

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT on

Object Oriented Analysis and Design

Submitted by

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in partial fulfilment for the award of the degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING



B.M.S. COLLEGE OF ENGINEERING

(Autonomous Institution under VTU)

BENGALURU-560019

April-2022 to July-2022

**B. M. S. College of Engineering,
Bull Temple Road, Bangalore 560019**
(Affiliated To Visvesvaraya Technological University, Belgaum)
Department of Computer Science and Engineering



CERTIFICATE

This is to certify that the Lab work entitled “**LAB COURSE Object Oriented Analysis and Design**” carried out by **NITHIN C (1BM19CS106)**, who is a bonafide student of **B. M. S. College of Engineering**. It is in partial fulfilment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the academic year 2021-2022. The Lab report has been approved as it satisfies the academic requirements in respect of an **Object Oriented Analysis and Design - (20CS6PCOMD)** work prescribed for the said degree.

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Course Outcome

CO4	Ability to conduct practical experiments to solve a given problem using Unified Modeling language.
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1. College Information System -

a) SRS:

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College information system

Problem statement :-

College system has gone through a vast transformation particularly in the last decade. Colleges admit a very large no of students belonging to a variety of discipline every year. Handling such large no of records becomes nearly impossible. Hence college info system is built.

S.R.S :-

- * College info system has admin who manages staff, student & department.
- * Admin can view & modify the student records like profile, attendance, fee, result & details of teachers & other employees in college, their personal info & their attendance.
- * Authentication will be done by username & password & classified by user type.
- * Staff in college teach more than one course to many students and staff who are teachers conduct examination for students of college.



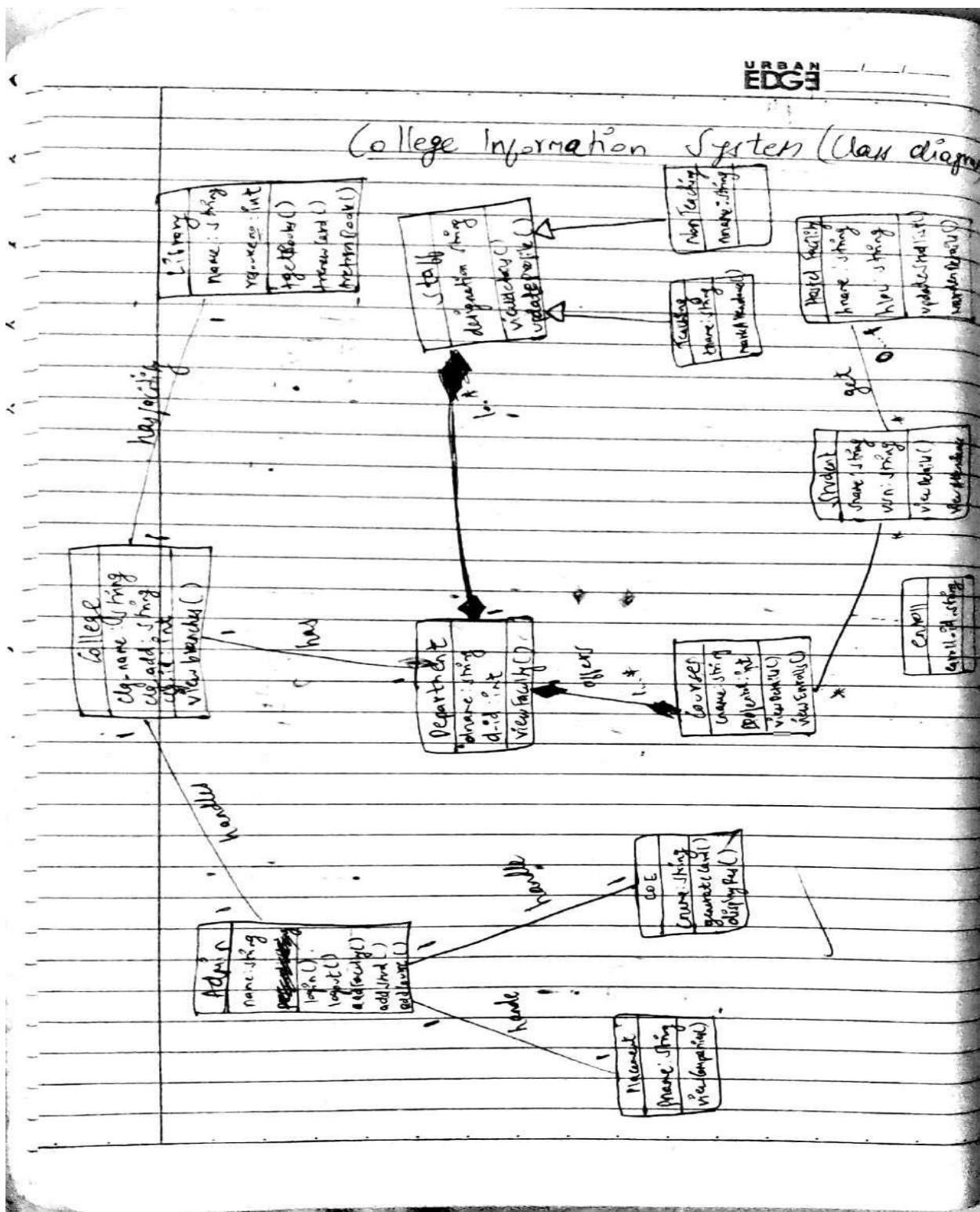
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- * students register themselves in dept book they are interested in.
- * There are diff types of exams conducted by college. Internal & SEE are two of them.
- * Every dept has a name and provide details abt itself.
- * COE office should be able to view student details, exams & publish them.

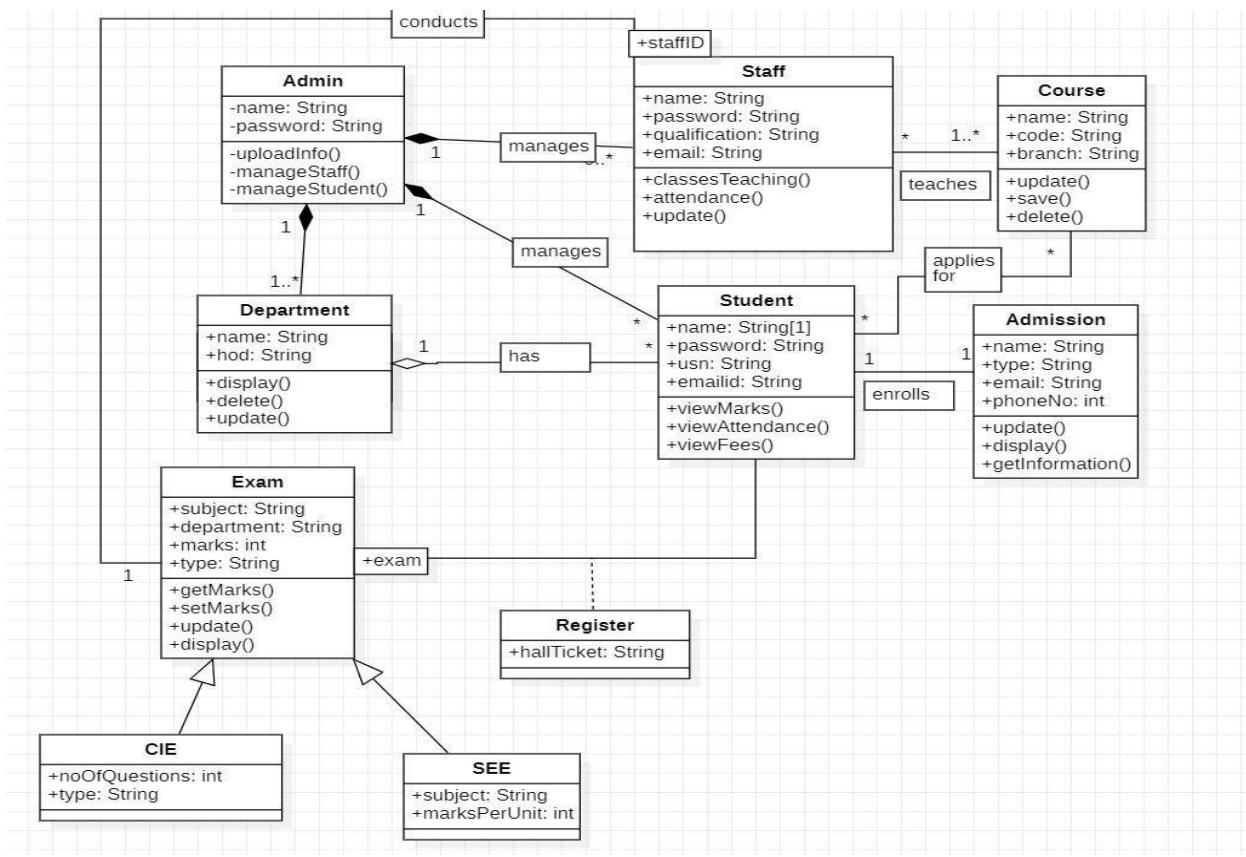
Justification for class diagram

- * Under admin, dept & student & staff are the components which cannot exist without admin class, hence it is a composition. The courses are associated with staff as they teach that course. Staff also handles the examinations & which has 2 sub class by inheritance, students are associated with exam, courses & admission.

b) Advance Class Diagram:

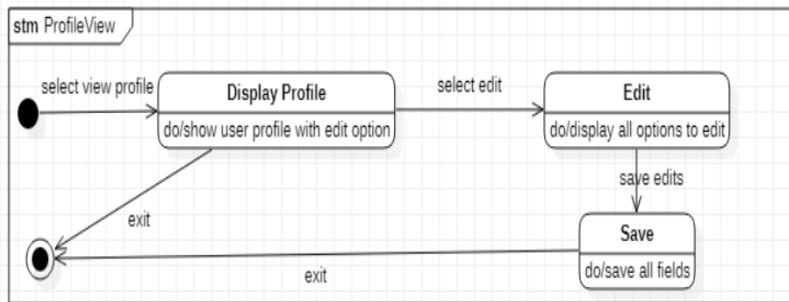
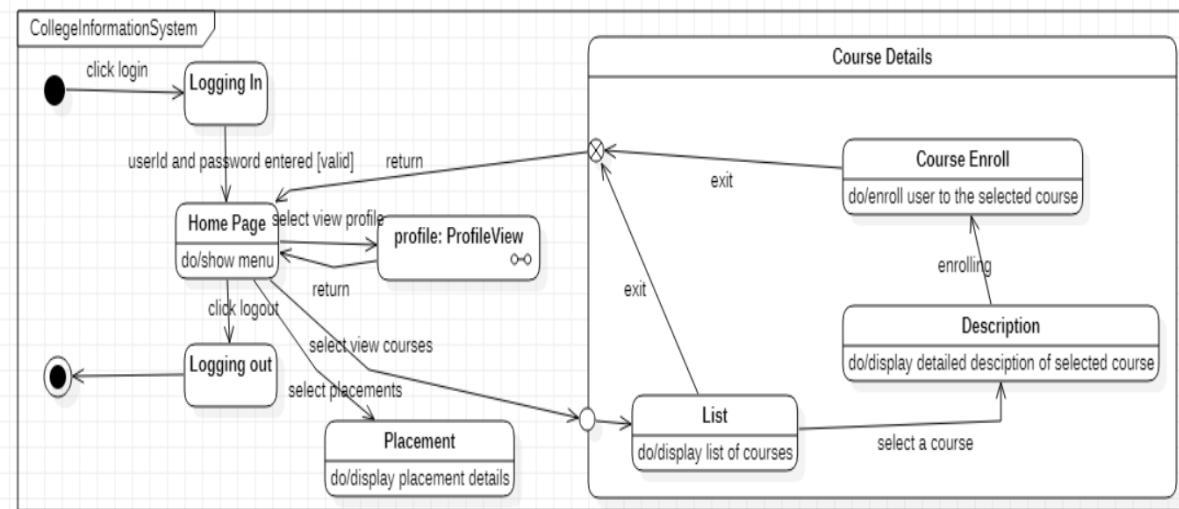


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c) Advance State Diagram:

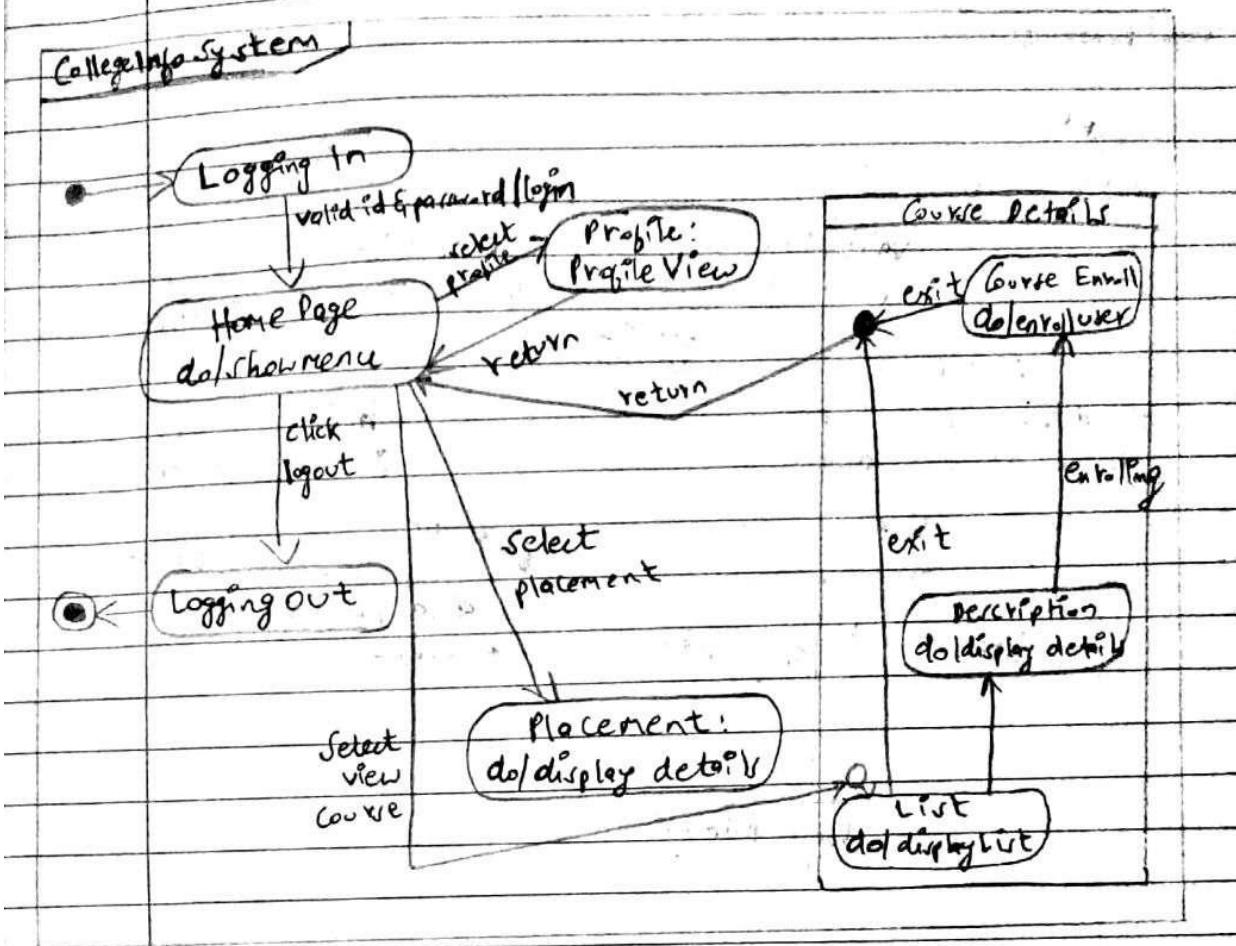
it College Information System: The given state diagram explains the various states present in the case of gives a detailed explanation of course details of user profile in detail as a form of sub state machine composite machine. All the respective details of transitions are mentioned.



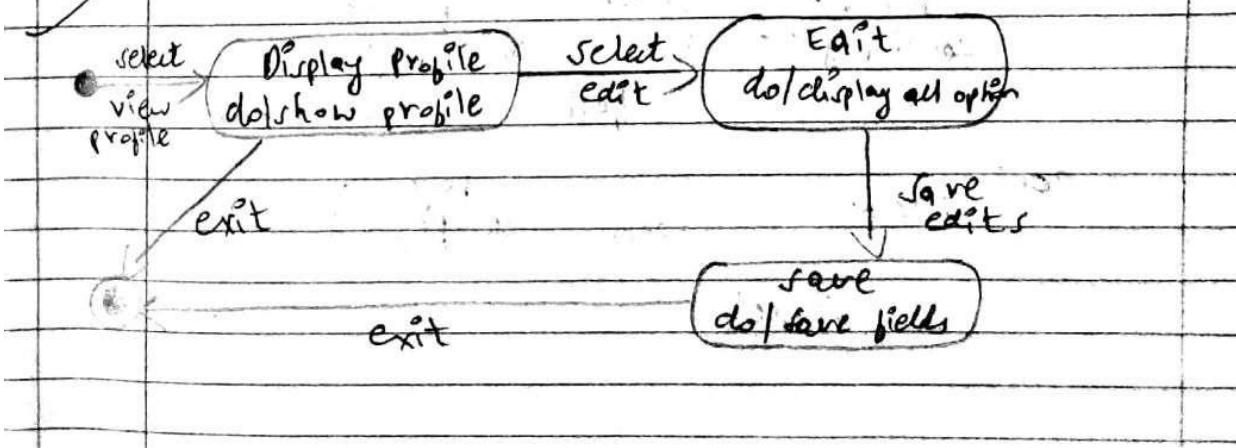
Advanced State diagram

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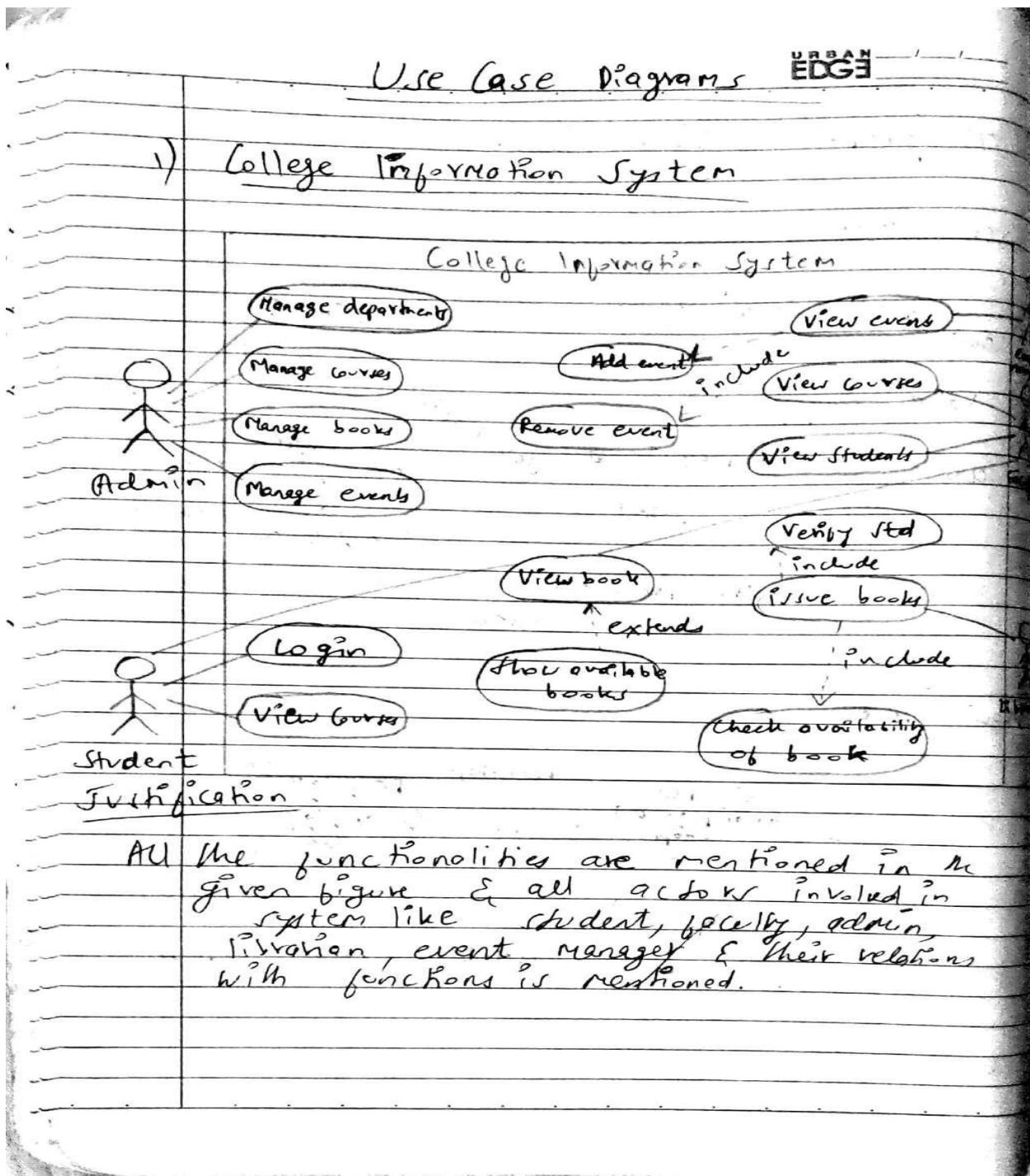
1) College Information System

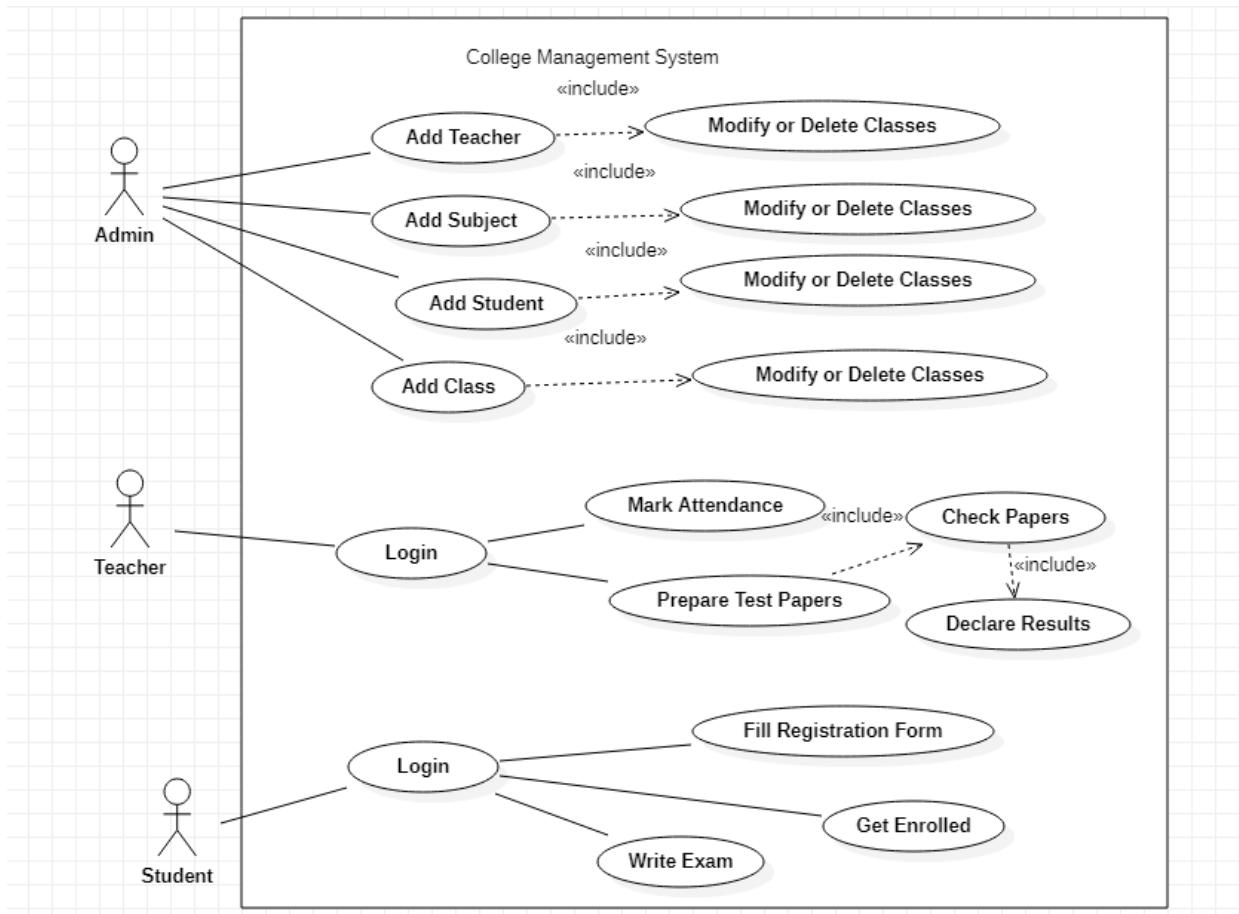


Profile View



d) Advance Use Case Diagram:





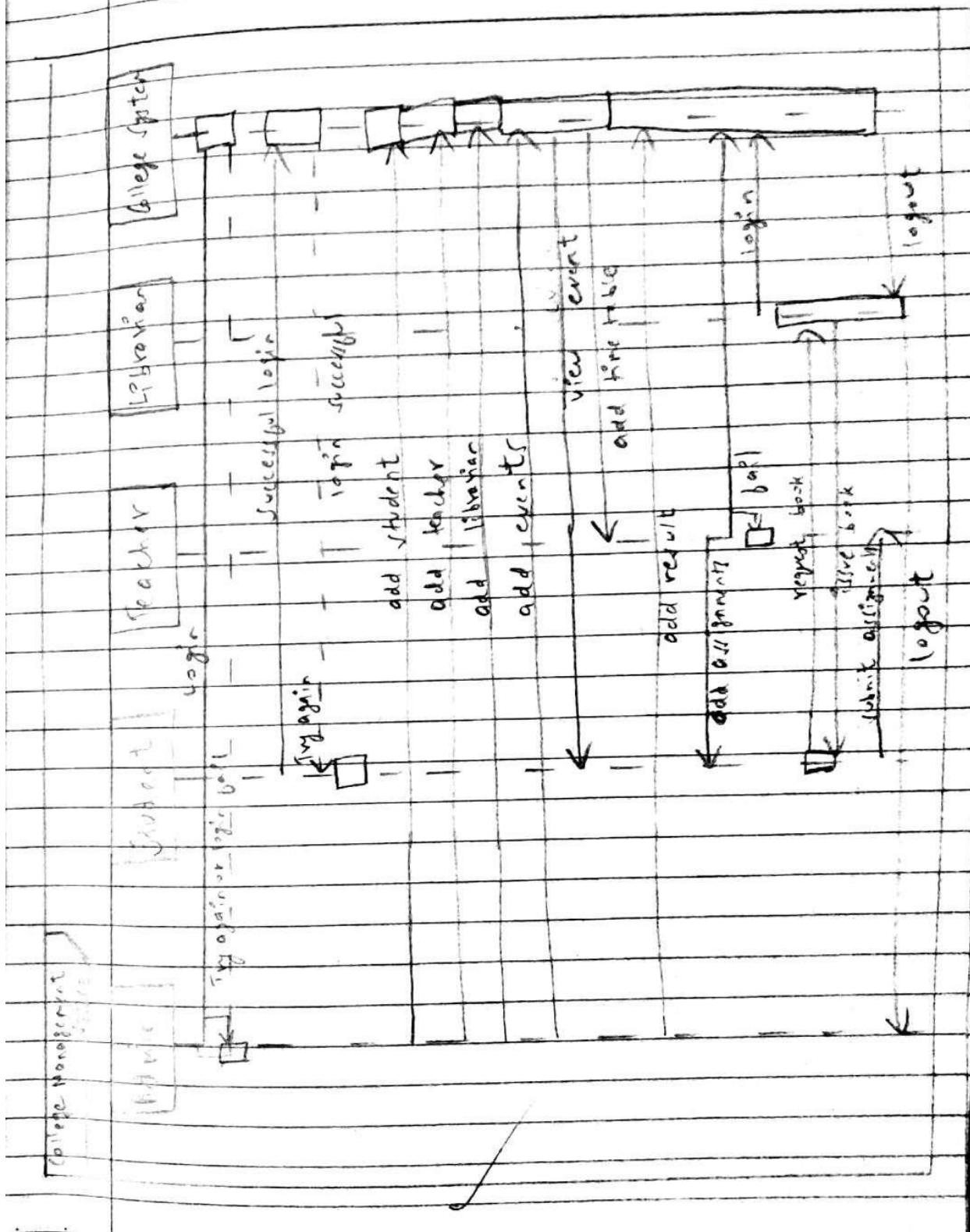
e) Sequence Diagram:

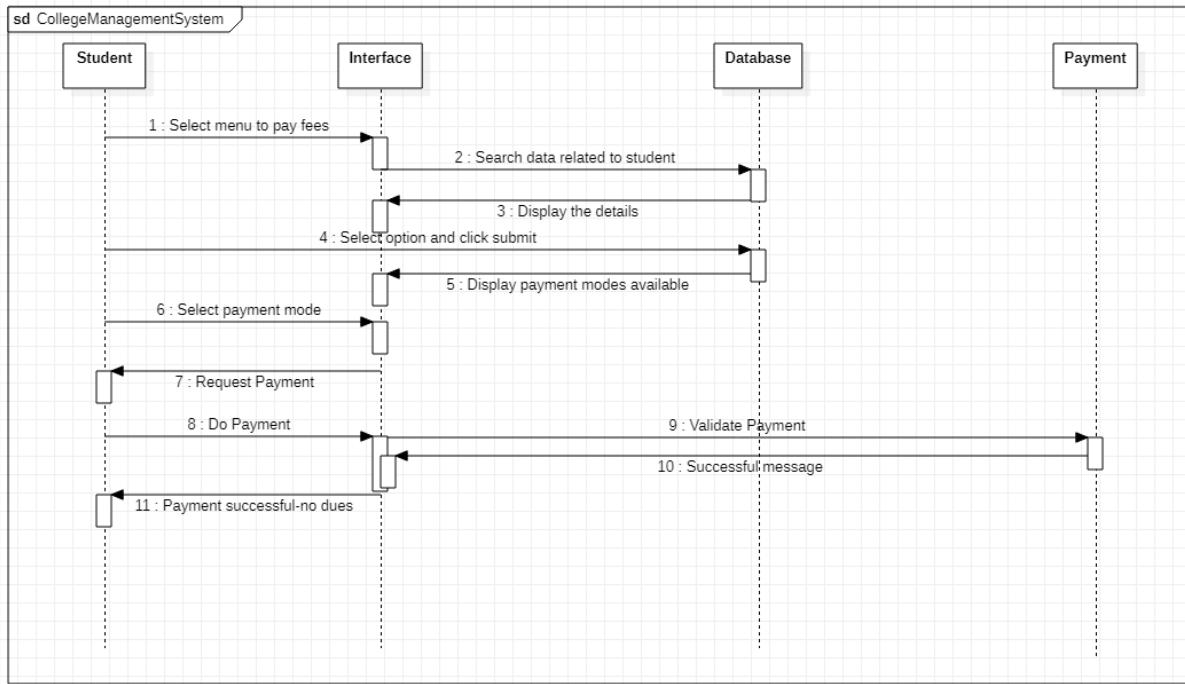
14 College Information System & The given sequence diagram shows the complete order of all the interactions taking place between the user & the system interface , database of payments & shows a detailed steps for payment , search & display in the system.

Sequence Diagrams

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1) College Management System:-



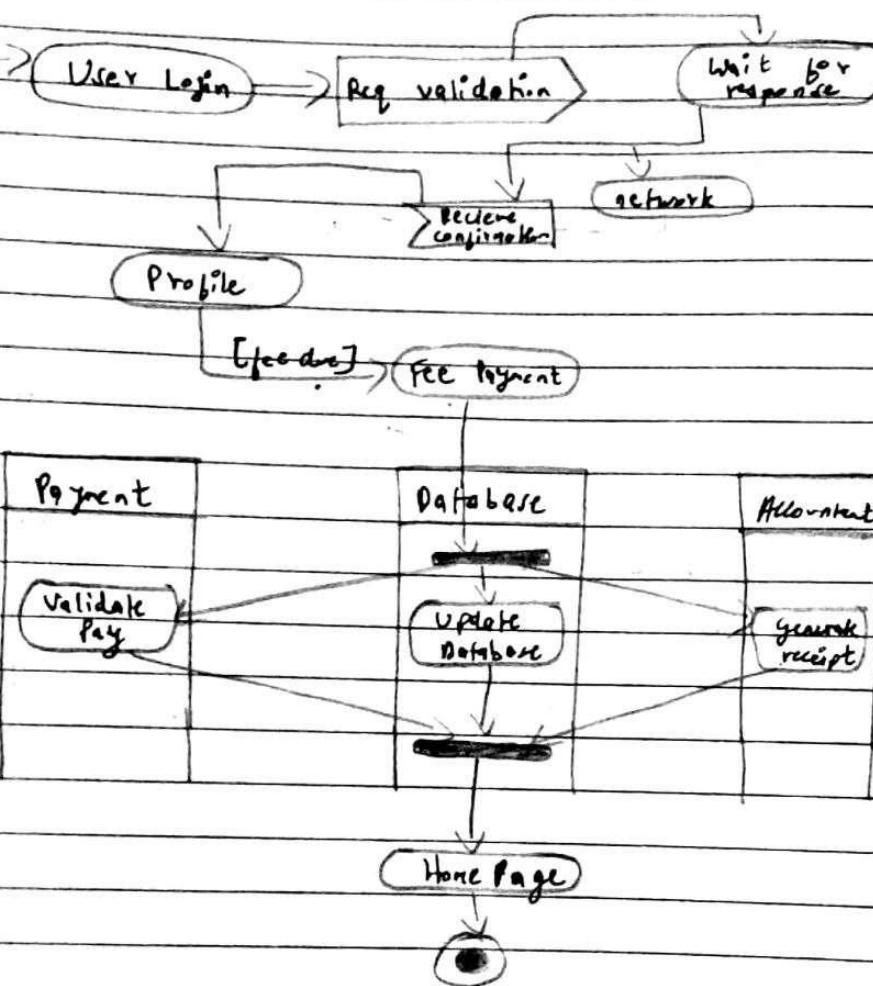


f) Activity Diagram:

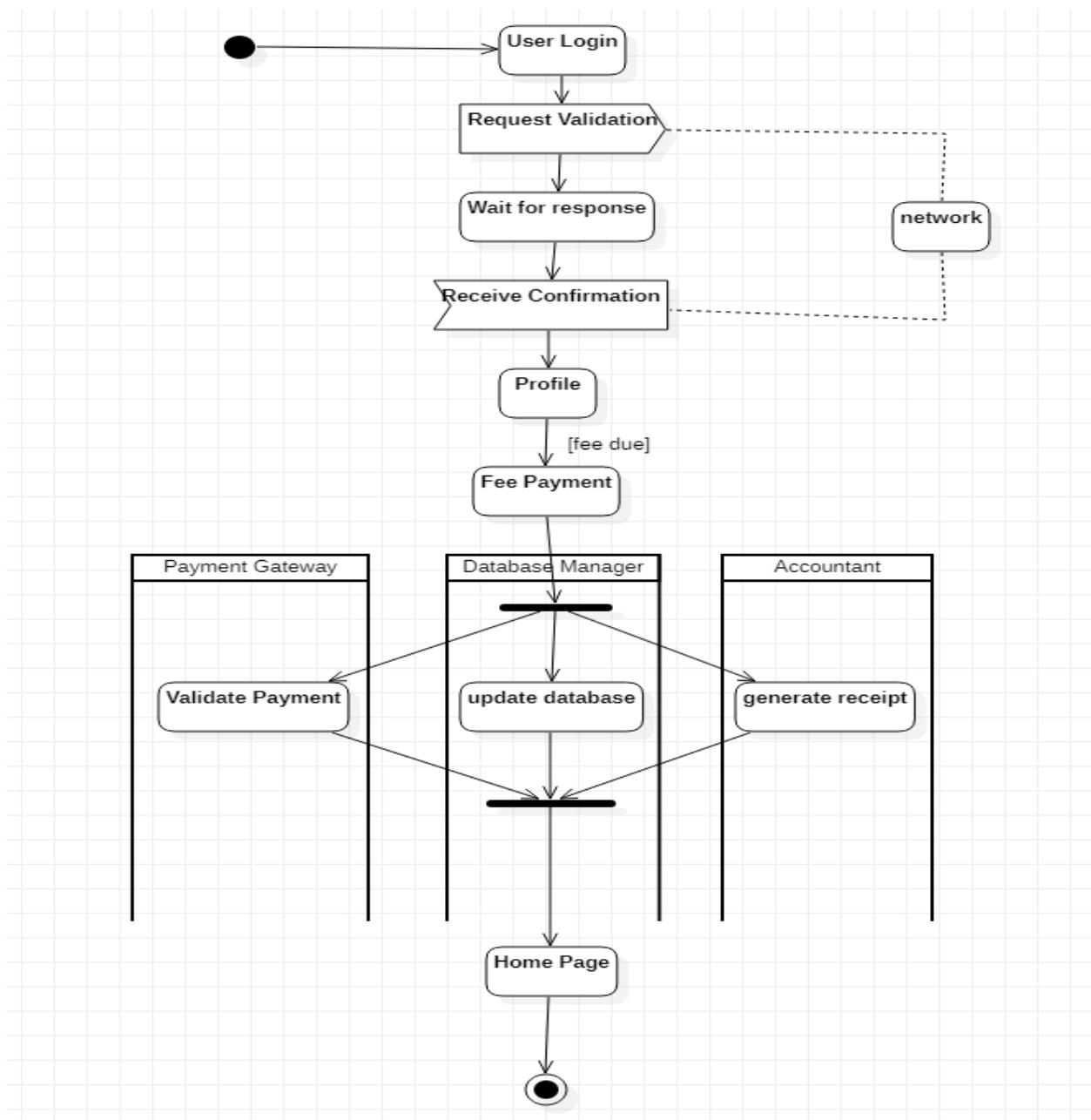
Activity diagrams

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i) College Information System



The given diagram explains complete working of given system from login to end and as well all activities which are performed while fee payment.



2. Hostel Management System-

a) SRS:

Hostel Management System

Problem Statement:-

For the past few years, the no of educational institutions has increased rapidly. Therefore the no of hostel is also increasing to provide accommodation for these students. There is a lot of strain on persons running hostels. Identification of drawbacks of existing sys leads to designing this system.

SRS :-

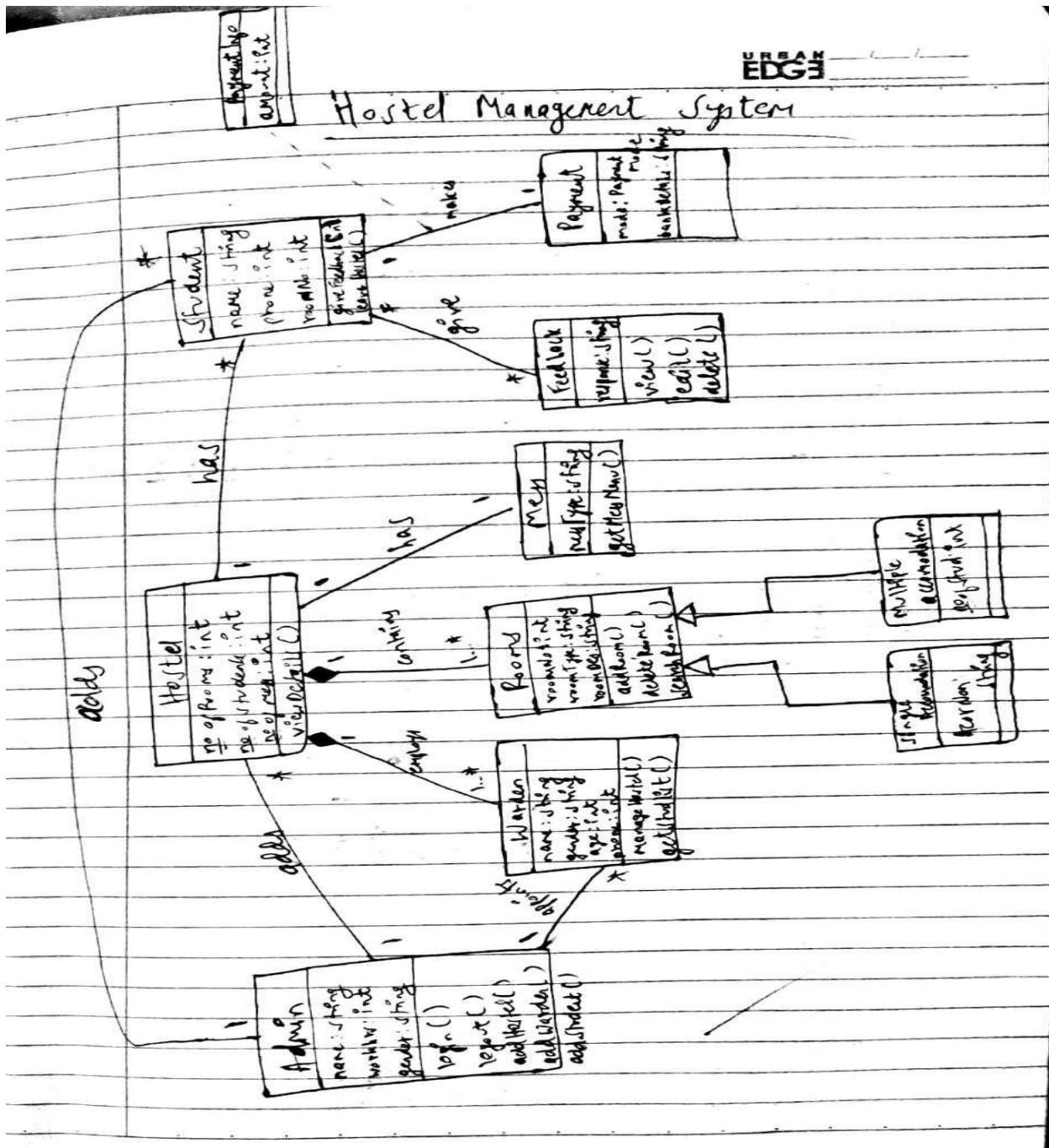
- * It has an admin who manages hostel allocation & payment methods.
- * As students vacate room, their entry needs to be deleted from database.
- * Payment needs to be done according to bill generated which has attributes no, type & date.
- * The student's details like name, place & addr, contact details is maintained.
- * It Comprises of both rooms & mess. The mess account will have rice status of an entire month, on basis of which monthly charges of student will be defined.

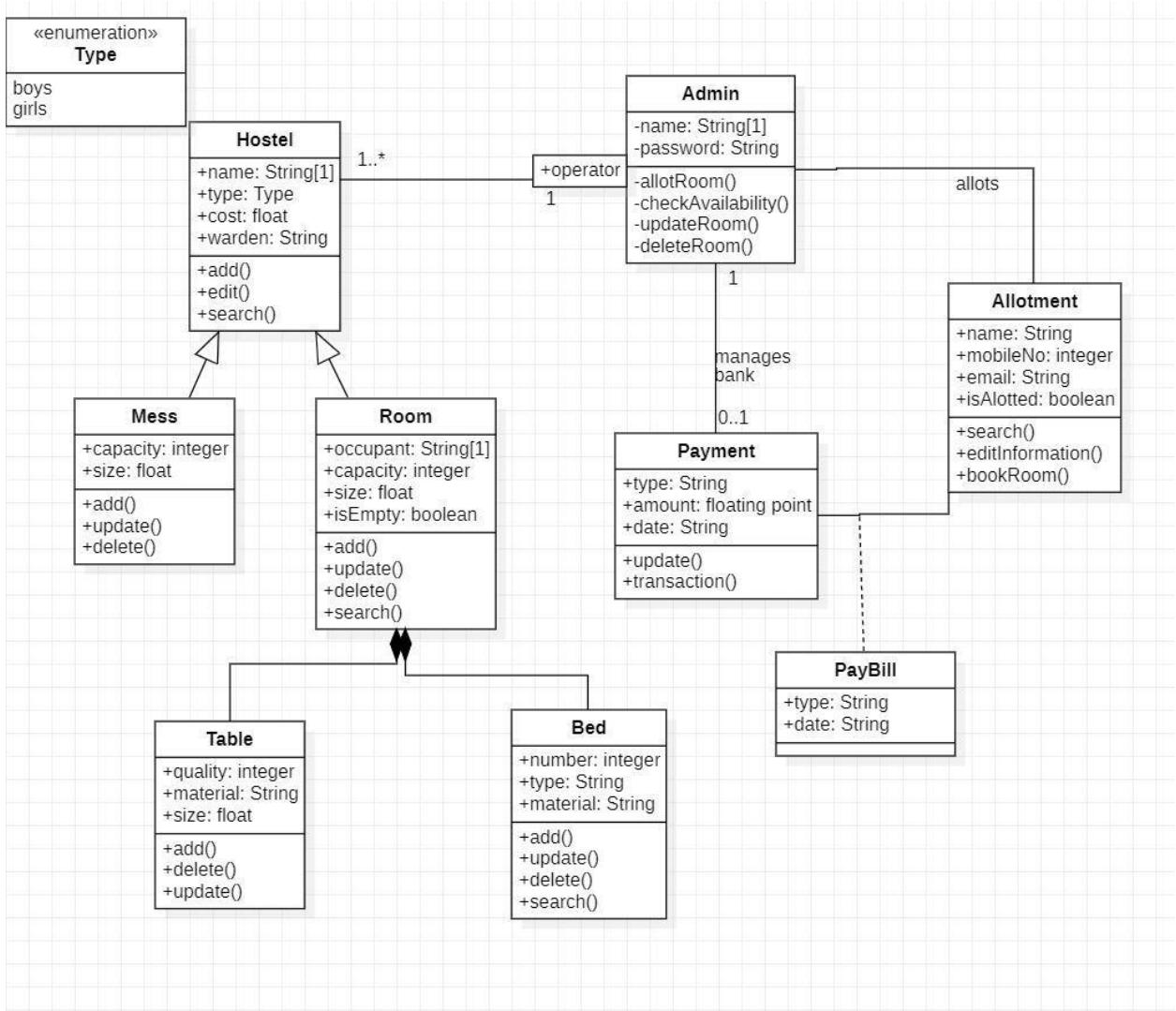
- * Accessories provided to each room like furniture are also maintained in database.
- * Mess Manager should manage mess workers & update mess.

Justification for class diagram :-

- * Admin controls & allow the room to the students hence association which can give a feedback ast room so association is used. The students make payment through various methods enumerated list so they are associated. For every hostel block a warden is assigned which is composed as one cannot just exist without other & it has list of all types of rooms & mess details which are aggregated.

b) Advance Class Diagram:

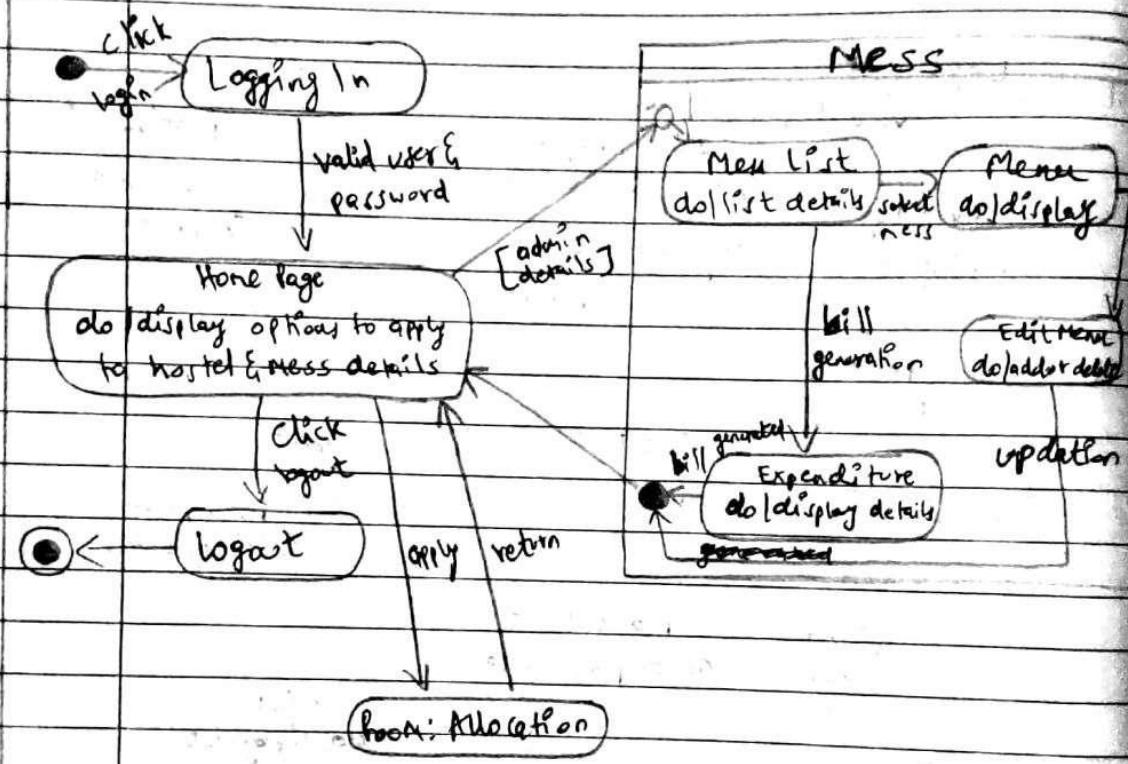




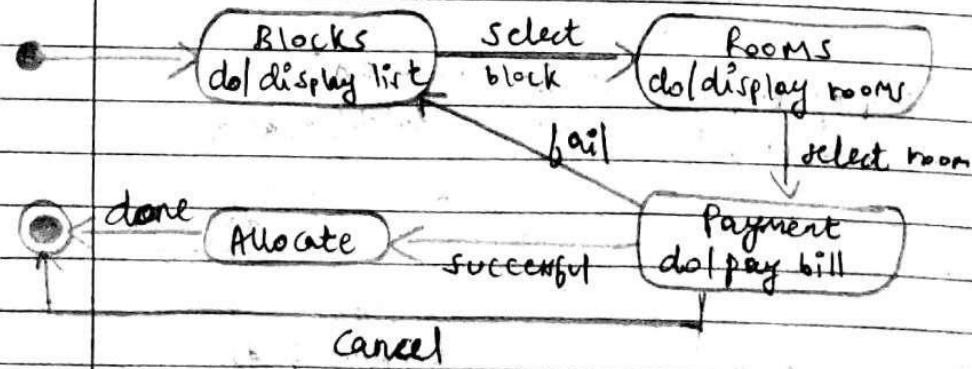
c) Advance State Diagram:

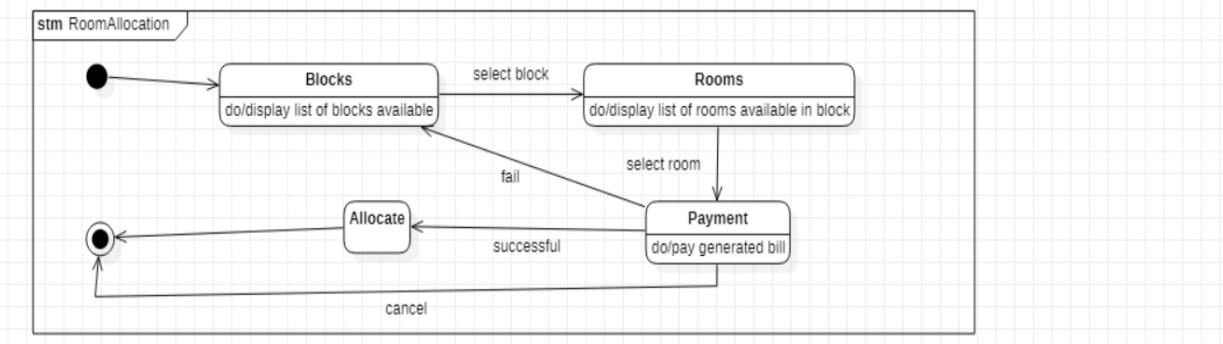
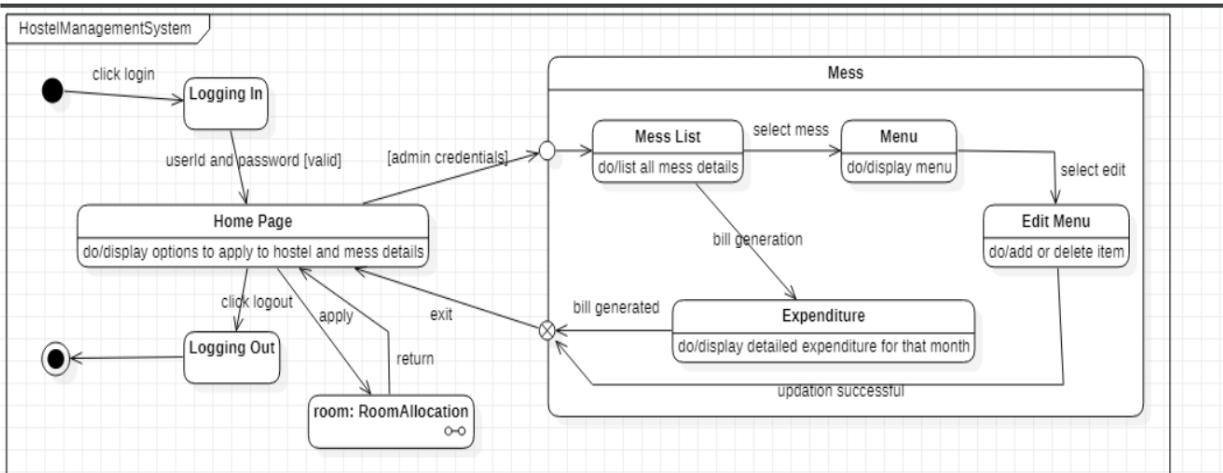
2) Hostel Management System

Hostel Management



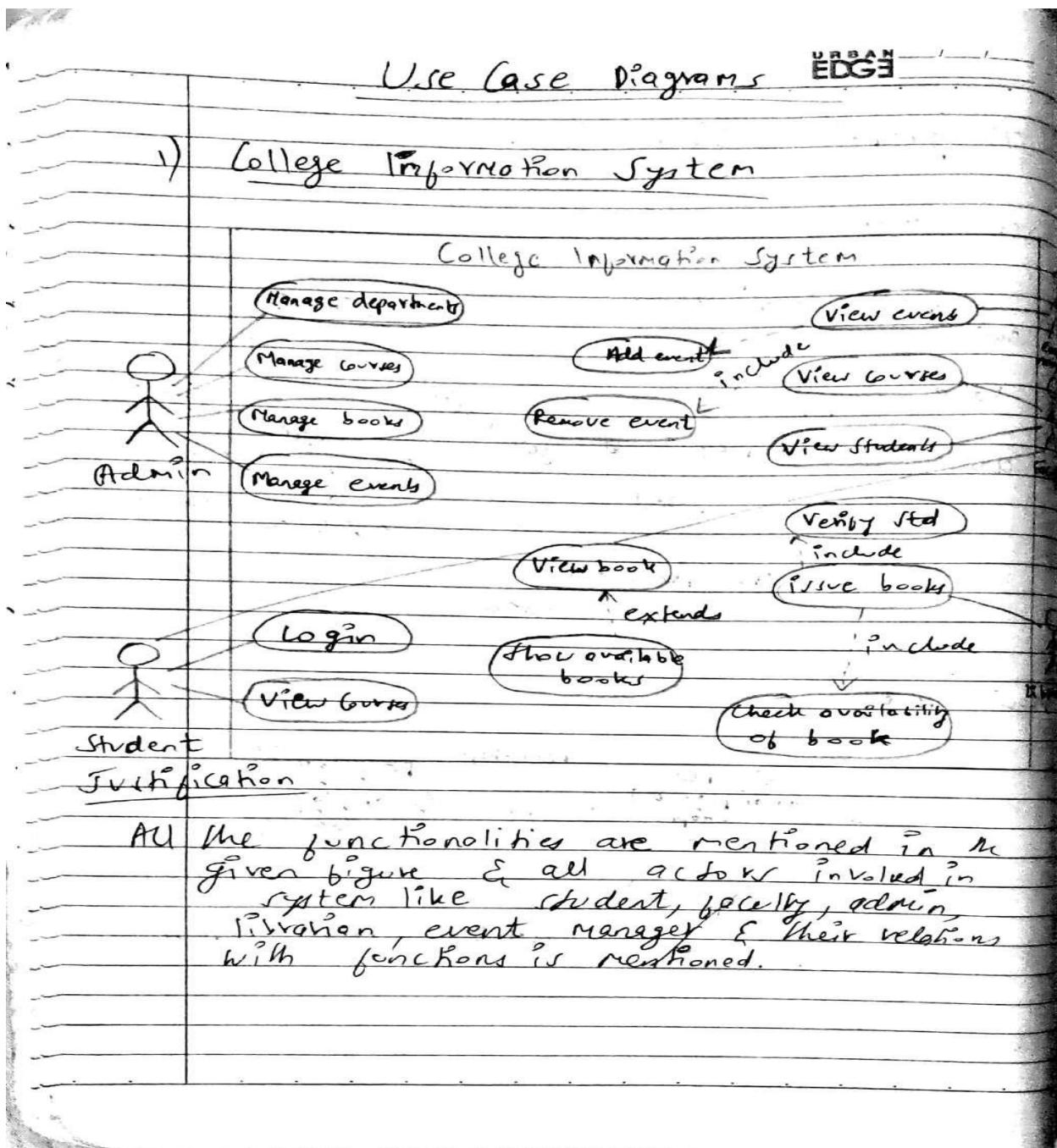
Allocation

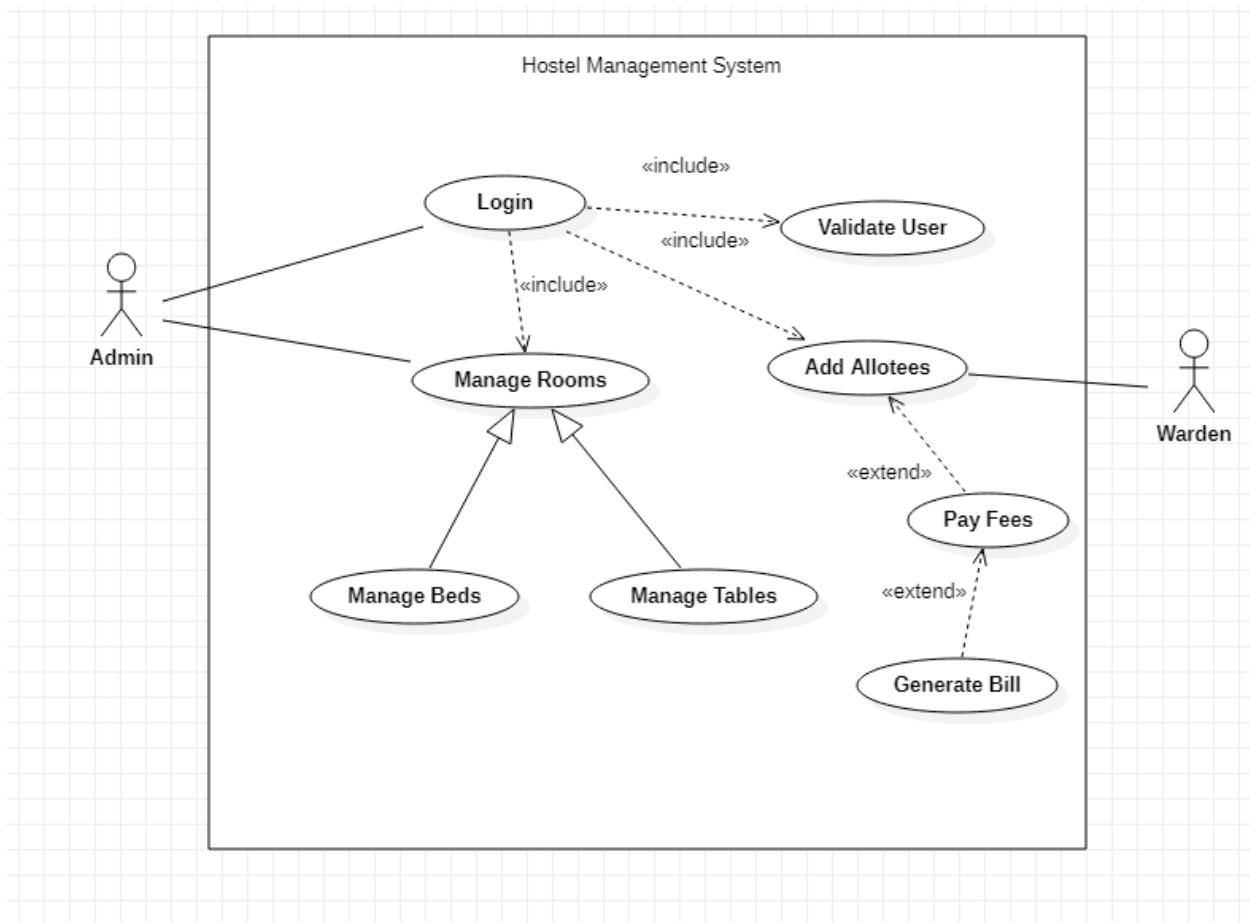




Q4 Hostel Management System : The given diagram explains the detailed description of case with respect to a room allocation & mess menu details where its explained with sub machine in depth for room allocation. All the transitions & actions are mentioned.

d) Advance Use Case Diagram:



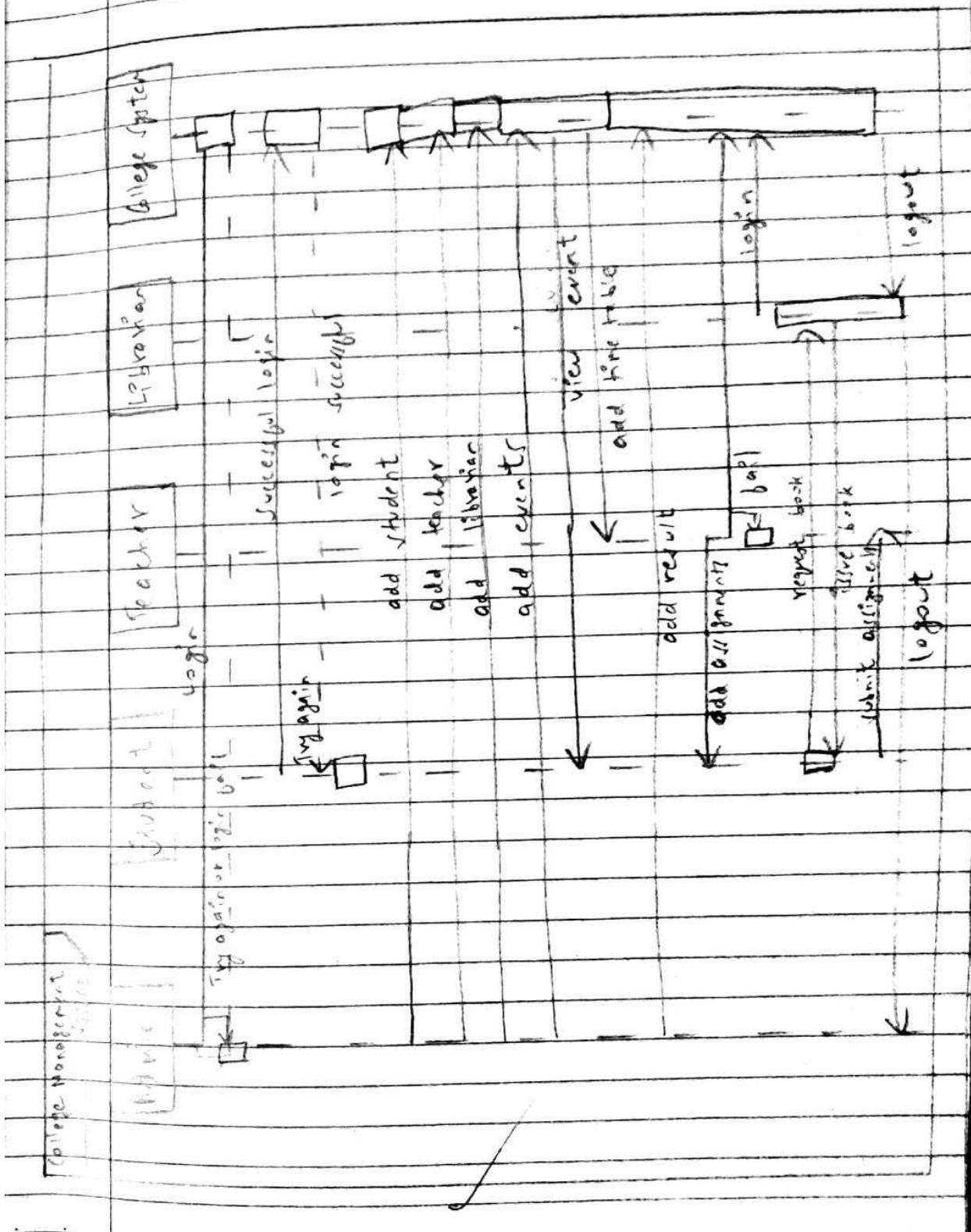


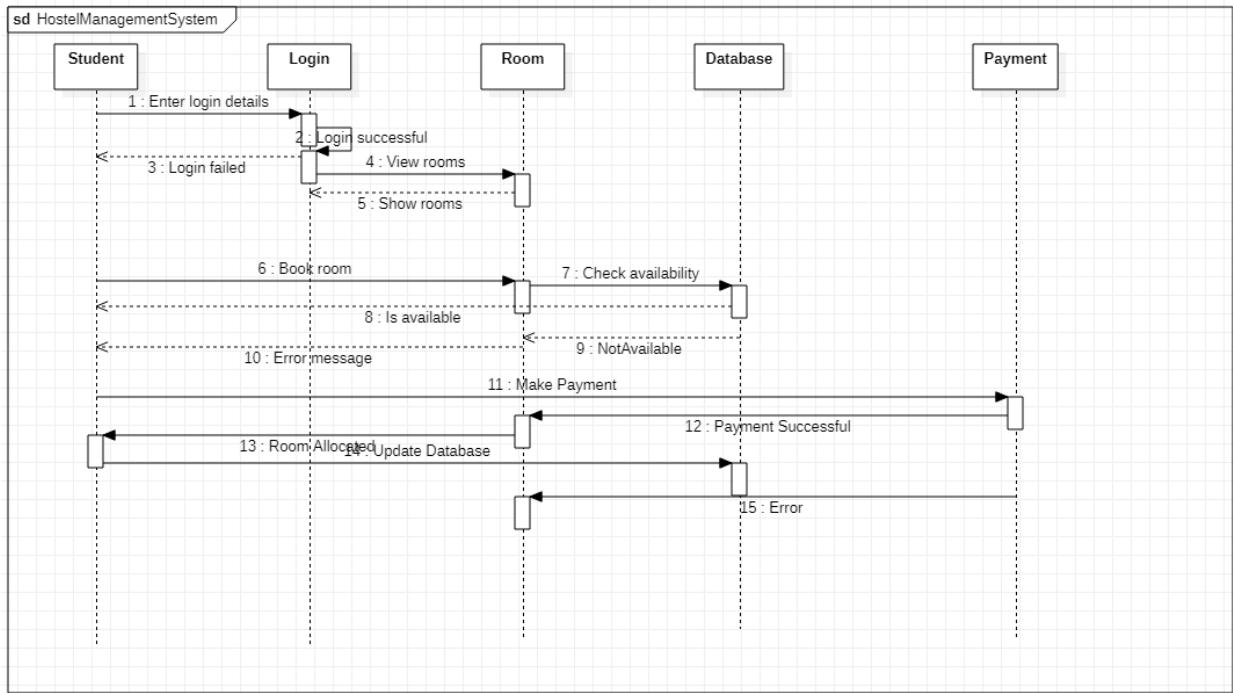
e) Sequence Diagram:

Sequence Diagrams

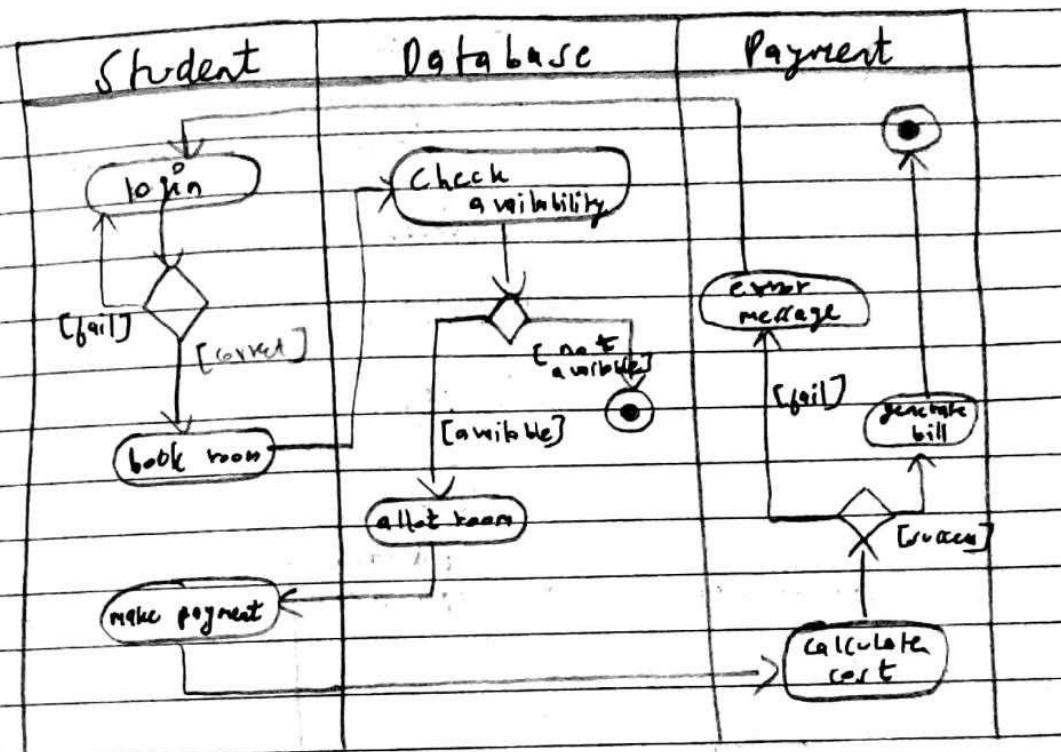
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EDGE

1) College Management System:-

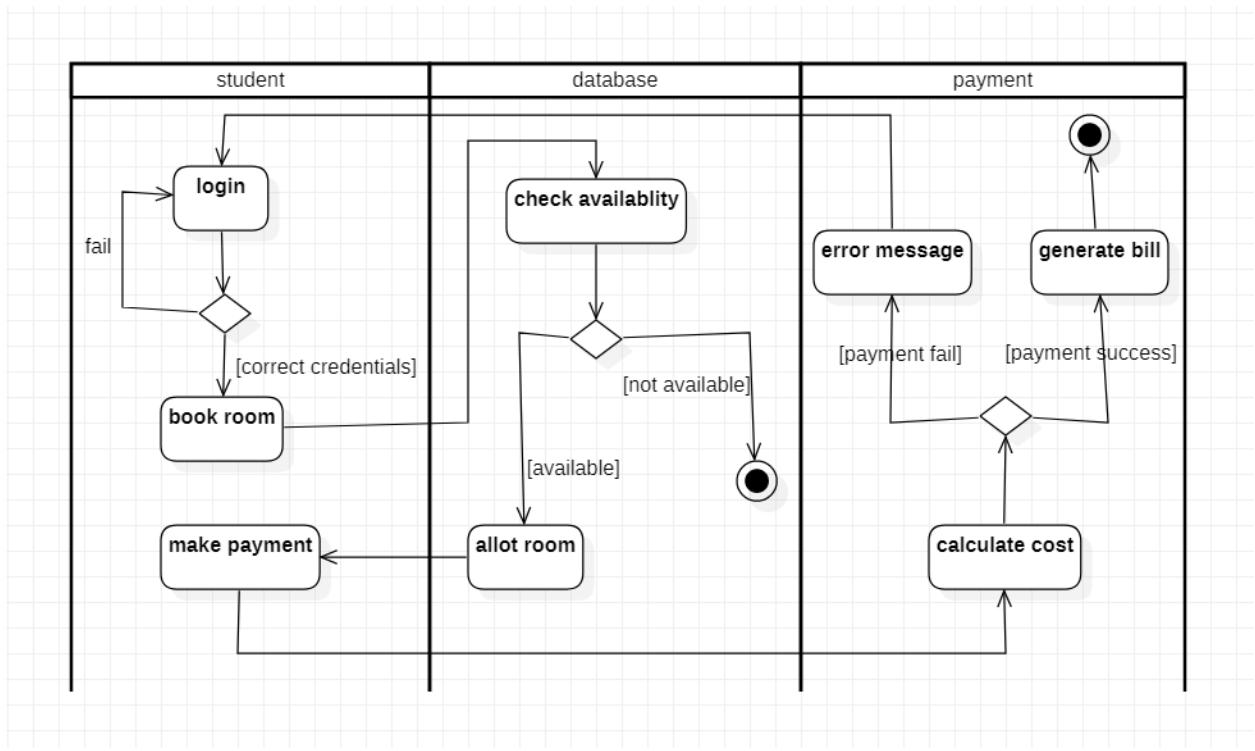




f) Activity Diagram:

2) Hostel Management System.

The given activity diagram explains how student can login to book rooms in hostel and activities happening in three dept: payment, database & login are shown.



3. Stock Maintenance System-

a) SRS:

Stock Maintenance System

Problem statement :-

In order for people to purchase things in stores, they should maintain prod details and stocks. There is a need for a system that could store details of purchases and remaining stocks along with prod details.

SRS:-

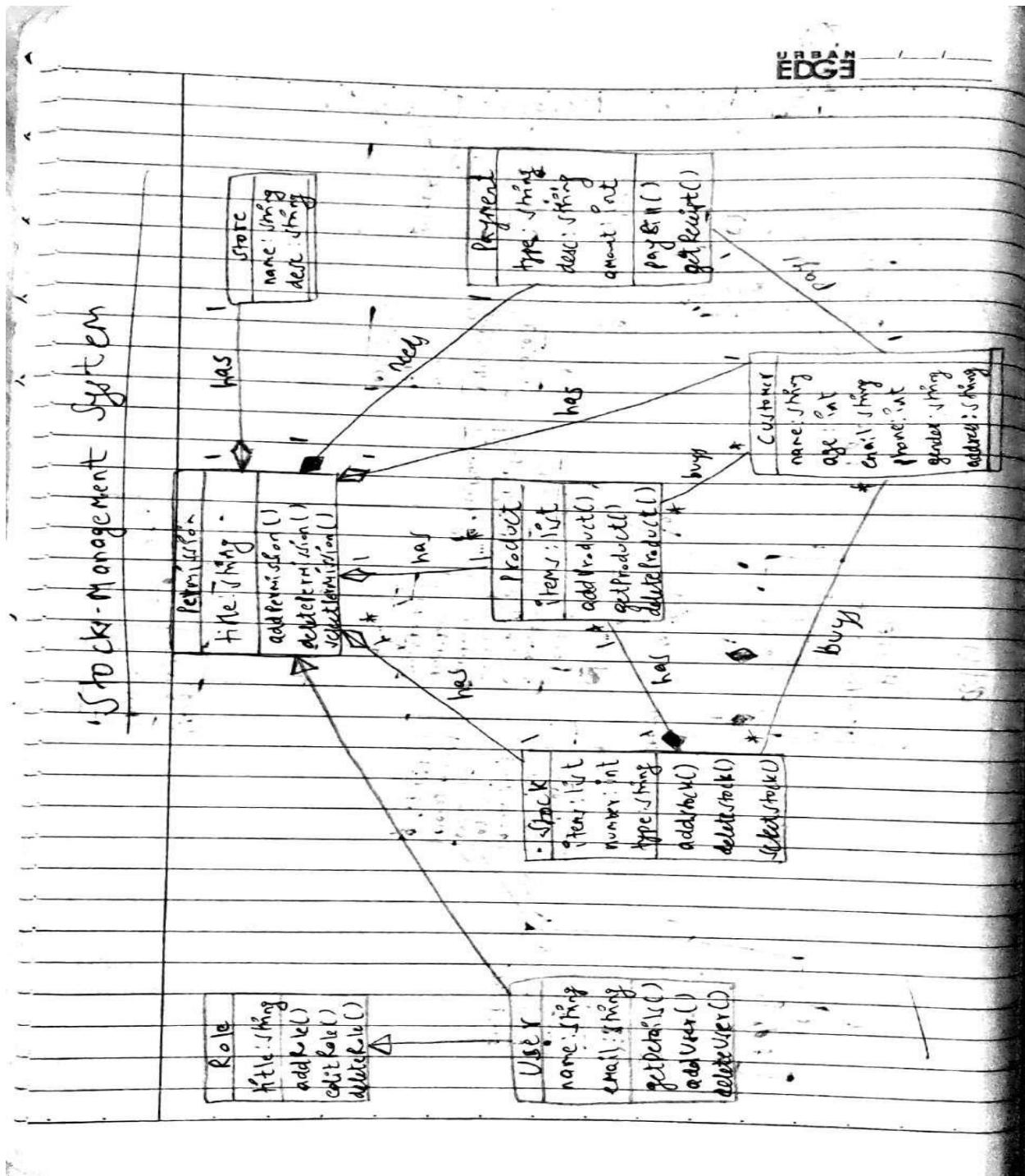
- * Customer can purchase one or more prod on any day which will have a code price & quantity.
- * Customer pays bill for their purchase, bill no, type and details of same is mentioned.
- * Stock of prod is maintained separately.
- * Stock contains details such as name, id generated, quantity, cost etc. which is retrieved during sales and purchase of product.
- * Vendor deals with info abt details of suppliers giving prod to organization.

- * Vendor consists of name, address, email id, sales fax, no etc.
- * Products are displayed in stores. All info regarding store such as id, name, address type are used to locate any product stored can be of many types.

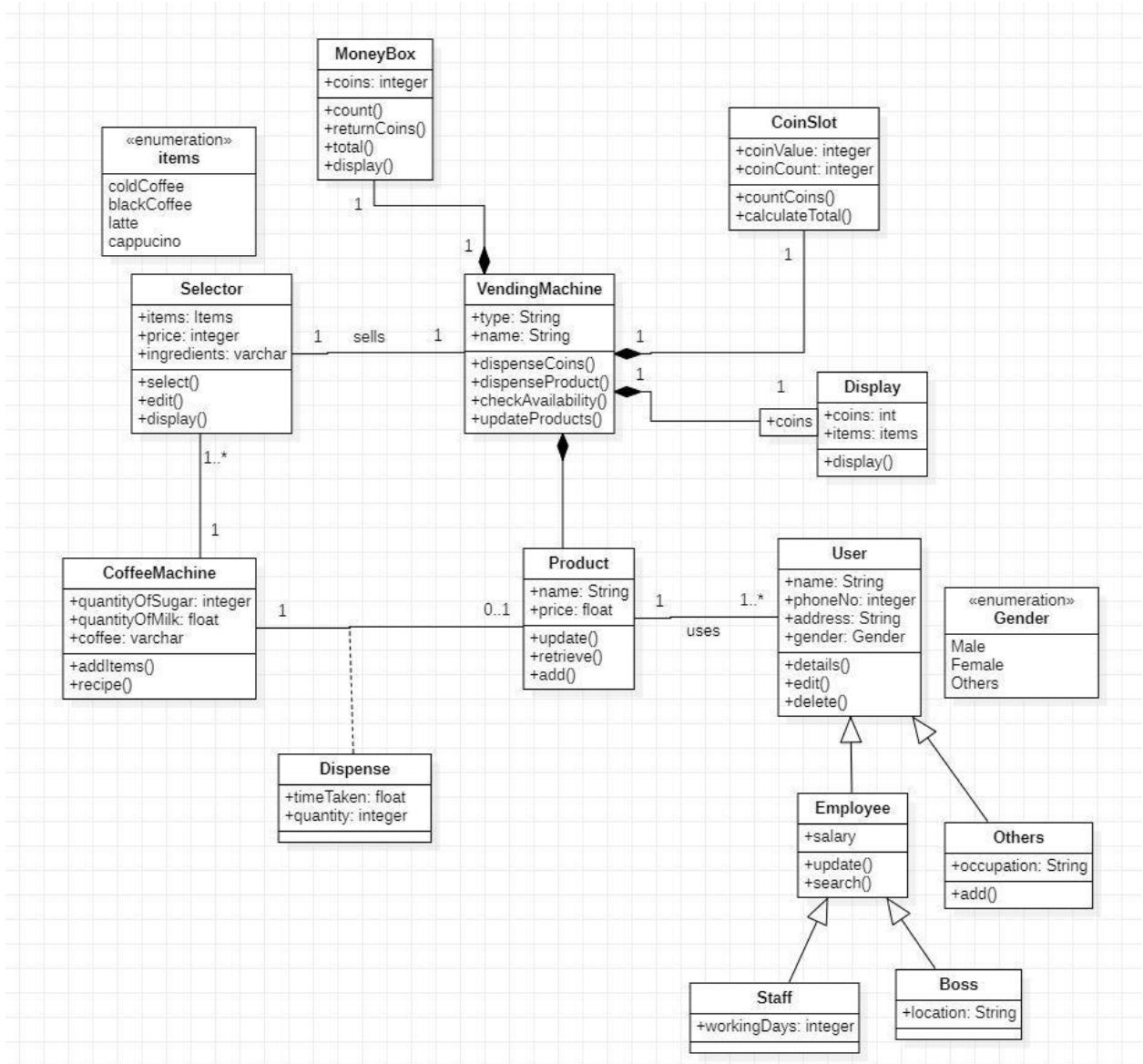
Justification for class diagram:-

- * A store which has several substores generalised & is composed of many products which in turn is associated with vendors. Every customer buys a product hence associated & pay bill for the stock purchased.

b) Advance Class Diagram:

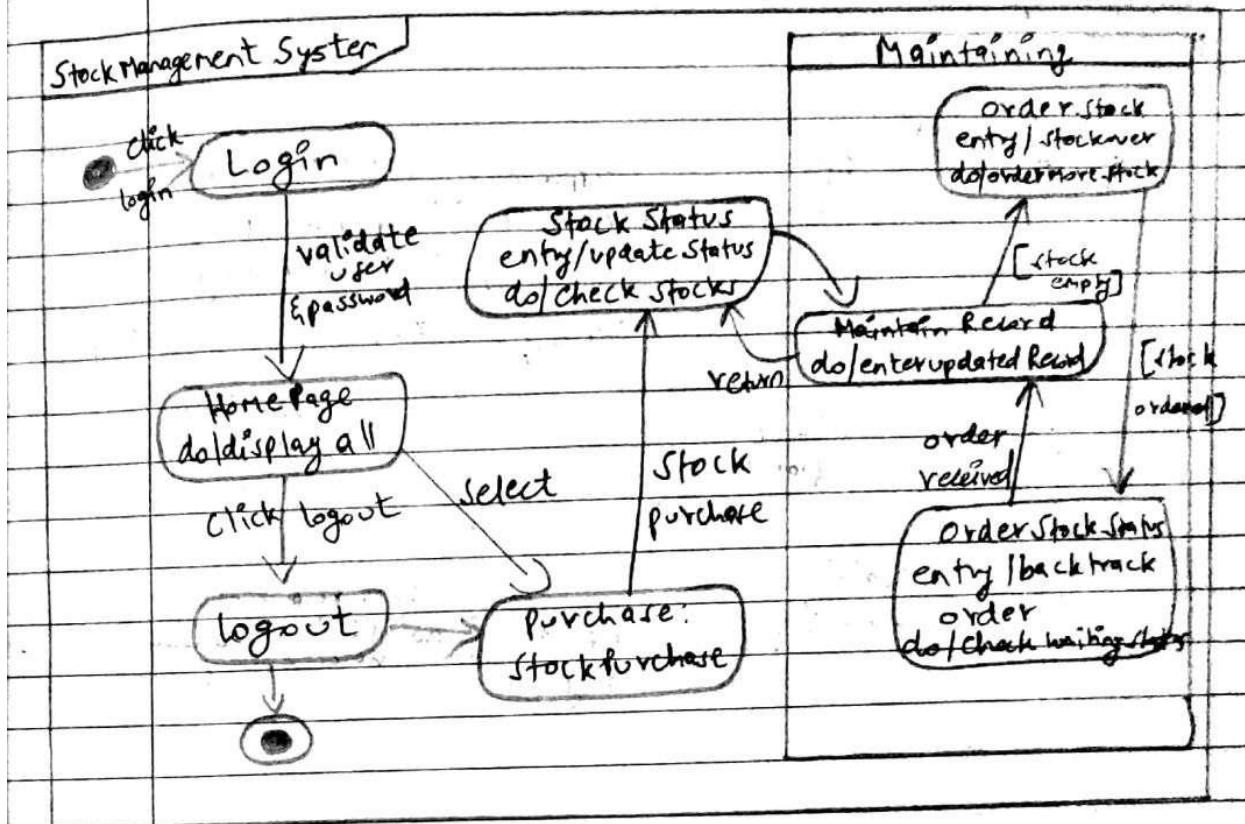


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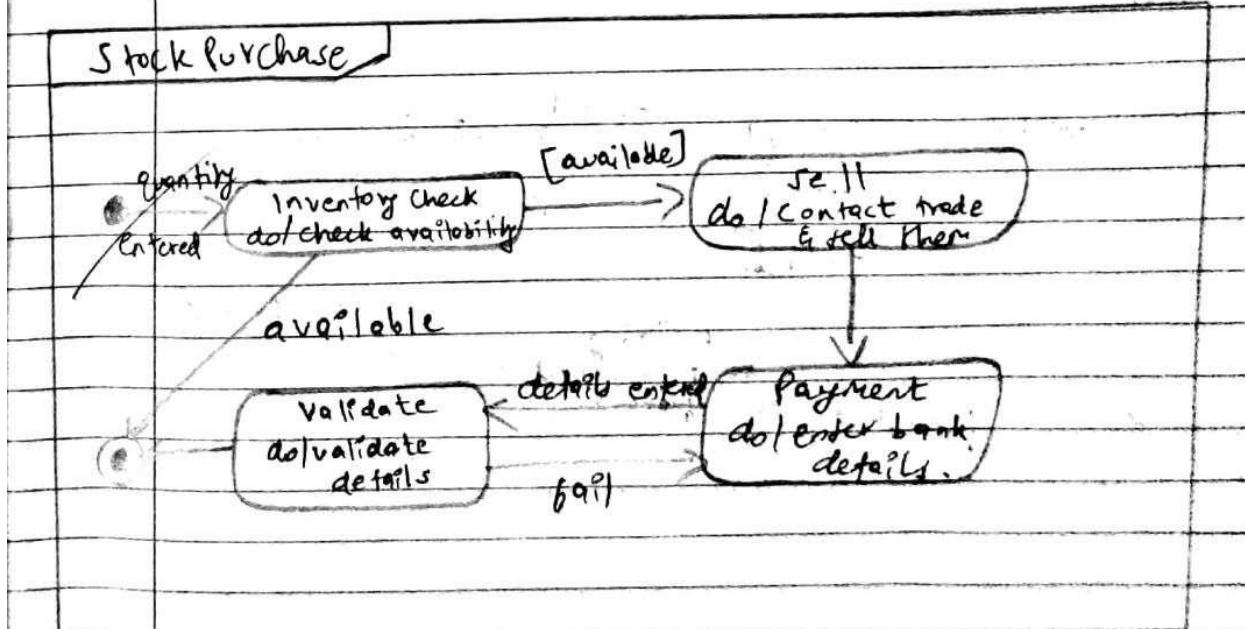


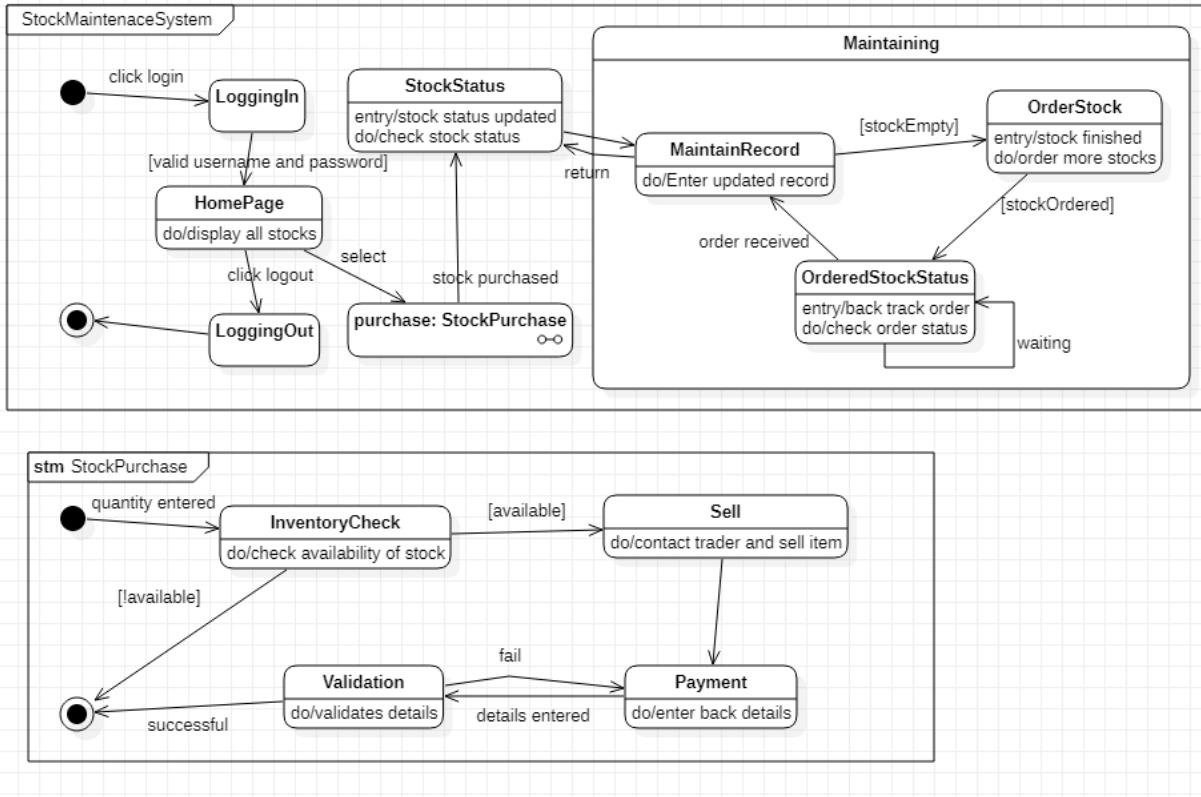
c) Advance State Diagram:

3) Stock Management System:



Stock Purchase

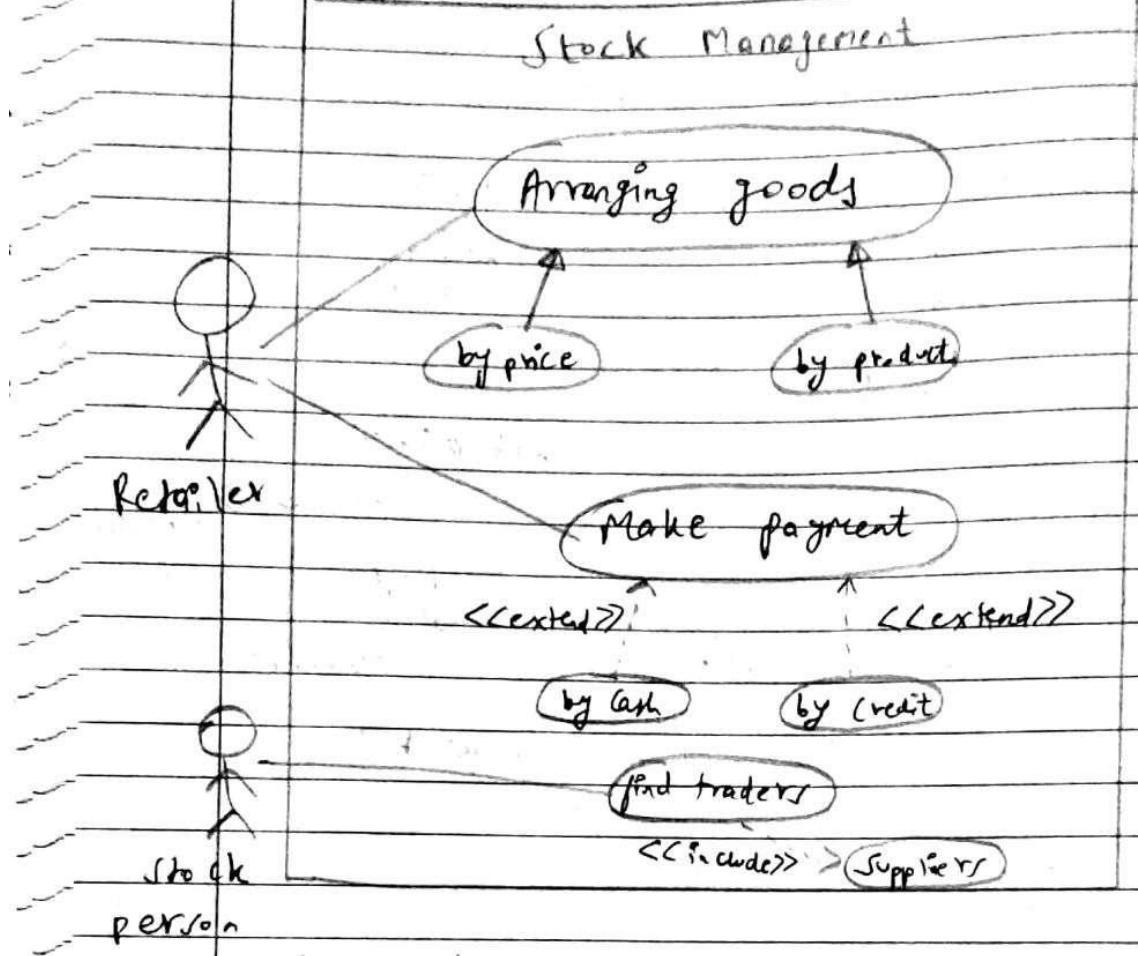




d) Advance Use Case Diagram:

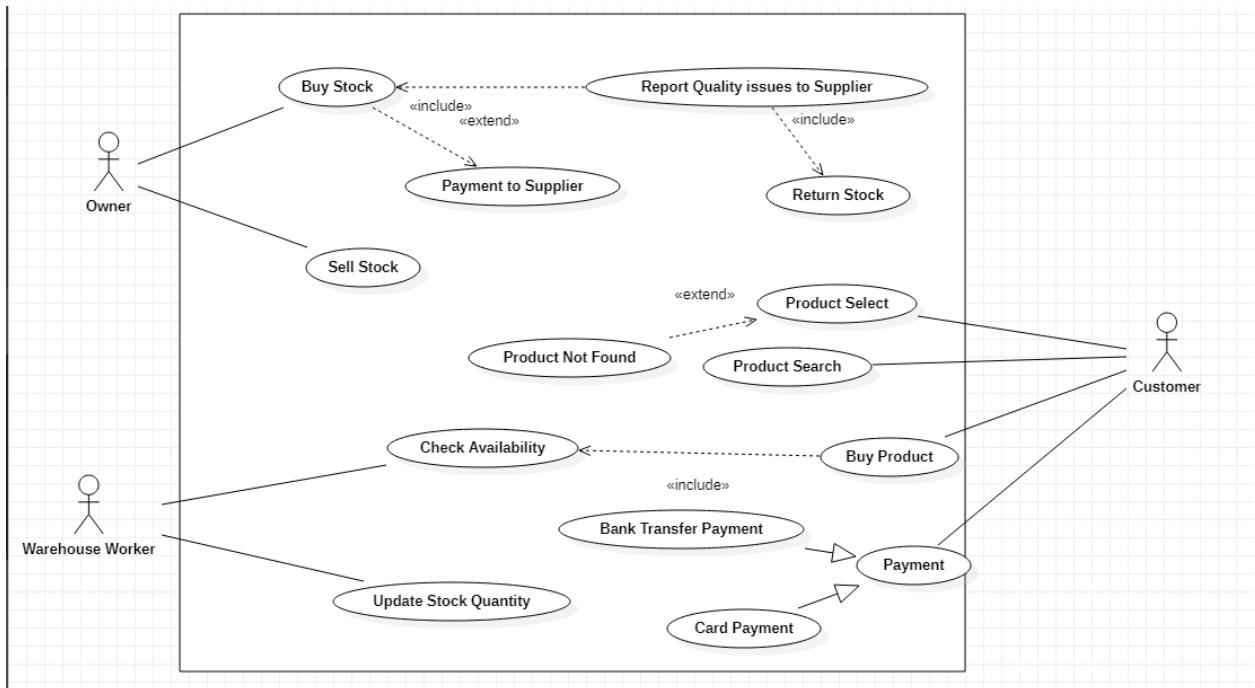
3)

Stock Management System



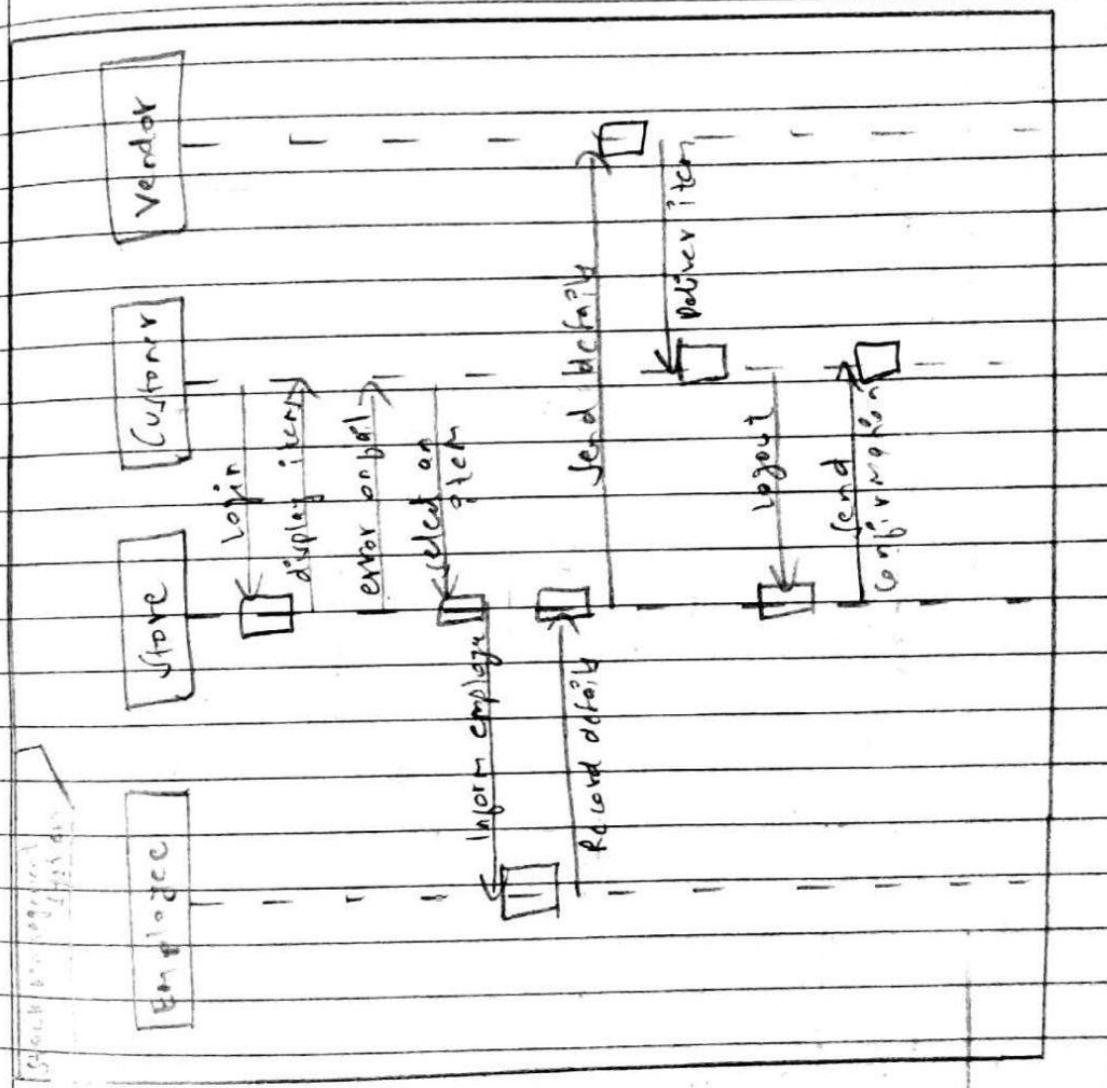
Justification

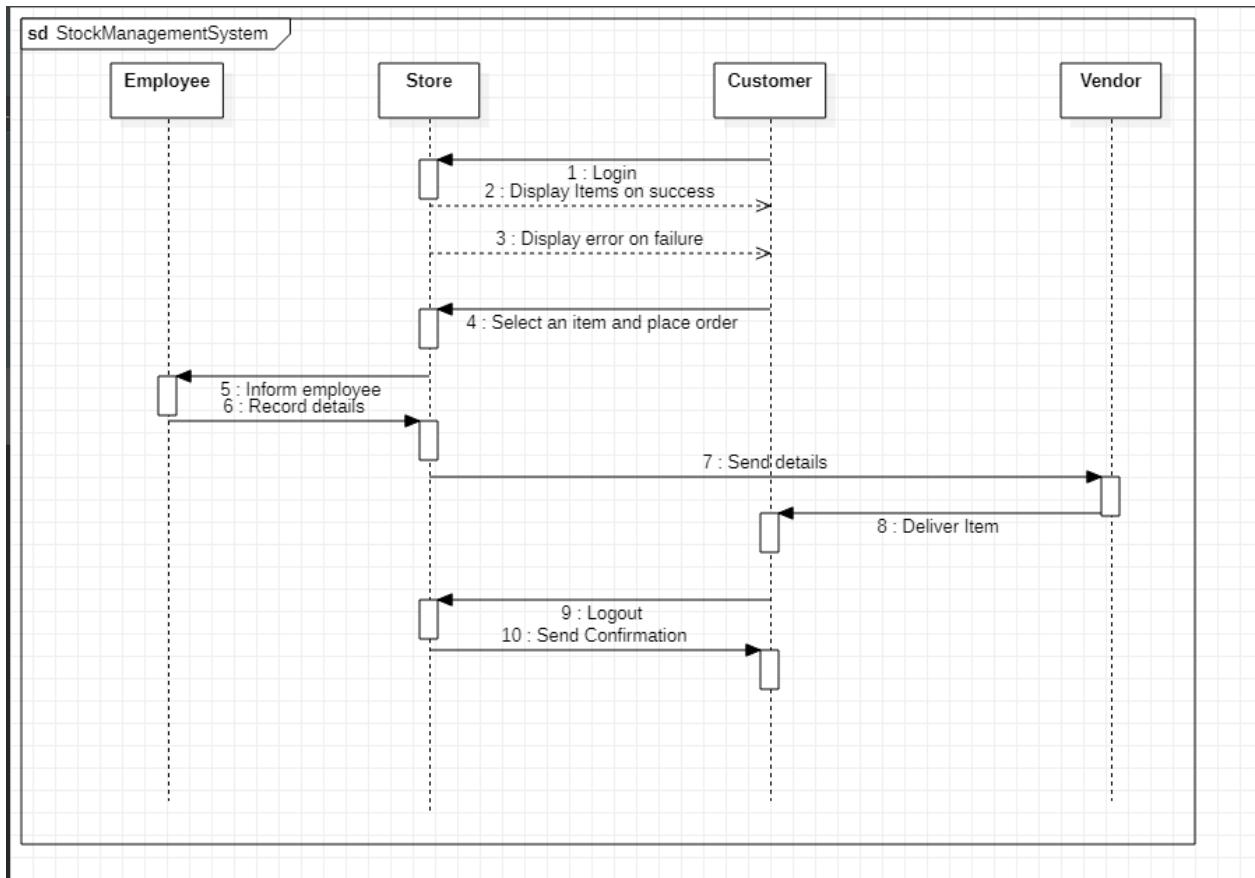
All funcs for given sys are mentioned & actors such as customer, owner & broker are given proper relations between them & func are mentioned.



e) Sequence Diagram:

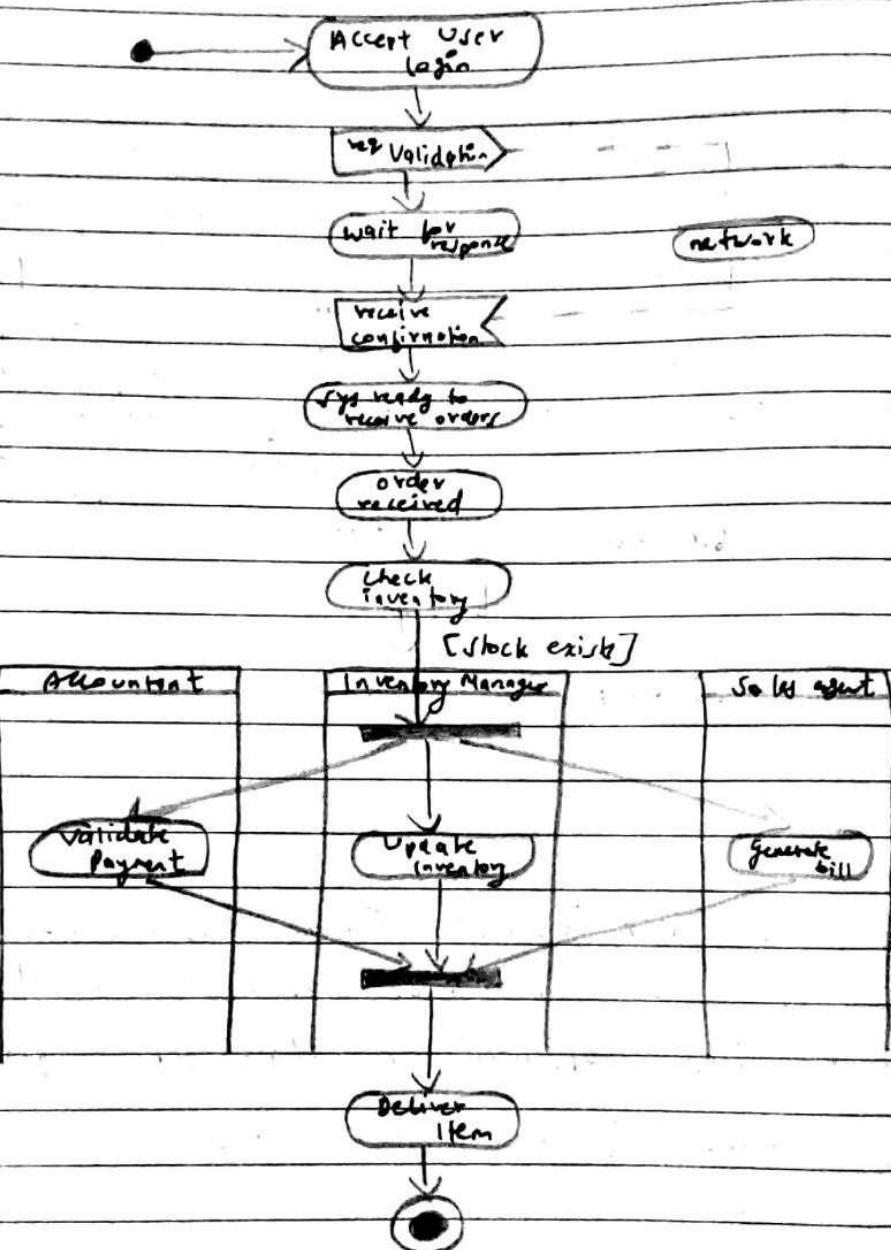
3) Stock Management System :-



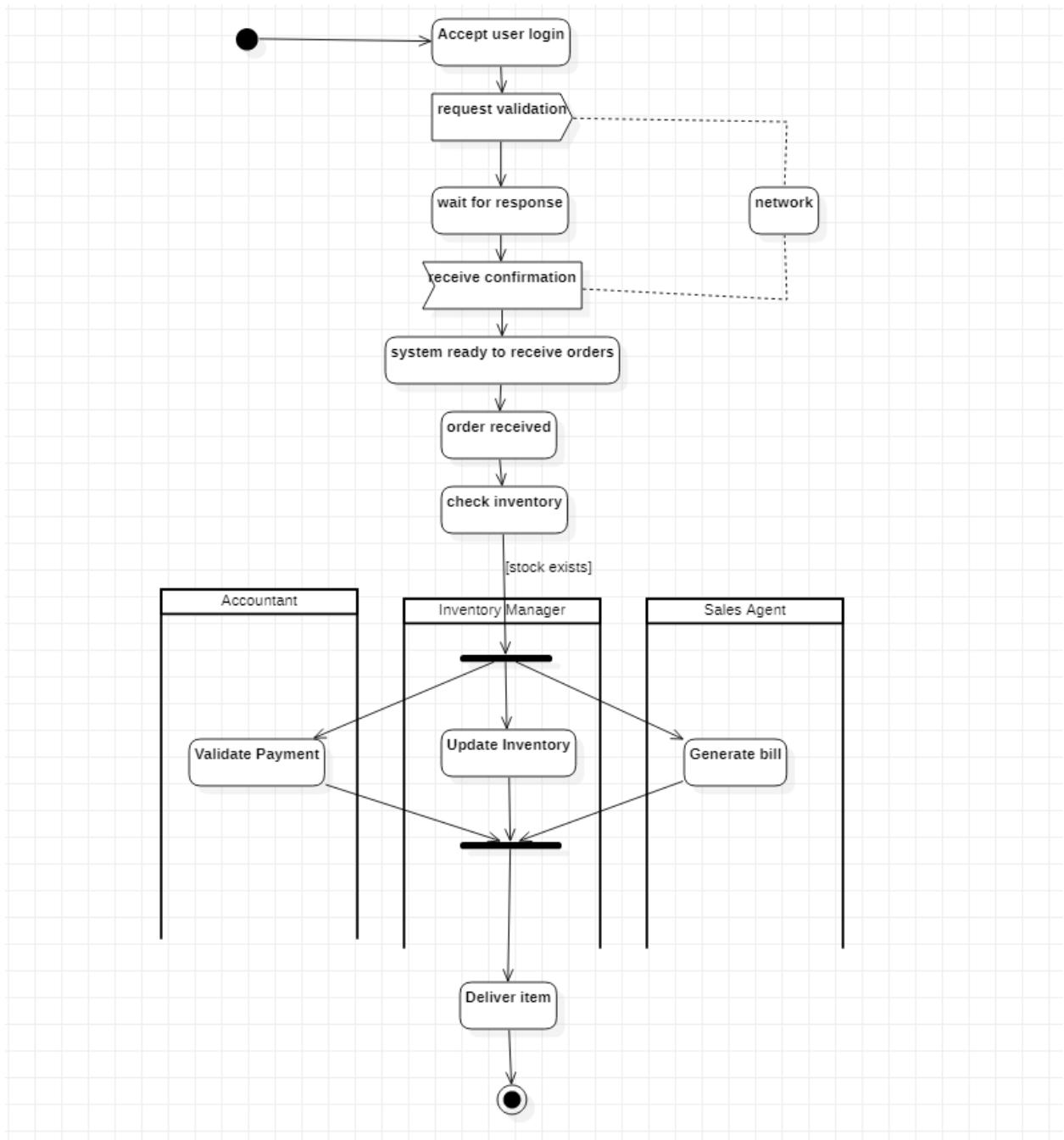


f) Activity Diagram:

3) Stock Maintenance System:



The given interaction Model gives complete system interaction with user & explains from login, validation to accountent, manager, sales agent & all activities w.r.t system.



4. Coffee Vending Machine-

a) SRS:

Coffee Vending Machine

Problem Statement

There is a need for a machine which is automated doesn't require manual operating to dispense coffee. The contents used should be uniform & the acceptance of payment needs to be handled. It should be extensible, reusable & modular.

SRS :-

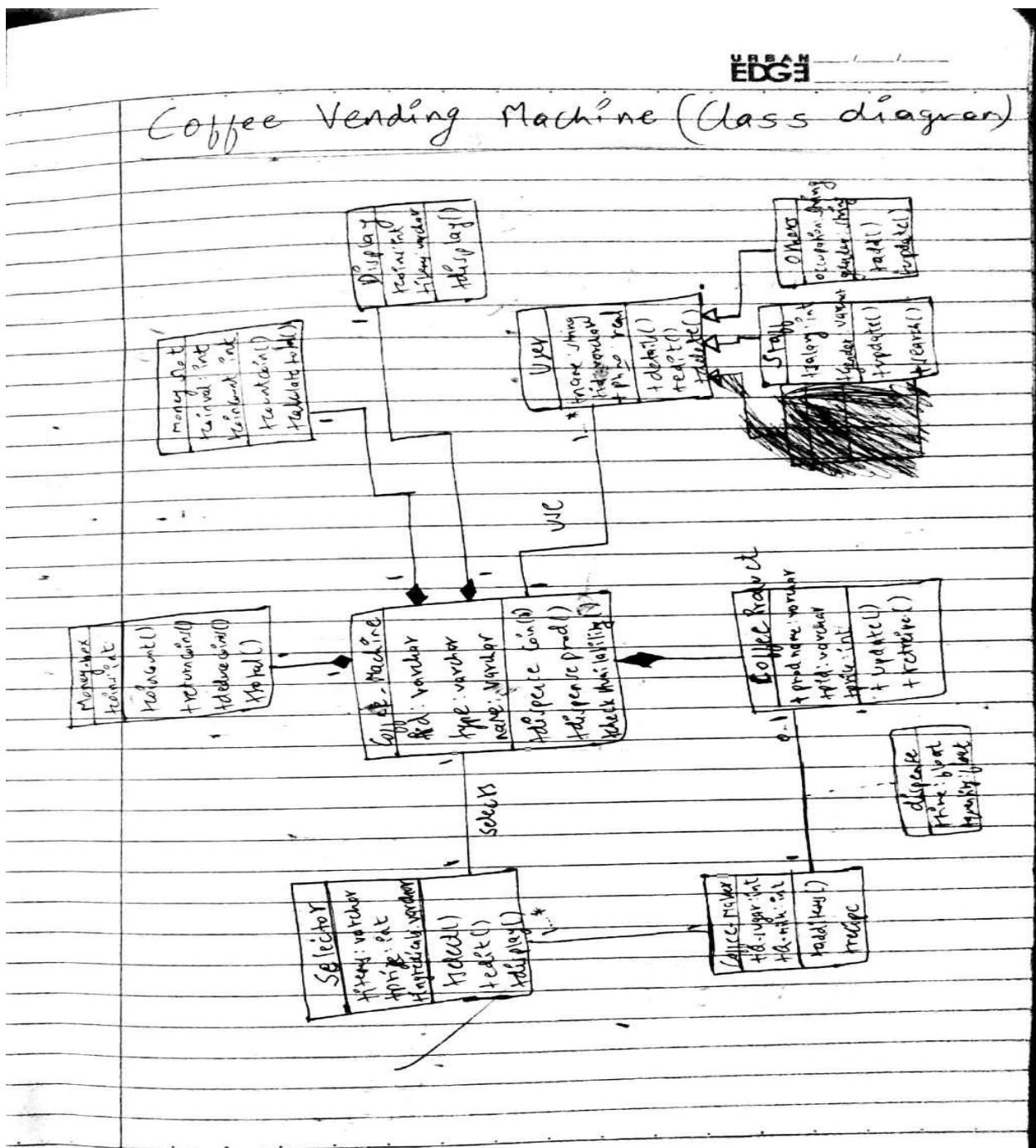
- * Vending machine must have money box, coin slot, display screen & probe.
- * User on selecting a coffee, machine, should be able to dispense it.
- * User places empty cup below filter. He shall be able to choose his preferred beverage.
- * There must be buttons for user to interact with system.
- * System shall check for properly inserted coins.
- * Coffee needs to be dispensed after a coin is inserted.

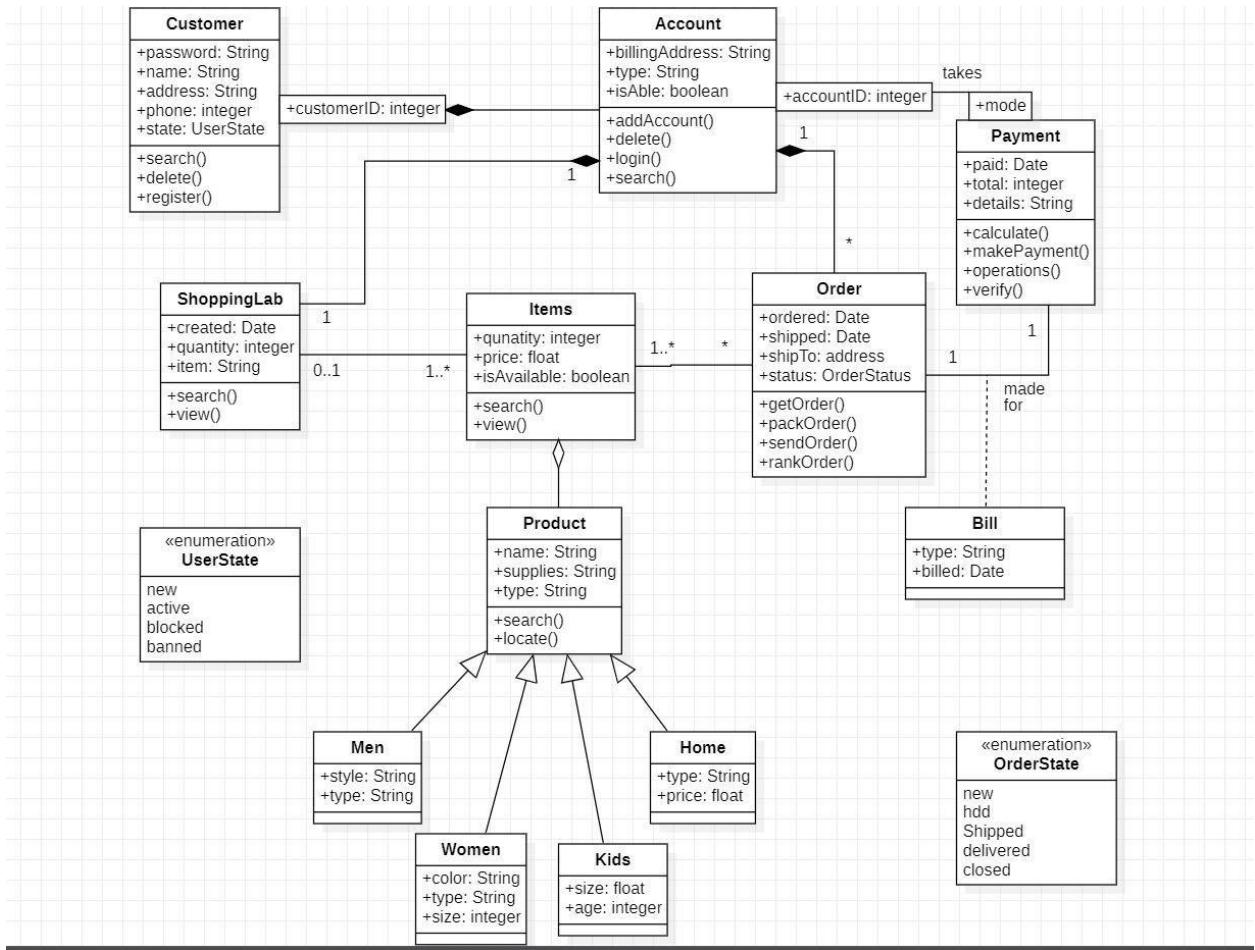
- * System must accept coins of diff amount & validate them.
- * System shall be able to detect low amt of ingredients & low no of cups and indicate with an LED.

Justification for class diagram

* A Coffee vending machine has a controller which has coin, prod dispenser & coin collector as independent parts, so aggregated which is composed of products which is composed of coffee, tea & milk, we use association with direction to link them. Prod dispenser is composed of prod hence composition.

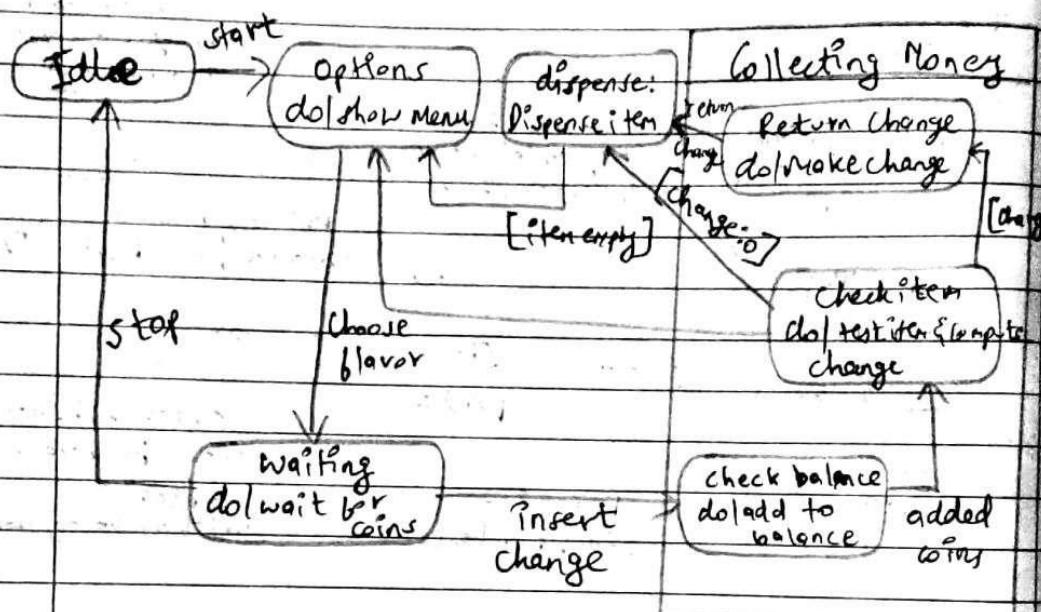
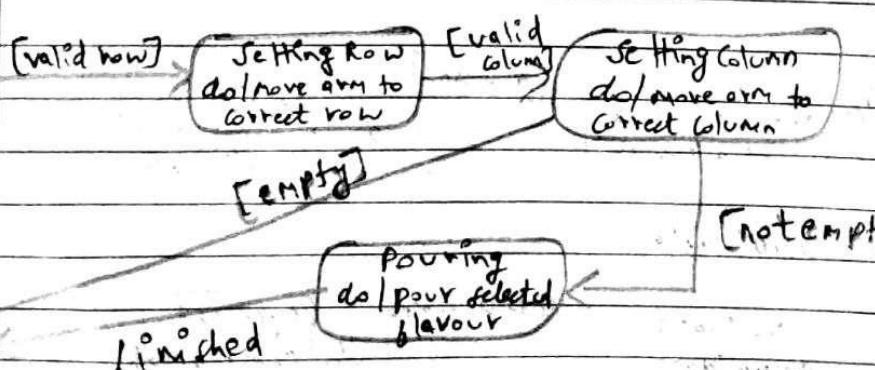
b) Advance Class Diagram:

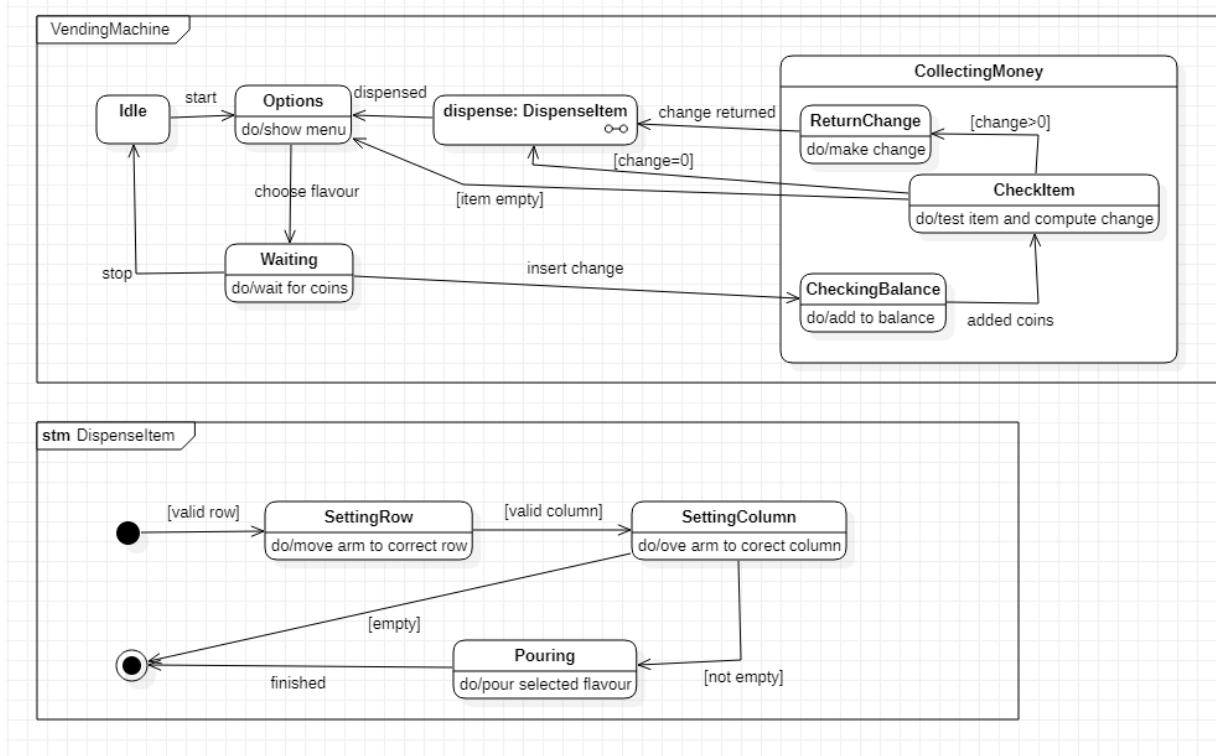




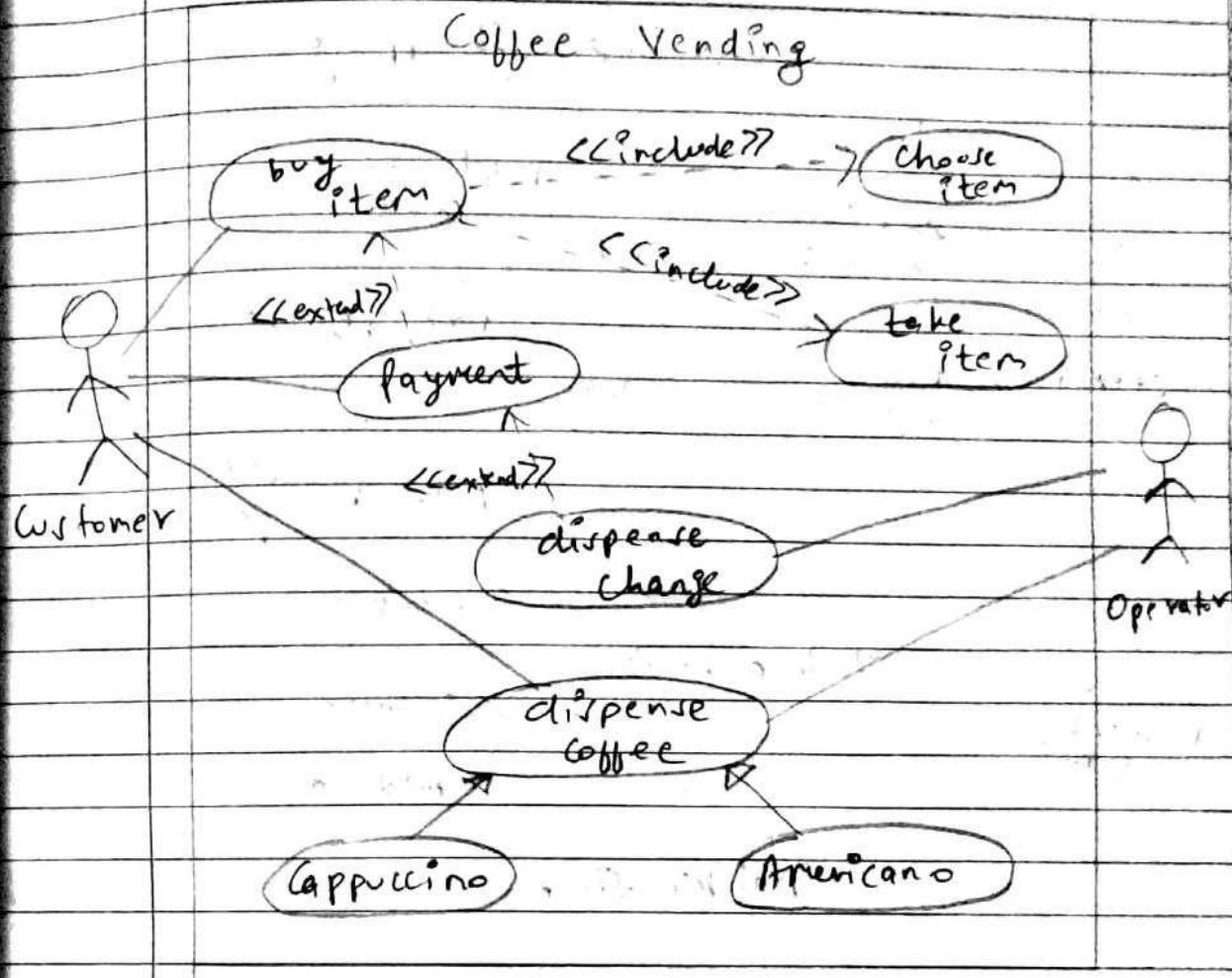
c) Advance State Diagram:

4) Coffee Vending Machine:

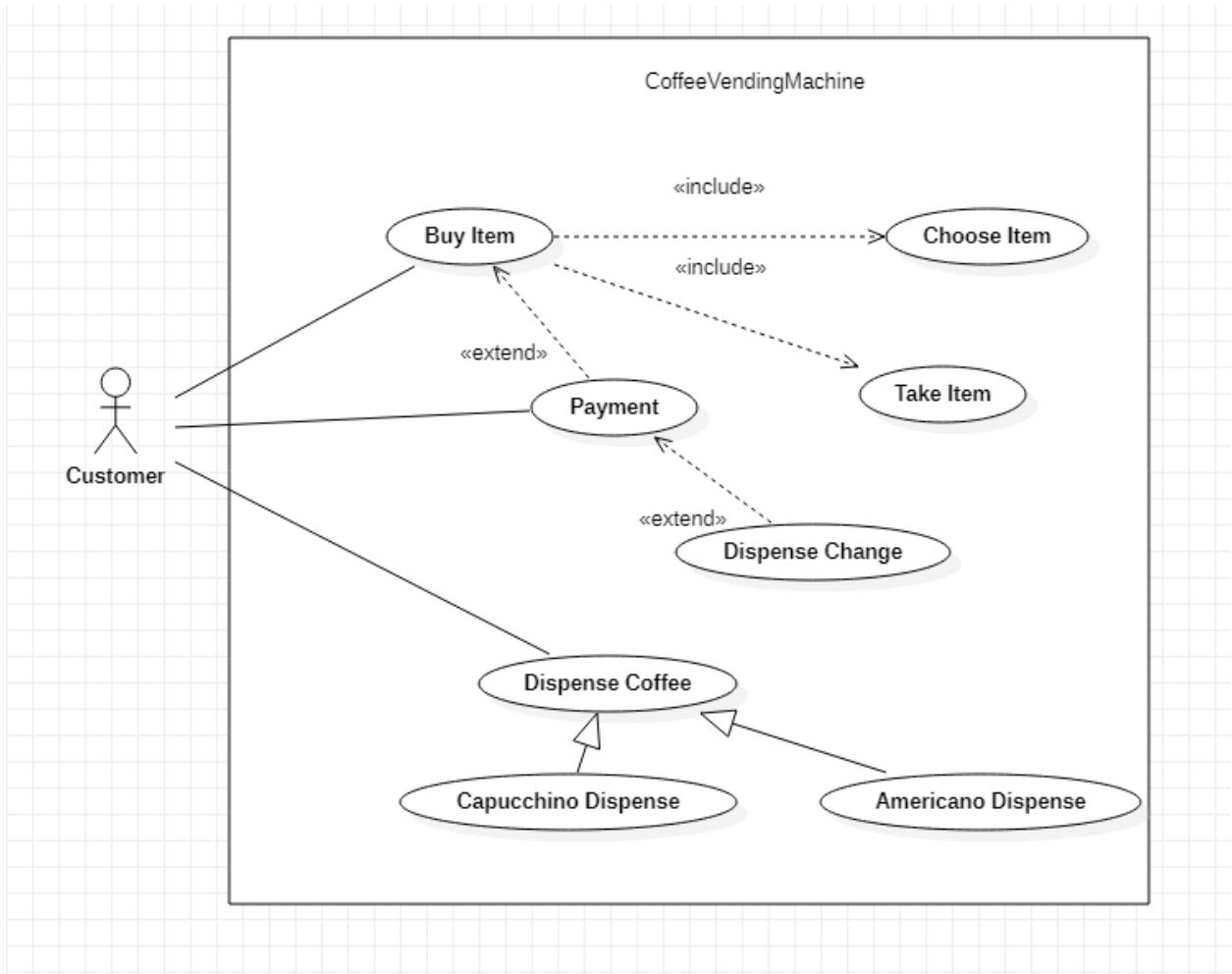
Vending MachineDispense item



d) Advance Use Case Diagram:

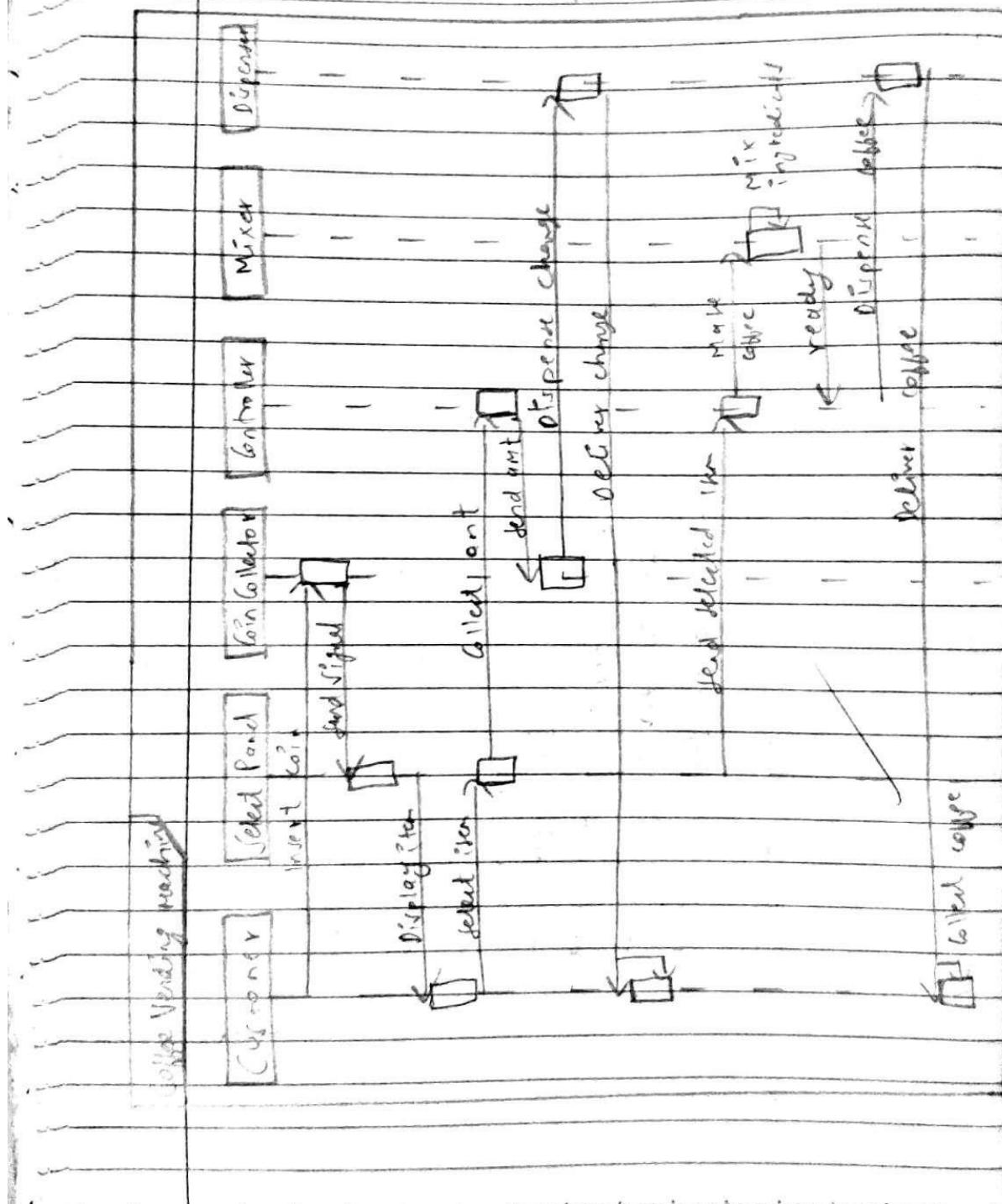
4) Coffee Vending SystemJustification

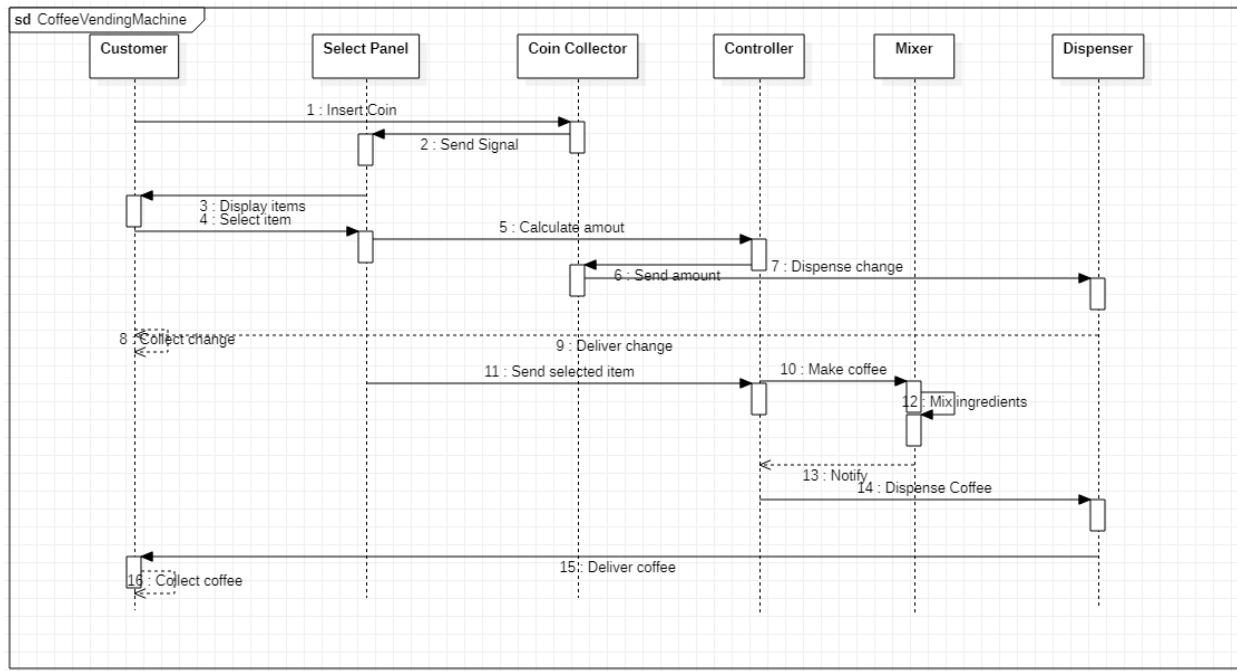
For given application all respective func of all parts are mentioned with all involved actors like Customer, system seller & all relations with func & actors are given accordingly.



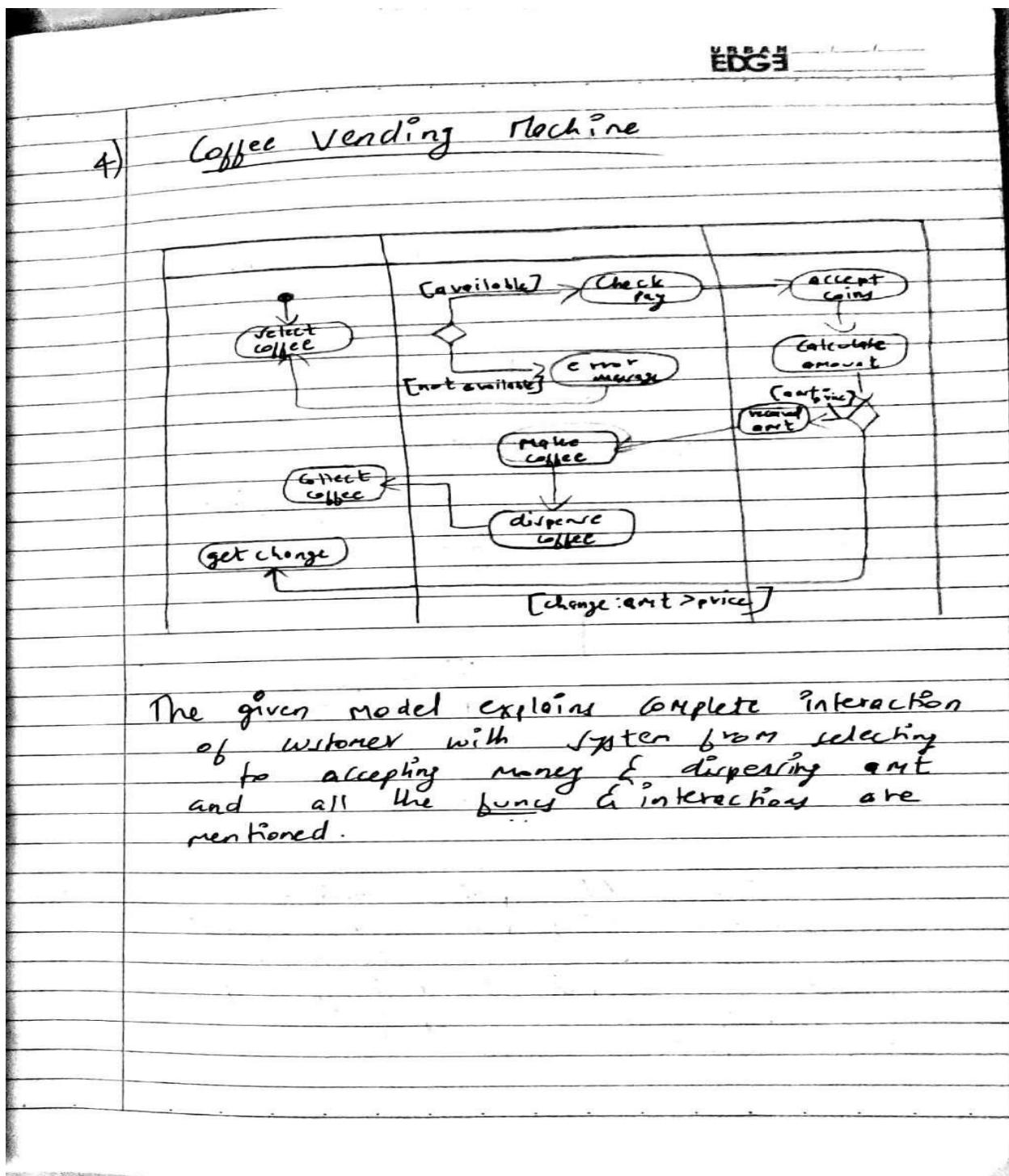
e) Sequence Diagram:

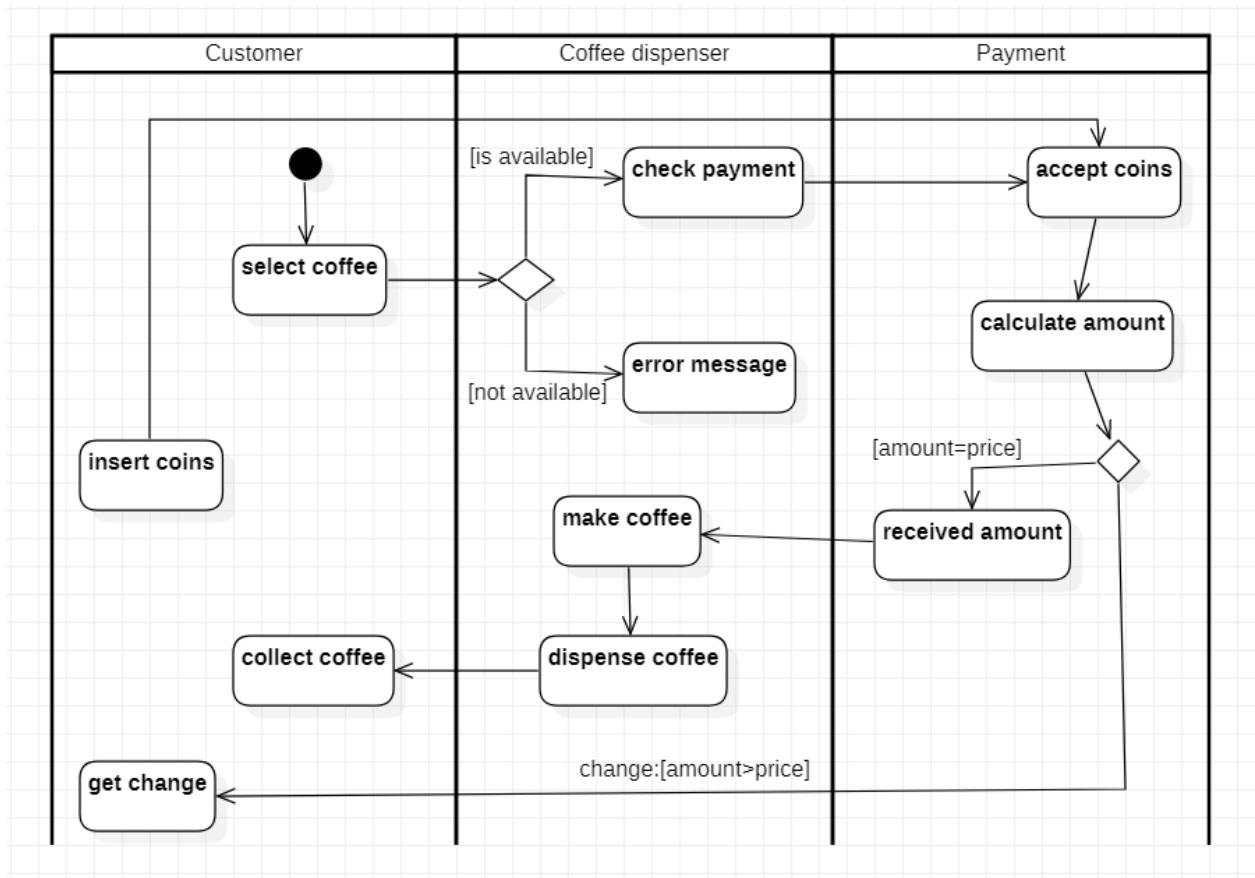
4) Coffee Vending Machine:-





f) Activity Diagram:





5. Online Shopping System-

a) SRS:

Online Shopping System

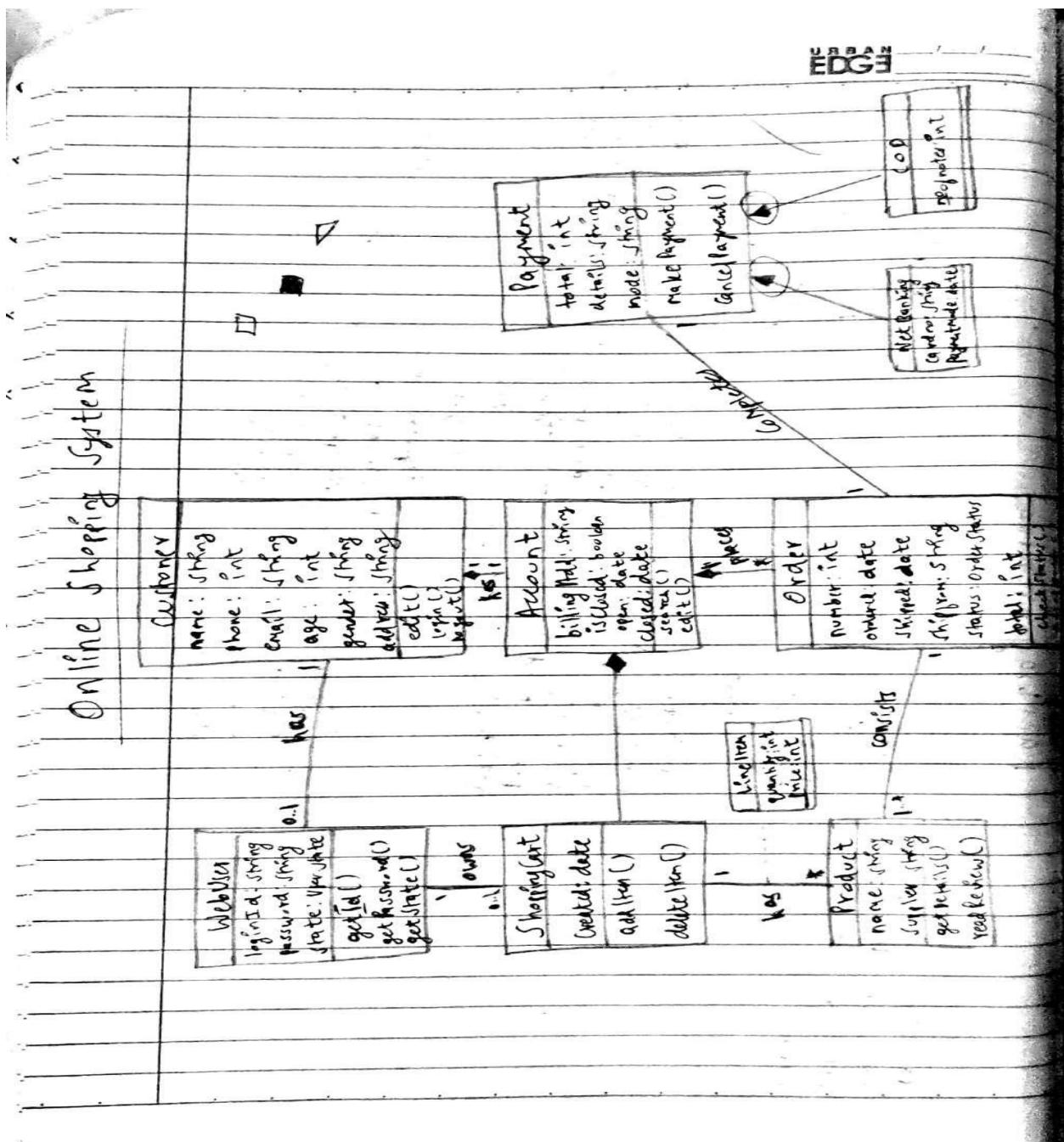
Problem Statement

With more & more people using Internet they prefer to shop for their required items online at comfort of sitting at home and getting it delivered there. All jobs of maintaining inventory, billing & delivery needs to be handled by a central system. It is less convenient for people to visit diff outlets for diff products.

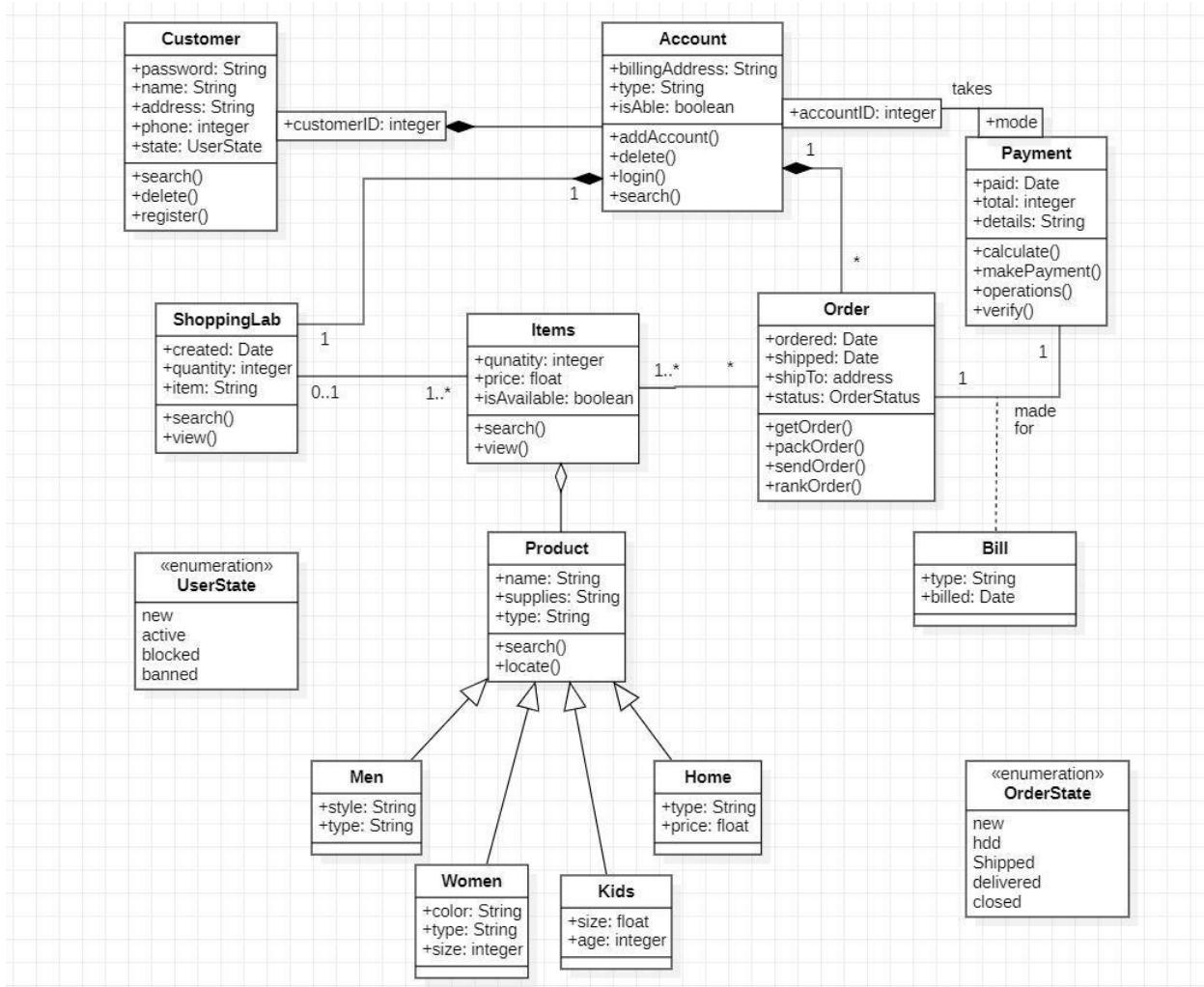
SRS :-

- * The customer must have an account in the online website where they purchase products.
- * Unregistered user can't buy products.
- * Customers login to system by entering valid user id & password.
- * After login, customer can make changes to cart or order items.
- * Different variety of products are listed for men, women & kids.
- * Customers can view all available prods, make comparisons b/w them and make a choice for their purchase.

b) Advance Class Diagram:

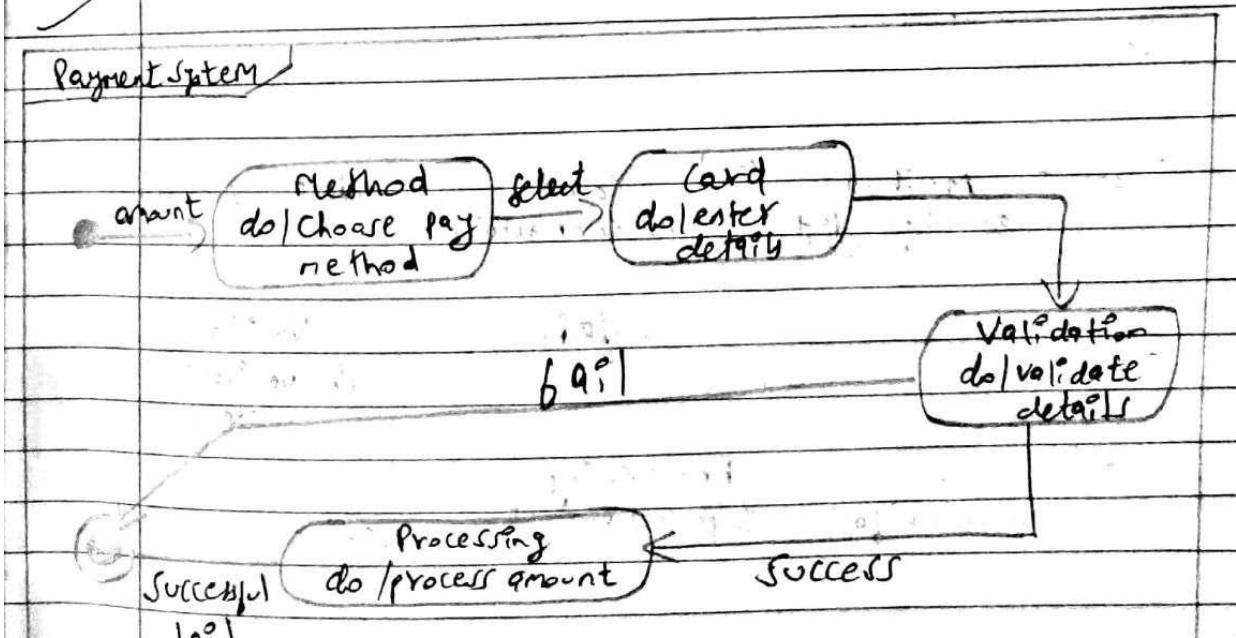
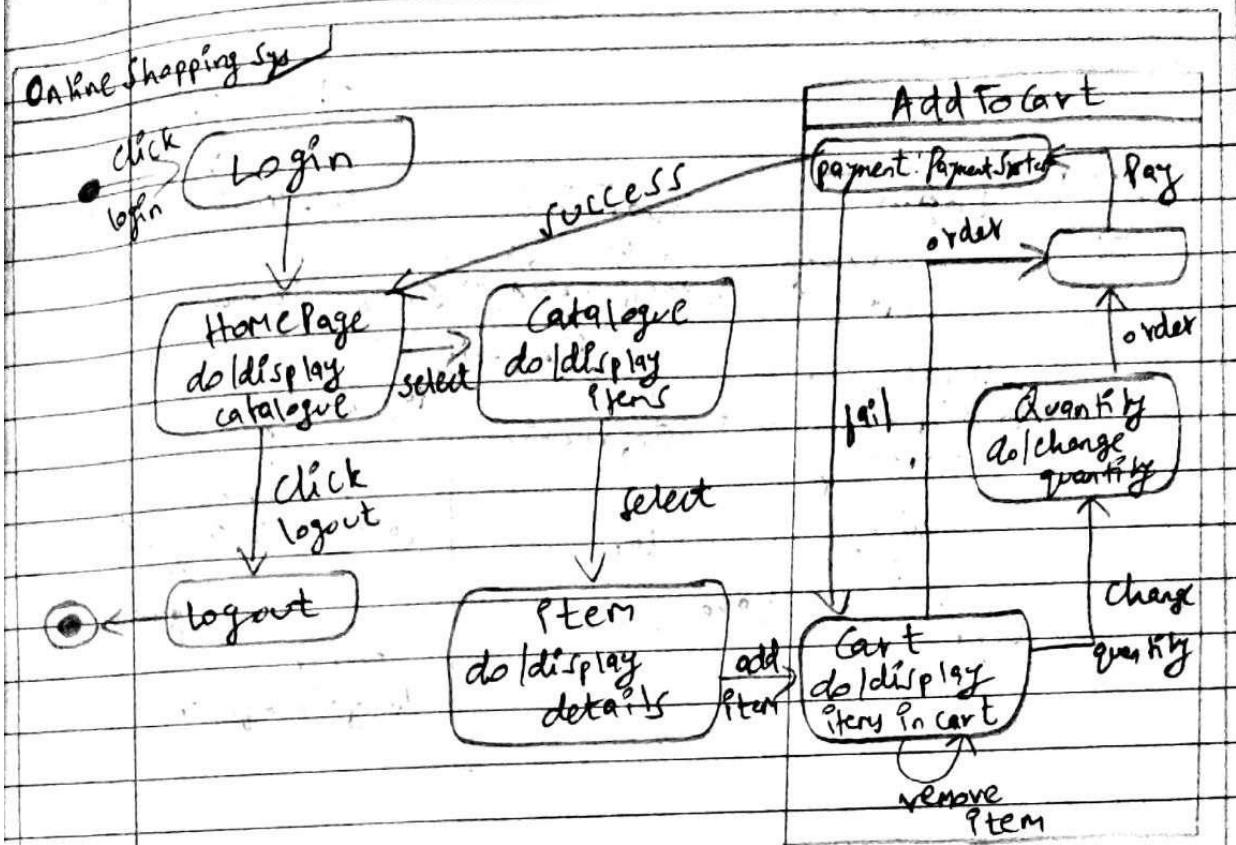


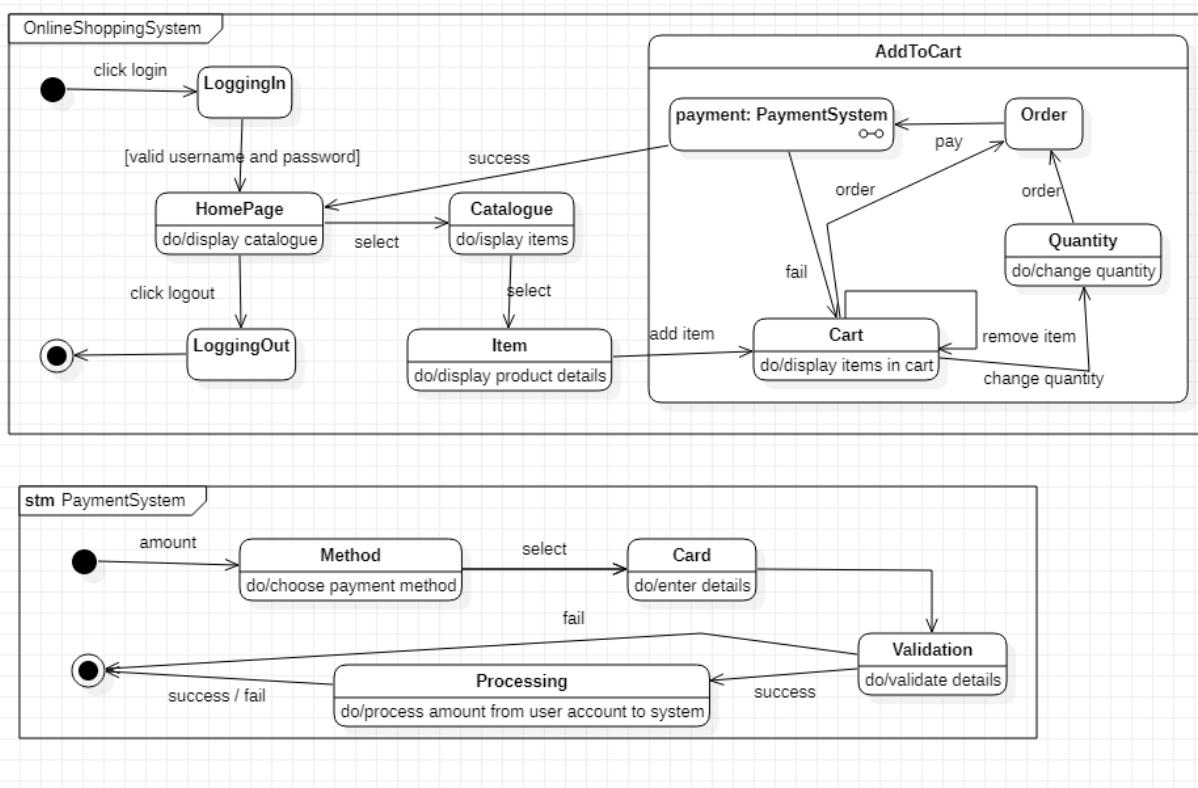
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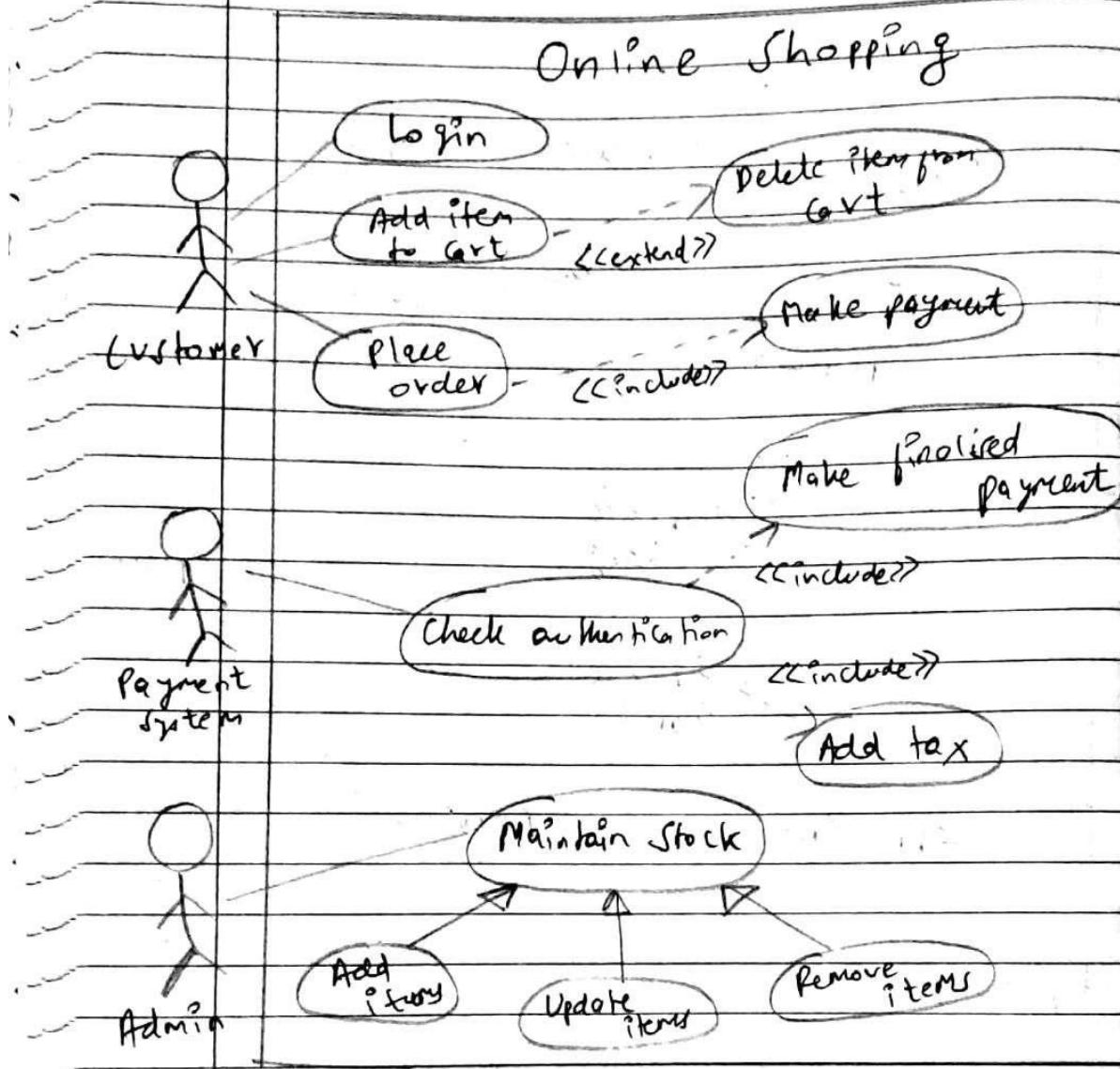
c) Advance State Diagram:

5) Online Shopping System :

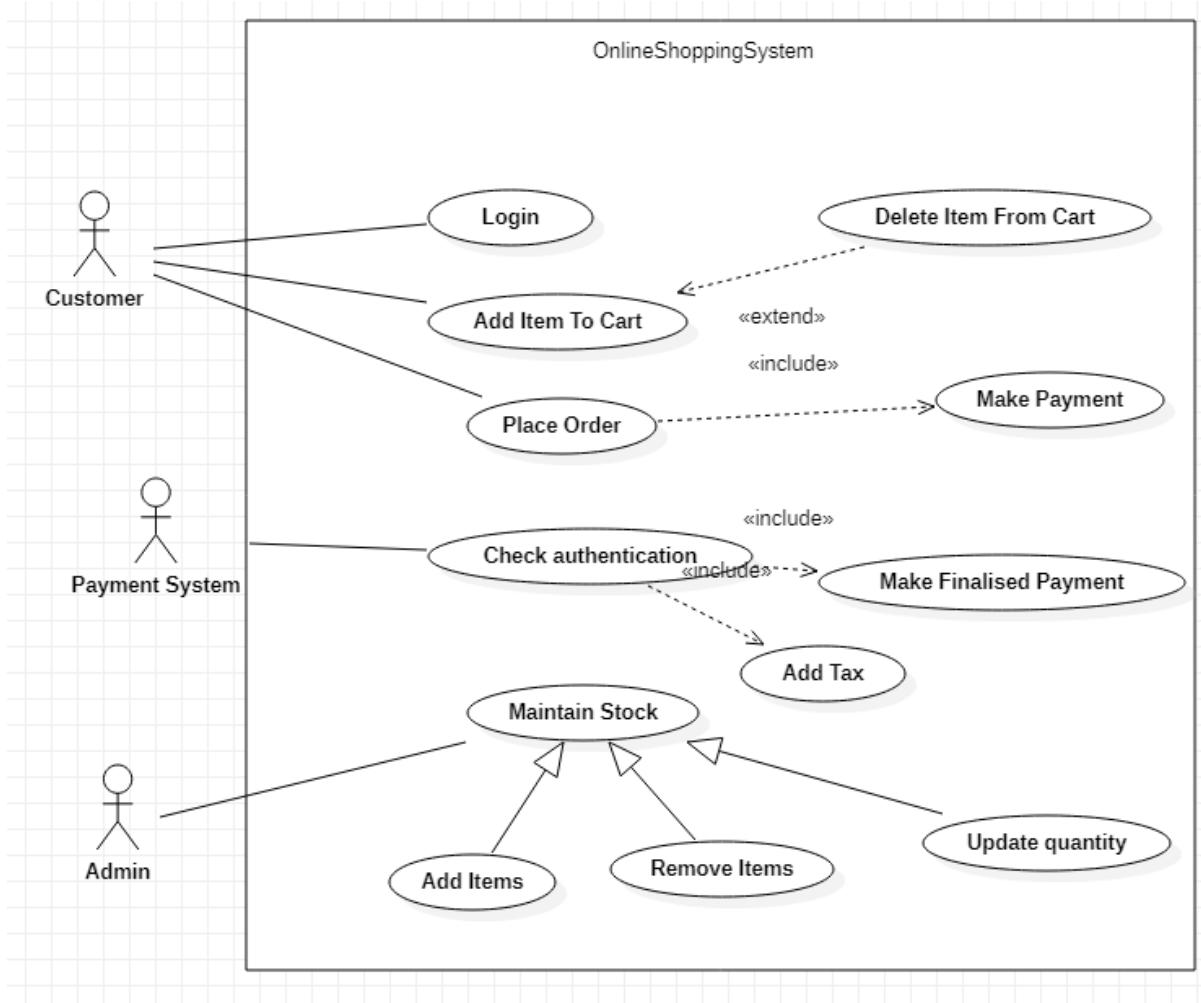




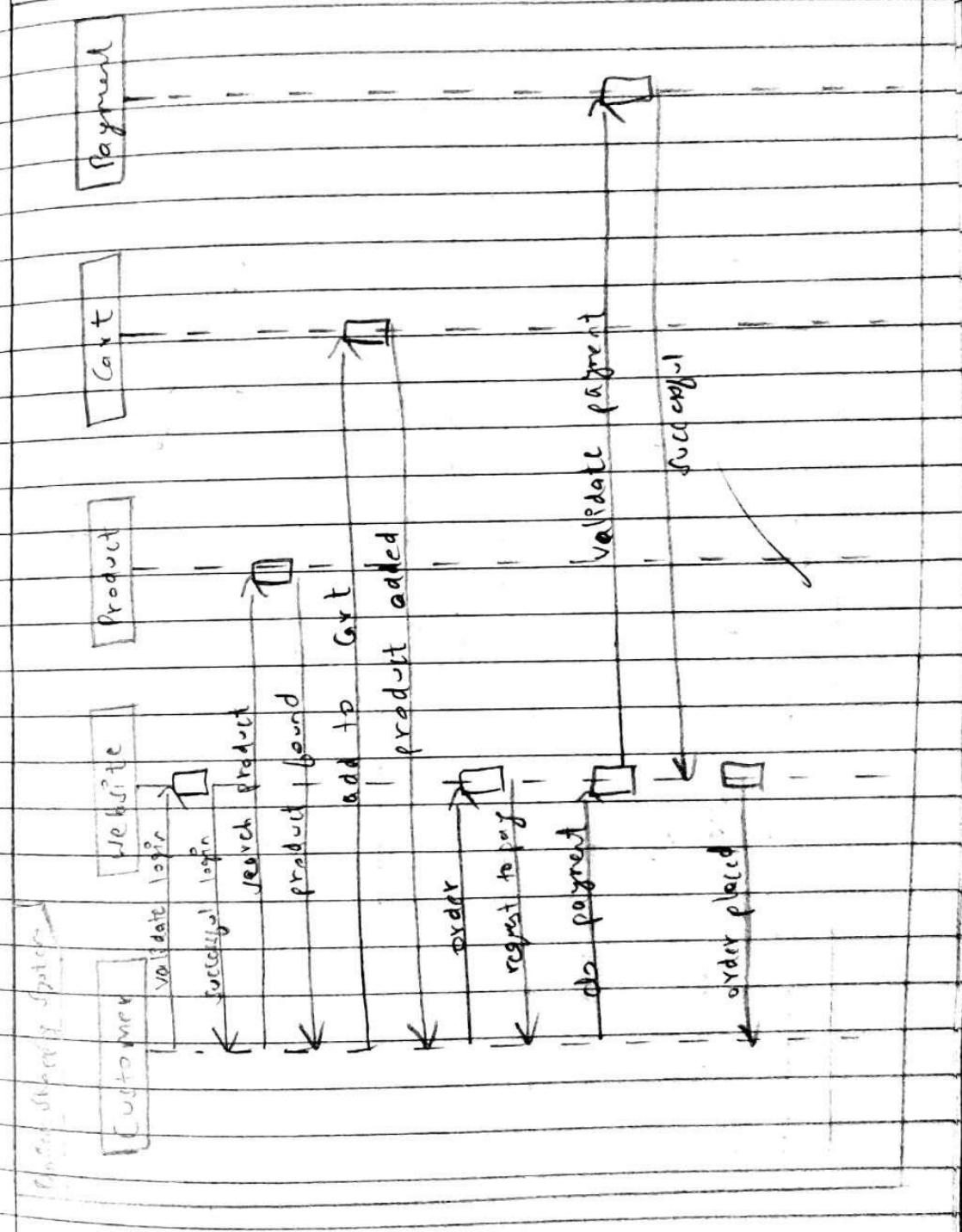
d) Advance Use Case Diagram:

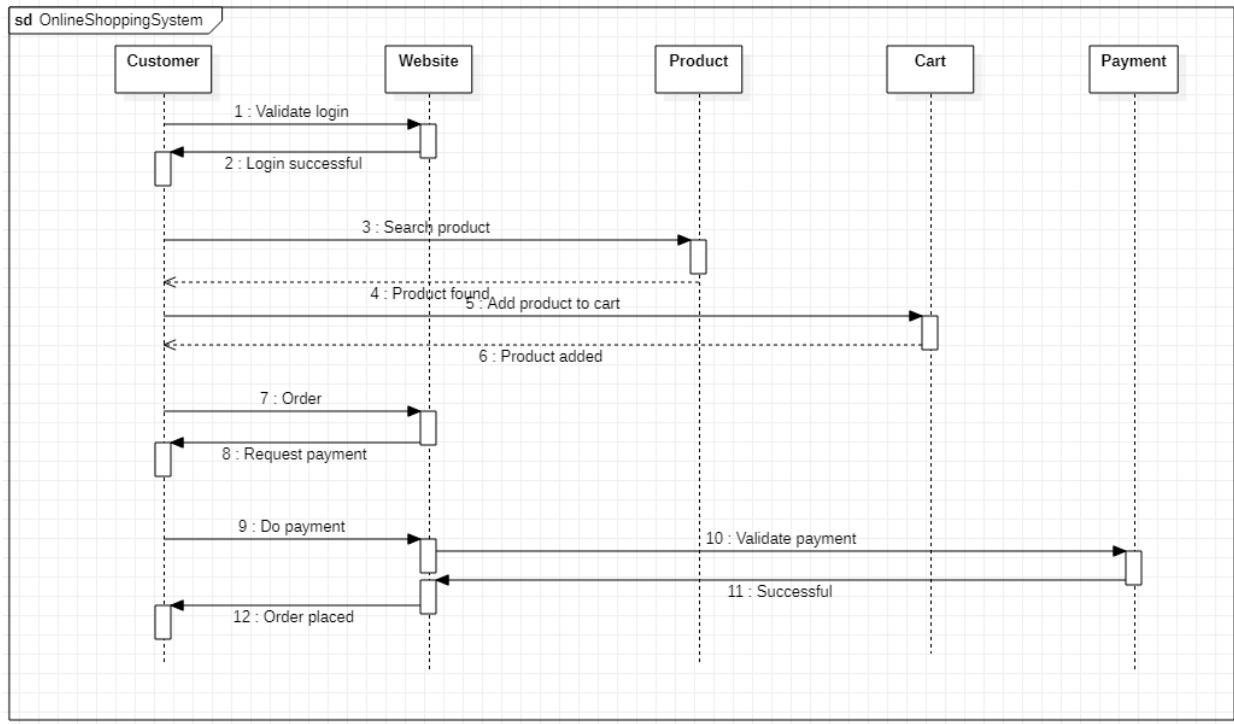
5) Online Shopping SystemJustification

All func for given system are given properly with all func of applications & all the actors like customer, admin, payment system are given and all relations is mentioned clearly.

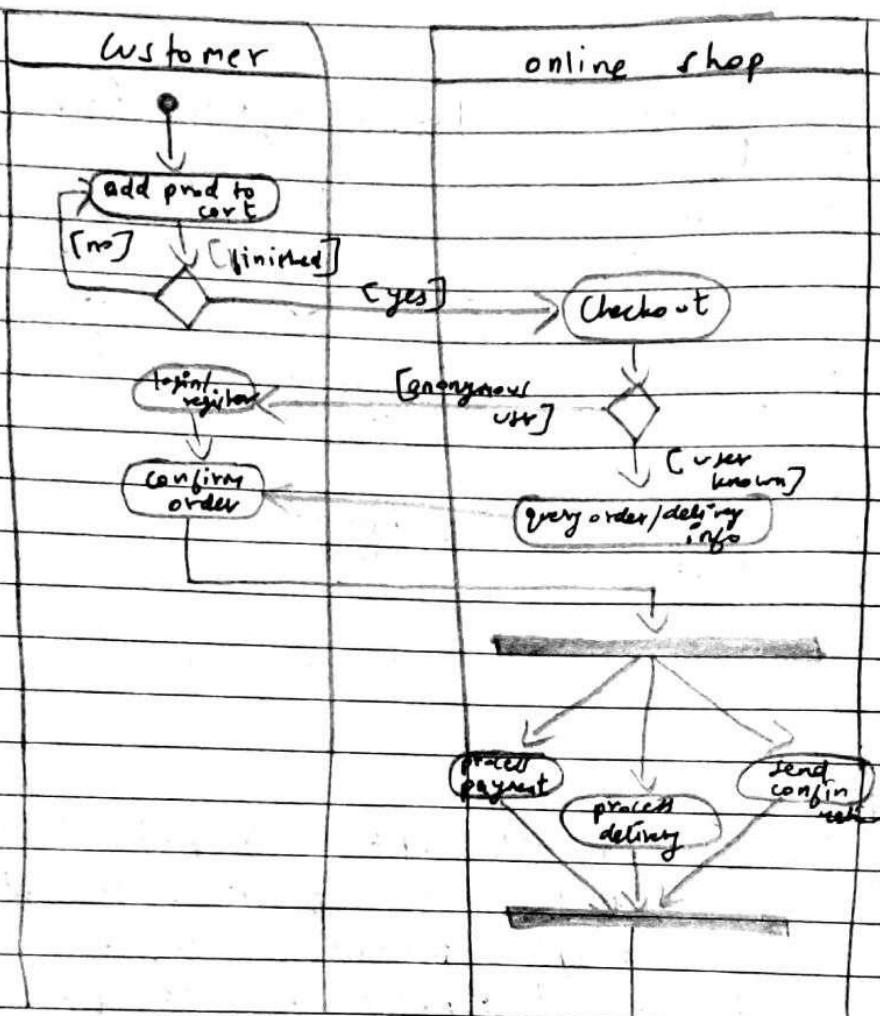


e) Sequence Diagram:

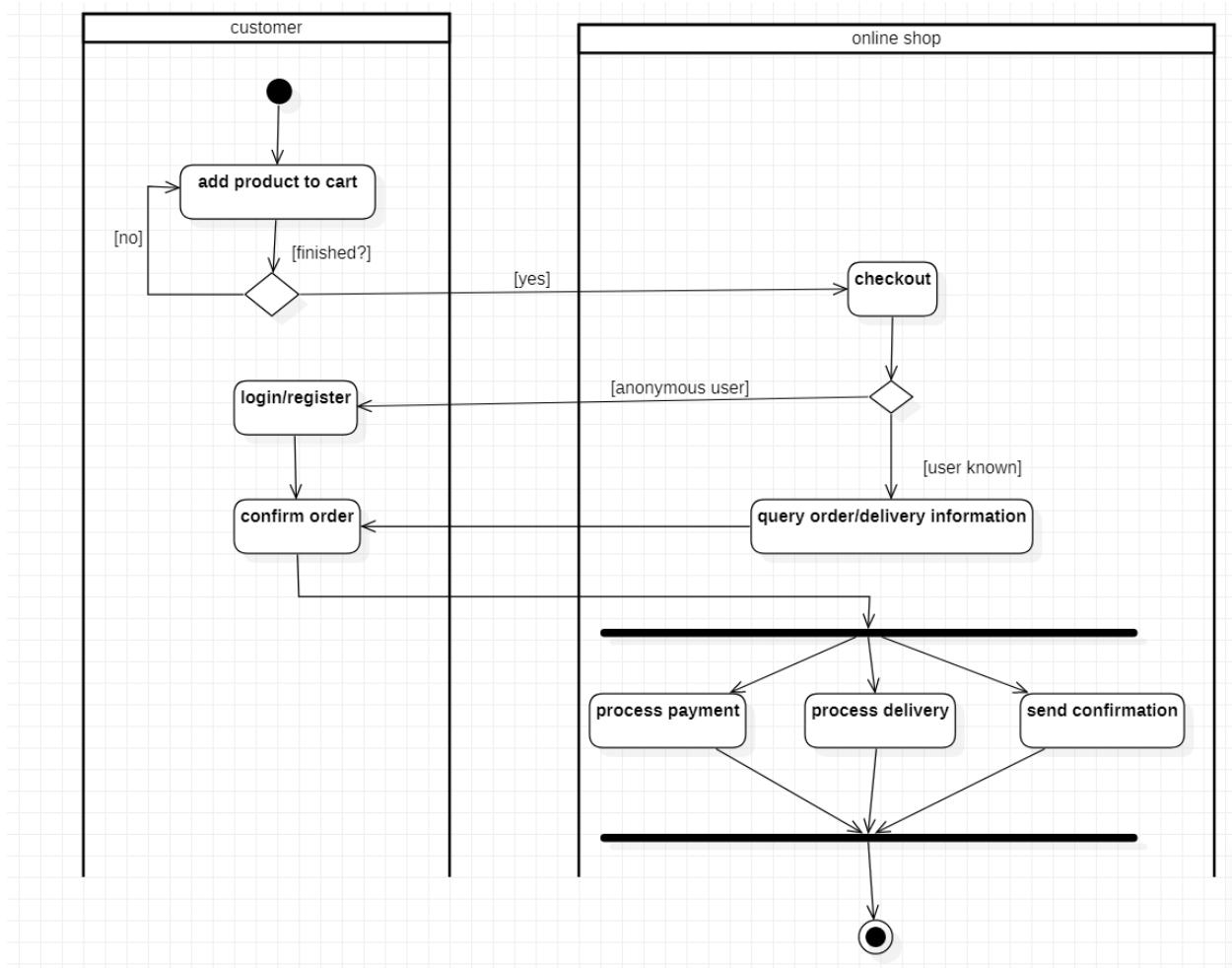
5) Online Shopping System :-



f) Activity Diagram:

5) Online Shopping System:

The given model explains various interactions taking place during customer login & shop, from add to cart to check out & payment activity to process delivery and all respectful interactions are mentioned.



6. Railway reservation system-

a) SRS:

Railway Reservation System

Problem statement :-

Passengers frequently need to know abt reservation, status, ticket availability etc. getting which gets difficult during peak hours. No of reservation Counter are very less. Waiting time in queues is max during booking.

SRS :-

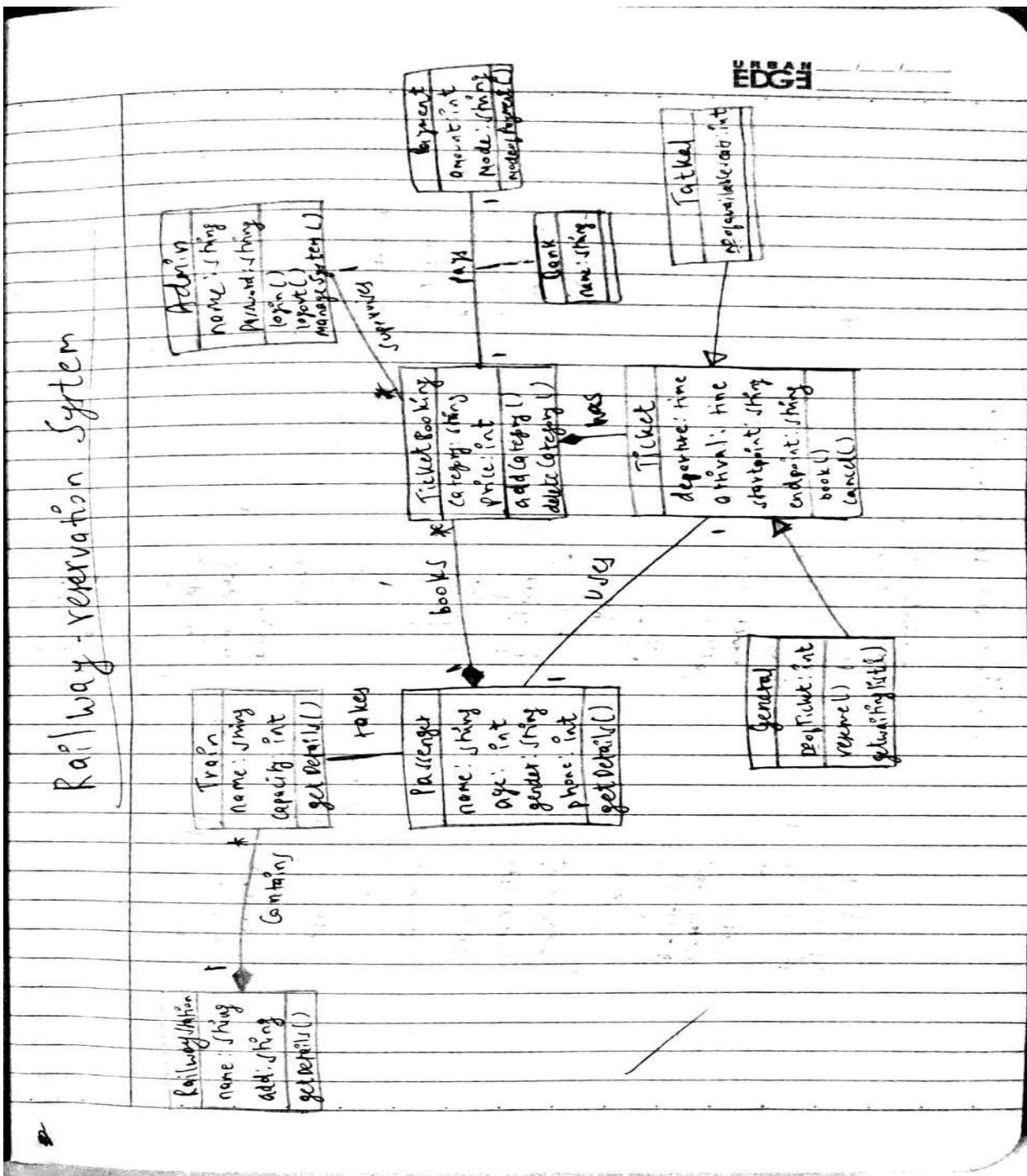
- * Each user should have user id, password, records of users should be kept in a log file.
- * Provision for backup of data should be ready.
- * Customers should be able to view tickets available on any day, last & no of seats.
- * Customers can book tickets only if they are available by filling the form.
- * In case of i-tickets, tickets are couriered to customers on their address. In case of e-ticket the ticket will be mailed to the user and he has to take print out of same.

- * For Cancelling of tickets, customer have to contact reservation office fill form & refund will be initiated.
- * After booking, customer has to check-in by paying reg amount.
- * After booking, database needs to be updated & other users must be informed.

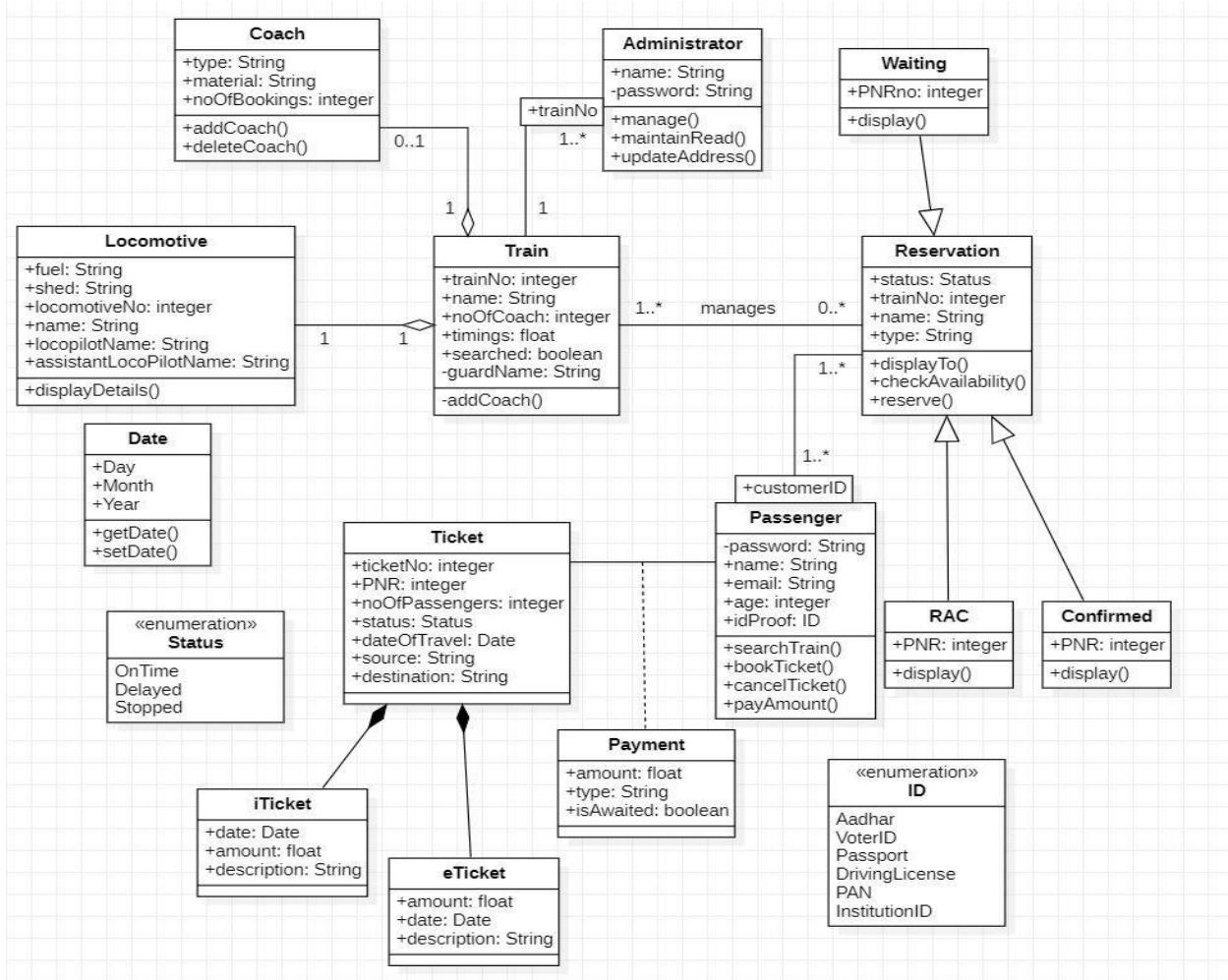
Justification of class diagram

- * For every train, the reservation is linked by association, & coach & engine are part of the train but can exist without it as well so it's aggregation. Administrator is linked to every train by a train no. Reservation is generalized into waiting RAC & CNF.

b) Advance Class Diagram:

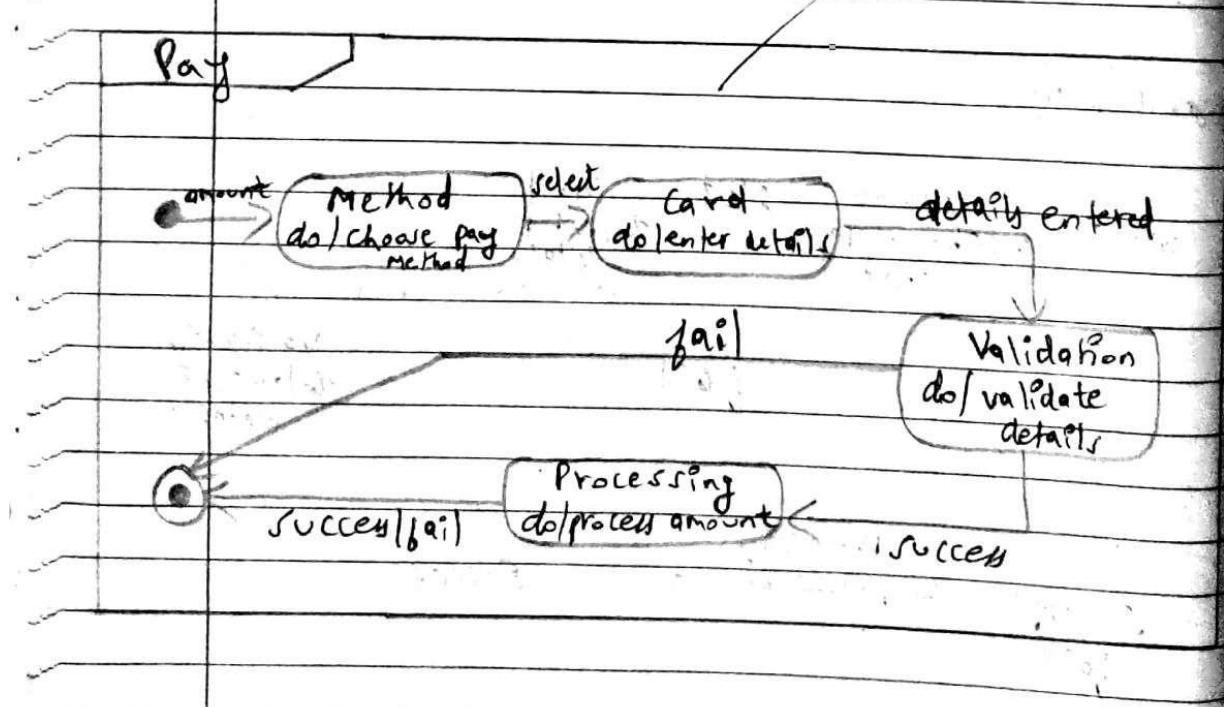
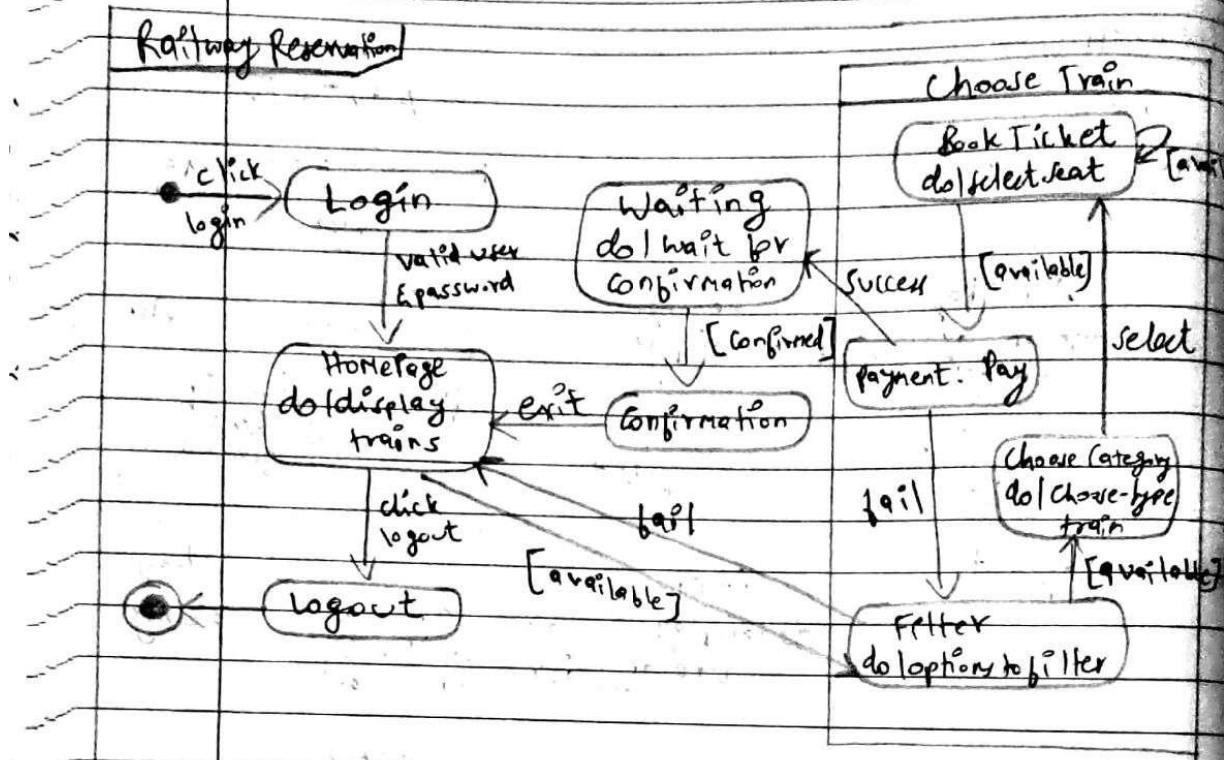


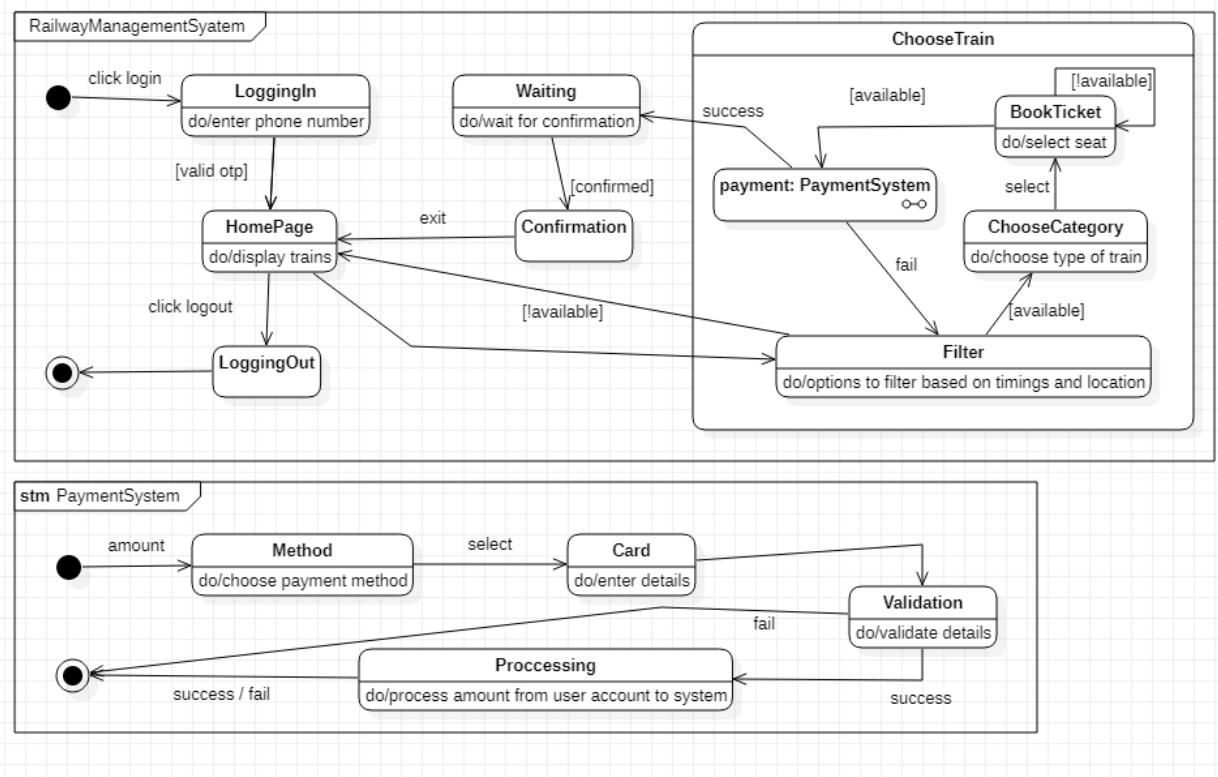
Scanned with CamScanner



c) Advance State Diagram:

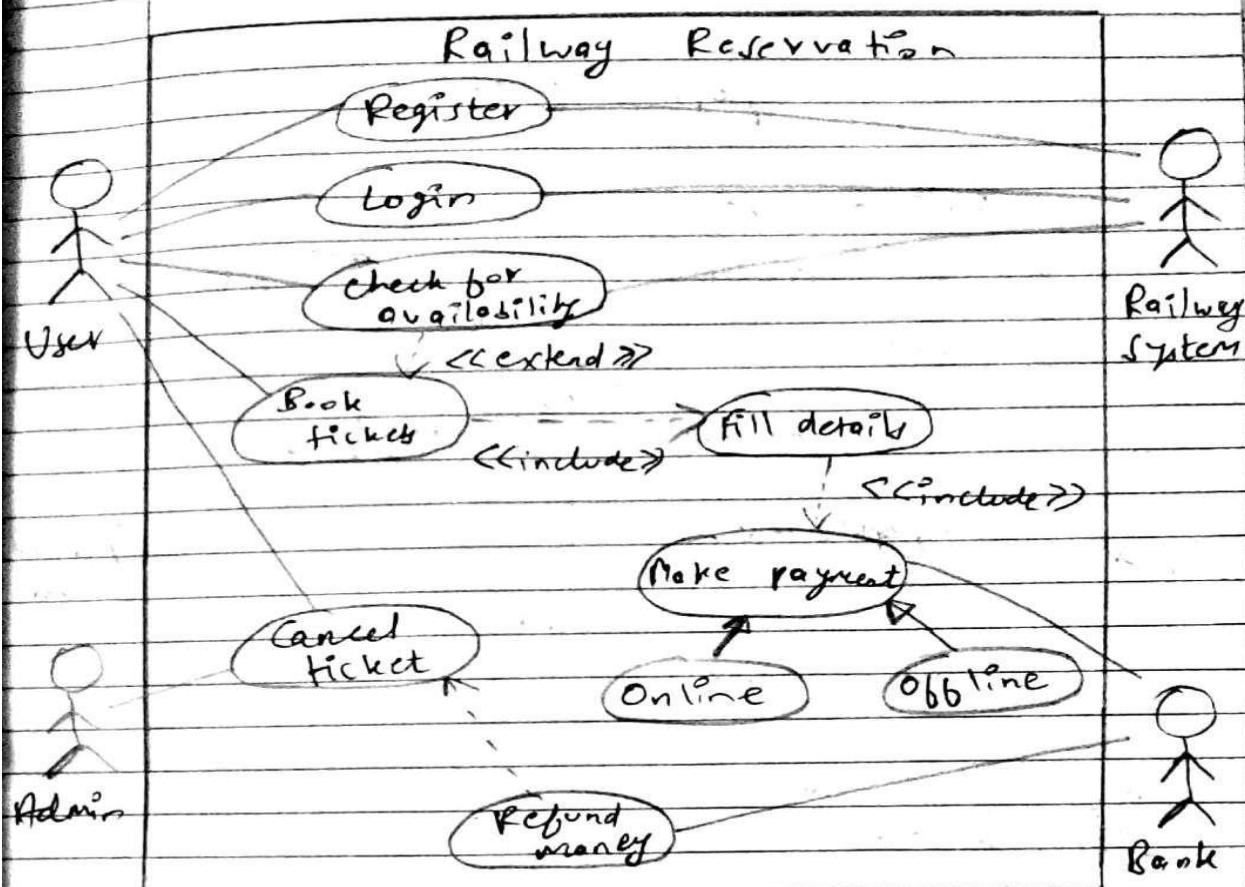
6) Railway Reservation System



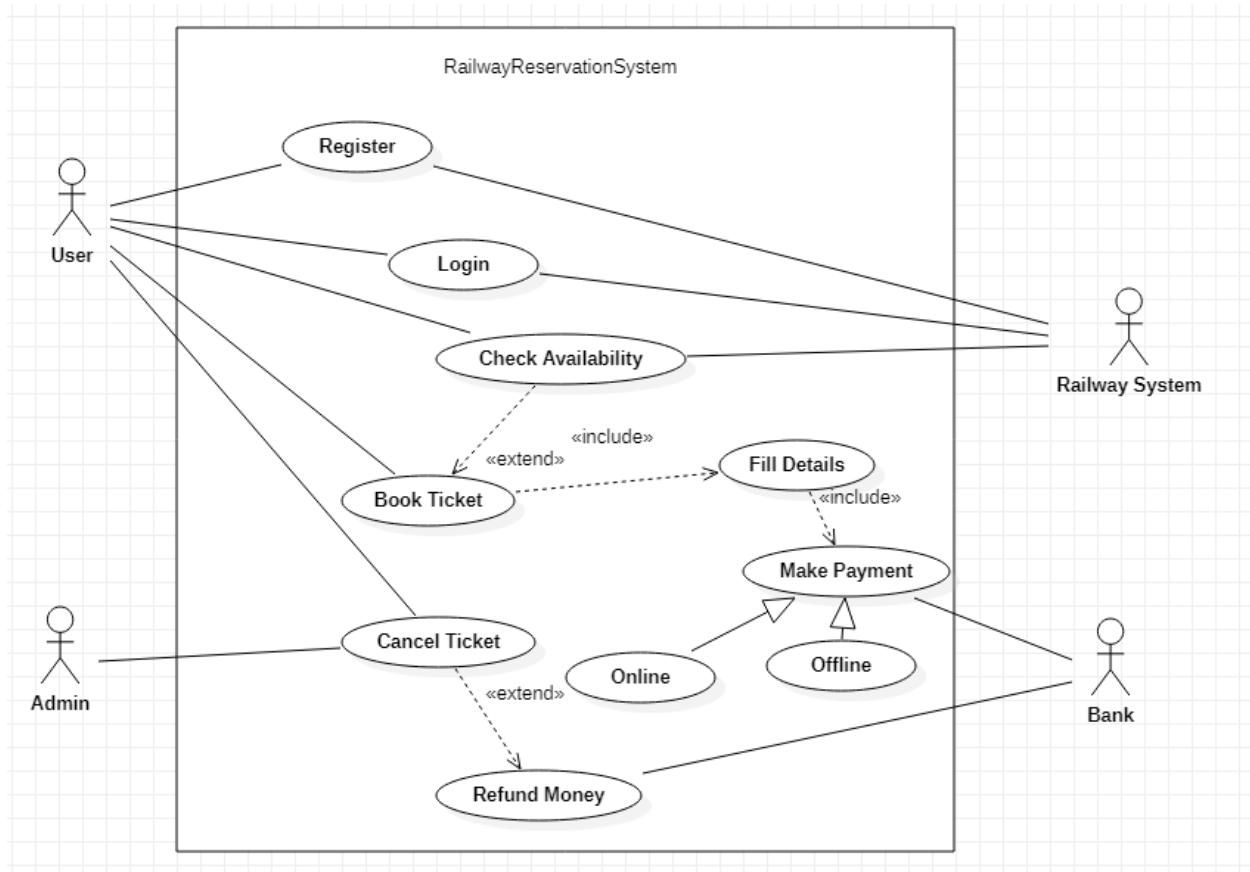


d) Advance Use Case Diagram:

6) Railway Reservation System

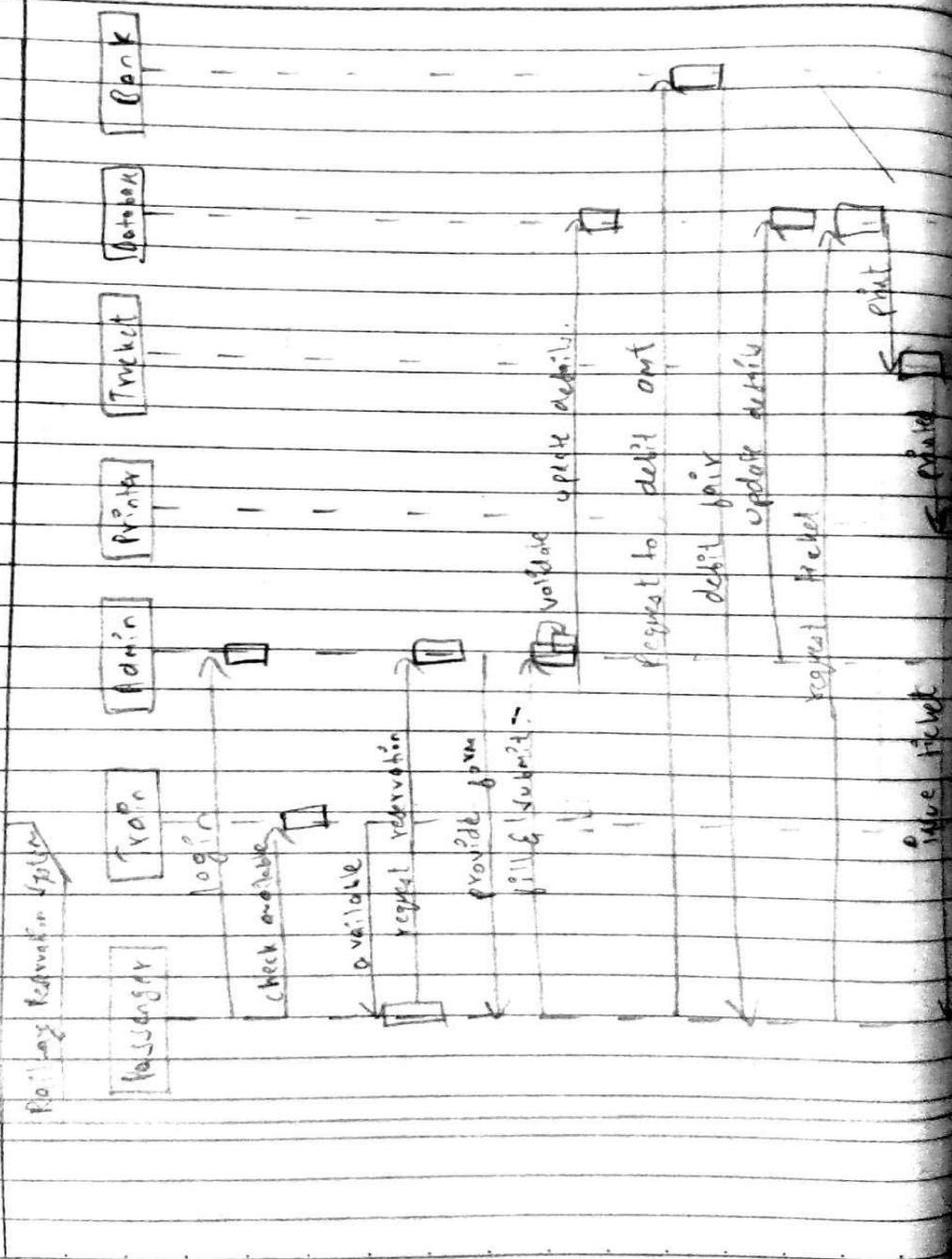
Justification

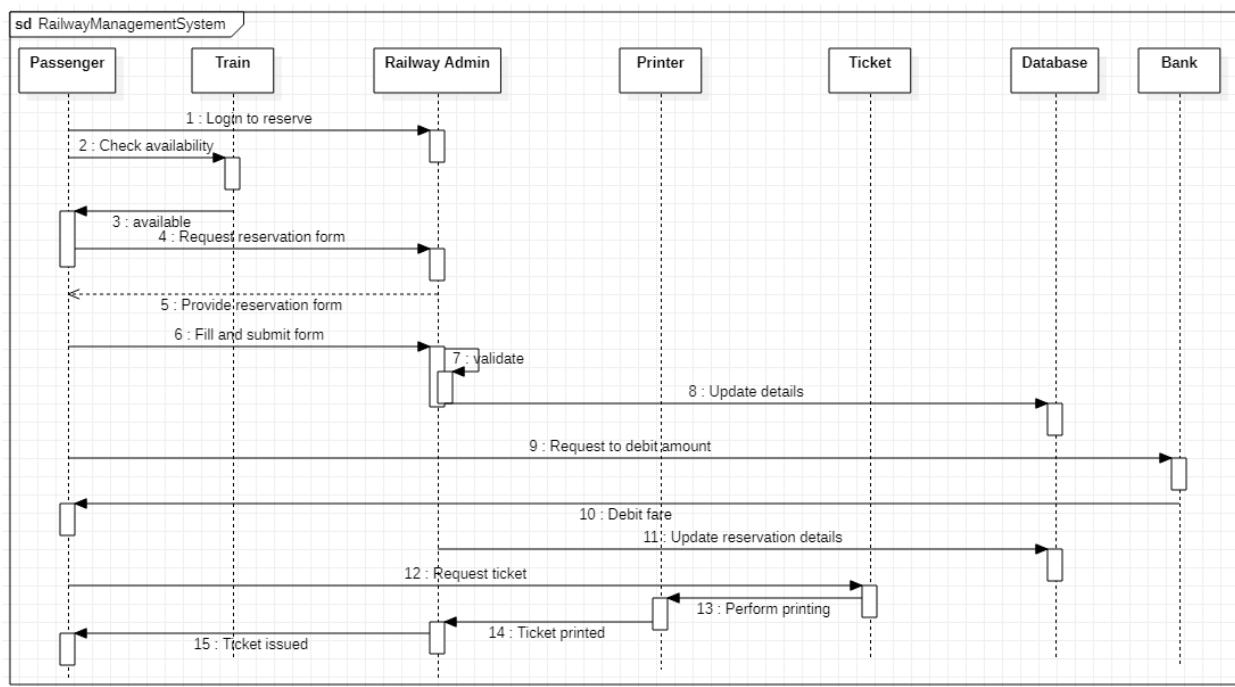
User can register, login and check status of tickets and book if available by filling all details. They can do payment after booking or even cancel ticket for which admin will be making refund on bank side.



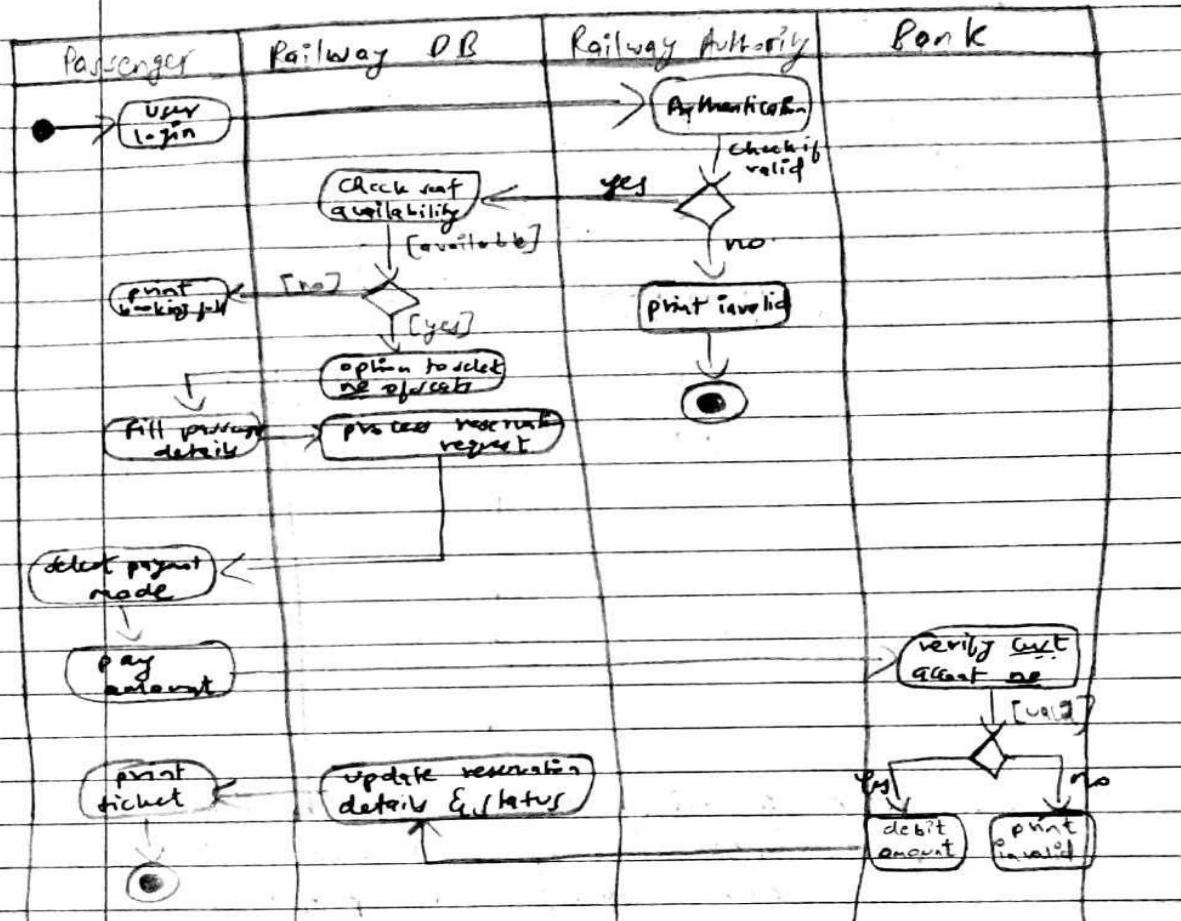
e) Sequence Diagram:

6) Railway Reservation System:

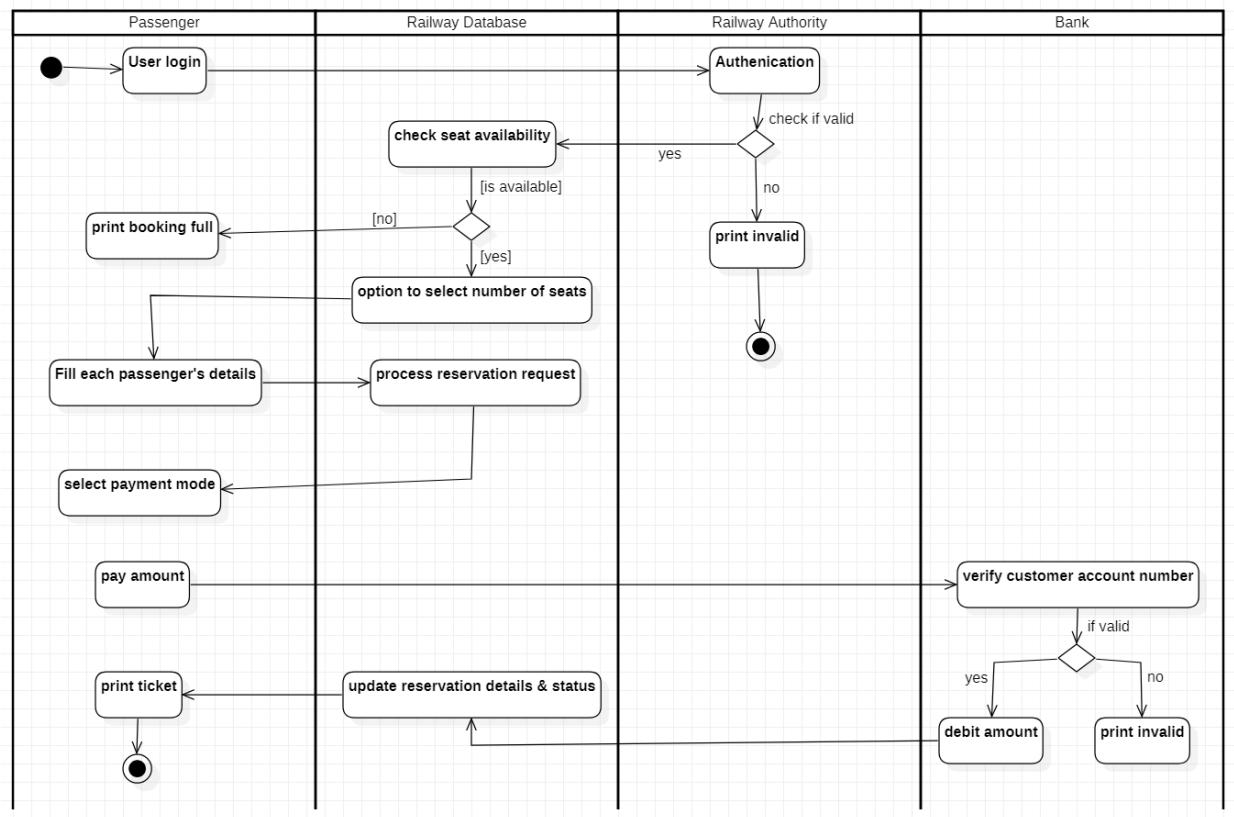




f) Activity Diagram:

6) Railway reservation System

The interaction of passengers with system is shown in detail wrt railway database, authority & payment with all conditions are mentioned.



7. Graphics Editor-

a) SRS:

Graphics Editor

Problem Statement :-

As of today use of CGI, animation in movies has skyrocketed. There is a need for a software with UI which is powerful and enables a user to develop his/her own model. The SW must be easy to use and should provide both coding & drag & drop options. We need to choose best underlying framework upon which UI can be built.

SRS :-

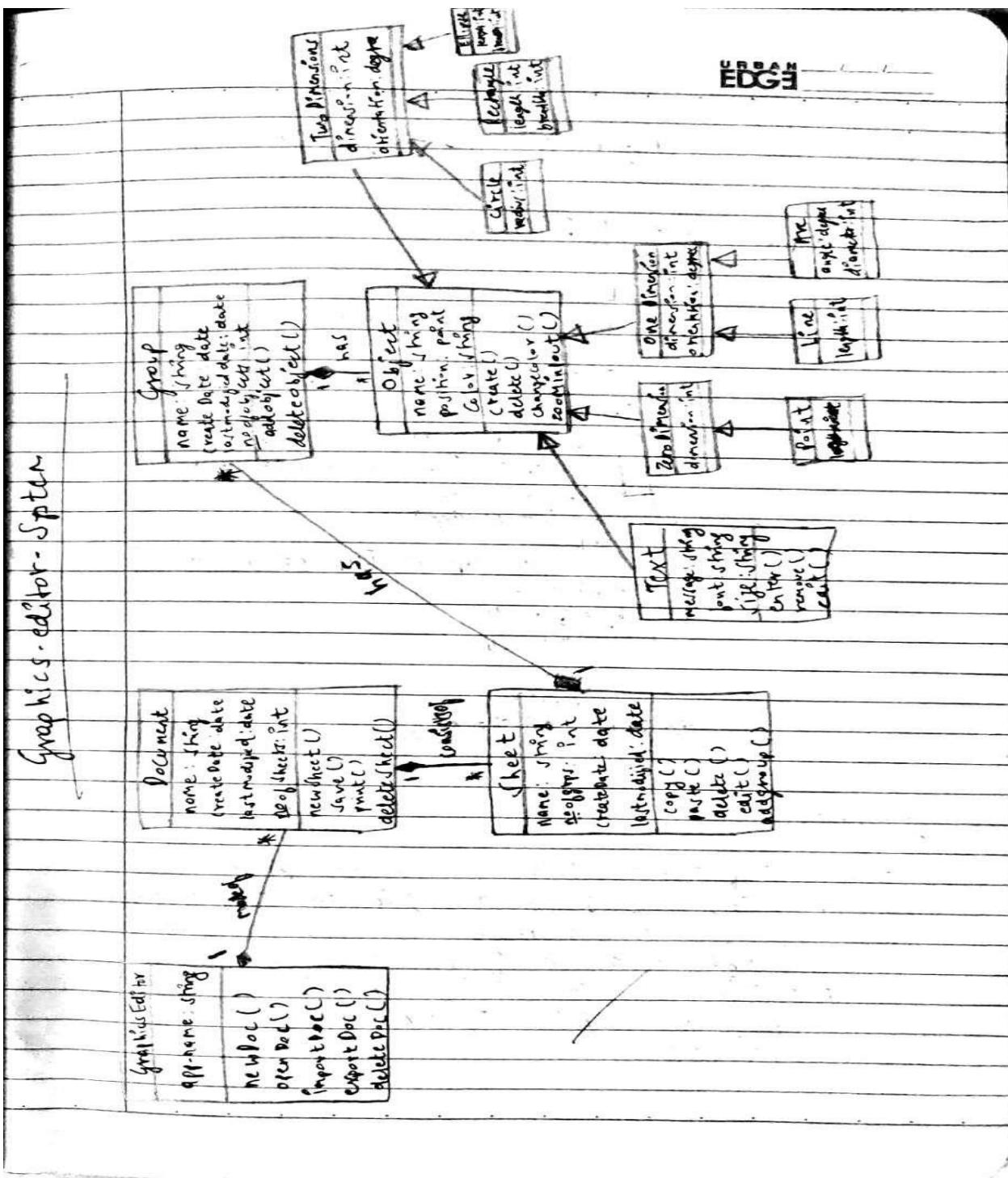
- * It consists of graphical document editor which can be used to create new doc, delete or update.
- * Editor consists of many documents each of which can be saved, opened or pointed.
- * A document is made of many sheets which have graphics included in them.
- * Sheet has multiple objs which can be created, grouped or formatted.

- * Functions are implemented to draw obj. and their connections as well as functions do add & remove connections, using event listener so that any changes in model will be reflected in diagram.
- * Editing is done using palette supplied
- * Each sheet contains drawing obj, text, geometric obj & groups.
- * Geometric obj include circle, rectangle, ellipse, squares etc with respective constraints.

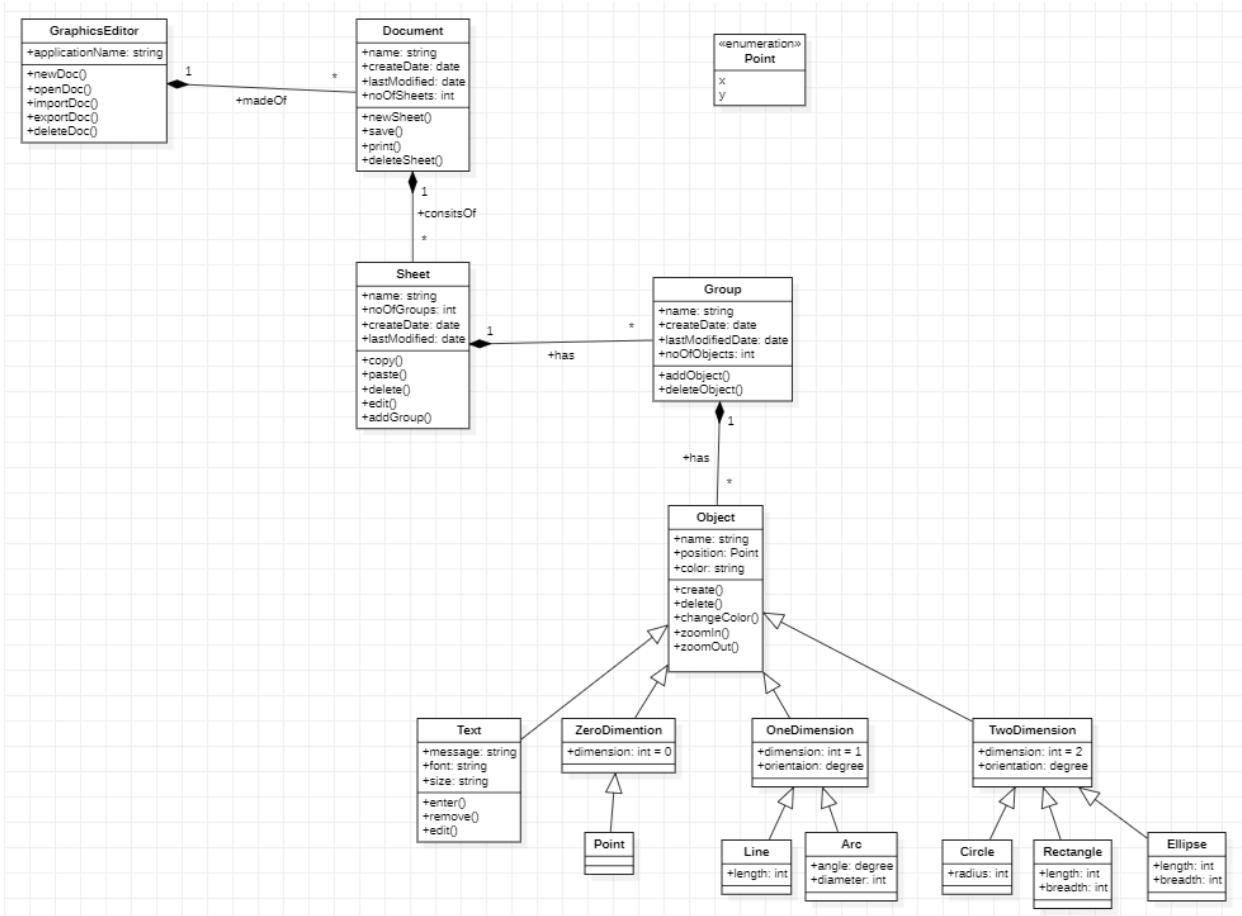
Justification of class diagram

- * Every Graphic doc editor has a document with doc-id for association. Document is composed of sheets which is composed of drawing objects, which has text geometrical obj which is generalized into several categories, groups which are linked by aggregation.

b) Advance Class Diagram:

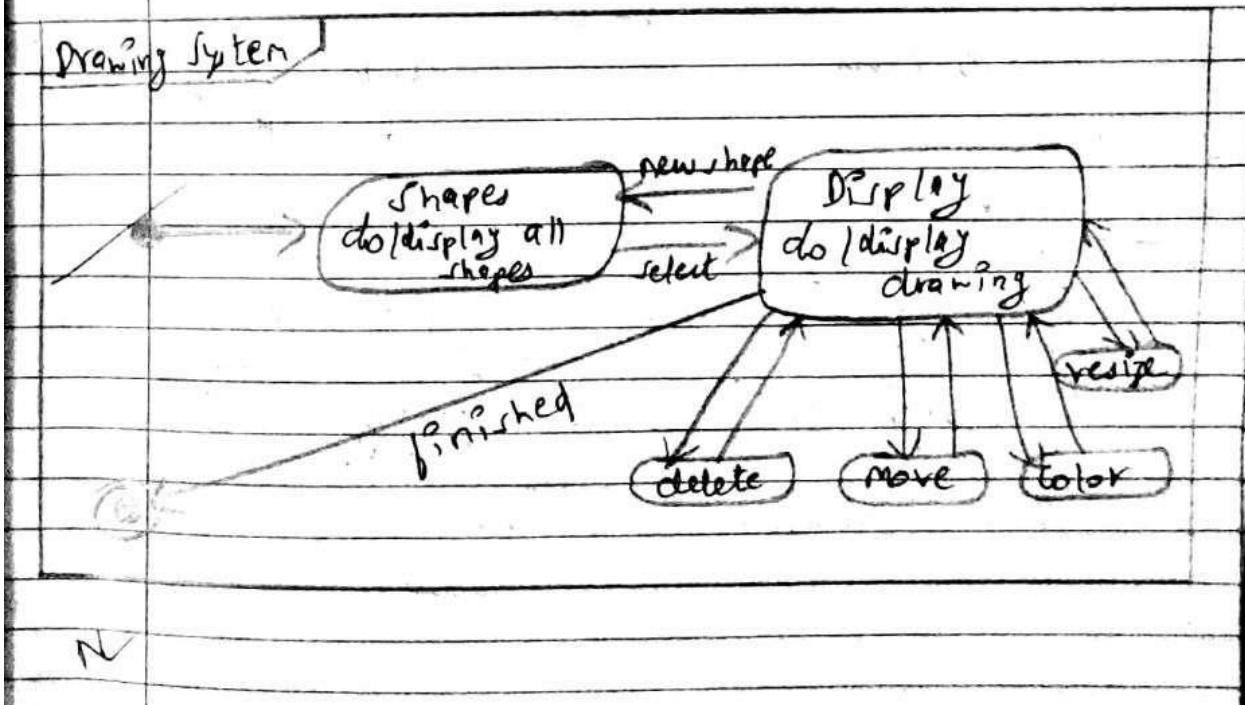
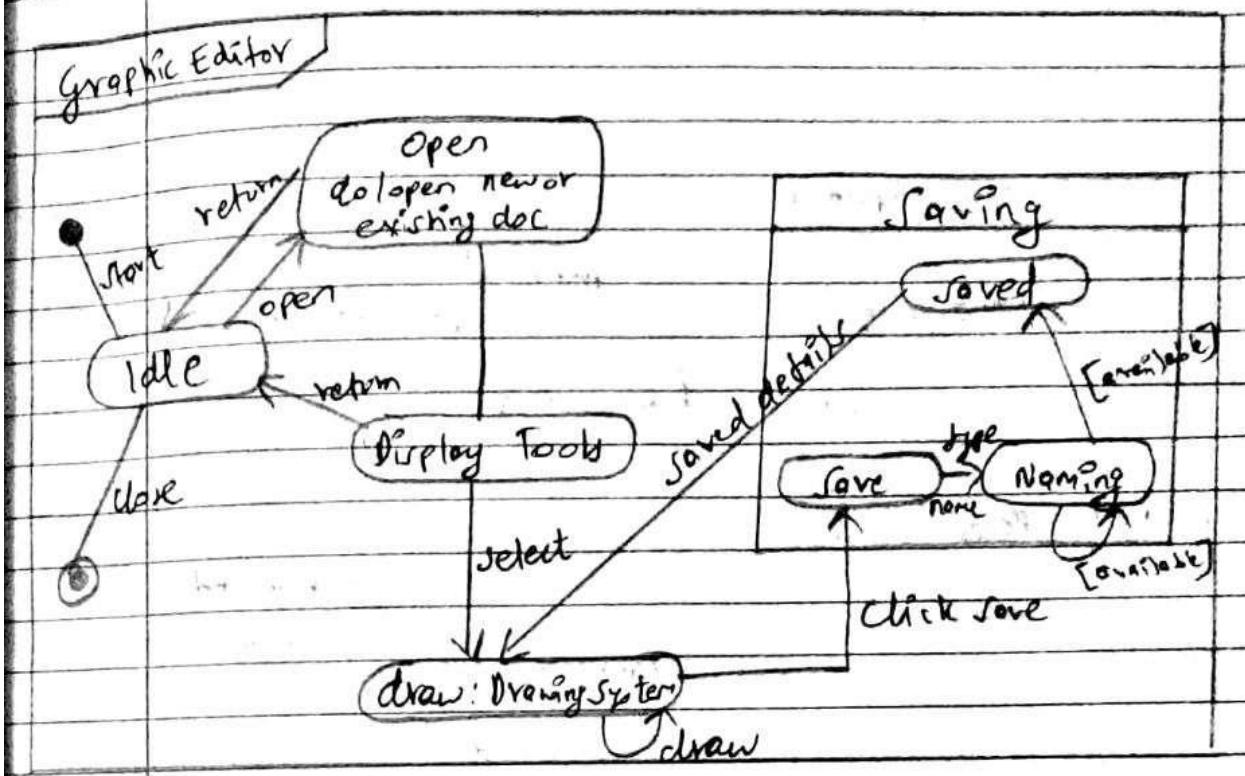


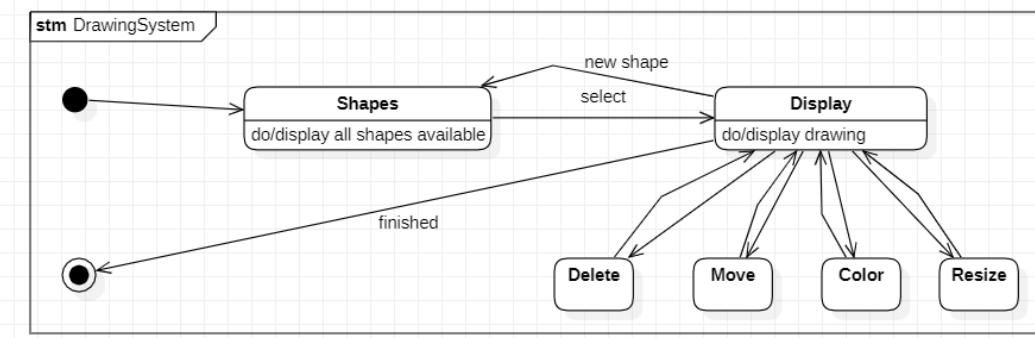
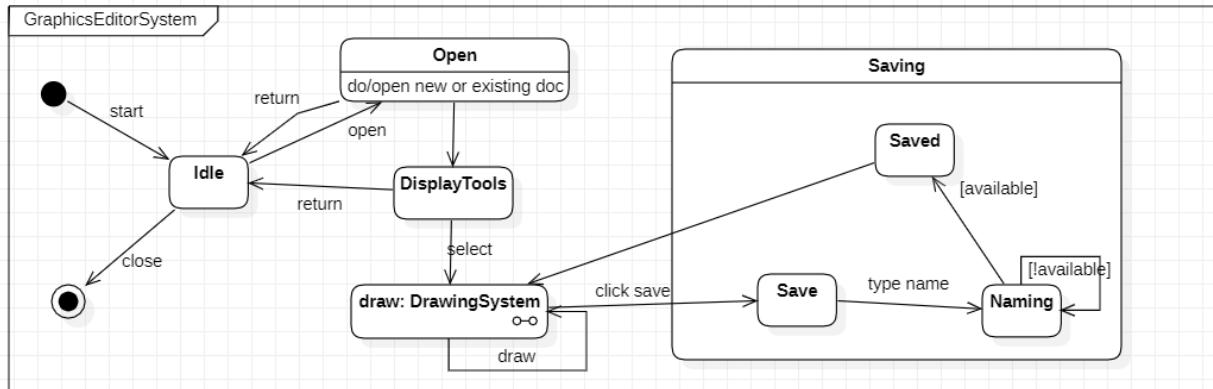
Scanned with CamScanner



c) Advance State Diagram:

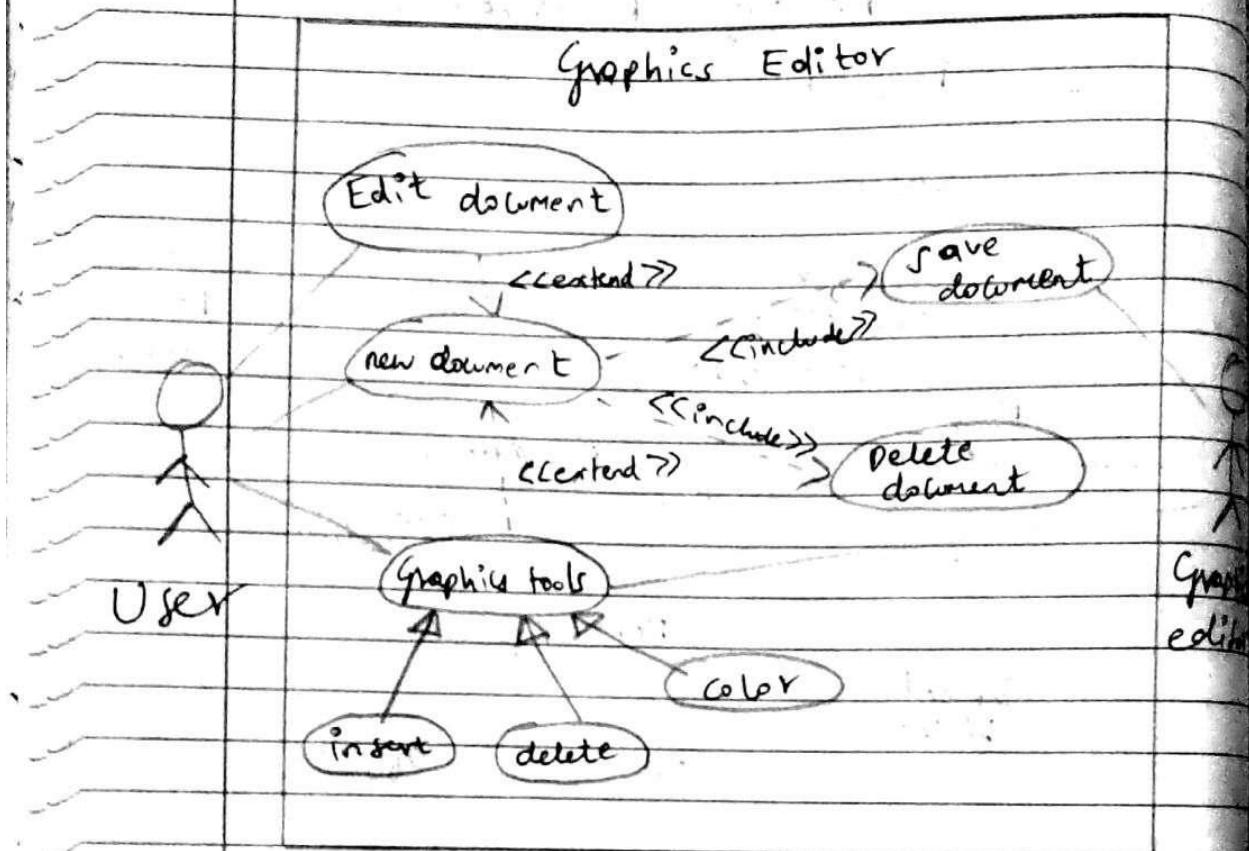
7) Graphic editor System:





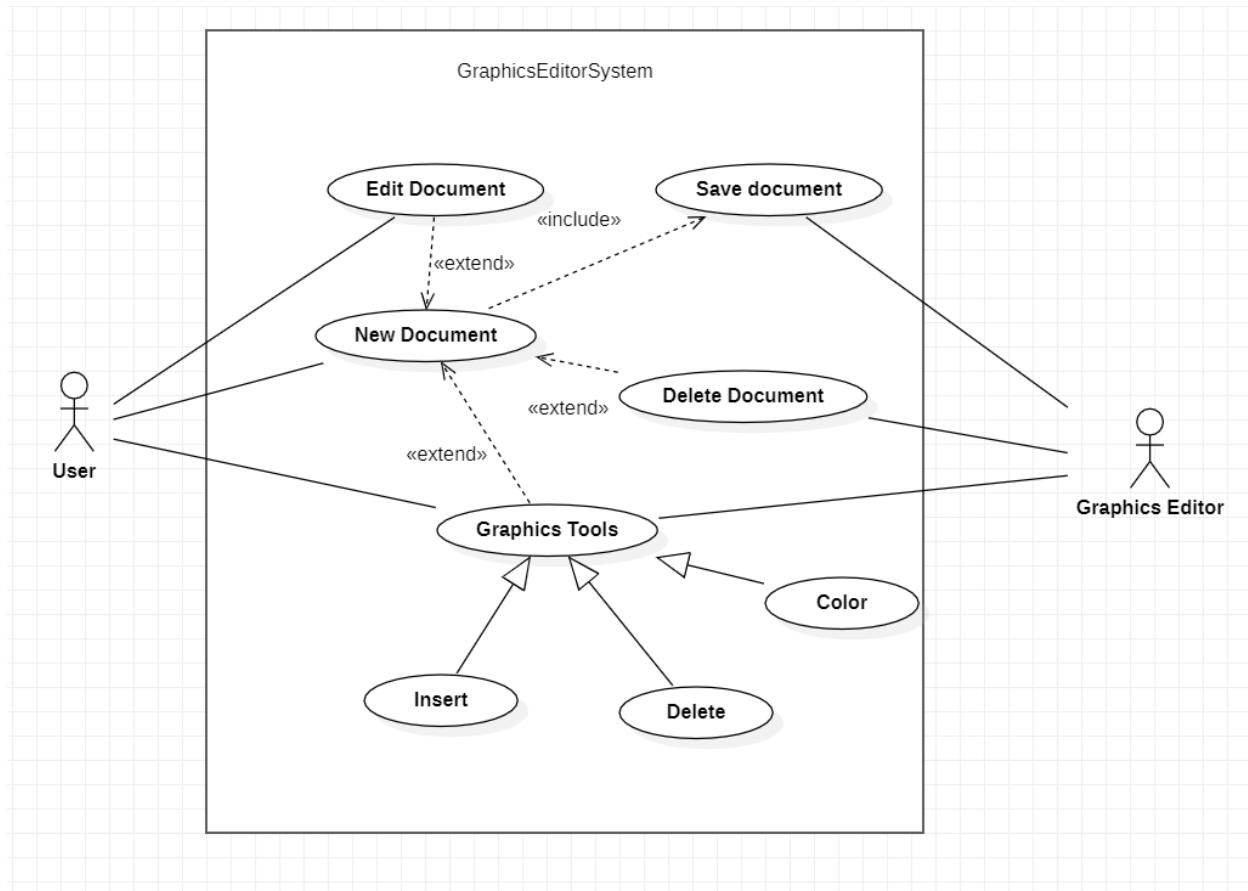
d) Advance Use Case Diagram:

7) Graphics Editor System

Justification:-

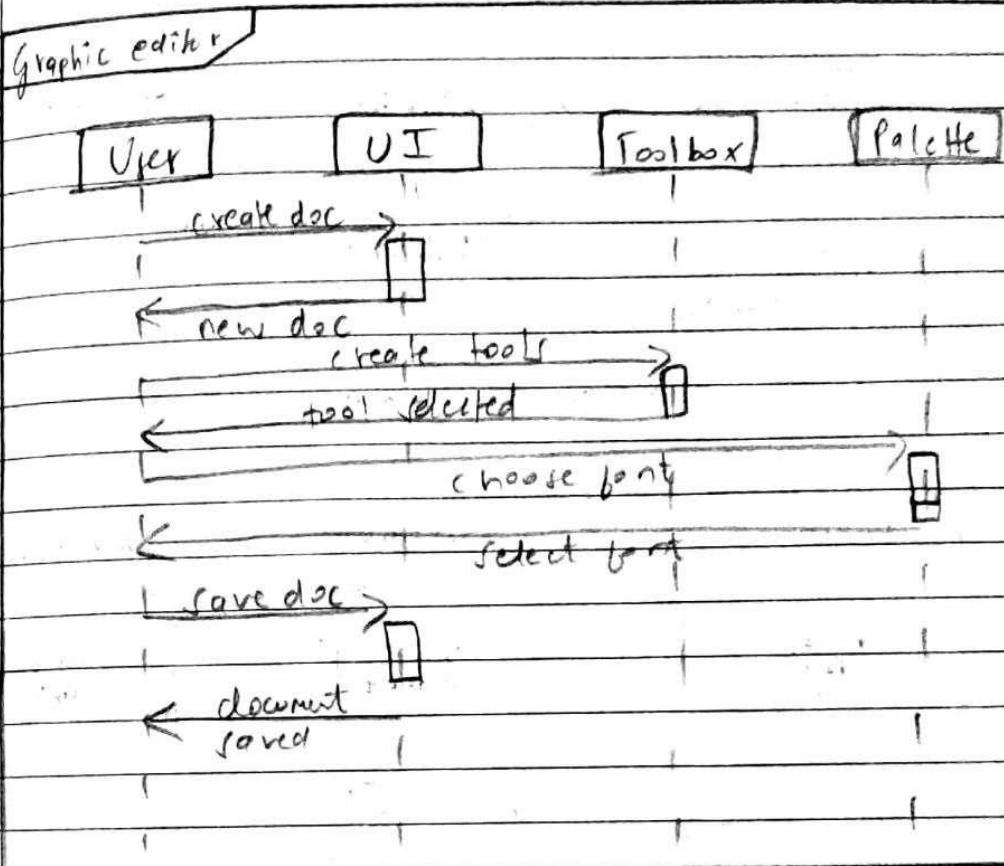
User can either edit document, create new document and save it or delete document as well.

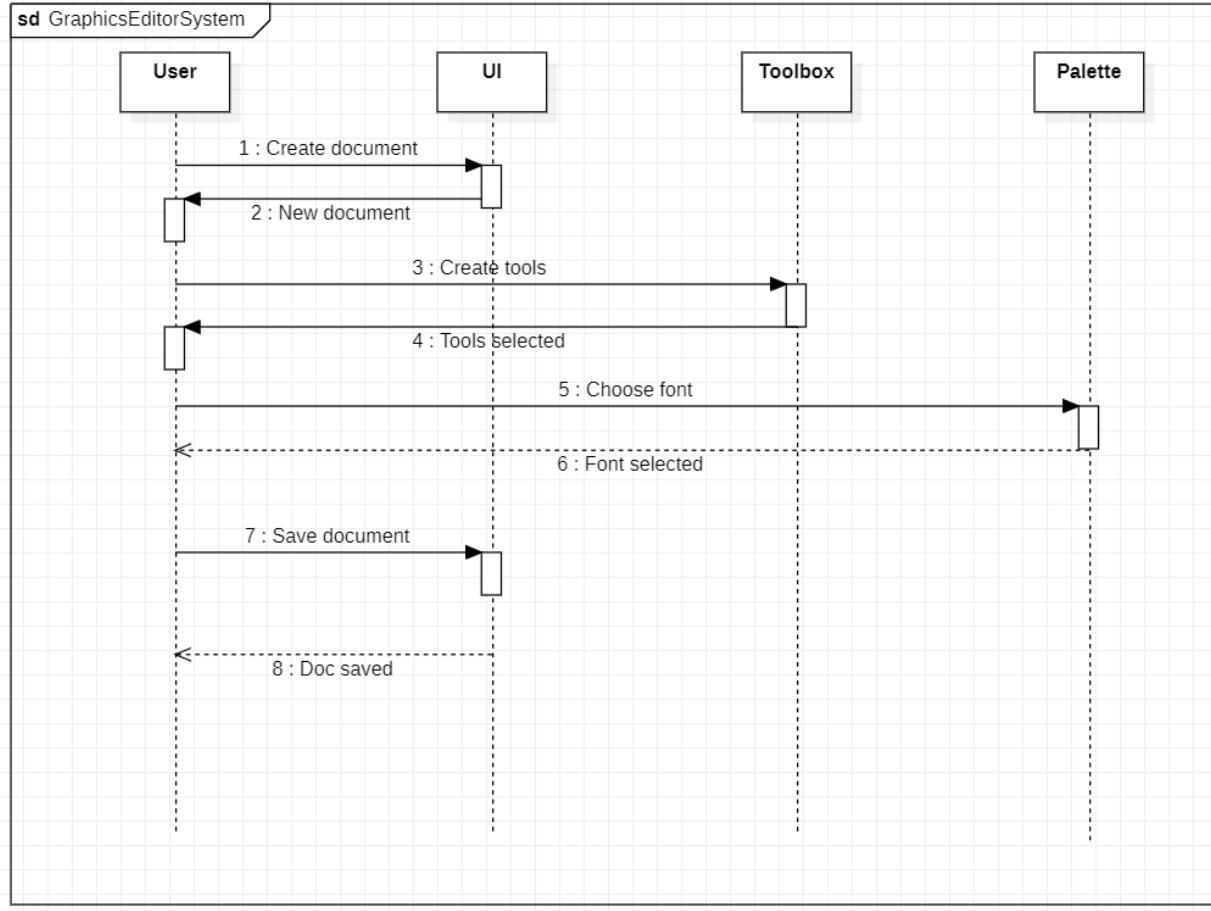
User can use graphic tools to insert, delete or color while creating new document.



e) Sequence Diagram:

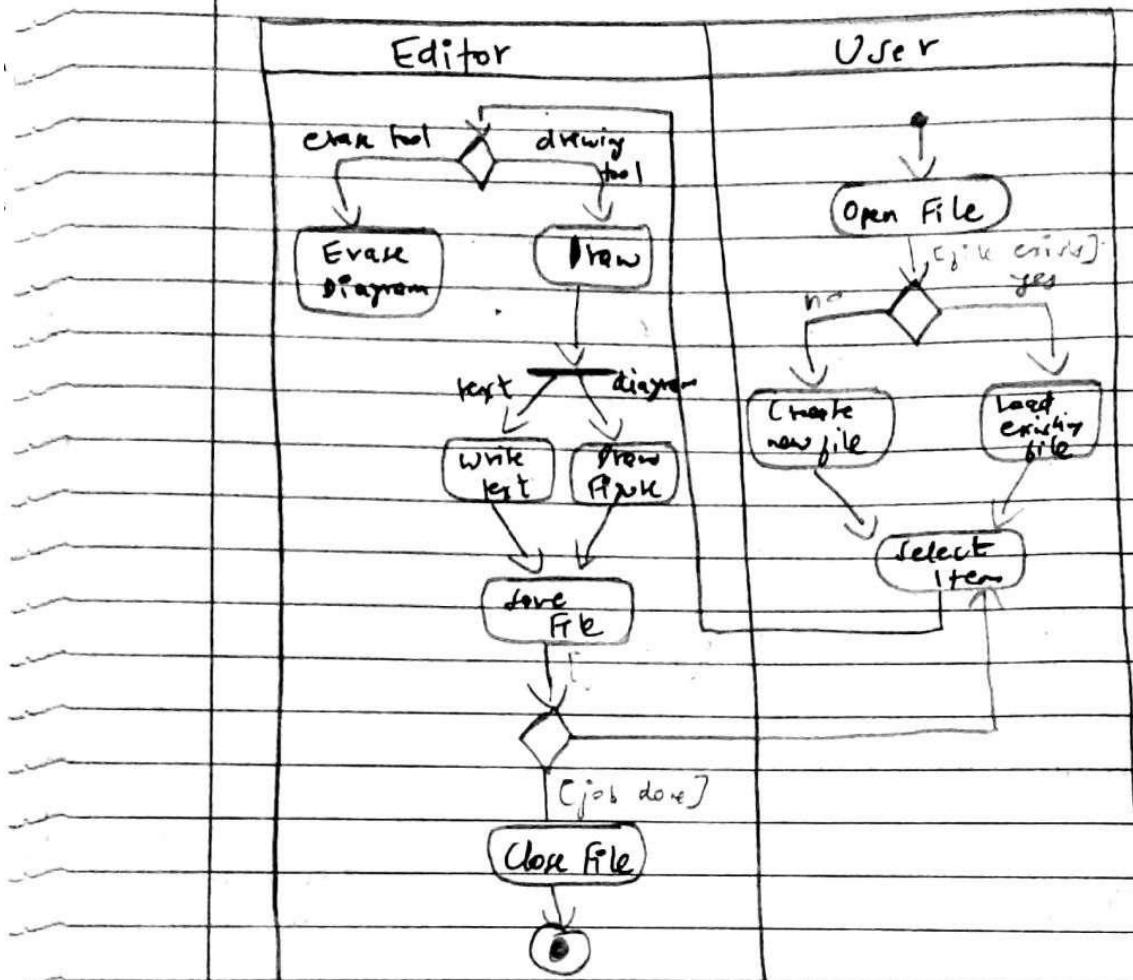
7) Graphic editor system :-





f) Activity Diagram:

7) Graphic Editor System:



The given activity model explains the complete interactions of user with editor & how various funcs are performed from creating a file to draw the various diagrams to saving a file ,it shows the conditions for each activities as well

