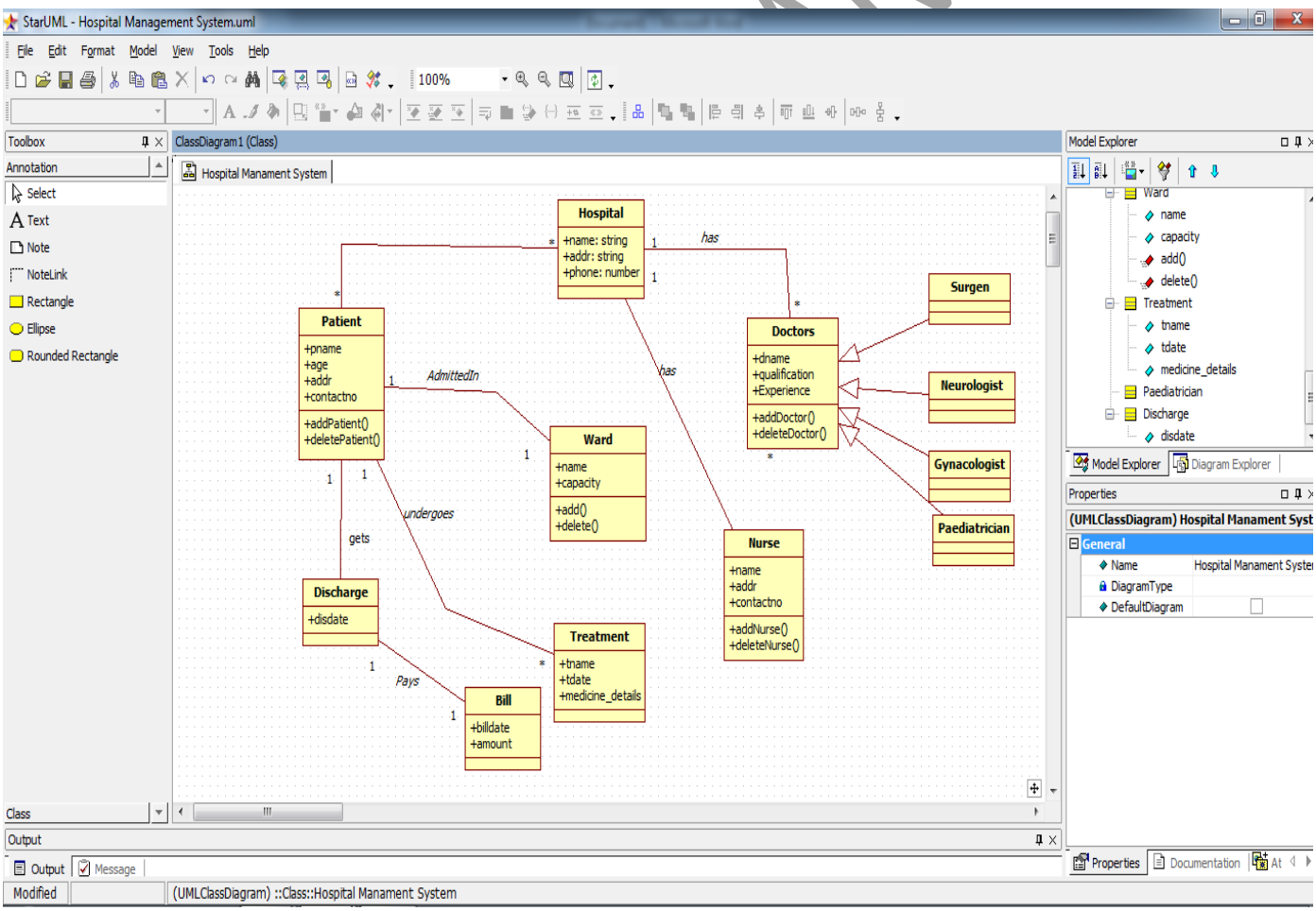
Practical No : 01

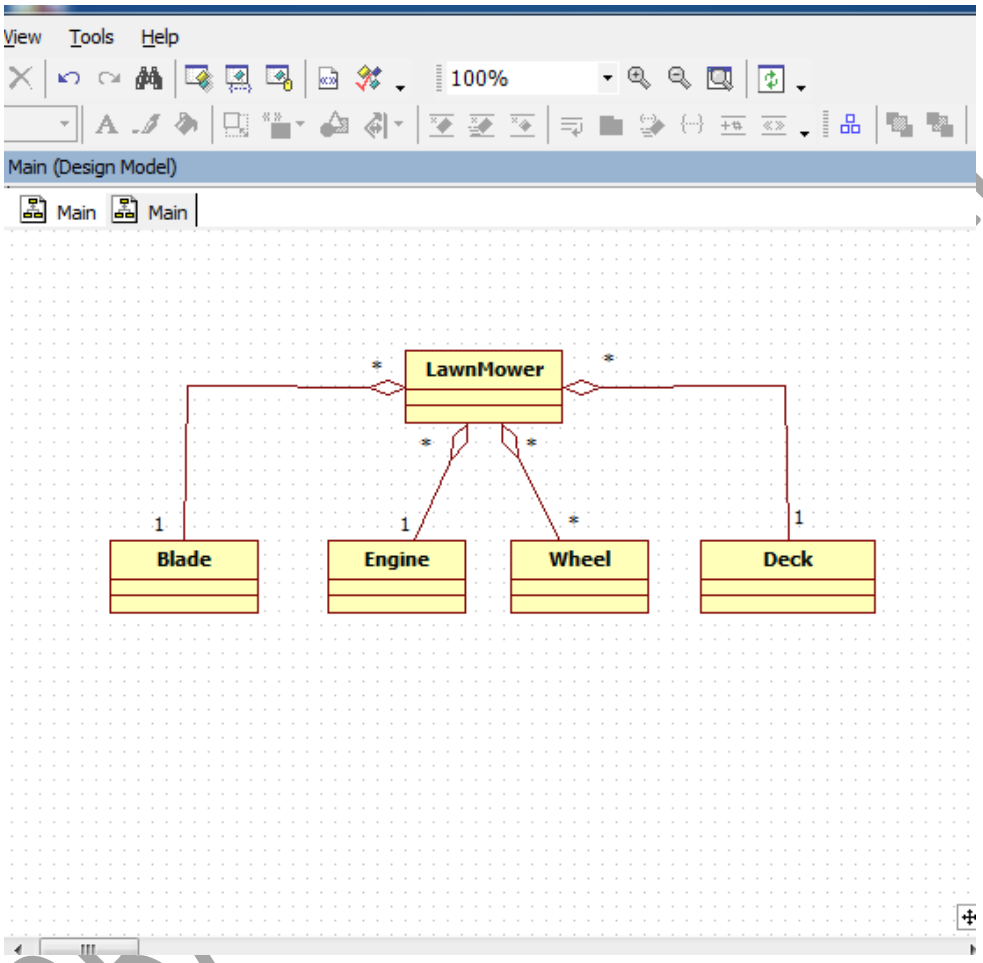
Aim: Study and implementation of Class Digram

Case A: An XYZ hospital is a multi speciality hospital that includes number of doctors , nurses, wards. Patients having different kinds of ailments come to the hospital and get checkup done from the concerned doctors like Surgeons, Neurologist, Gynecologist and Pediatrician. Patients admitted to wards and undergo treatment. Patient gets discharge and pays Bill.

Design a class diagram for the same.



Case B: A Lawn Mover consists of one blade, one engine, many wheels and one deck. The manufacturing process is flexible and largely combines all parts. Draw Class Diagram for the same using the concept of Aggregation.



Practical No: 02

AIM: Study and Implementation of Use Case Diagram.

Q.1 Consider a physical bookstore, such as shopping mall.

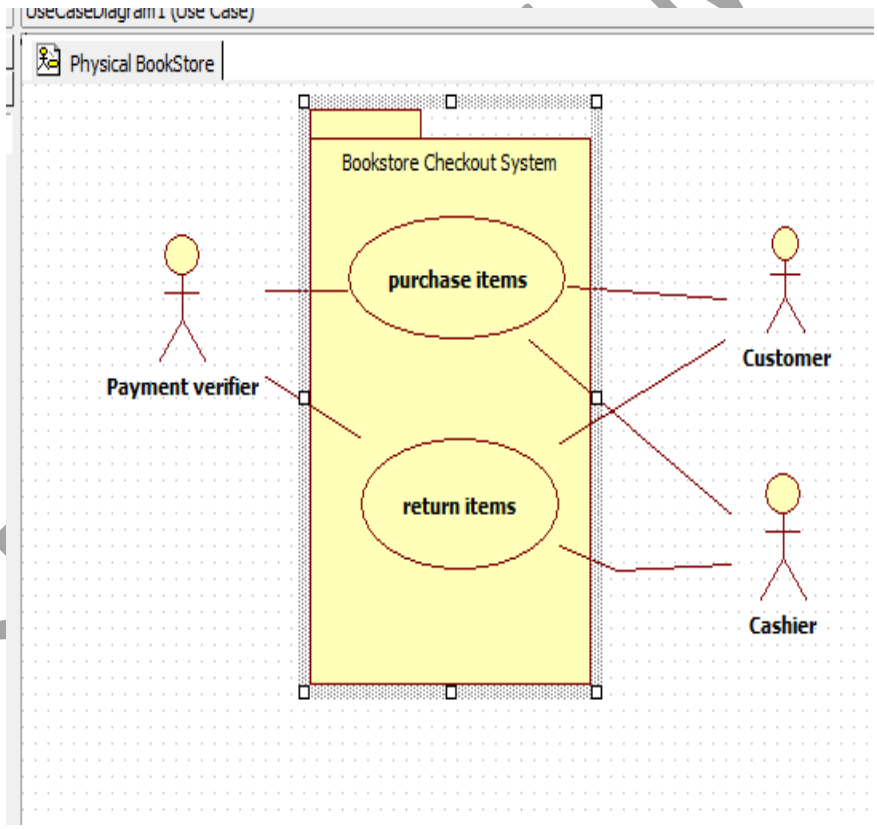
a) List actors that are involved in the design of a checkout system.
b) List use cases that are involved in the purchase of items.
c) Prepare use case diagram for above.

Solution:

A) I) Customer: A Person who initiates the purchase of items.
ii) Cashier: An employee who is authorized to check out purchases at a cash register.
iii) Payment Verifier: The remote system that approves use of credit or debit card.

B) I) Purchase items: Customer purchase items and pays bill.
ii) Return items: The customer brings back items that were previously purchased and gets refund.

C)



Q.2 Consider an ATM machine.

a) List the actors and explain the relevance of each actor.

b) Use Case Summary for an ATM machine is as below:

i) System Startup

The system is started up when the operator turns the operator switch to the "on" position.

ii) System Shutdown:

The system is shut down when the operator makes sure that no customer is using the machine, and then turns the operator switch to the "off" position.

iii) Session

A session is started when a customer inserts an ATM card into the card reader slot of the machine. The customer is asked to enter his/her PIN, and is then allowed to perform one or more transactions, choosing from a menu of possible types of transaction in each case.

If a transaction is aborted due to too many invalid PIN entries, the session is also aborted, with the card being retained in the machine.

iv) Transaction

A transaction use case is started within a session when the customer chooses a transaction type from a menu of options. The customer will be asked to furnish appropriate details (e.g. account(s) involved, amount).

The transaction will then be sent to the bank, along with information from the customer's card and the PIN the customer entered.

v) Withdrawal

A withdrawal transaction asks the customer to choose a type of account to withdraw from (e.g. Savings, Checking or Current) a menu of possible accounts.

If the transaction is approved by the bank, the appropriate amount of cash is dispensed by the machine before it issues a receipt.

vi) Deposit

A deposit transaction asks the customer to choose a type of account to deposit to (e.g. checking) from a menu of possible accounts, and to type in a dollar amount on the keyboard.

vii) Transfer

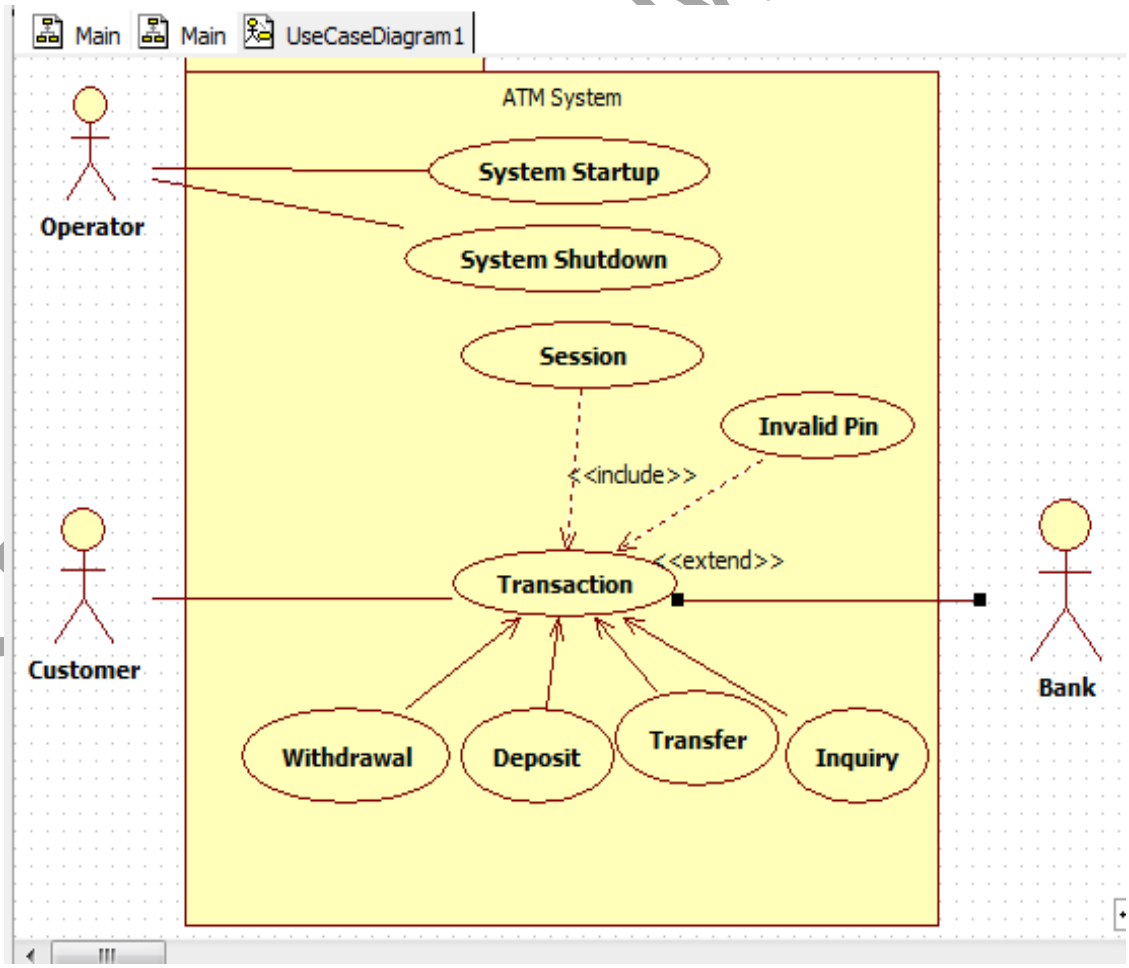
A transfer transaction asks the customer to choose a type of account to transfer from (e.g. checking) from a menu of possible accounts, to choose a different account to transfer to, and to type in a amount on the keyboard. No further action is required once the transaction is approved by the bank before printing the receipt.

viii) Inquiry

An inquiry transaction asks the customer to choose a type of account to inquire about from a menu of possible accounts. No further action is required once the transaction is approved by the bank before printing the receipt.

ix) Invalid Pin

An invalid PIN extension is started from within a transaction when the bank reports that the customer's transaction is disapproved due to an invalid PIN. The customer is required to re-enter the PIN and the original request is sent to the bank again. If the bank now approves the transaction, or disapproves it for some other reason, the original use case is continued; otherwise the process of re-entering the PIN is repeated.



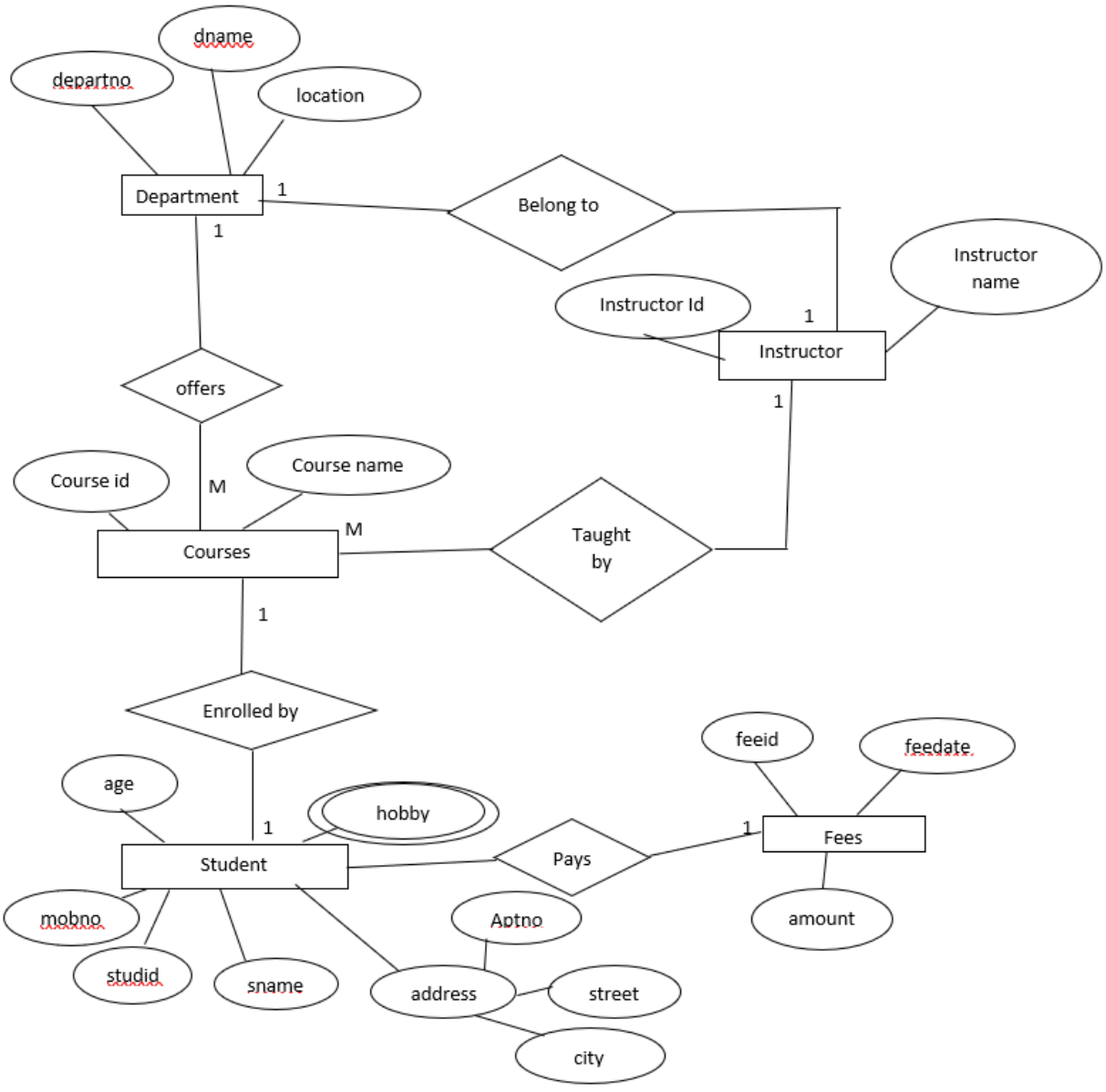
Practical No:03

Aim: Draw E-R diagram and convert entities and relationship to table.

Case study No:1

Draw an ER diagram for following:-

I. Department Offers course.
II. Student enrolls for the course
III. Instructors are appointed for various courses.
IV. Instructors are belongs to department.
V. Student pay fees.



Practical No: 04

Aim: Study and implementation of Sequence Diagram.

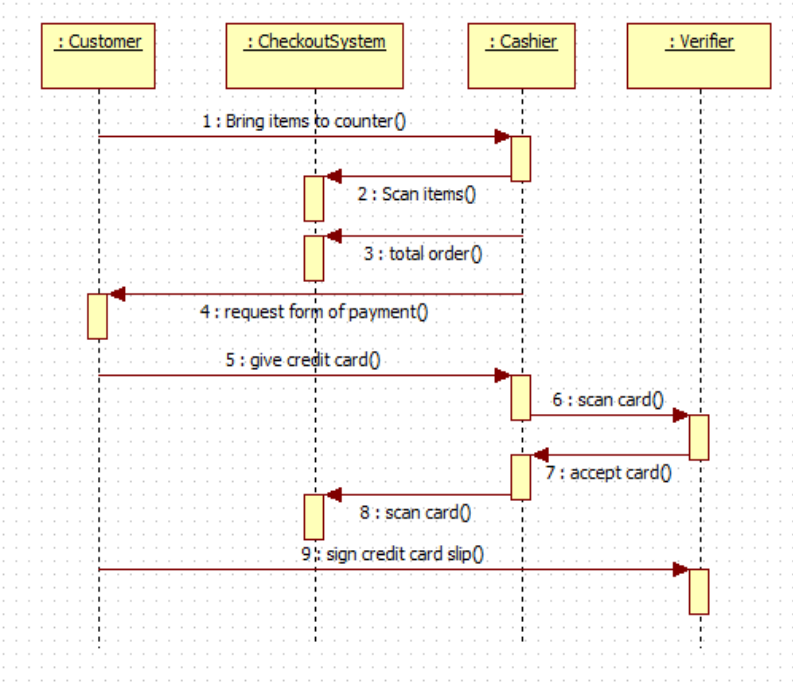
Q.1 Consider a physical bookstore such as shopping mall. There are two Use Cases used in the system, namely , Purchase Items and Return Items.

Prepare a scenario for each Use Case and Draw a Sequence Diagram for it.

Solution:

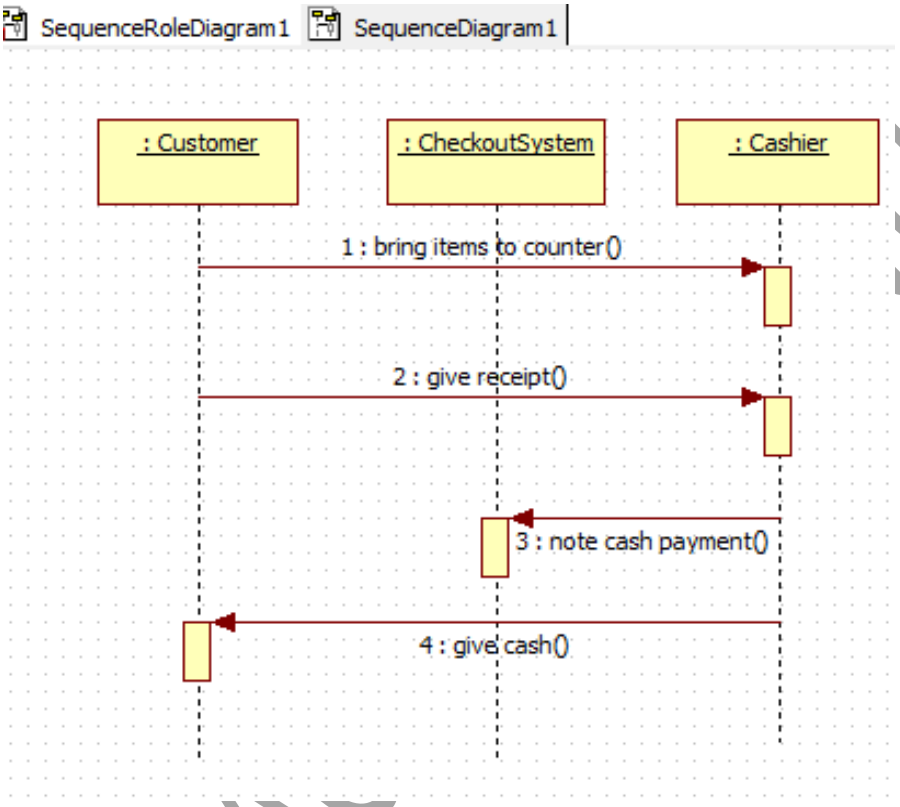
1] Purchase Items:

- Customer brings items to the counter.
- Cashier scans each customer item.
- Cashier totals order, including tax.
- Cashier requests form of payment.
- Customer gives credit card.
- Cashier scans card.
- Verifier reports that credit card payment is acceptable.
- Customer signs credit card slip.

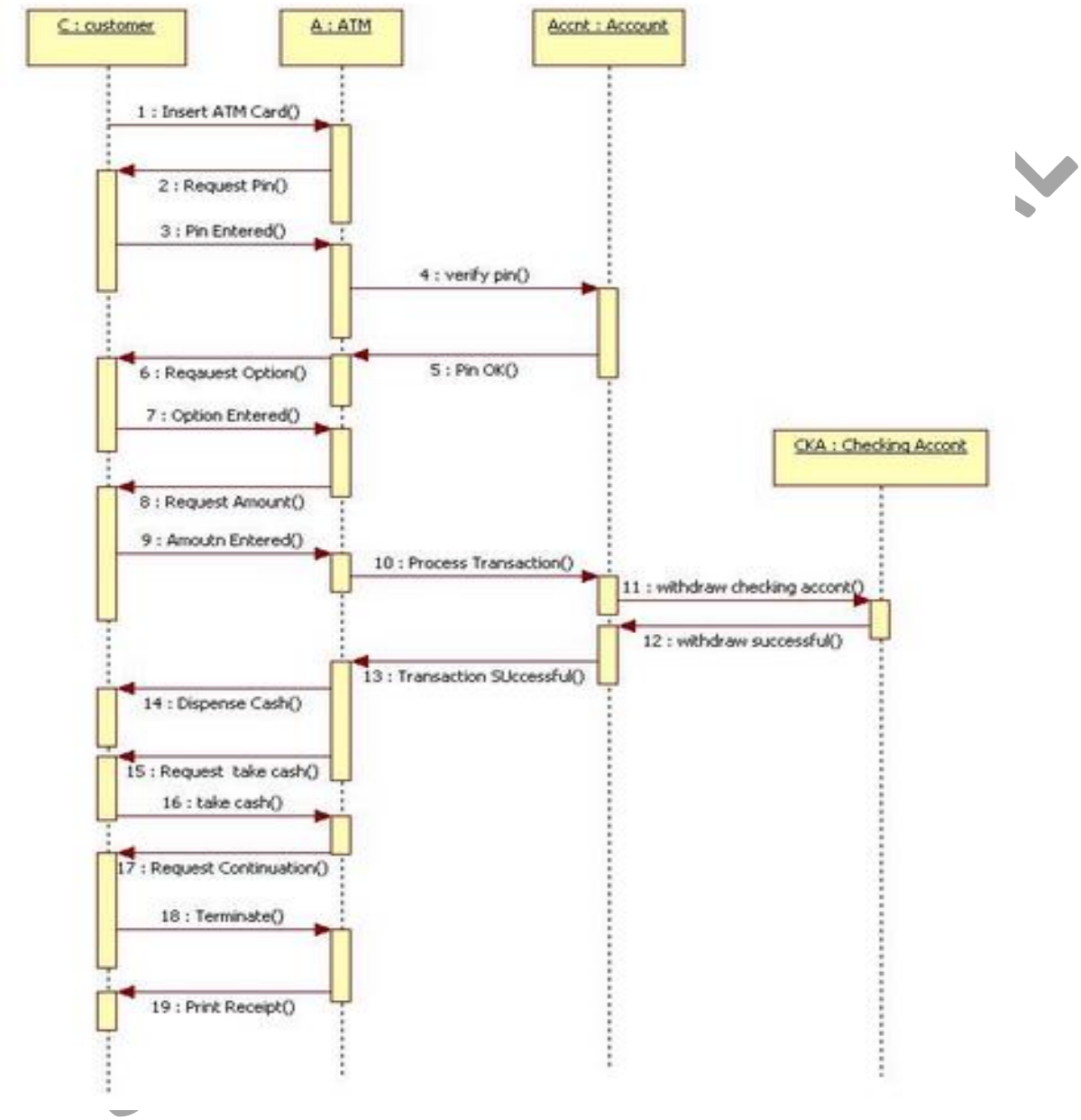


2] Return Items :

- Customer brings purchased item to the counter.
- Customer has receipt from earlier purchase.
- Cashier notes the payment was in cash.
- Cashier accepts items and gives customer a cash refund.



Q.2 Draw a sequence diagram for Withdrawal of Funds from Checking Account of Bank ATM machine.

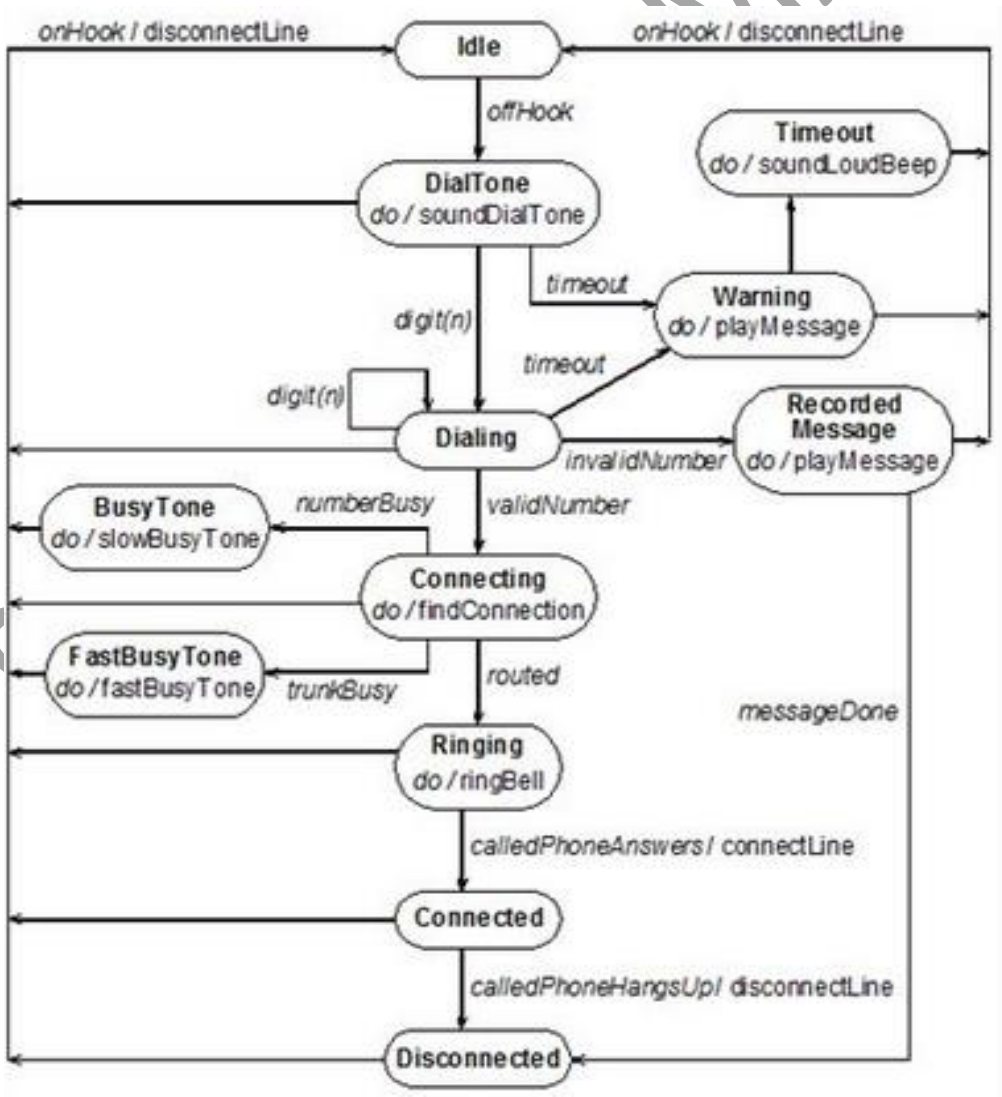


Practical No: 05

State Diagram

Draw a State Diagram for a Telephone Line along with activities. The diagram concerns a phone line as well as the sequence associated with normal calls.

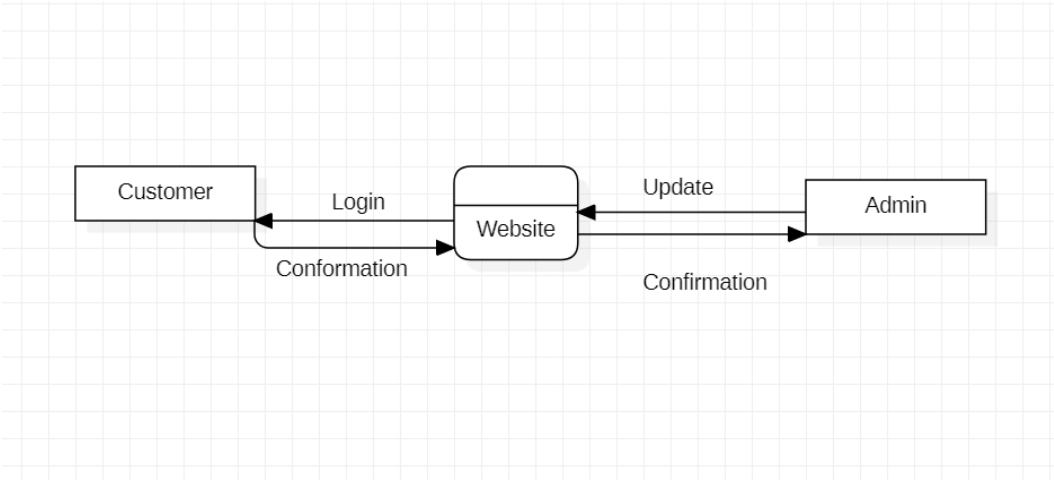
At the start of a call, the telephone line is idle. When the phone is removed from the hook, it emits a dial tone and can accept the dialing of digits. Upon the entry of valid number, the phone system tries to connect the call and route it to proper destination. The connection can fail if the number is busy. If the connection is successful, the called phone becomes ringing. If the called party answers the phone, a conversation can occur. When the called party hangs up, the phone disconnects and reverts to idle when put on hook again.



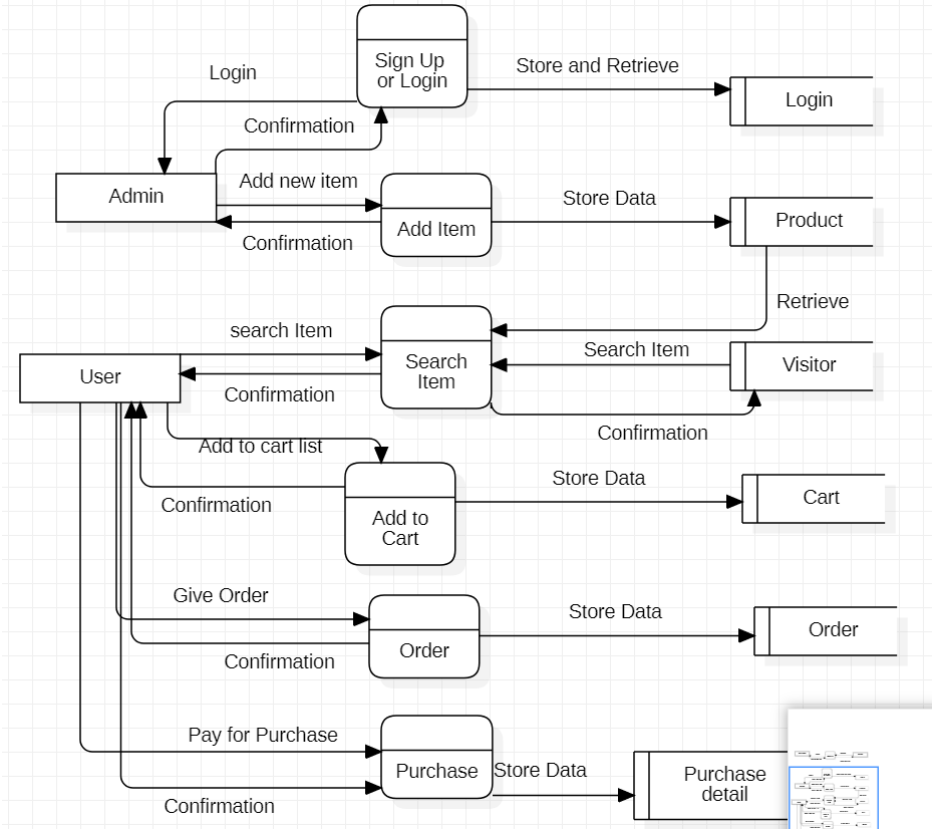
Practical No:06

Aim: Data flow diagram for Online shopping website.

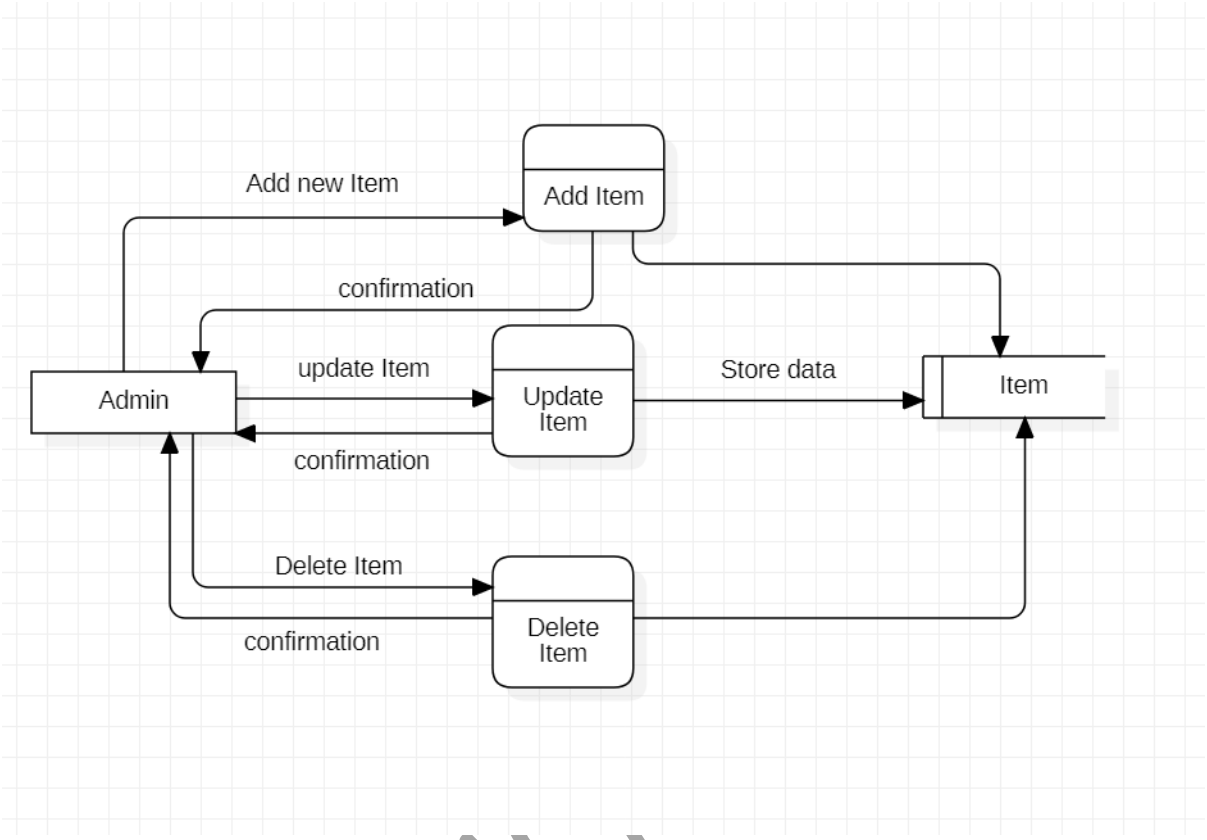
1. **Context level DFD (level 0)**



2. **First level DFD (level 1):**



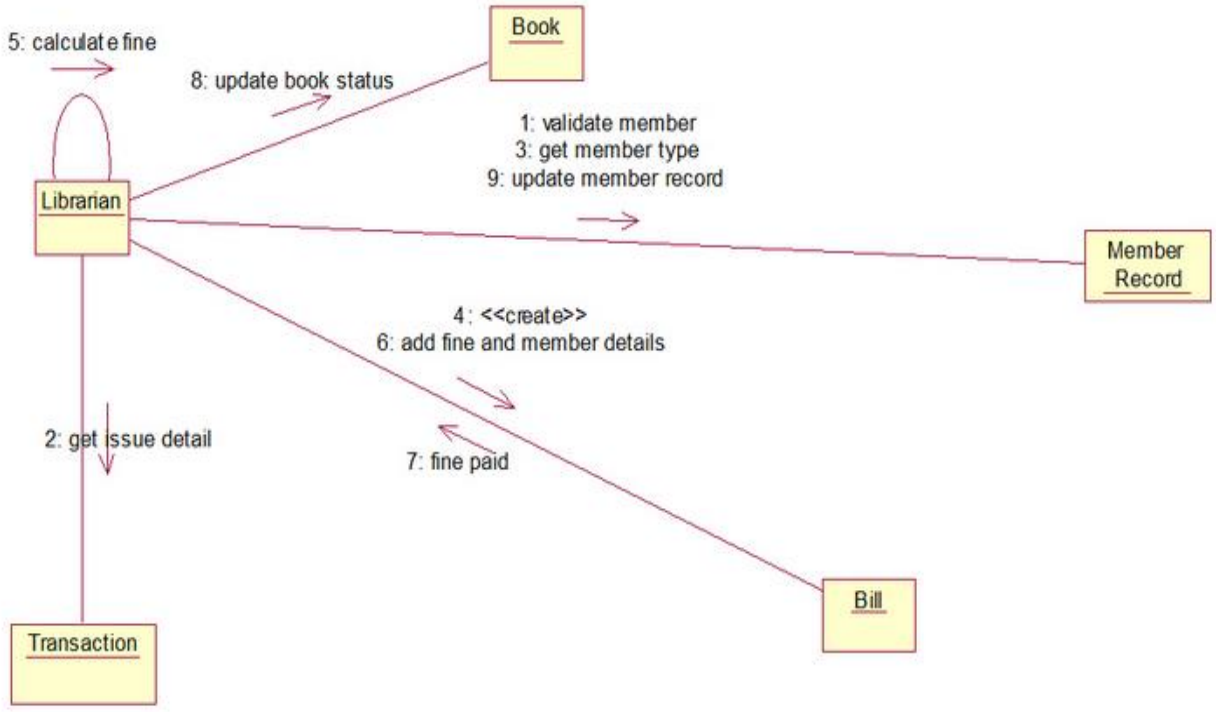
3. **Second Level DFD (Level 2):**



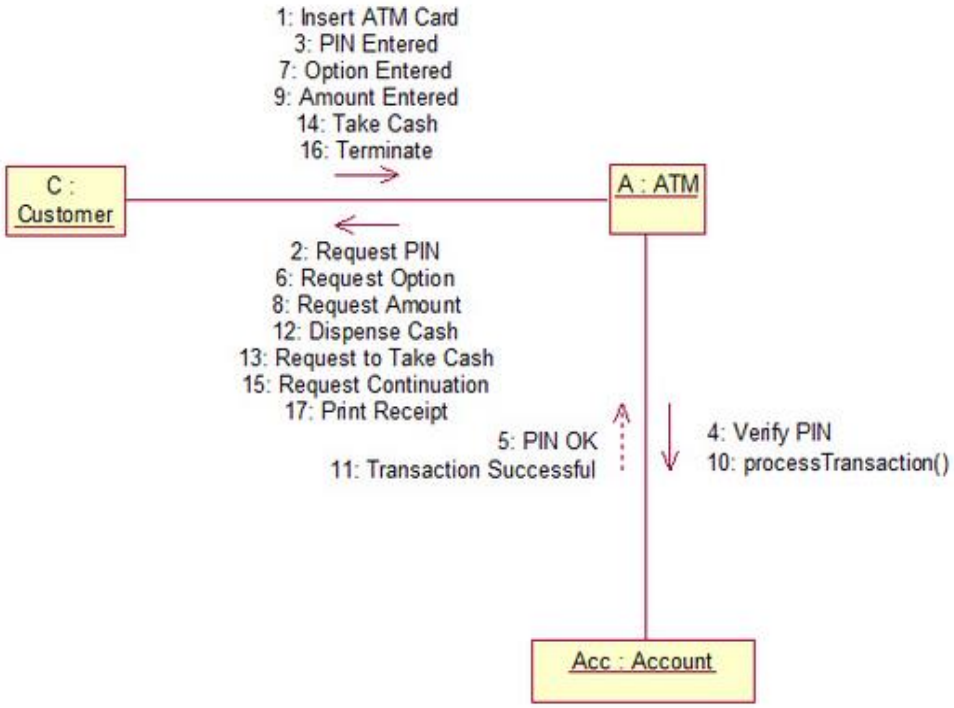
Practical No: 07

Aim: Study and implementation of Collaboration Diagram.

Q.1 Prepare Collaboration Diagram of Library Management System.



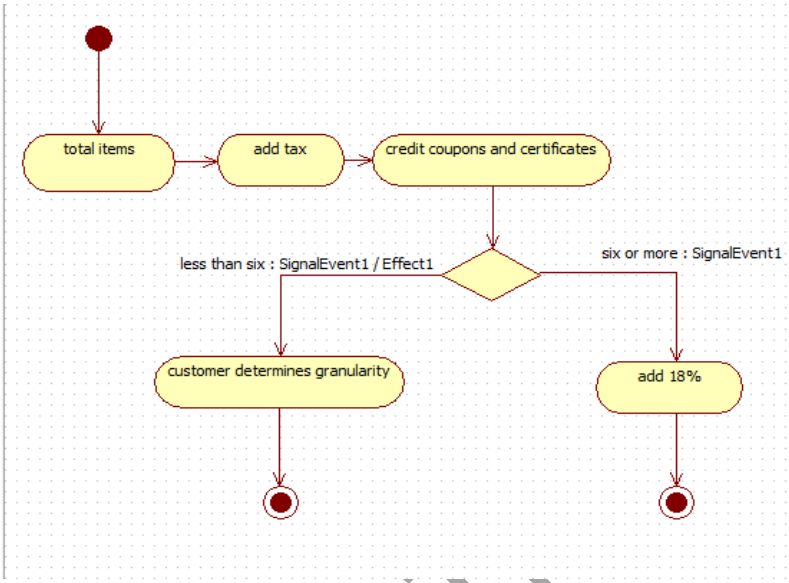
Q.2 Prepare Collaboration Diagram for ATM Machine.



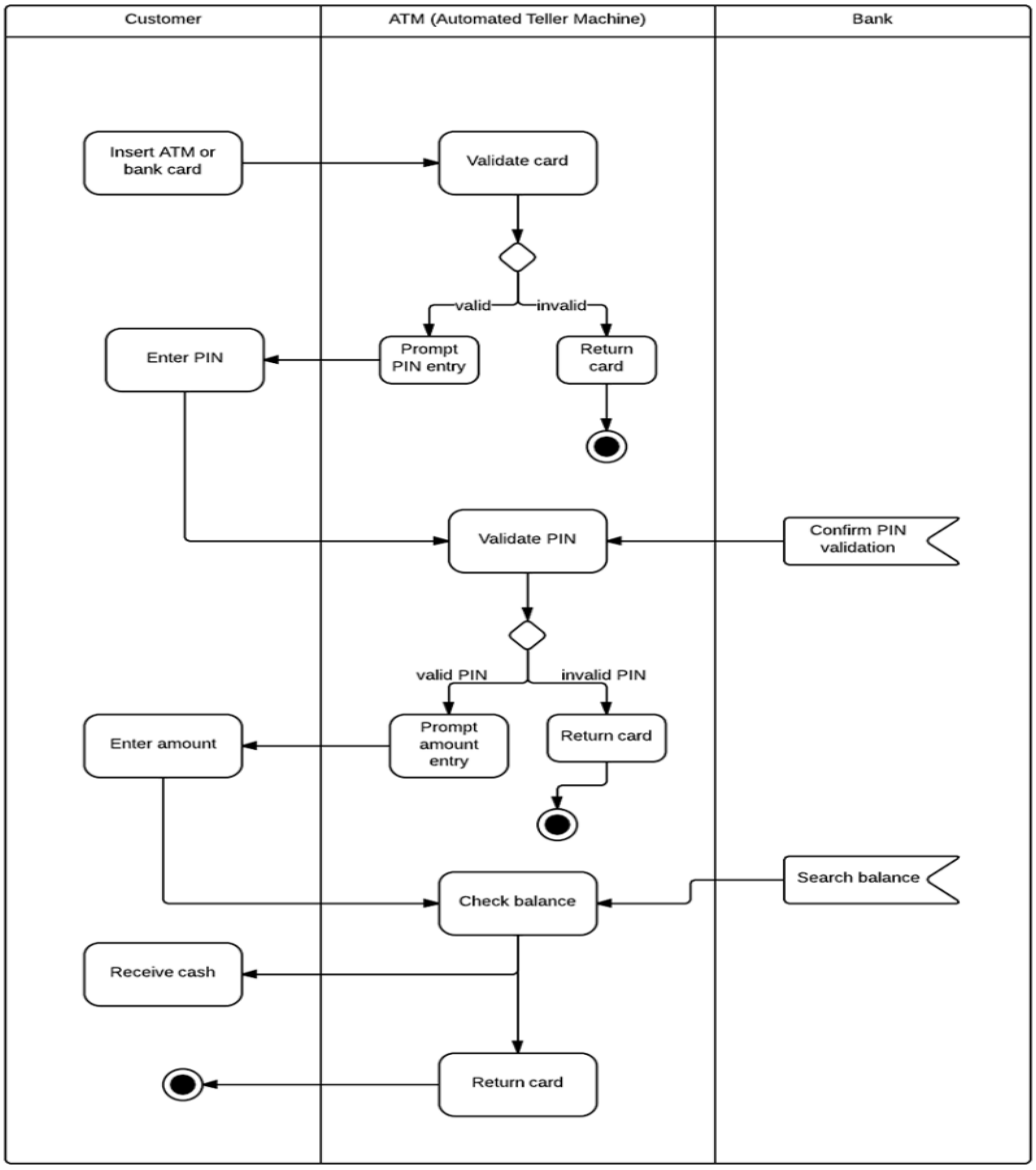
Practical No: 08

Aim: Study and implementation of Activity Diagram

Q.1 Prepare an Activity Diagram for computing Restaurant Bill. There should be a charge for each delivered item. The total amount should be subject to tax and a service charge of 18% for groups of six or more. For smaller groups, there should be a blank entry for gratuity according to customer's discretion. Any coupons or gift certificates submitted by the customer should be subtracted.



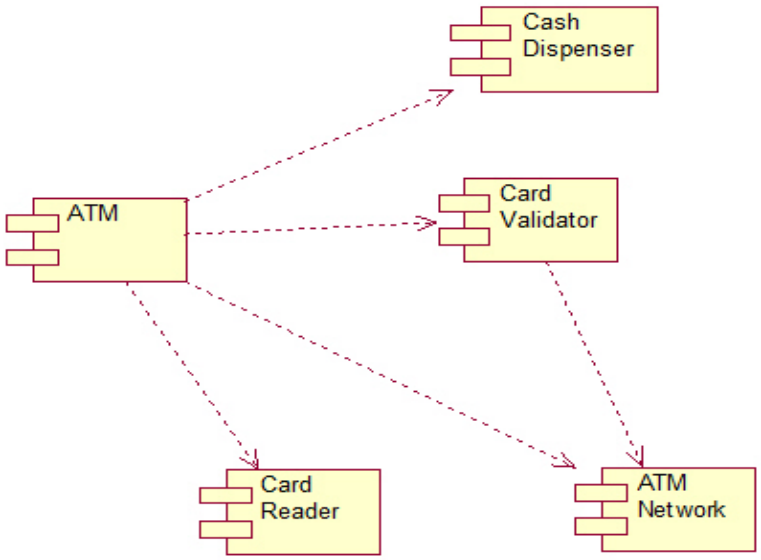
Q.2 Prepare Activity Diagram for the Cash Withdrawal from the ATM Machine. Use Swimlanes for activities performed by the organization.



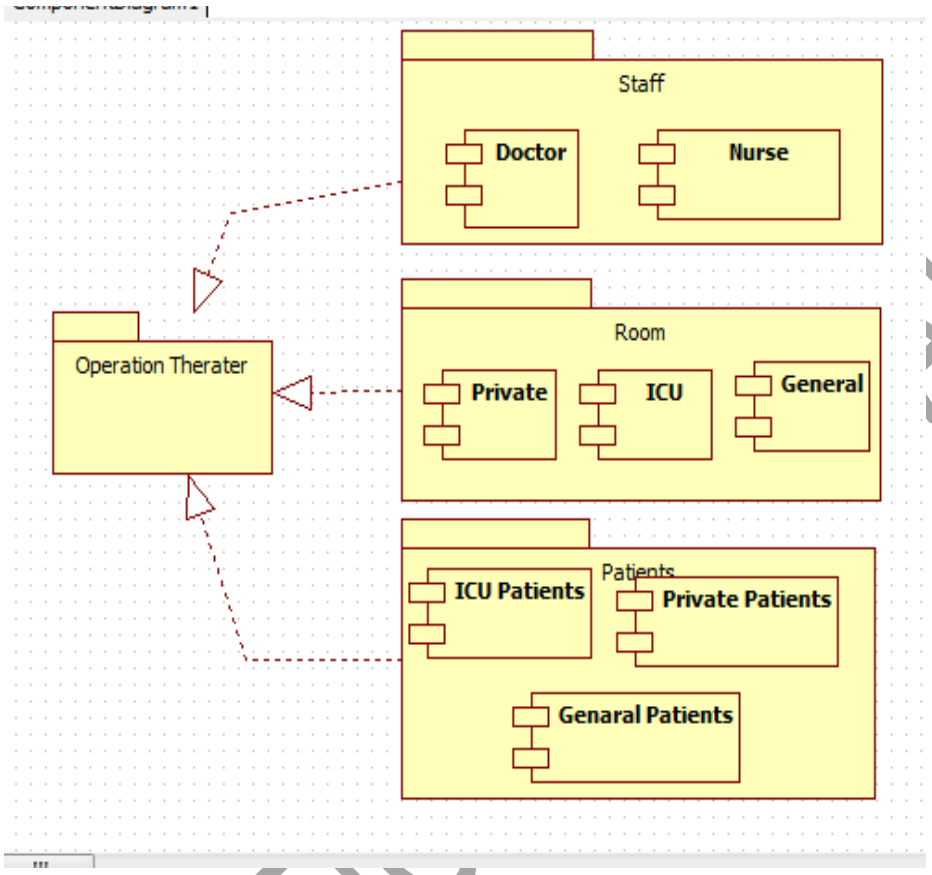
Practical No: 09

Aim: Study and implementation of Component Diagram.

Q.1) Prepare a Component Diagram for ATM Machine.



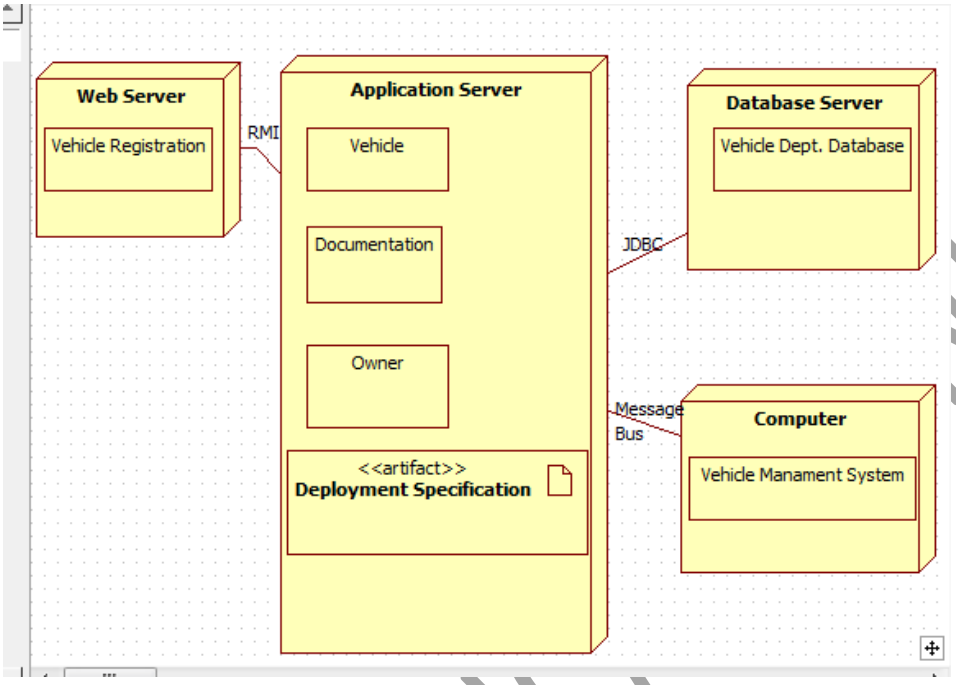
Q.2 Prepare Component Diagram for Operation Theater Processing part of Hospital.



Practical No: 10

Aim: Study and Implementation of Deployment Diagram

Q.1 Prepare a Deployment Diagram for Online Vehicle Registration System.



Q.2 Prepare a Deployment Diagram For ATM Machine.