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074| BCT| 045
Assignment 2 - OOAD

1.
Ans: The significance of various types of models like conceptual, structural, behavioural, etc. can be explained by the following points:-

Models are specifically developed to support analysis, specification, design, verification and validation of a system as well as to communicate certain information.

i) Modelling is faster:
The model of software application is specified on a higher abstraction level than the traditional programming. This model is automatically transformed into a working software.

ii) Models are cost effective:
We have a shorter time to market and it is possible to do it at a lower cost.

iii) Modeling leads to increased quality.
The quality of System depends upon the generator or engine. Hence, quality can increase a lot because we can let our best people work on the engine.

iv) Models are less error prone
After the models has been implemented, the chances of error occuring reduces so that the workflow won't be tedious.

v) There are different modeling techniques for different types of software projects so, one can be choosy for selecting an appropriate modeling technique:

Example: let us consider ATM system.

i) Its conceptual model will be like:

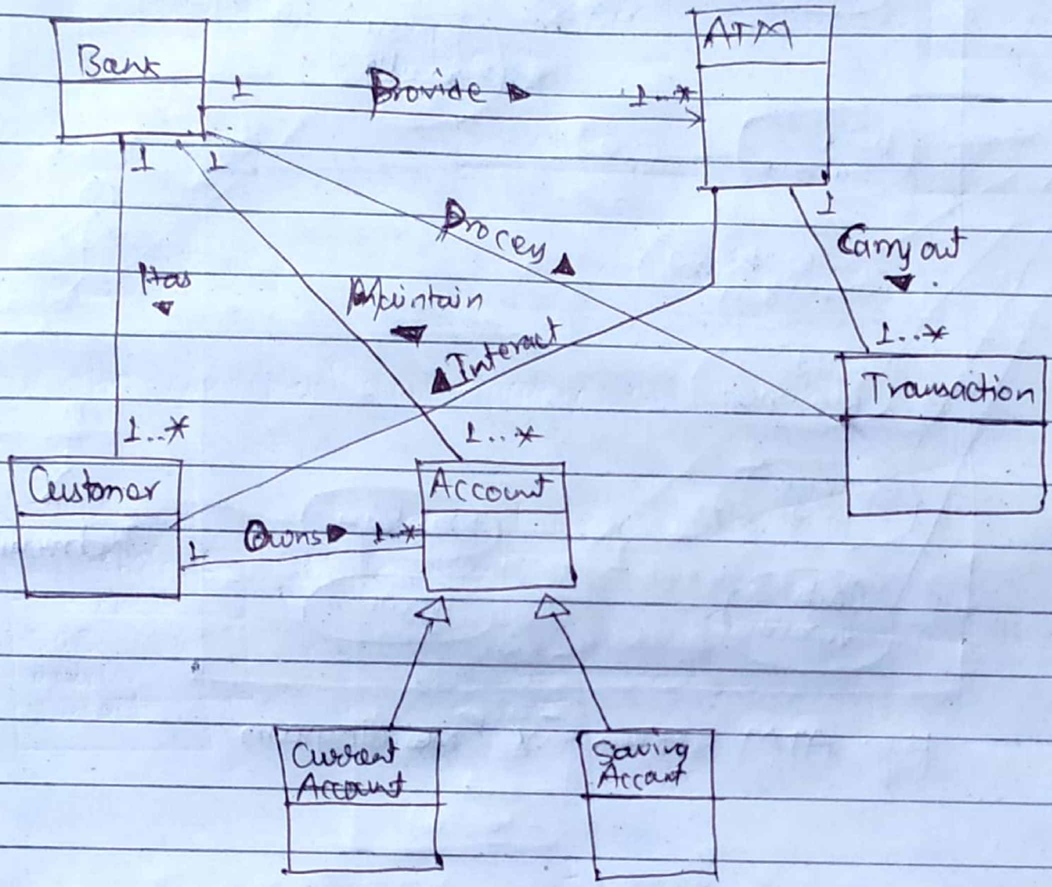

Fig: conceptual class diagram for ATM system

ii) Its structural (class diagram) diagram would be similer to the above conceptual class diagram but having attributes and behaviours of each class.

iii) The behavioural model for ATM system would be an use case diagram given below:-

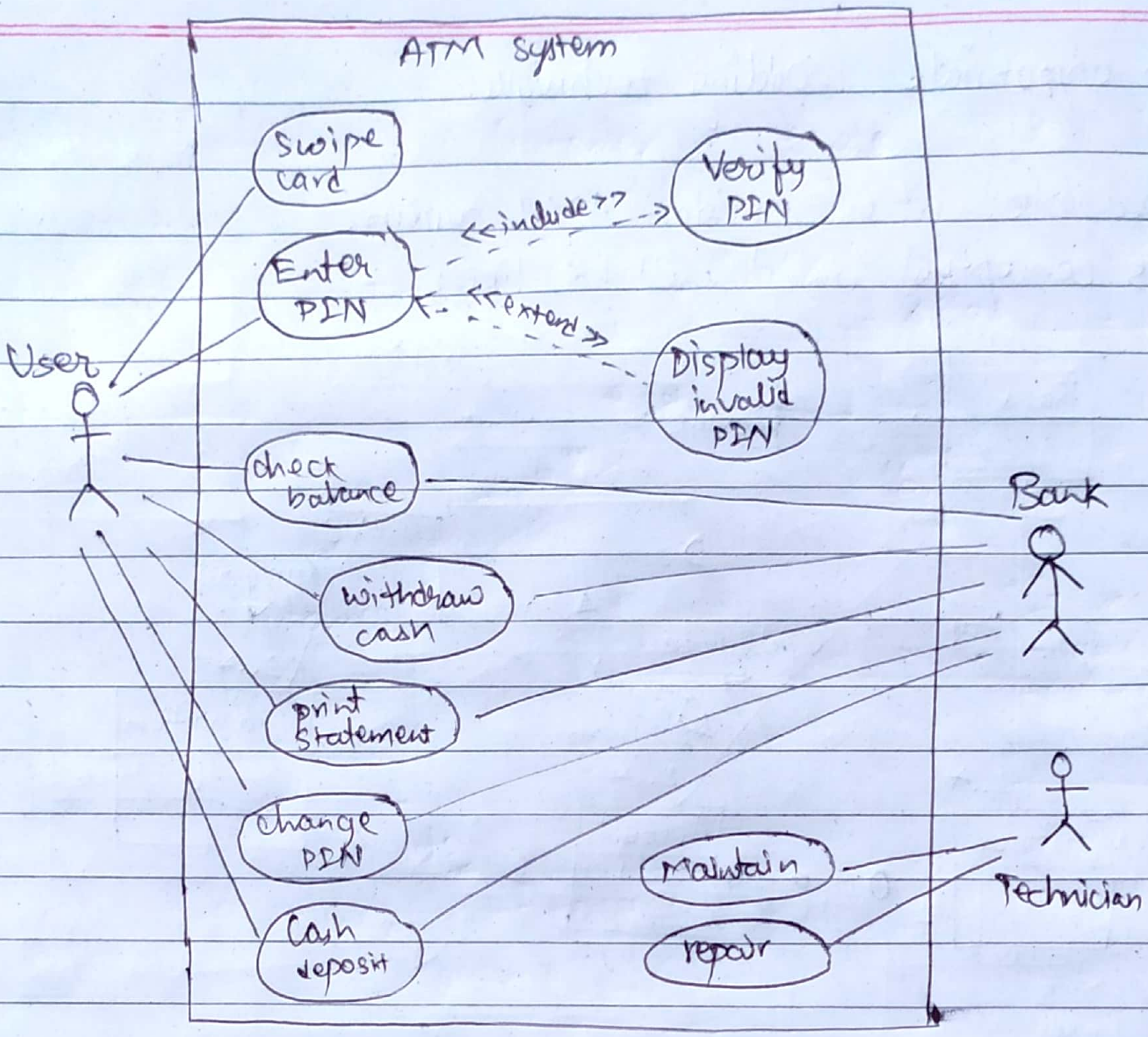

fig. ATM system use case diagram

Q2.

Ans The conceptual class diagram can be drawn by using the following conceptual classes by noun phrase identification.

Book Bibliography Reference

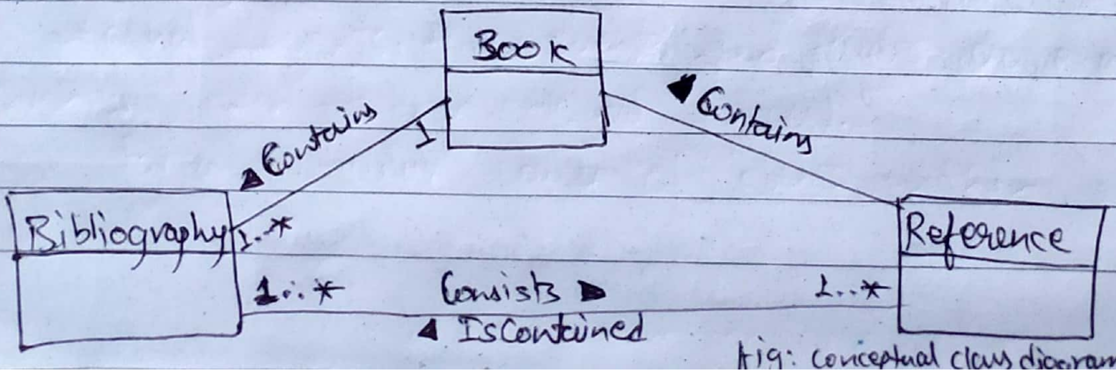

fig: conceptual class diagram

Q3.

Sol

Solⁿ The conceptual classes could be the following:

Operator Machine Test Copy Page

Button BlankPage

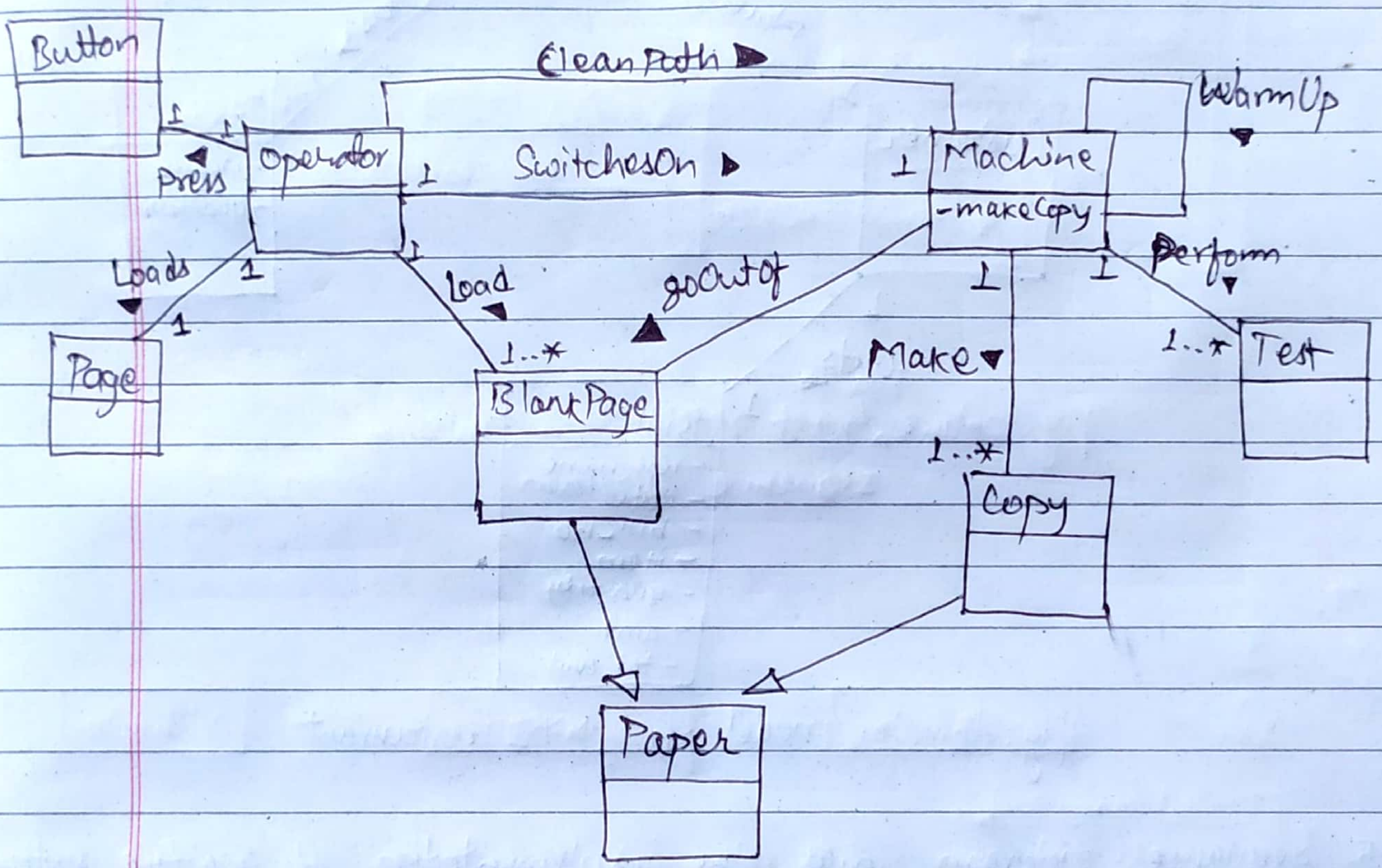

fig: conceptual class diagram for Photocopier machine

4.

Sol^n Waiter Order Customer Items Bill Table

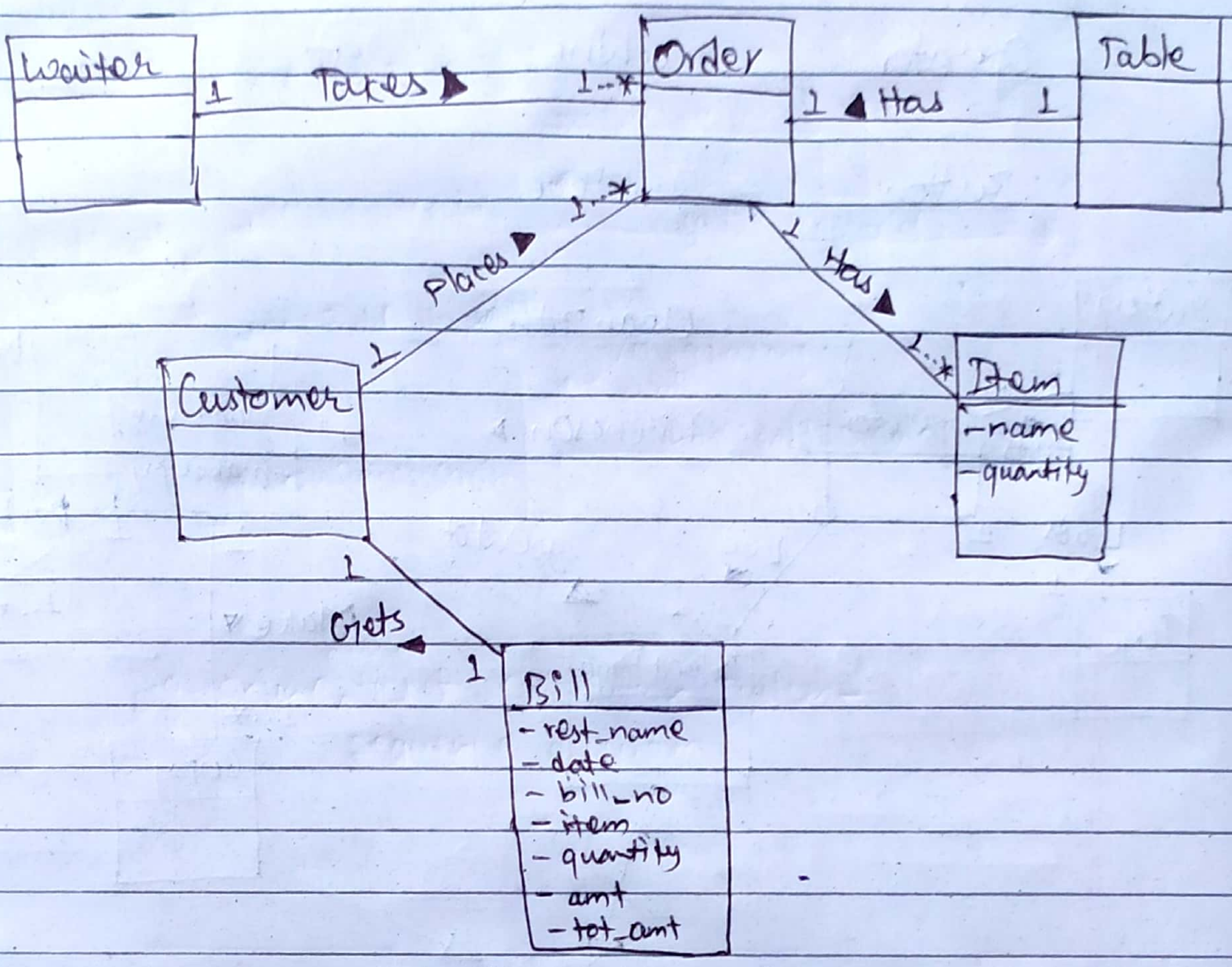

fig: domain model for XYZ restaurant

5. Sequence diagram aids the implementation of reactive system.

Ans: Reactive systems are the systems that allow multiple individual applications to blend into one unit, reacting to their environment, while staying aware of each other. Simply, they are the systems that respond to external or internal events, timer events and faults or exeptions (which are often ~~ref~~ from external sources).

For a particular course of events within a use case,

~~on~~ a system sequence diagram(or simply a sequence diagram shows the external actors that interact directly with the system, the system (as a black box), and the system events that the actor generates.

Time proceeds downwards and the ordering of events shald follow their Order in the scenario. For an use case scenario, an SSD shows:-

i) the system(as a black box)

ii) the external actors that interact with system

iii) the system events that the actors generate.

iv) the operations of system in response to events, in temporal order.

~~v) develop c~~

Example: Usecase: Order Entry.

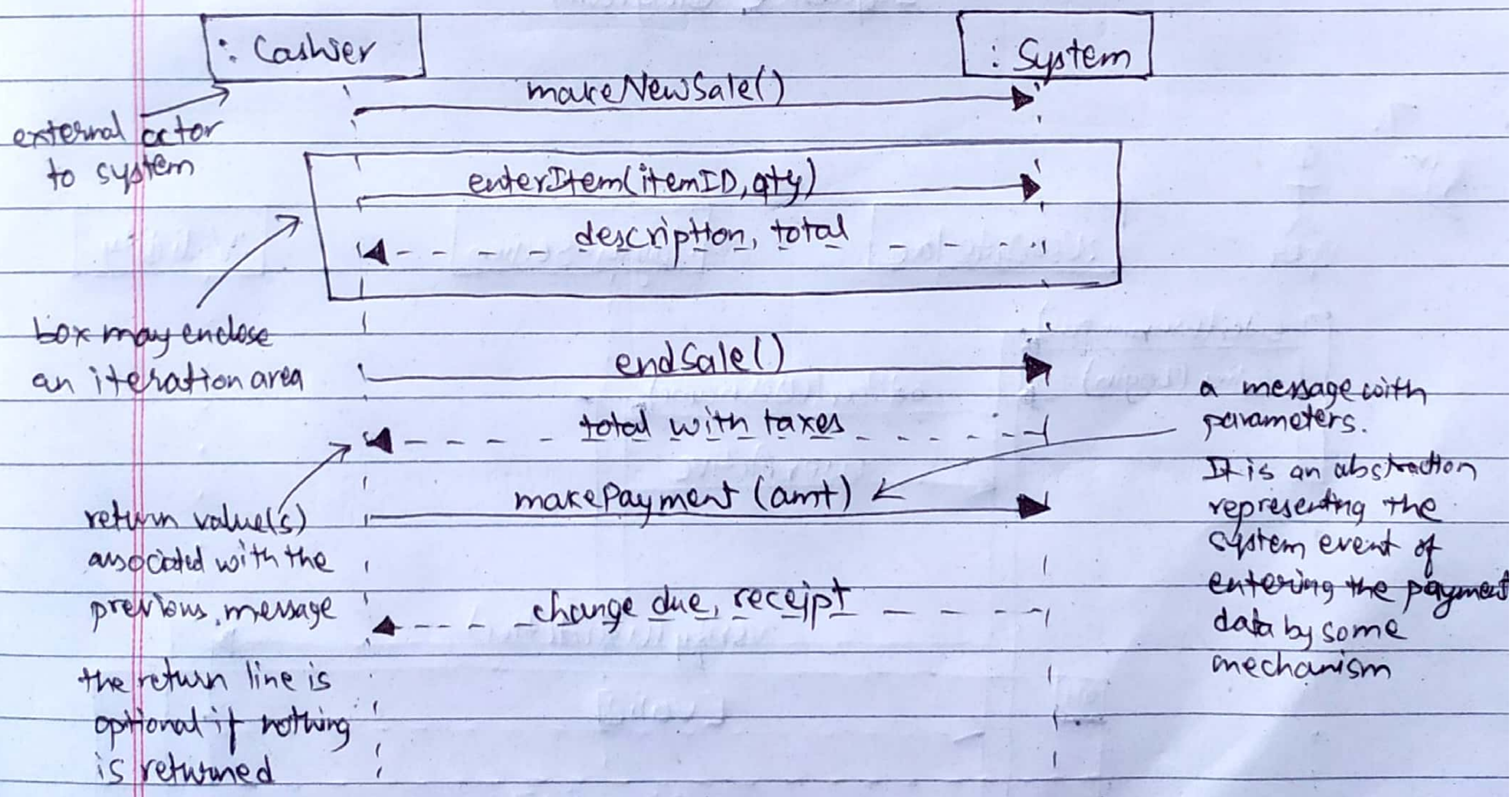
: Cashier
: System
makeNewSale()
external actor to system
enterItem(itemID,qty)
description, total
box may enclose an iteration area
endSale()
total with taxes
a message with parameters.
It is an abstraction representing the system event of entering the payment data by some mechanism
makePayment (amt)
return value(s) associated with the previous message
change due, receipt
the return line is optional if nothing is returned

fig: orderEntry use case - sequence diagram

This clearly shows sequence diagram aids the implementation of reactive system.

6.

Sol^n

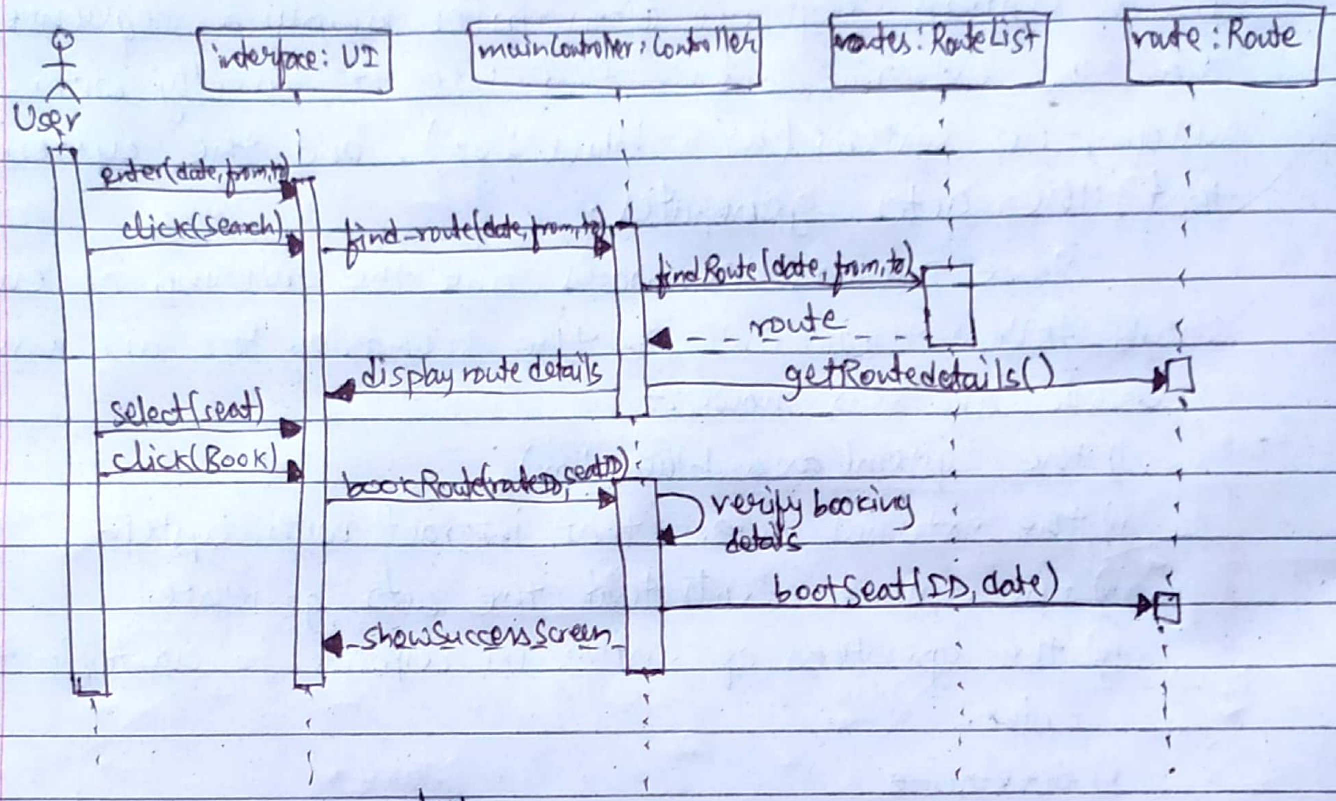

fig. online bus ticket reservation system-
sequence diagram

7.

Sol^n

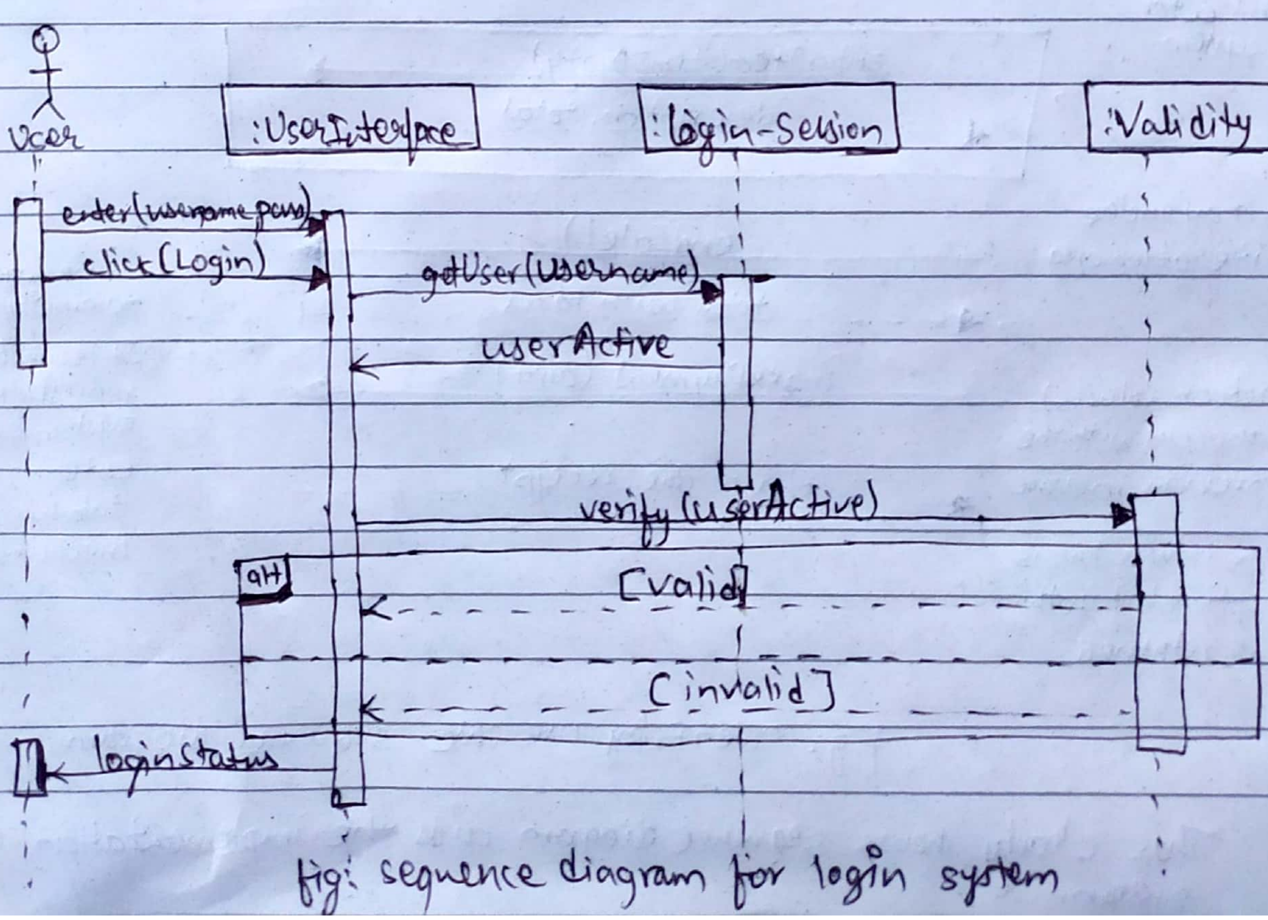

fig: sequence diagram for login system

8.
Soln

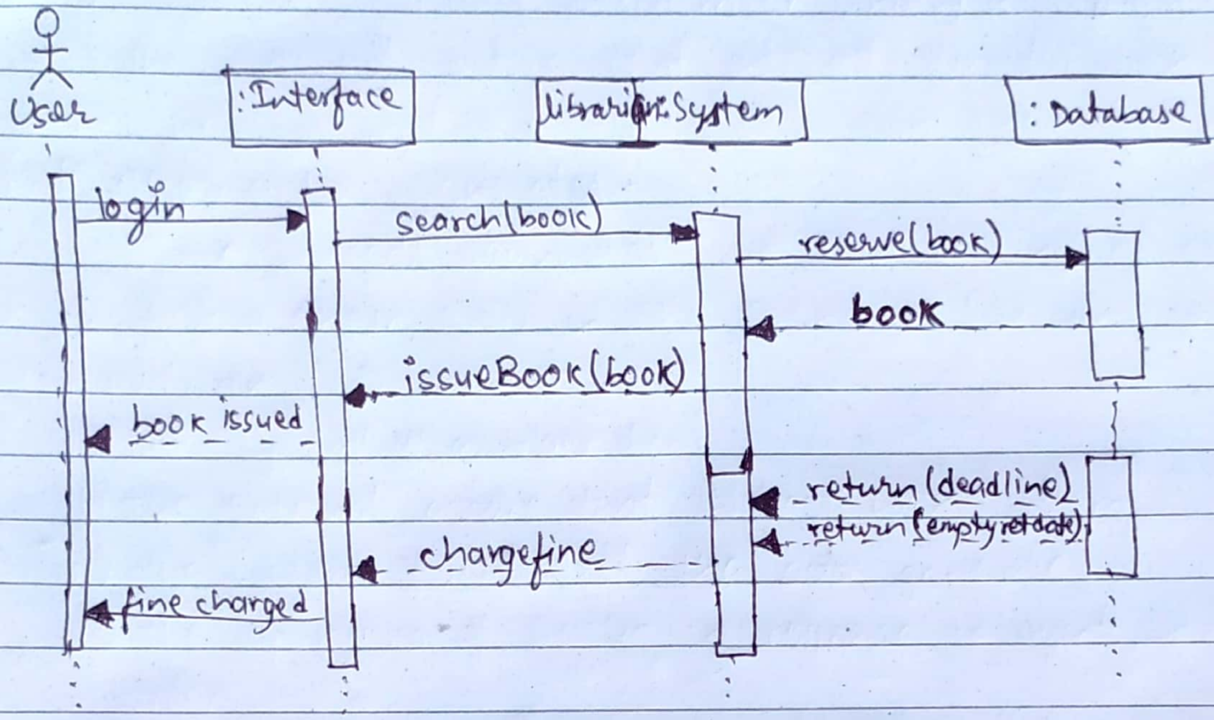

fig.: sequence diagram for library management system