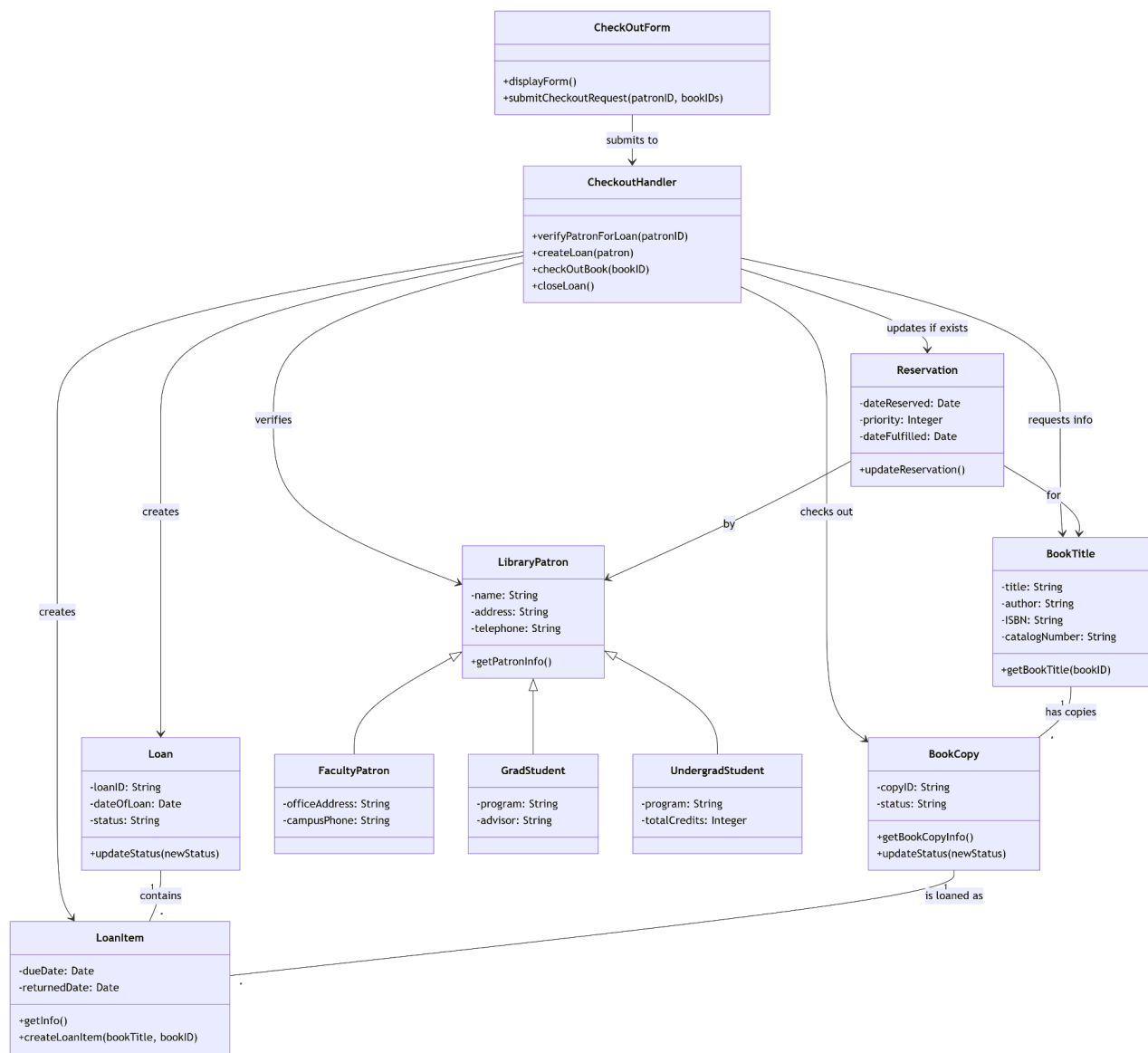


Figure 2: Detail Sequence Diagram for Use case checkout books

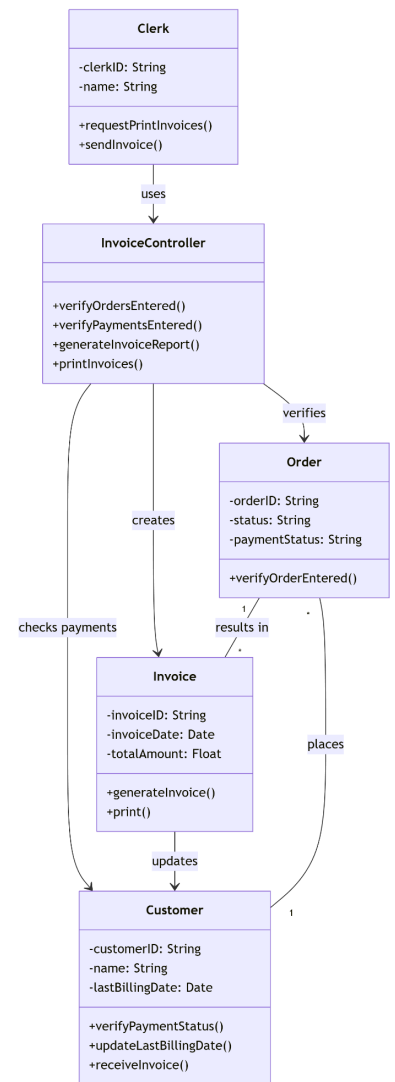
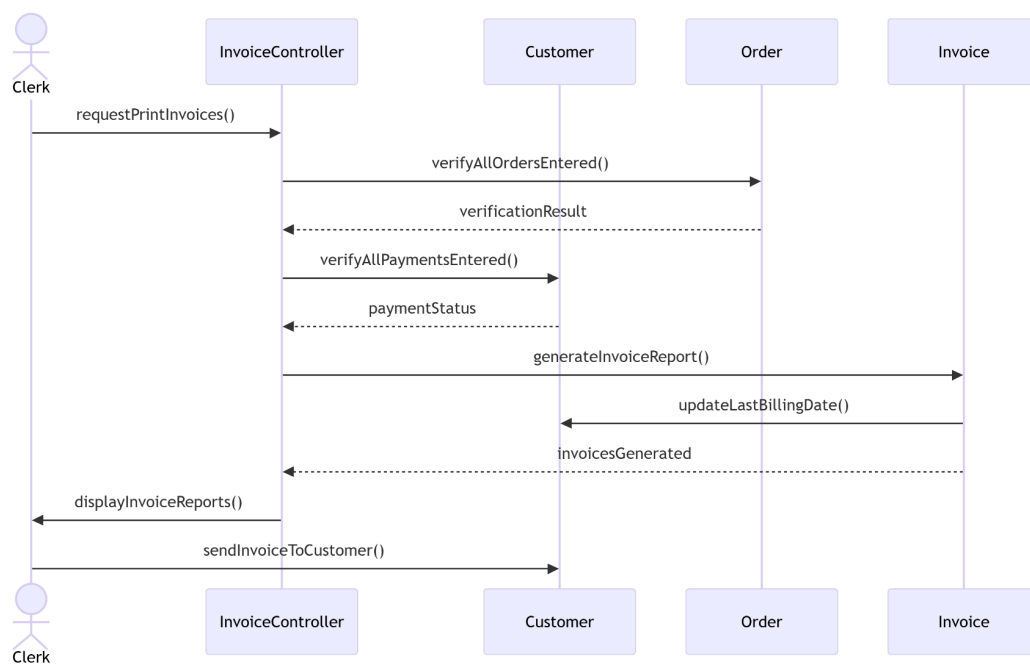


QUESTION 3

The table below is a fully developed use case description for a use case *Print Grocery Invoice* in an Online Mart System.

Use Case Name:	Print Grocery Invoice	
Scenario:	Print Grocery Invoice	
Triggering Event:	At the end of the day, invoices are printed	
Brief Description:	The clerk manually checks to see that all the orders have been assembled. The clerk spot-checks, using the written records to make sure all the orders have been entered by viewing them with the system. The clerk also makes sure all payments have been entered. Finally he/she prints the invoice reports. An invoice is sent to each customer.	
Actors:	Clerk	
Stakeholders:	Clerk, Manager	
Preconditions:	Customer records must exist. Order must exist.	
Postconditions:	Customer records are updated with last billing date.	
Flow of activities:	Actor	
	1. Collect all order made via call and via online for the day. 2. View several customers to verify that all orders has been entered. 3. Review log of payments received and verify that payments have been entered. 4. Enter date and request invoices.	2.1 Display customer information including orders. 3.1 Display customer information, including payment transaction. 4.1 Review every customer record. Find unpaid orders and breakdown by "bank transfer" or "cash on delivery"
Exception conditions:	None	

- a) Develop a **first-cut sequence diagram**, which only includes the actor and problem domain classes.
(10 marks)
- b) Develop a **design class diagram** based on the domain classes.
(10 marks)



QUESTION 6

Syafiq is developing a small library system for a school. Currently the school uses a log book to register library users and to keep track of the books borrowed and returned. The headmaster would like a system that will allow him to store details of library users, books, books borrowed and returned in a database. He would also like to have some sort of reporting to show overdue books. **Figure 3**, **Figure 4** and **Figure 5** shows the Use Case Diagram, Domain Class Diagram and System Sequence Diagram for the proposed library system.

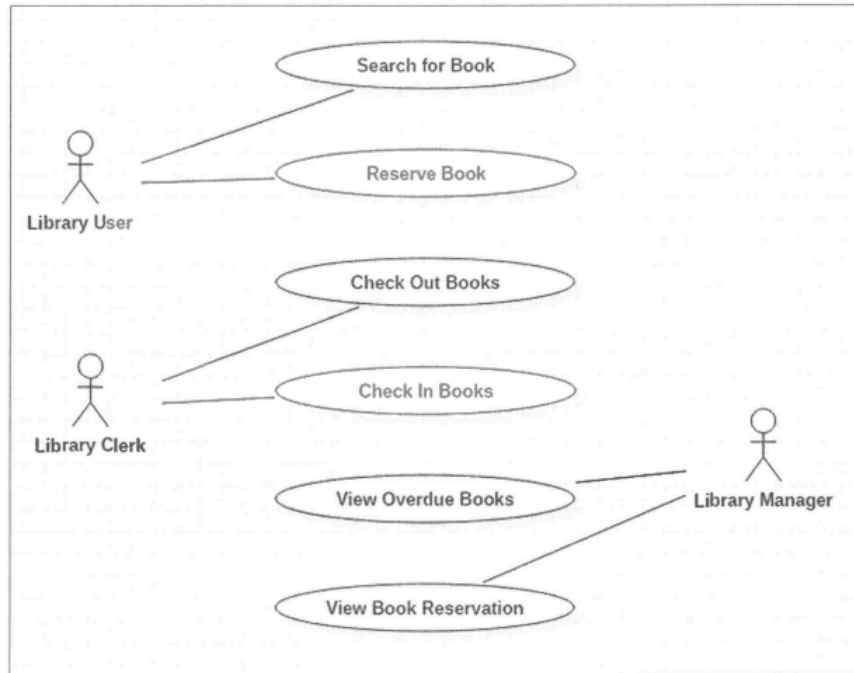


Figure 3: Use Case Diagram for Library System

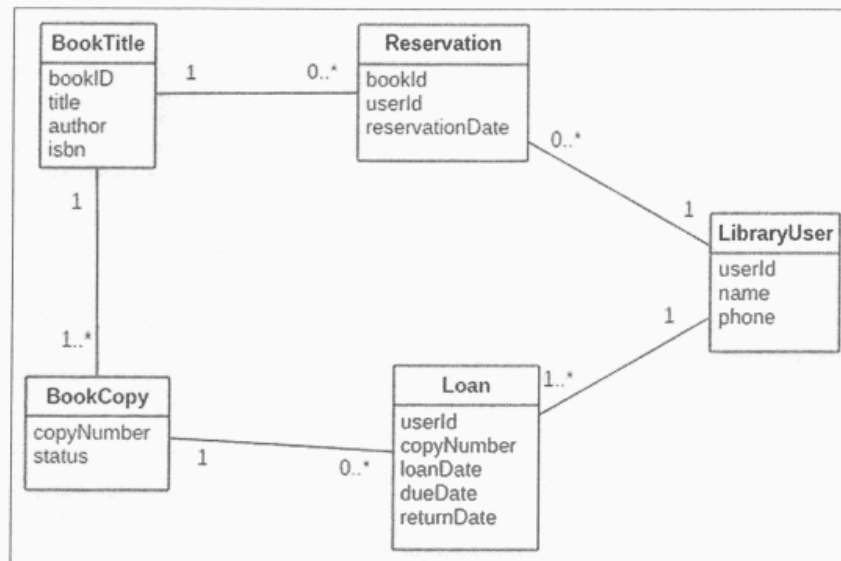


Figure 4: Domain Class Diagram for Library System

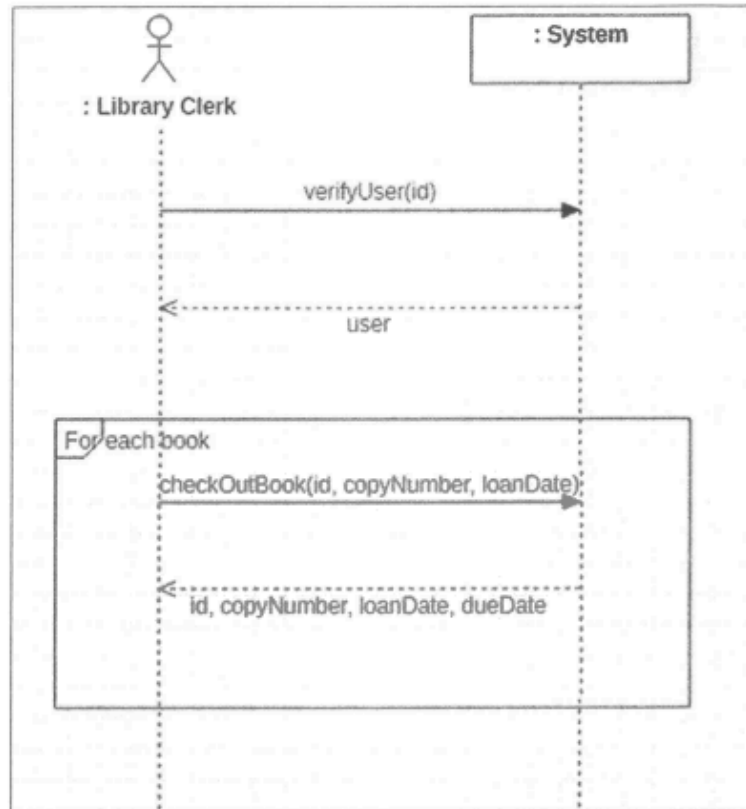
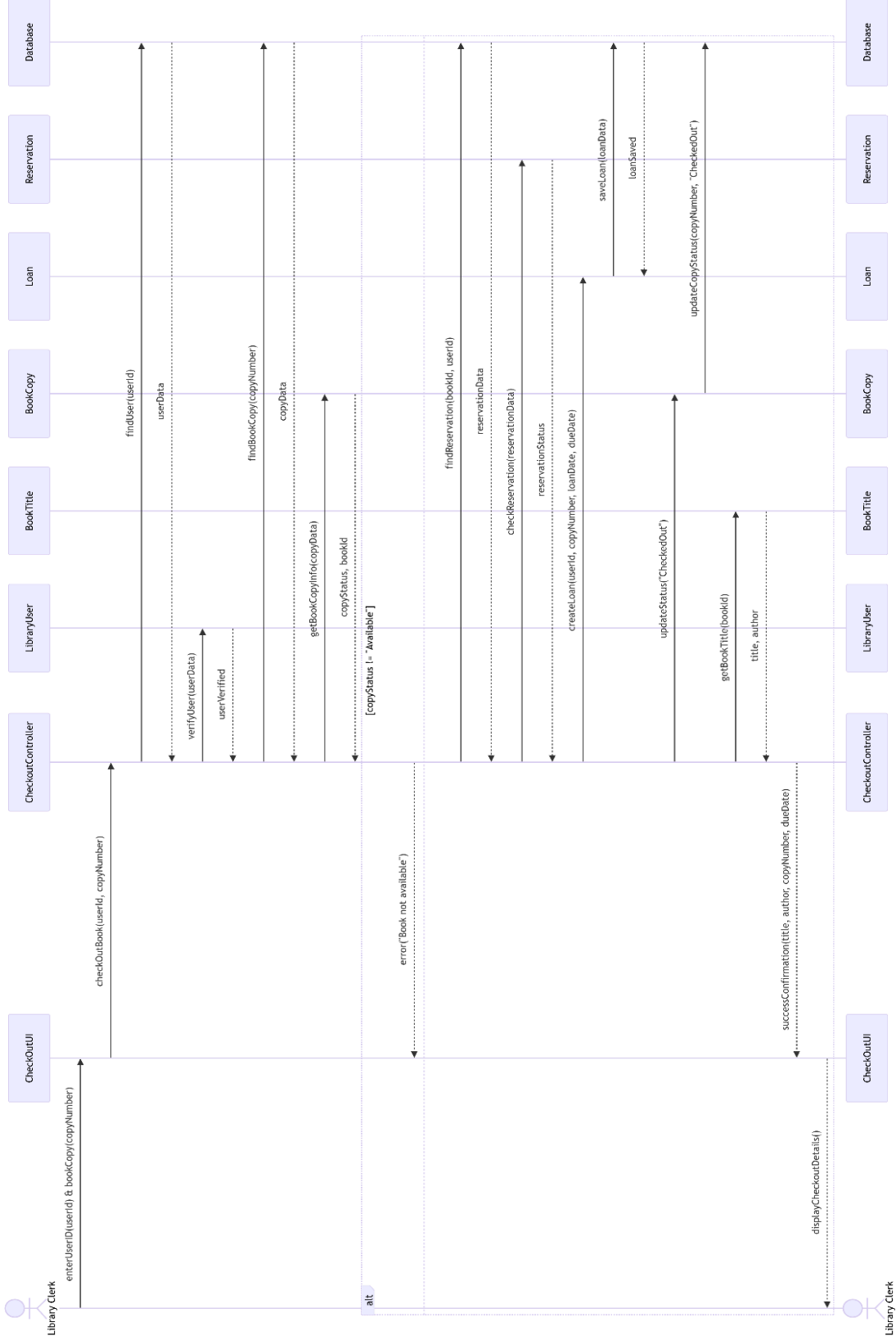


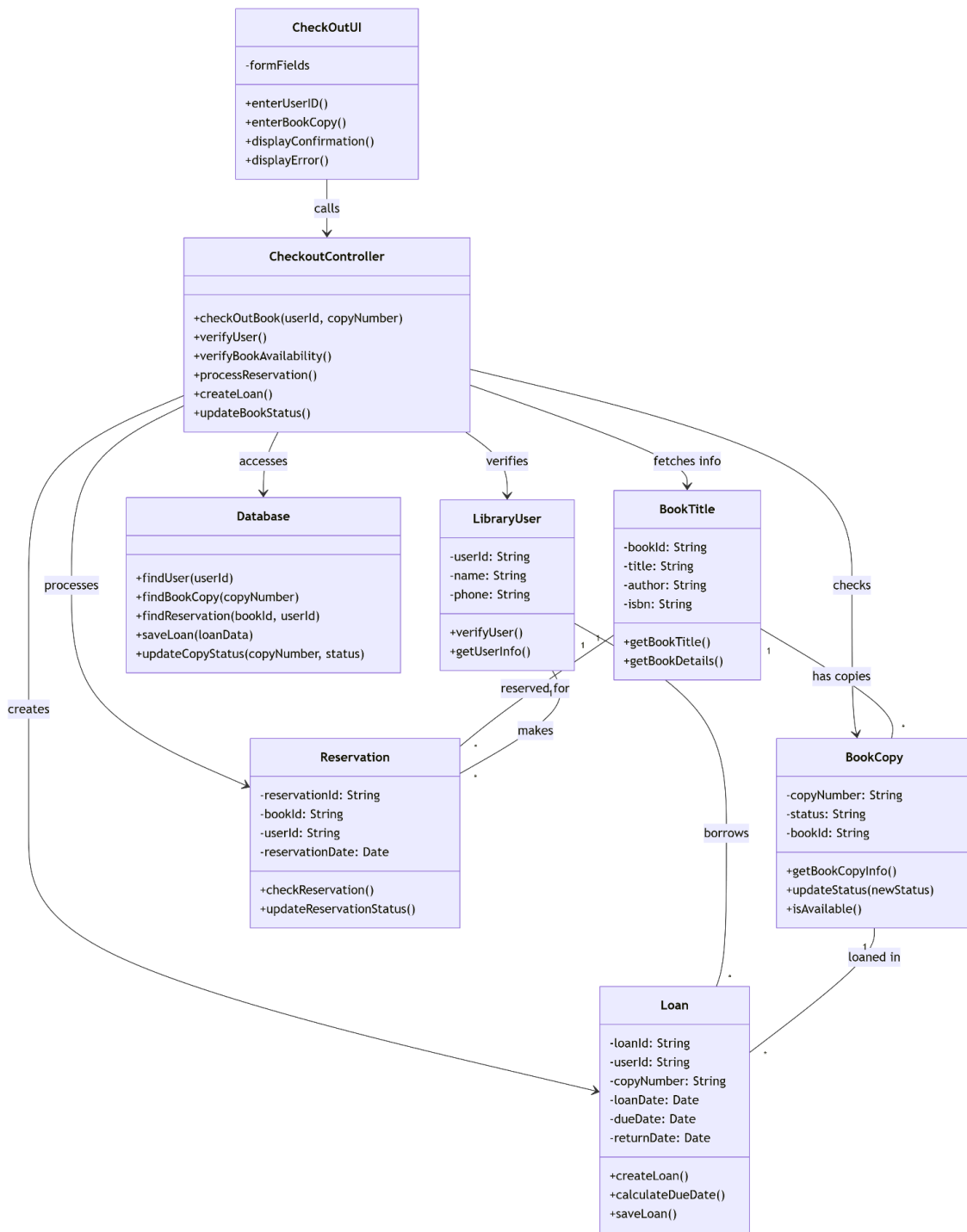
Figure 5: System Sequence Diagram for Library System

Based on the figures given, create the following diagrams for Use Case Check Out Book:

- a) Multilayer Sequence Diagram
- b) Detail Design Class Diagram

(20 marks)





QUESTION 6

Kolej Yayasan Bestari is a private college located in Cyberjaya. The college has built a new state-of-the-art sports complex. In order to encourage its students to use the new sports complex and to develop new sports talent, the management has decided to allow its student to borrow sports equipment for free for a certain period of time. This is to ensure that other students have a chance to use the equipment as well. The sports equipment needs to be tracked and managed properly.

You have been assigned to develop a small system that allows the sports department to keep track of the sports equipment borrowed by the students. The Use Cases for the new system include Search Equipment, Reserve Equipment, Checkout Equipment and CheckIn Equipment.

Figure 3 is the Domain Class Diagram for the new system and Figure 4 is the System Sequence Diagram for Use Case CheckOut Equipment.

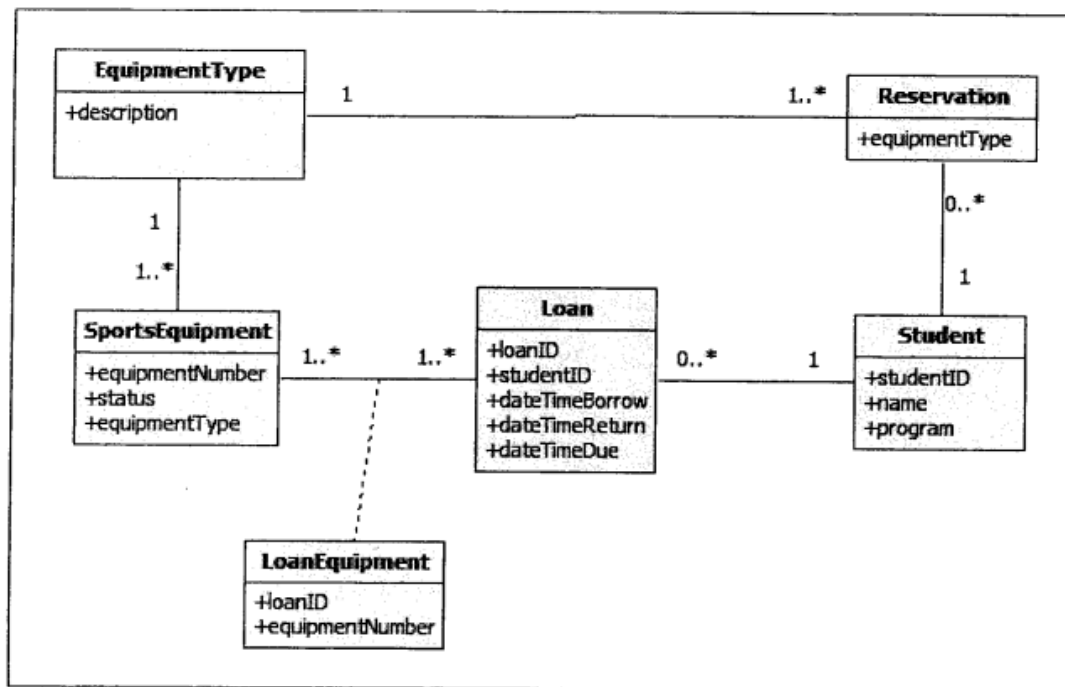


Figure 3

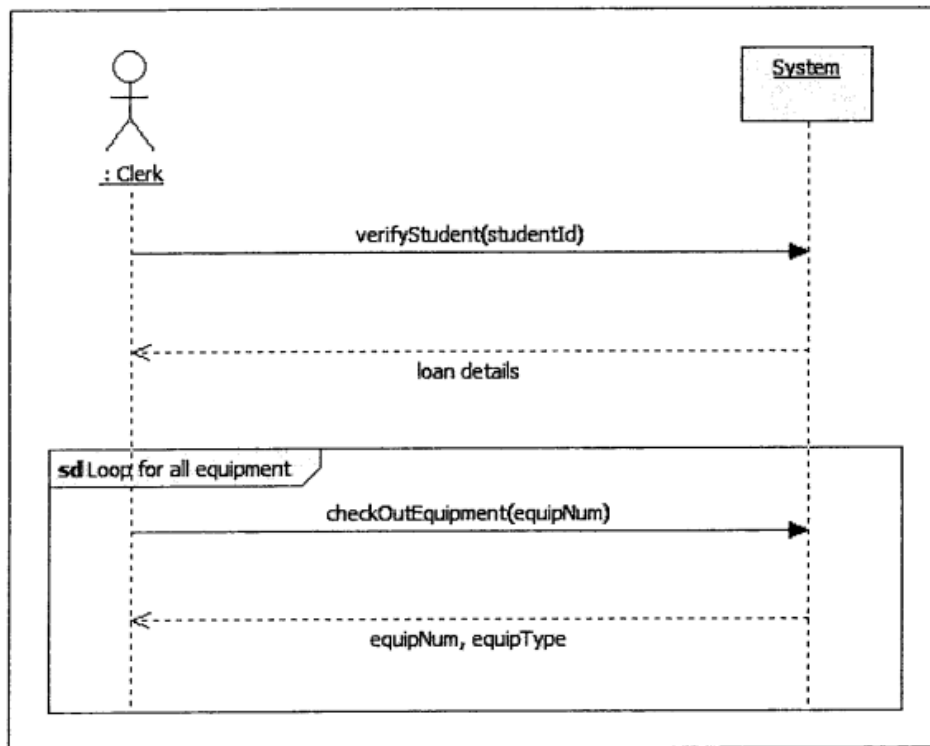


Figure 4

Based on the two figures, construct the followings for Use Case CheckOut Equipment:

a) Multilayer Sequence Diagram

(15 marks)

b) Detail Design Class Diagram

(10 marks)

