VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

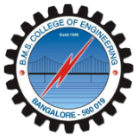
LAB REPORT
on

OBJECT ORIENTED MODELING AND DESIGN

Submitted by

DISHA N (1BM19CS051)

in partial fulfillment 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

C ERTIFICATE

This is to certify that the Lab work entitled "**OBJECT ORIENTED MODELING AND DESIGN** " carried out by **DISHA N (1BM18CS051),** who is bonafide student of **B. M. S. College of Engineering.** It is in partial fulfillment 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 MODELING AND DESIGN - (20CS6PCOMD)** work prescribed for the said degree.

Sheetal V A
Assistant Professor
Department of CSE
BMSCE, Bengaluru

`

Dr. Jyothi S Nayak
Professor and Head
Department of CSE
BMSCE, Bengaluru

Index Sheet

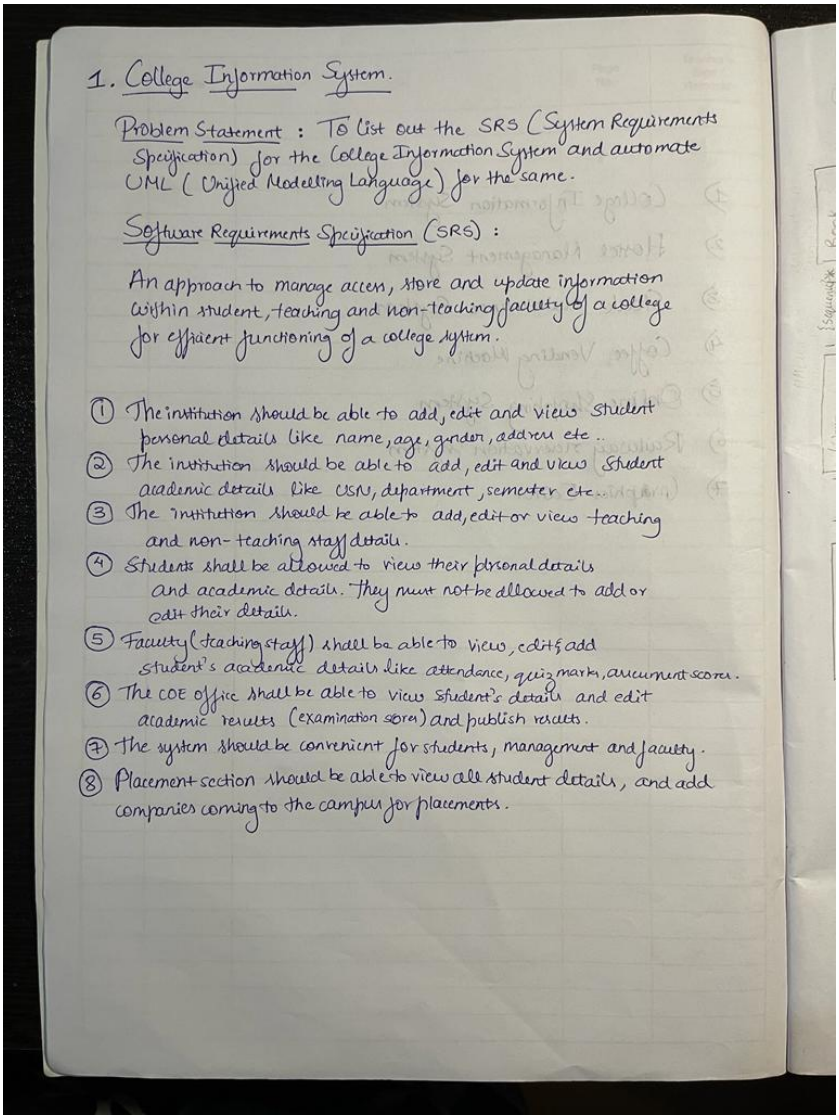
Sl. No.	Experiment Title	Page No.
1.	College information system	4-9
2.	Hostel management system	10-15
3.	Stock management system	16-21
4.	Coffee vending machine	22-27
5.	Online shopping system	28-33
6.	Railway reservation system	34-39
7.	Graphics editor system	40-45

Course Outcome

CO4	Ability to conduct practical experiments to solve a given problem using Unified Modeling language.

Exercise 1: College Information System

1. Write SRS



1. College Information System.

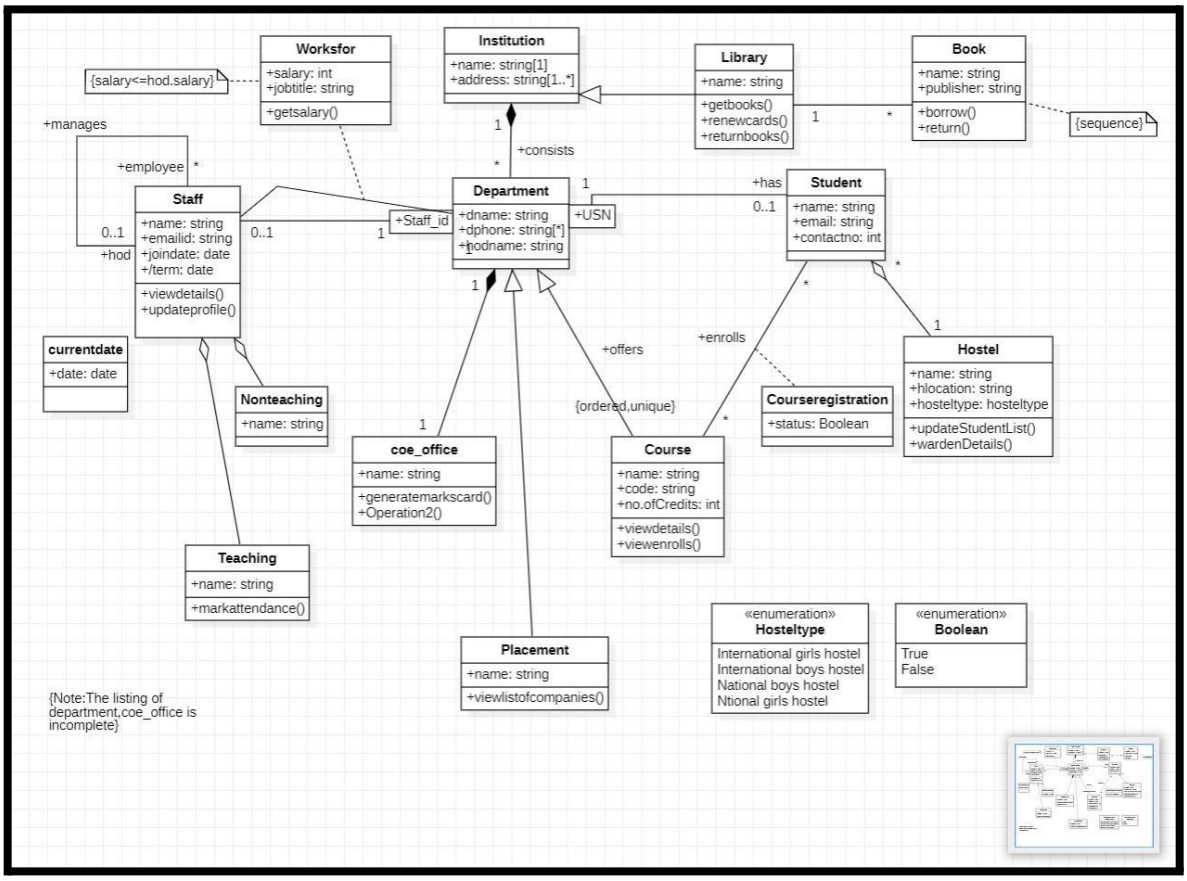
Problem Statement : To list out the SRS (System Requirements Specification) for the College Information System and automate UML (Unified Modelling Language) for the same.

Software Requirements Specification (SRS) :

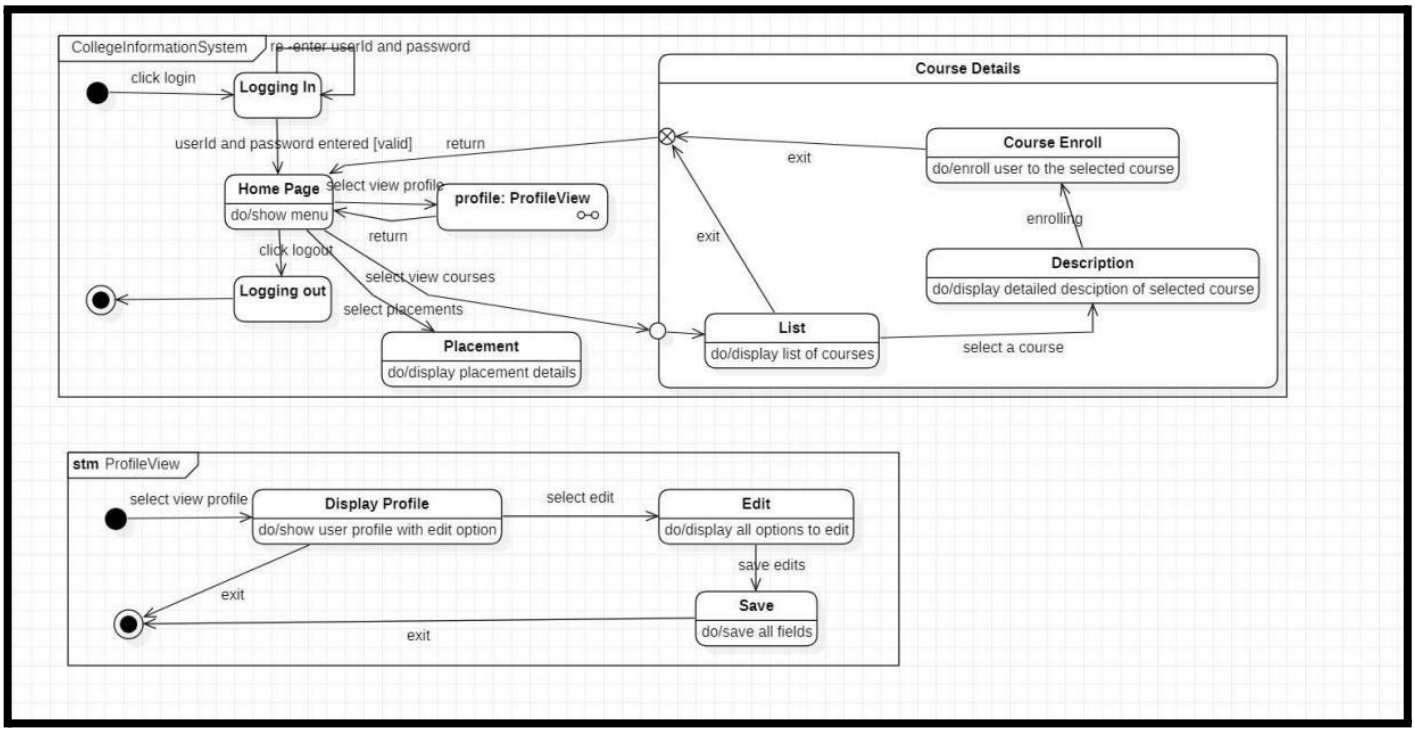
An approach to manage access, store and update information within student, teaching and non-teaching faculty of a college for efficient functioning of a college system.

1. The institution should be able to add, edit and view student personal details like name, age, gender, address etc..
2. The institution should be able to add, edit and view student academic details like USN, department, semester etc..
3. The institution should be able to add, edit or view teaching and non-teaching staff details.
4. Students shall be allowed to view their personal details and academic details. They must not be allowed to add or edit their details.
5. Faculty (teaching staff) shall be able to view, edit & add student's academic details like attendance, quiz marks, assignment scores.
6. The COE office shall be able to view student's details and edit academic results (examination scores) and publish results.
7. The system should be convenient for students, management and faculty.
8. Placement section should be able to view all student details, and add companies coming to the campus for placements.

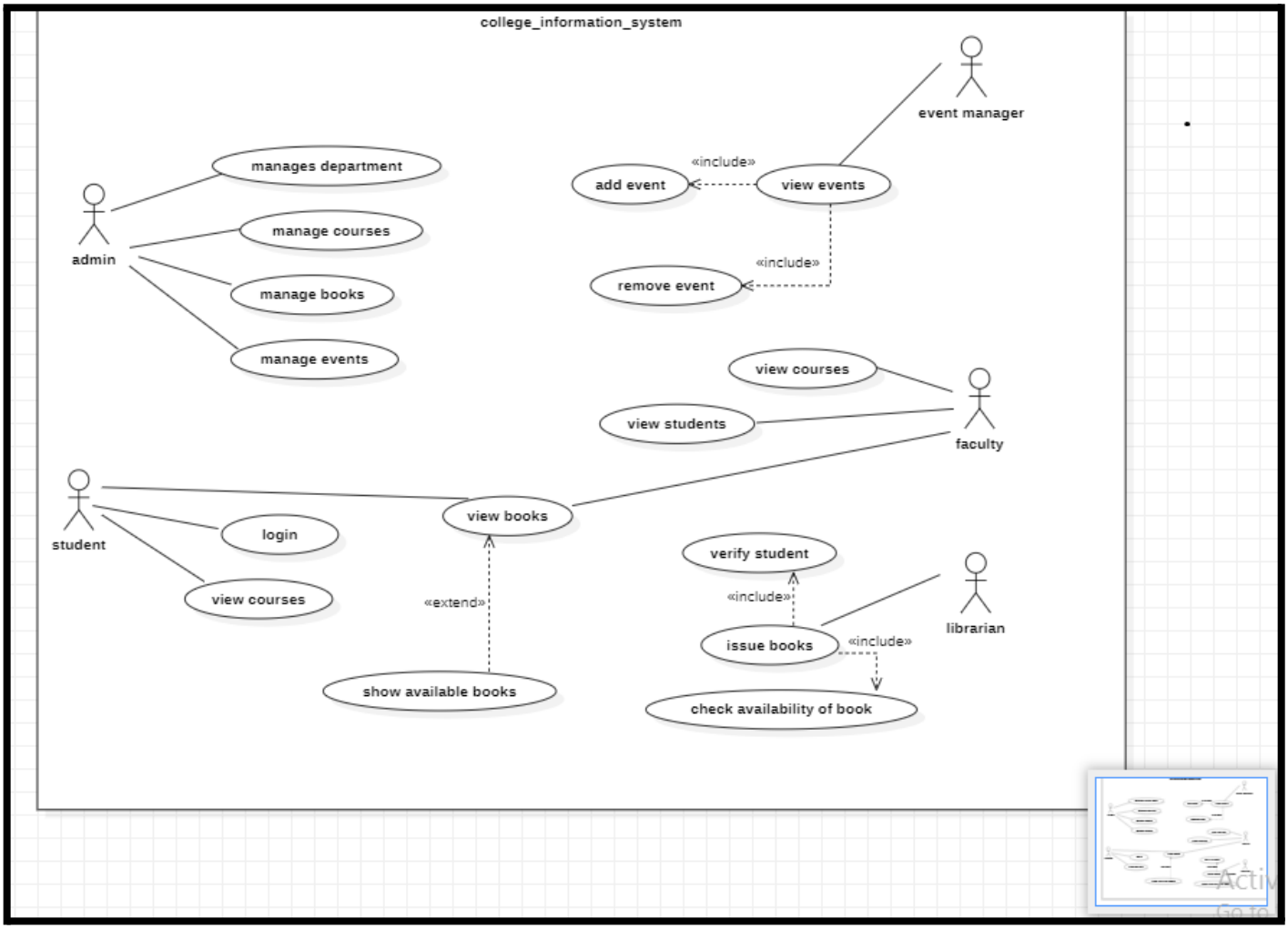
2. Draw the advanced class diagram



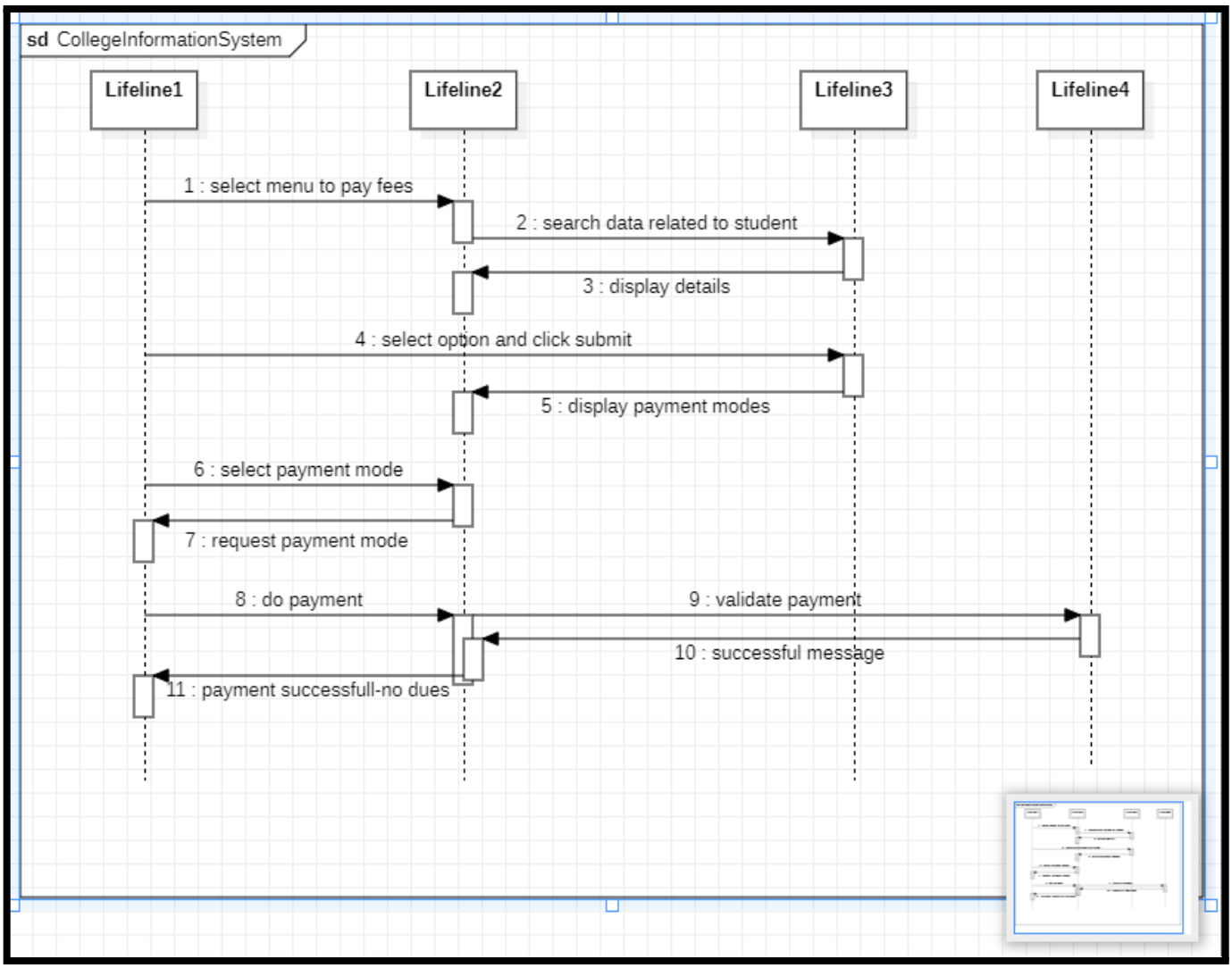
3. Draw the advanced state diagram



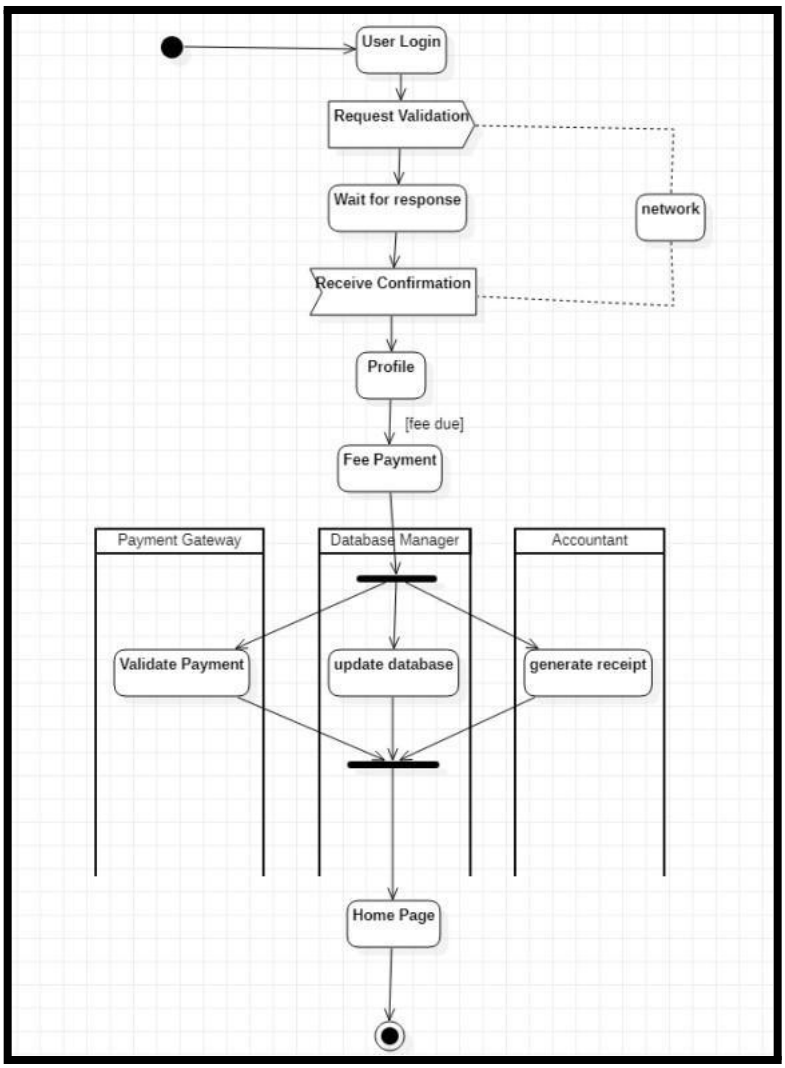
4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram

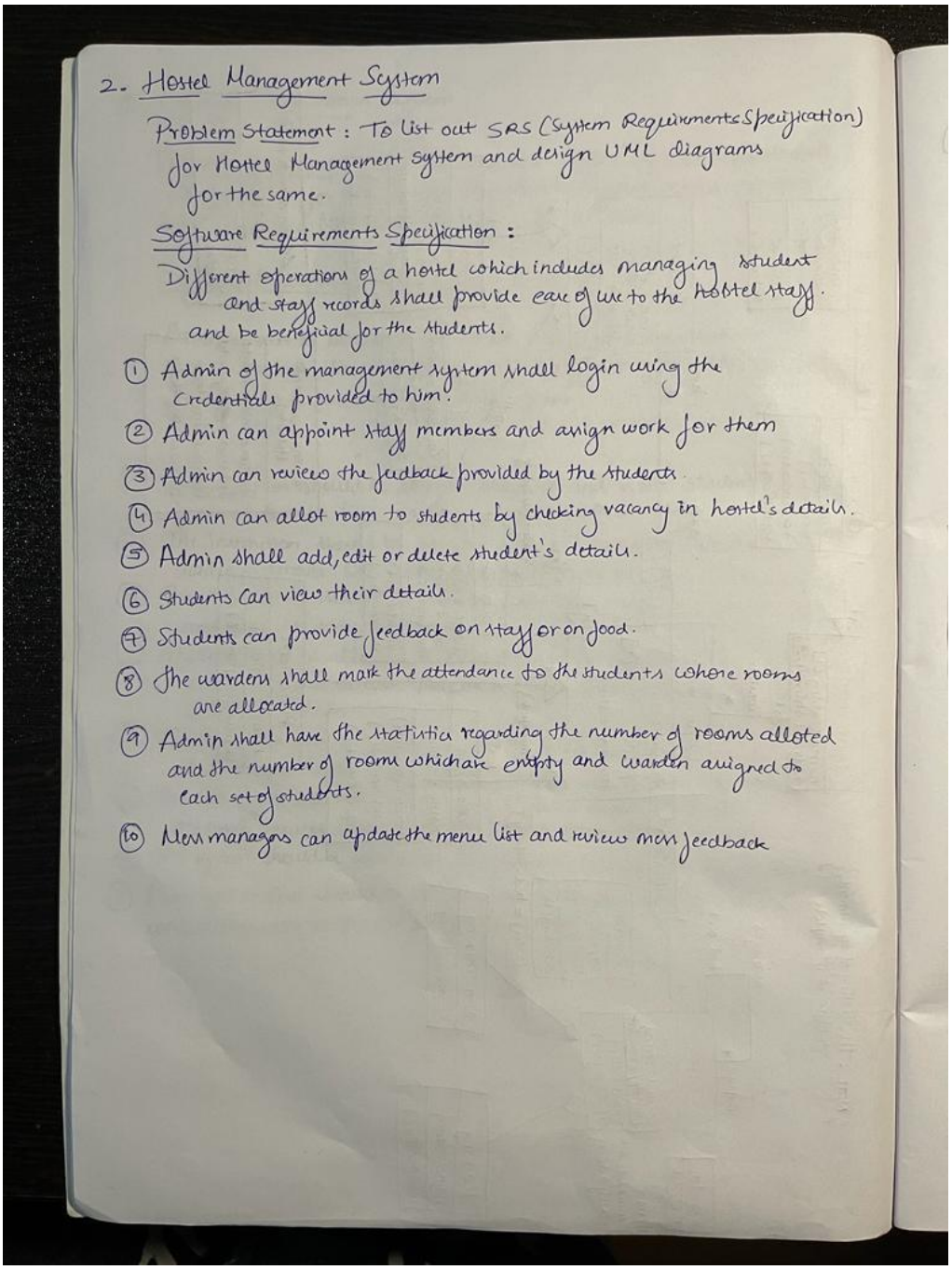


6. Draw the advanced activity diagram



Exercise 2: Hostel Management System

1. Write SRS



2. Hostel Management System

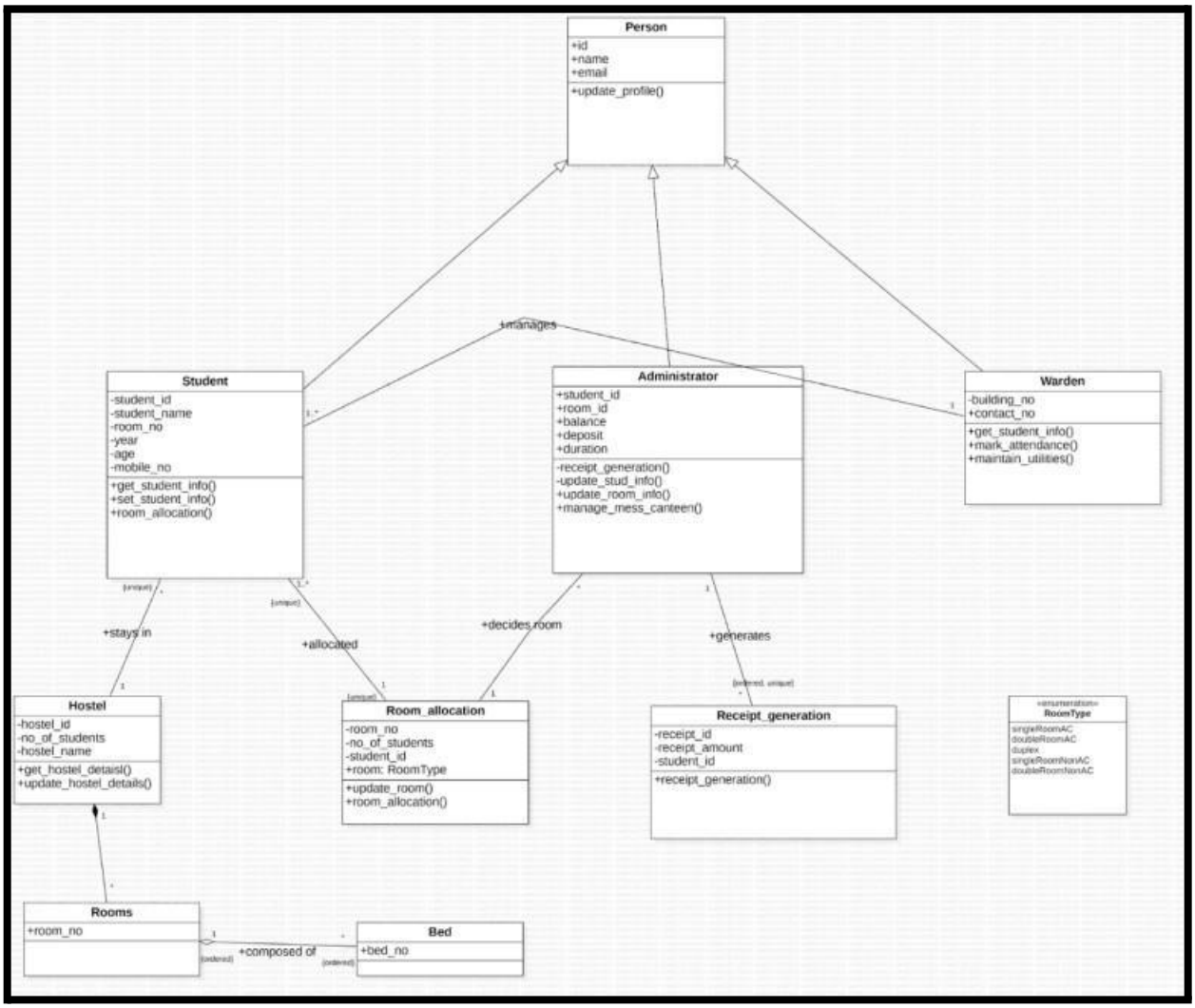
Problem Statement : To list out SRS (System Requirements Specification) for Hostel Management system and design UML diagrams for the same.

Software Requirements Specification :

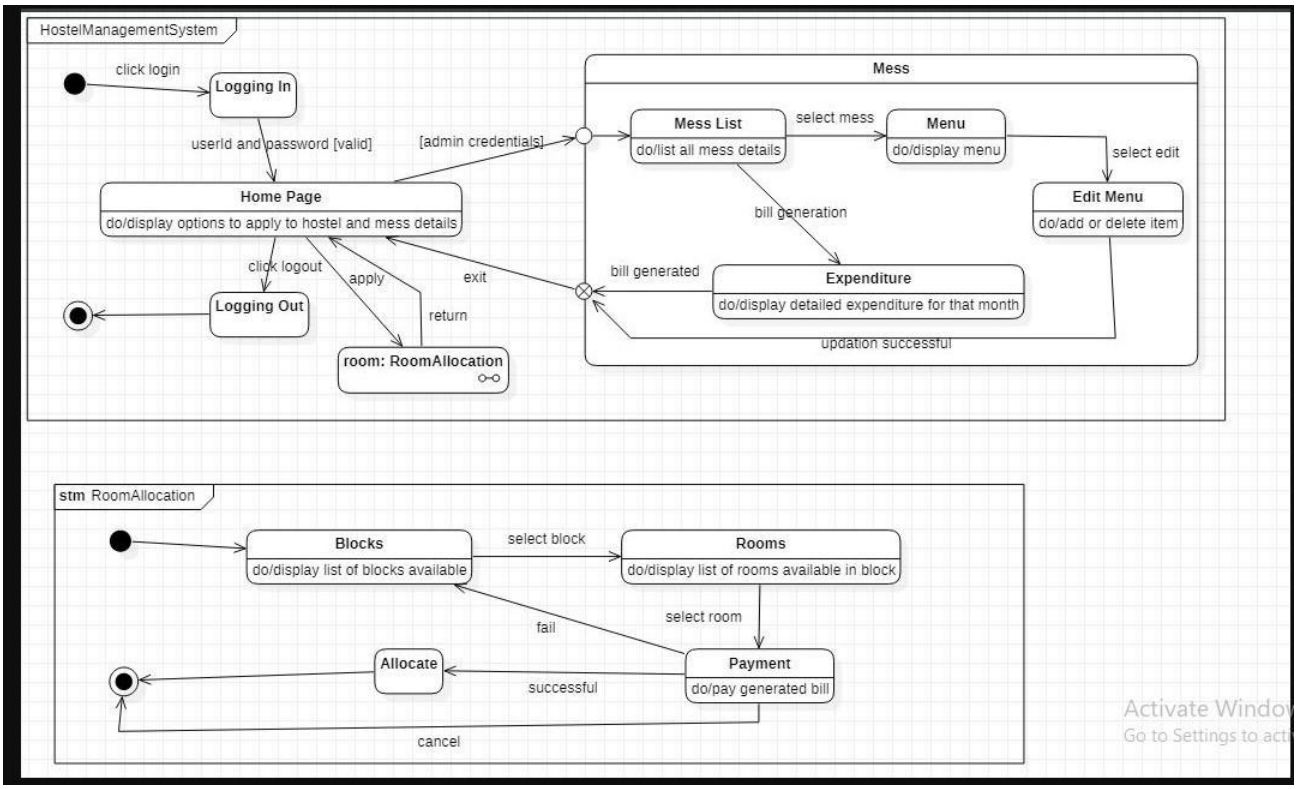
Different operations of a hostel which includes managing student and staff records shall provide ease of use to the hostel staff. and be beneficial for the students.

1. Admin of the management system shall login using the credentials provided to him.
2. Admin can appoint staff members and assign work for them
3. Admin can reviews the feedback provided by the students
4. Admin can allot room to students by checking vacancy in hostel's details.
5. Admin shall add, edit or delete student's details.
6. Students can view their details.
7. Students can provide feedback on staff or on food.
8. The wardens shall mark the attendance of the students whose rooms are allocated.
9. Admin shall have the statistics regarding the number of rooms alloted and the number of rooms which are empty and warden assigned to each set of students.
10. Mess managers can update the menu list and review mess feedback

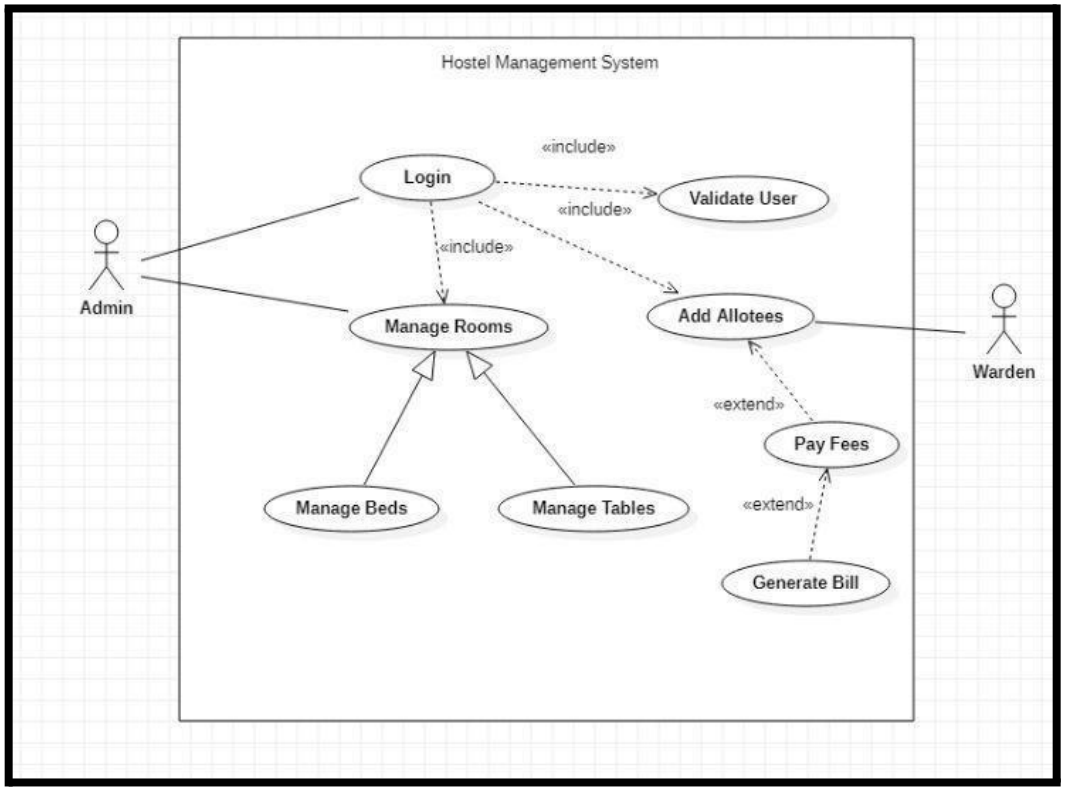
2. Draw the advanced class diagram



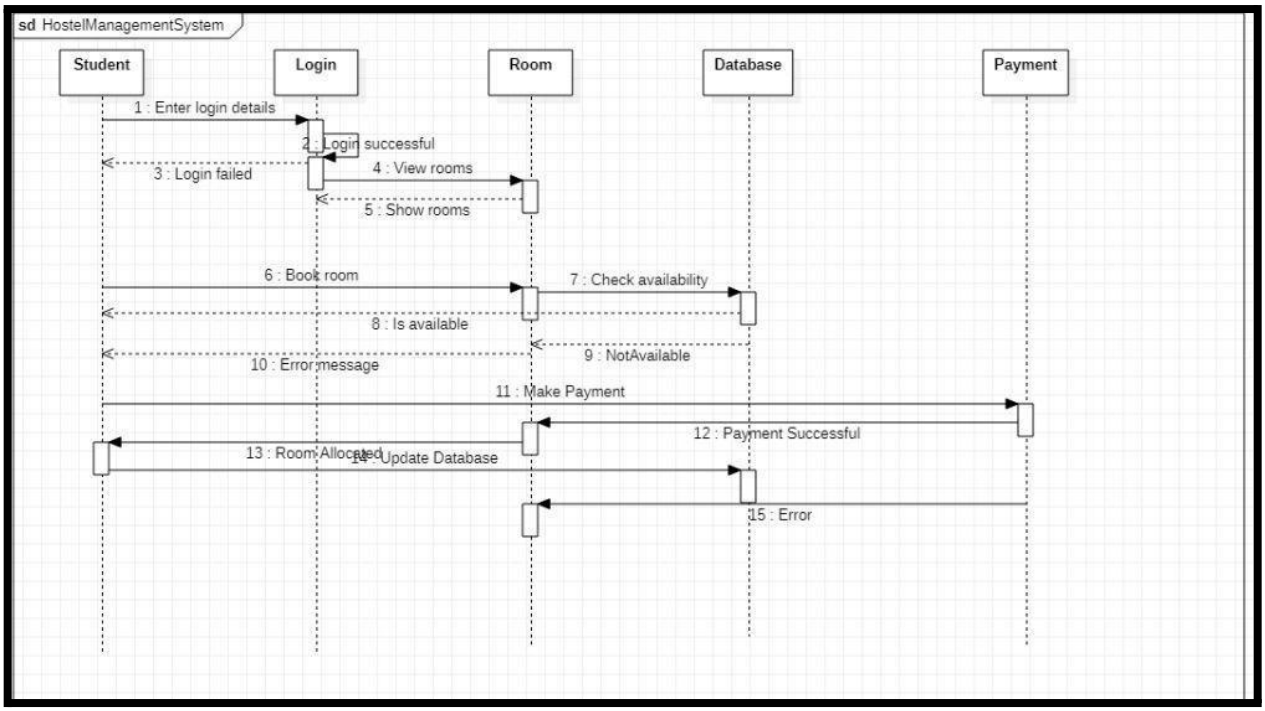
3. Draw the advanced state diagram



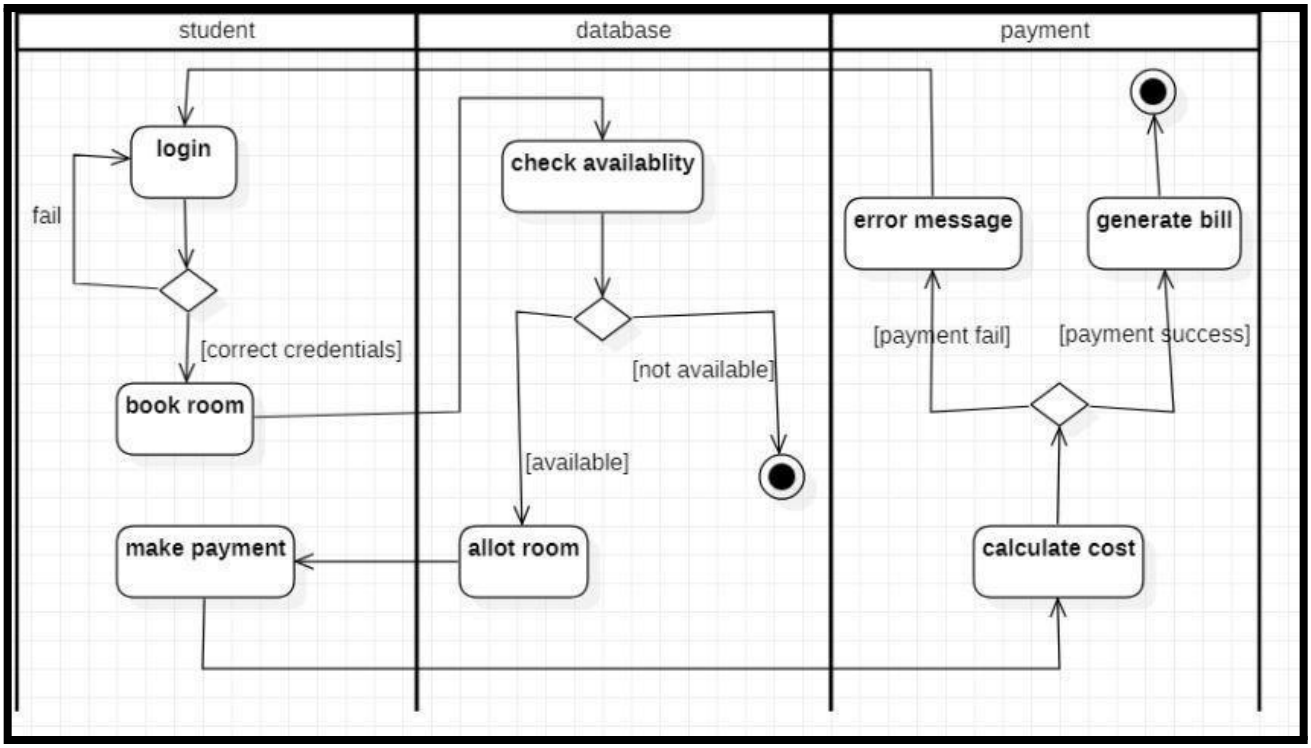
4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram

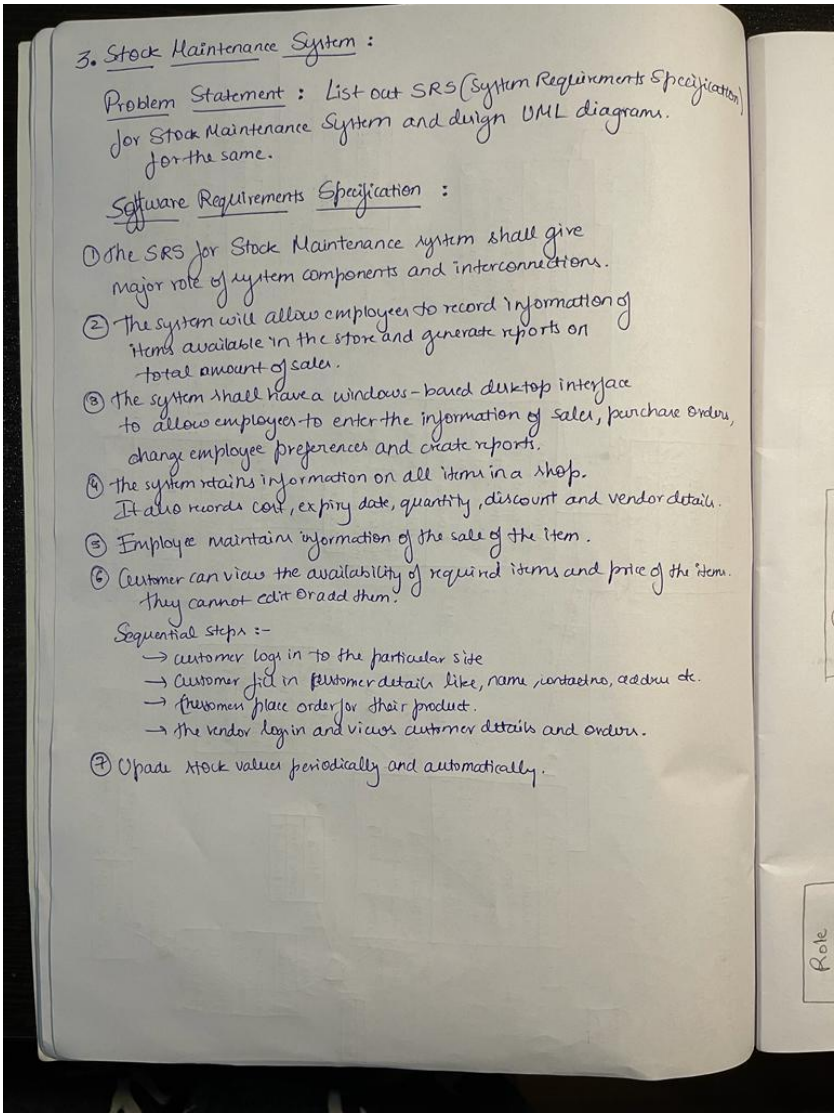


6. Draw the advanced activity diagram



Exercise 3: Stock Management System

1. Write SRS



3. Stock Maintenance System :

Problem Statement : List out SRS (System Requirements Specification) for Stock Maintenance System and design UML diagrams for the same.

Software Requirements Specification :

① The SRS for Stock Maintenance system shall give major role of system components and interconnections.

② The system will allow employees to record information of items available in the store and generate reports on total amount of sales.

③ The system shall have a windows-based desktop interface to allow employees to enter the information of sales, purchase orders, change employee preferences and create reports.

④ The system retains information on all items in a shop. It also records cost, expiry date, quantity, discount and vendor details.

⑤ Employee maintains information of the sale of the item.

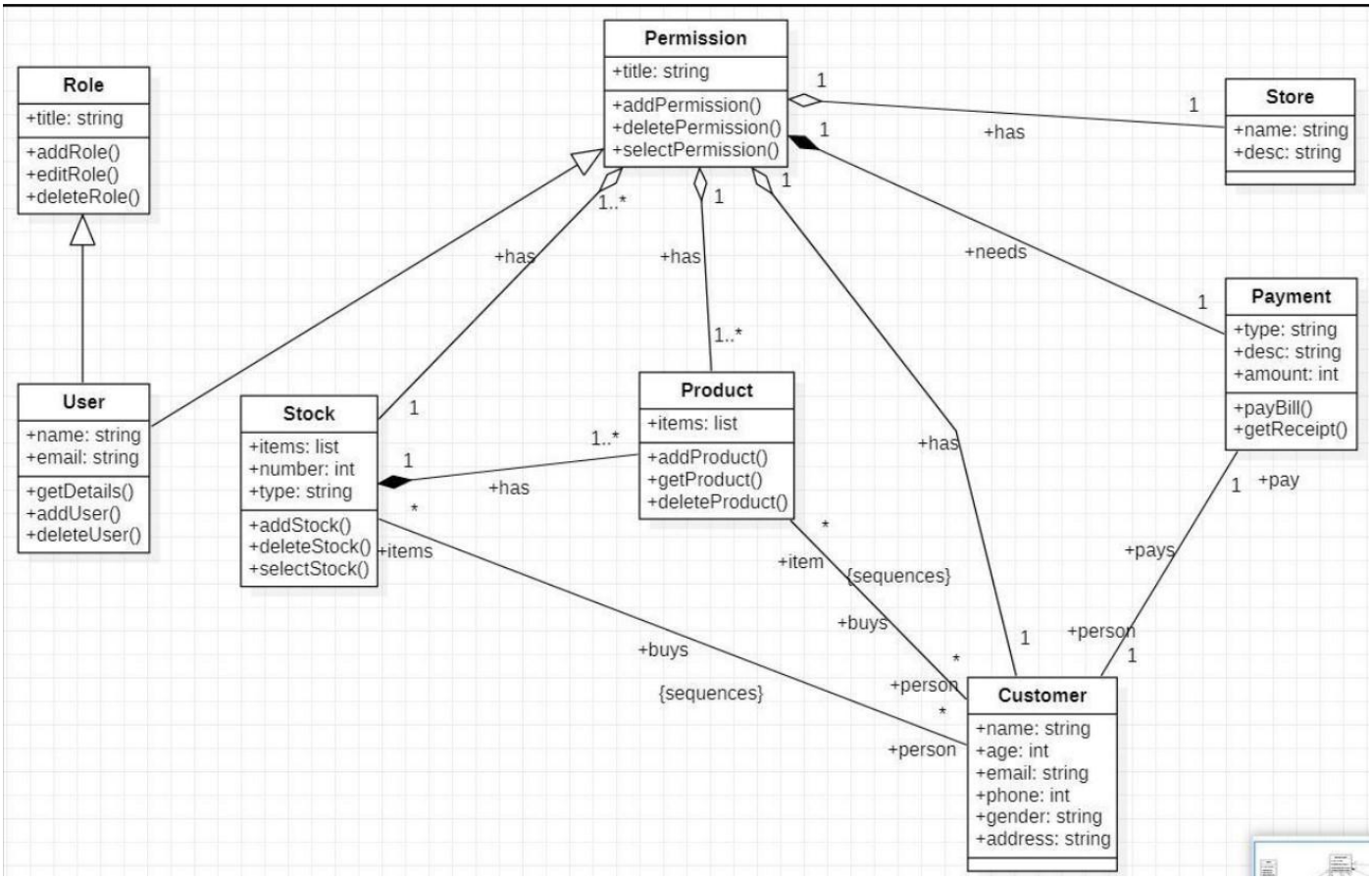
⑥ Customer can views the availability of required items and price of the item. They cannot edit or add them.

Sequential steps :-
→ customer logs in to the particular site
→ Customer fill in customer details like, name, contact no, address etc.
→ Customers place order for their product.
→ The vendor login and views customer details and orders.

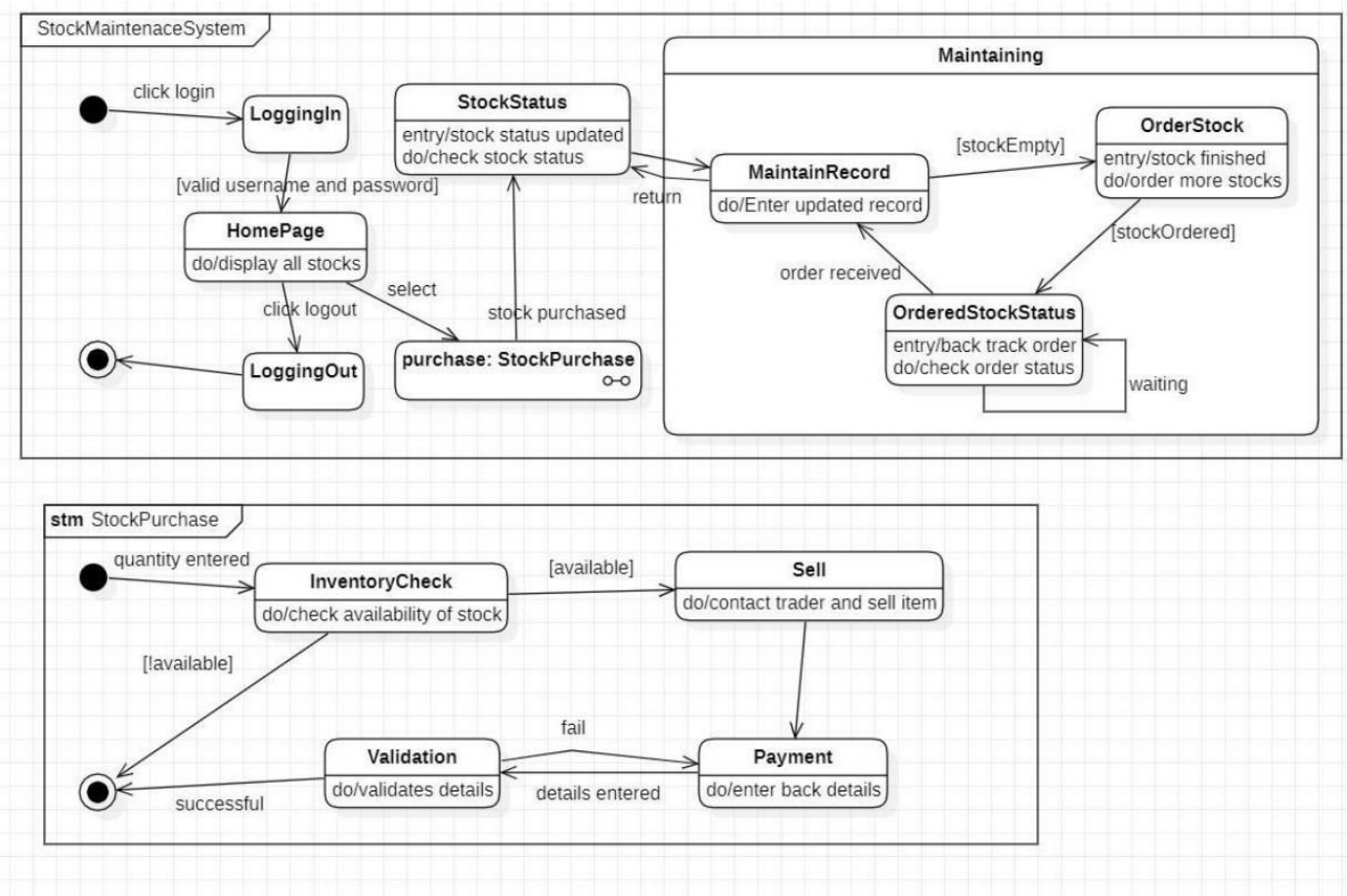
⑦ Update stock values periodically and automatically.

Role

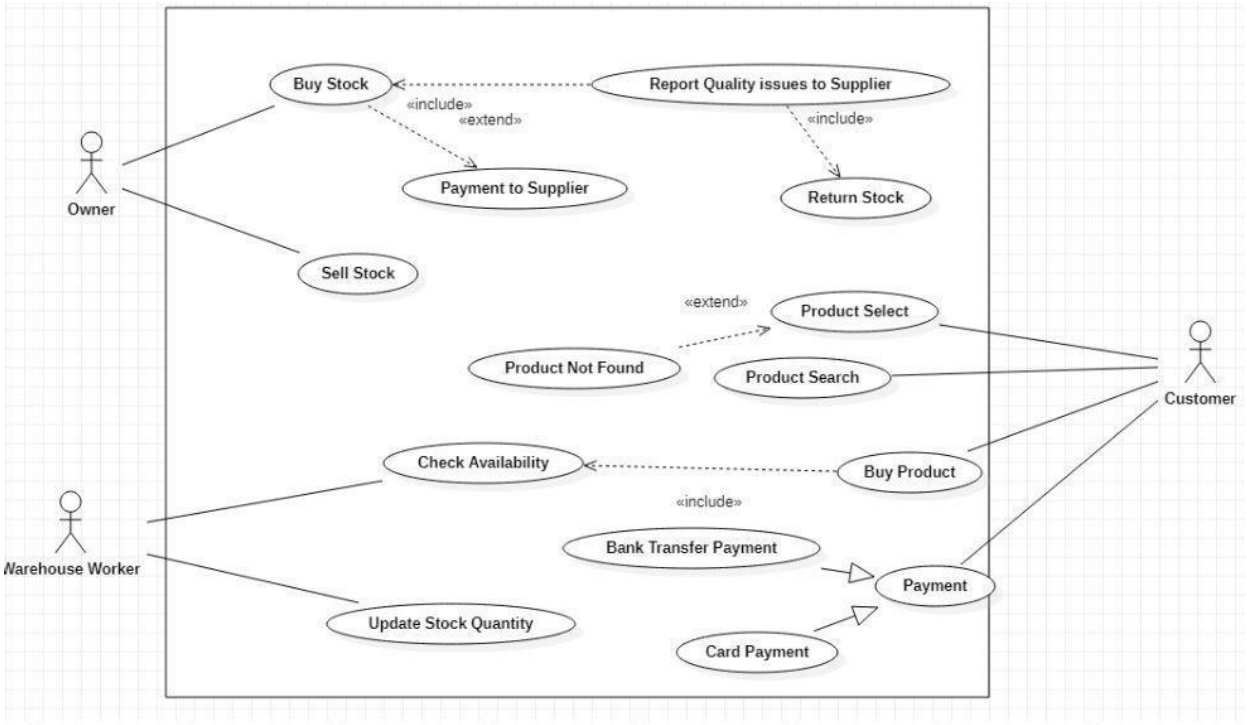
2. Draw the advanced class diagram

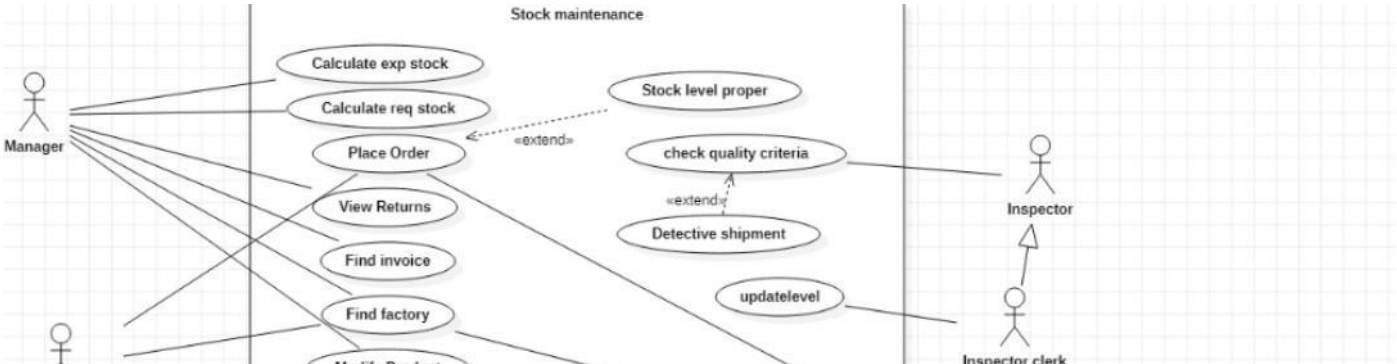


3. Draw the advanced state diagram

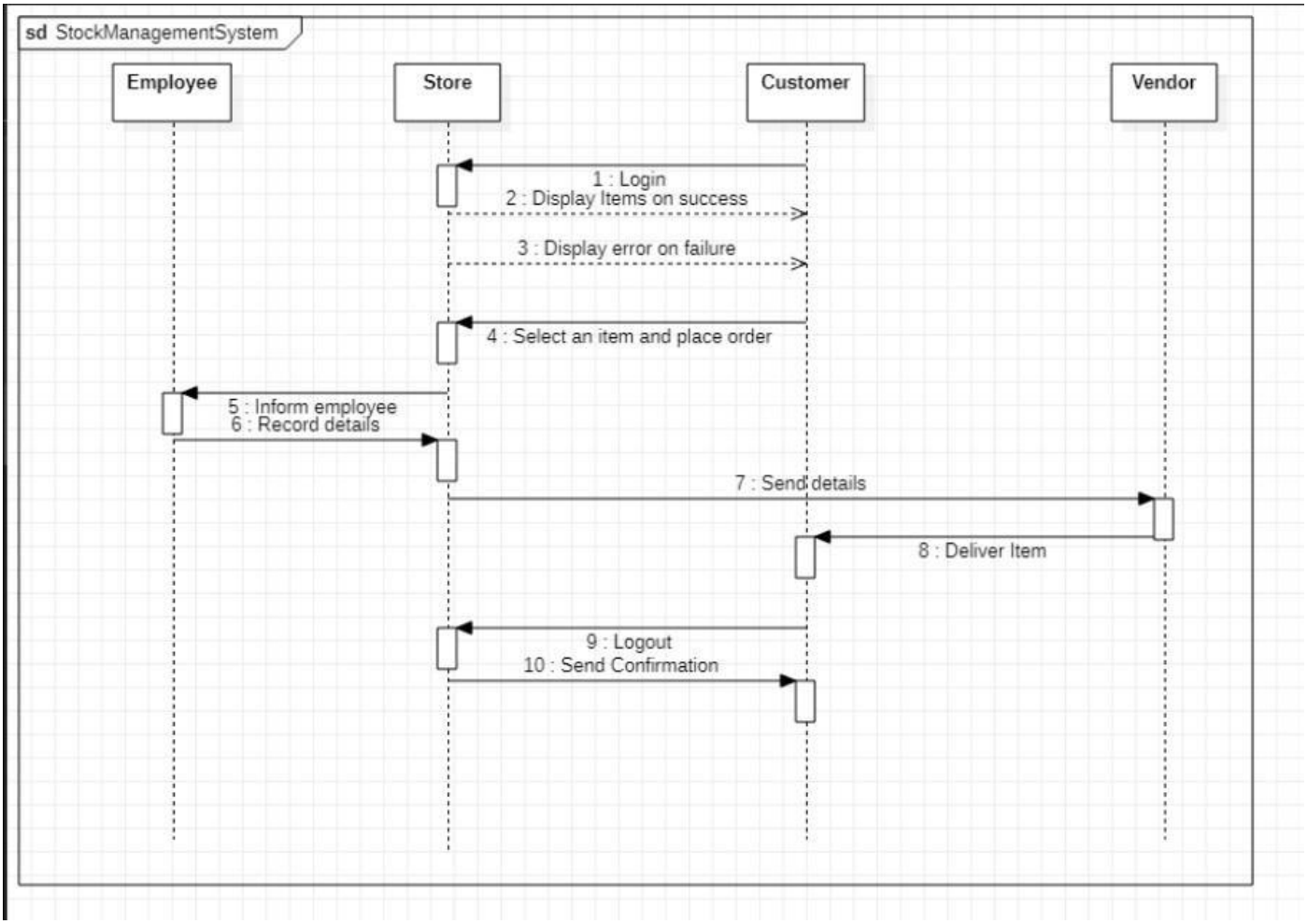


4. Draw the advanced use case diagram

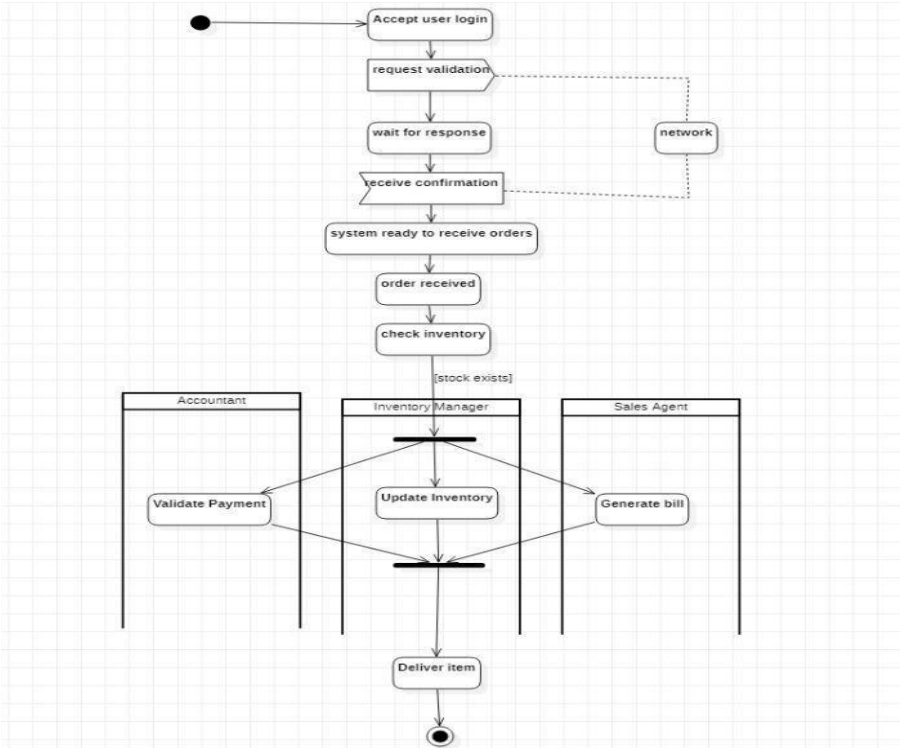

Buy Stock
Report Quality issues to Supplier
«include»
«extend»
«include»
Owner
Payment to Supplier
Return Stock
Sell Stock
«extend»
Product Select
Product Not Found
Product Search
Customer
Check Availability
Buy Product
«include»
Warehouse Worker
Bank Transfer Payment
Payment
Update Stock Quantity
Card Payment

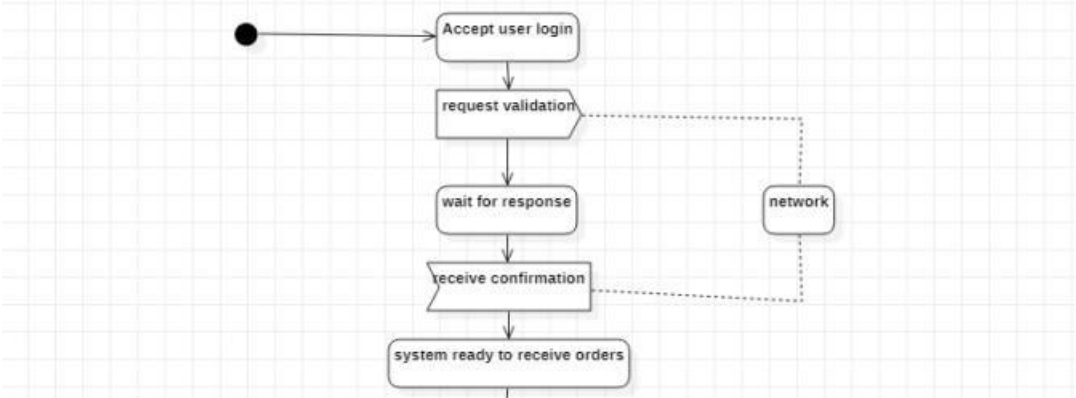

Stock maintenance
Calculate exp stock
Stock level proper
Calculate req stock
Manager
«extend»
Place Order
check quality criteria
Inspector
View Returns
«extend»
Detective shipment
Find invoice
updatelevel
Find factory
Inspector clerk

5. Draw the advanced sequence diagram



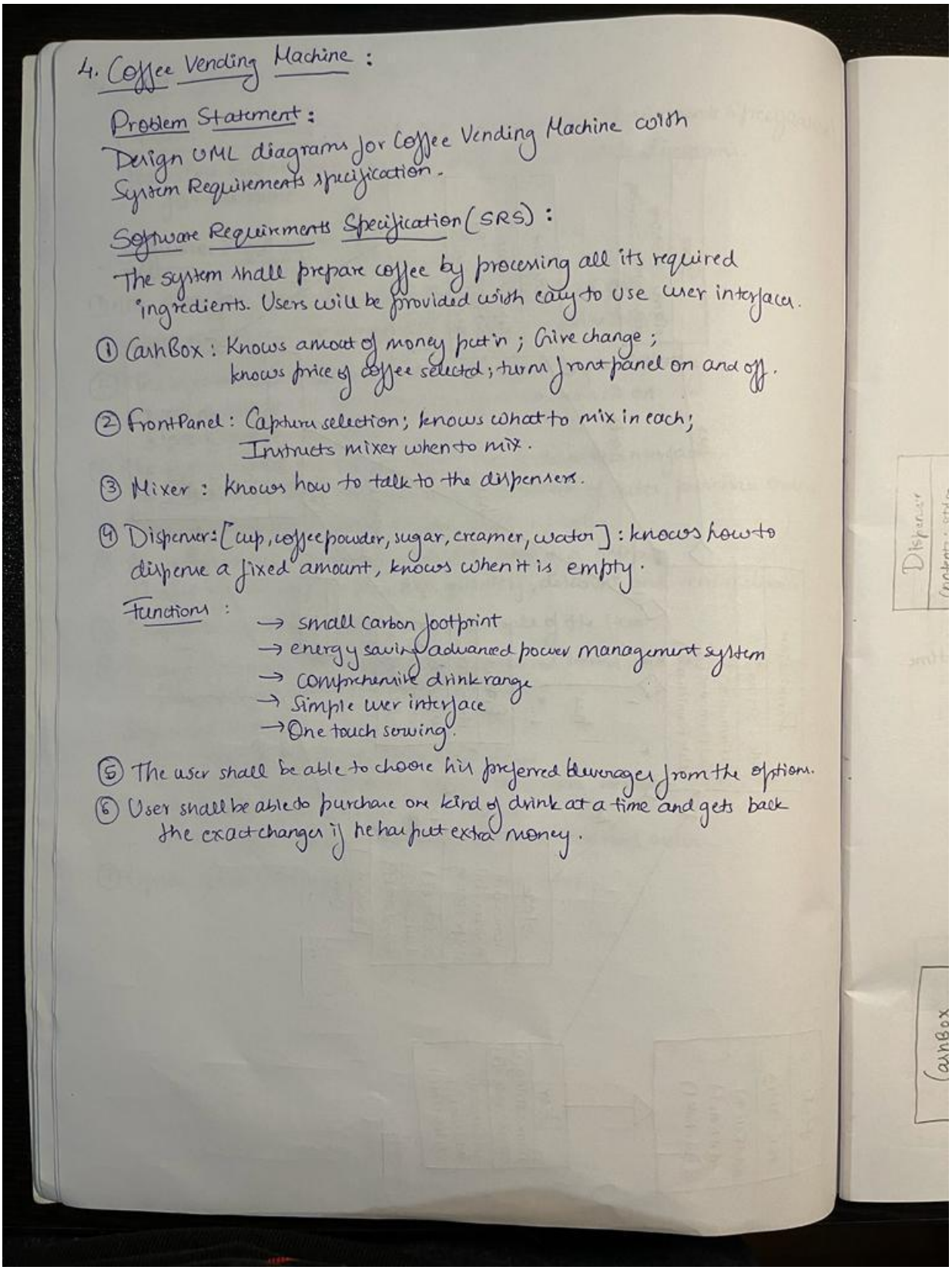
6. Draw the advanced activity diagram


Accept user login
request validation
wait for response
network
receive confirmation
system ready to receive orders
order received
check inventory
[stock exists]
Accountant
Inventory Manager
Sales Agent
Validate Payment
Update Inventory
Generate bill
Deliver item


Accept user login
request validation
wait for response
network
receive confirmation
system ready to receive orders

Exercise 4: Coffee Vending Machine

1. Write SRS



4. Coffee Vending Machine :

Problem Statement :
Design UML diagrams for Coffee Vending Machine with System Requirements specification.

Software Requirements Specification (SRS) :
The system shall prepare coffee by processing all its required ingredients. Users will be provided with easy to use user interface.

① CashBox : Knows amount of money put in ; Give change ;
knows price of coffee selected ; turn front panel on and off.

② FrontPanel : Capture selection ; knows what to mix in each ;
Instructs mixer when to mix.

③ Mixer : knows how to talk to the dispensers.

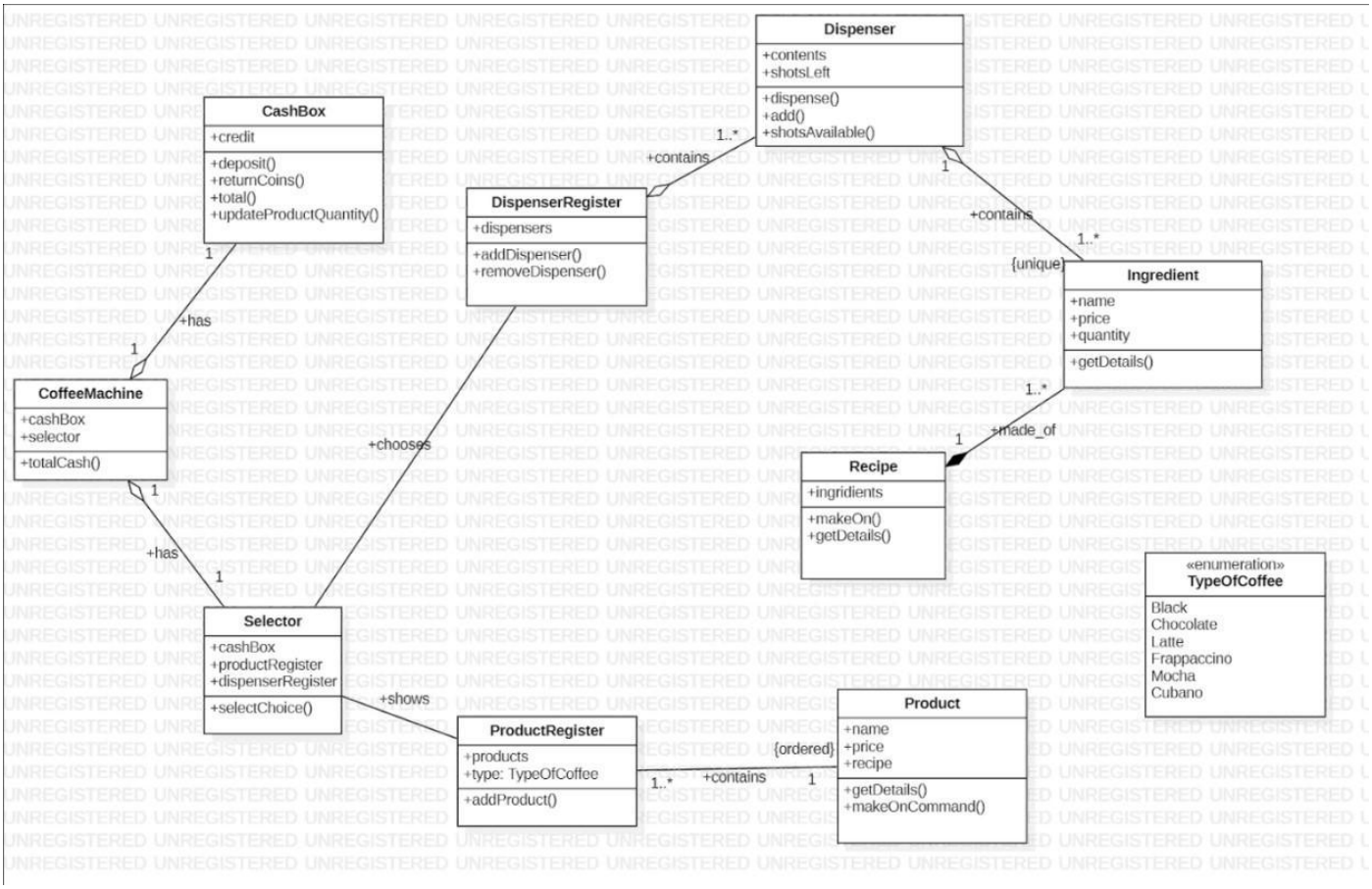
④ Dispenser : [cup, coffeepowder, sugar, creamer, water] : knows how to dispense a fixed amount, knows when it is empty.

Functions :
→ small carbon footprint
→ energy saving advanced power management system
→ comprehensive drink range
→ Simple user interface
→ One touch serving.

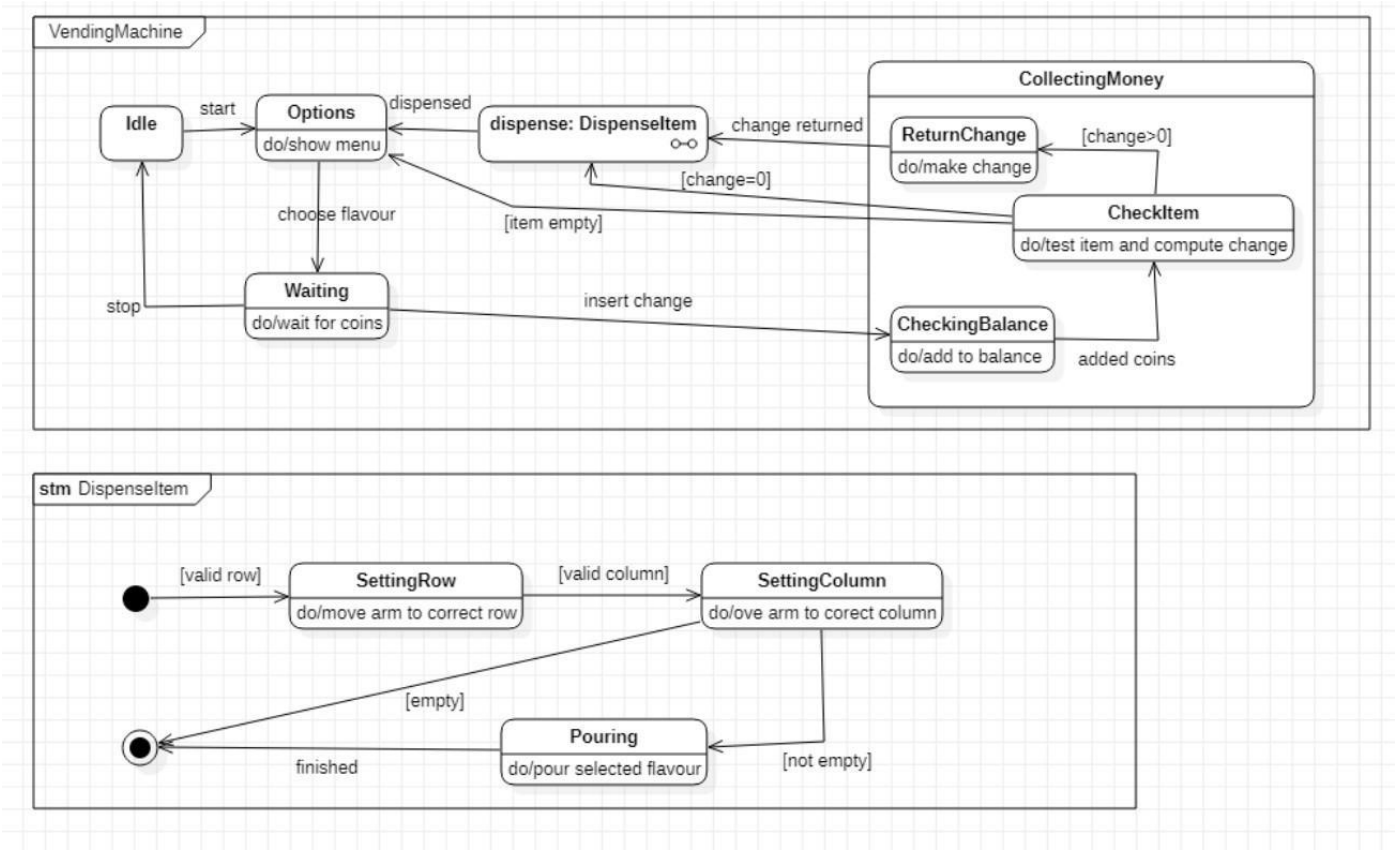
⑤ The user shall be able to choose his preferred beverages from the options.

⑥ User shall be able to purchase one kind of drink at a time and gets back the exact changes if he has put extra money.

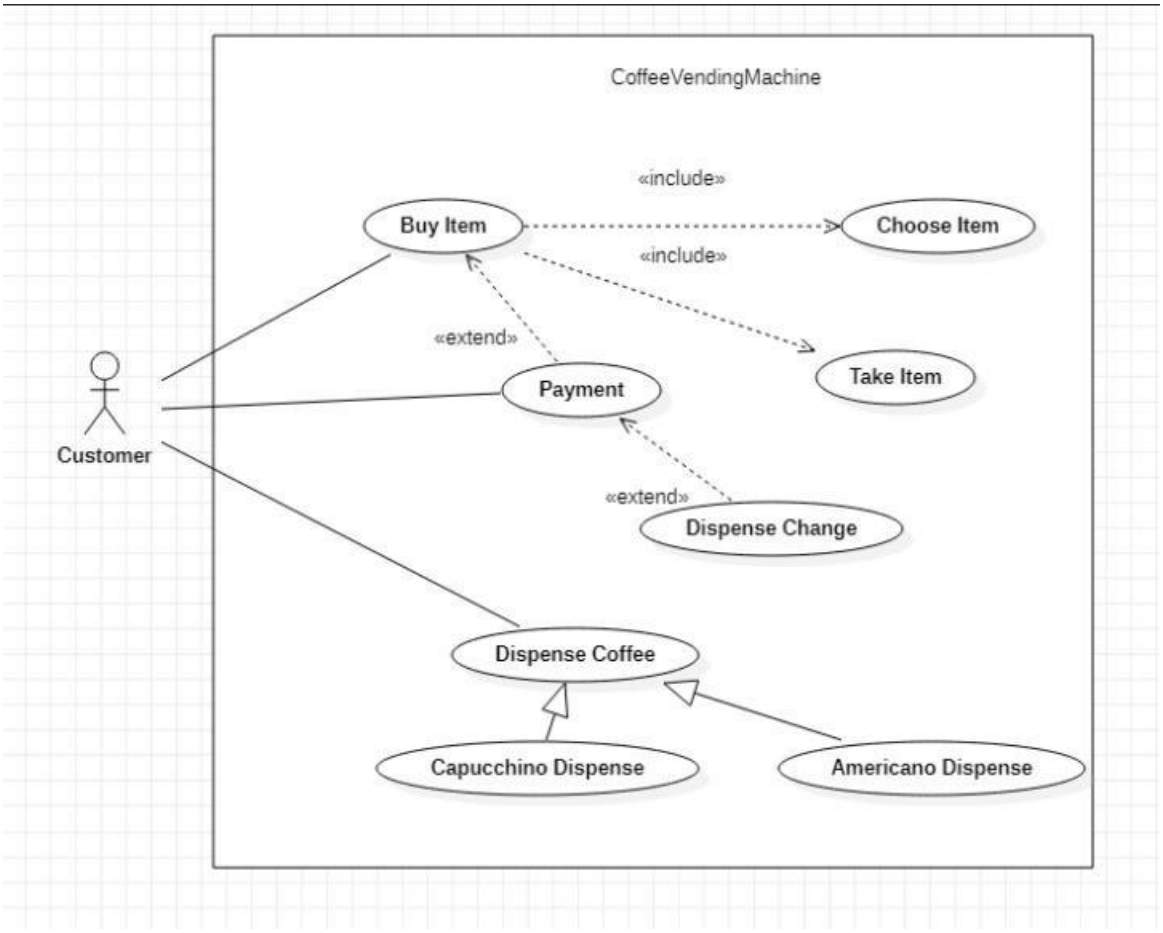
2. Draw the advanced class diagram



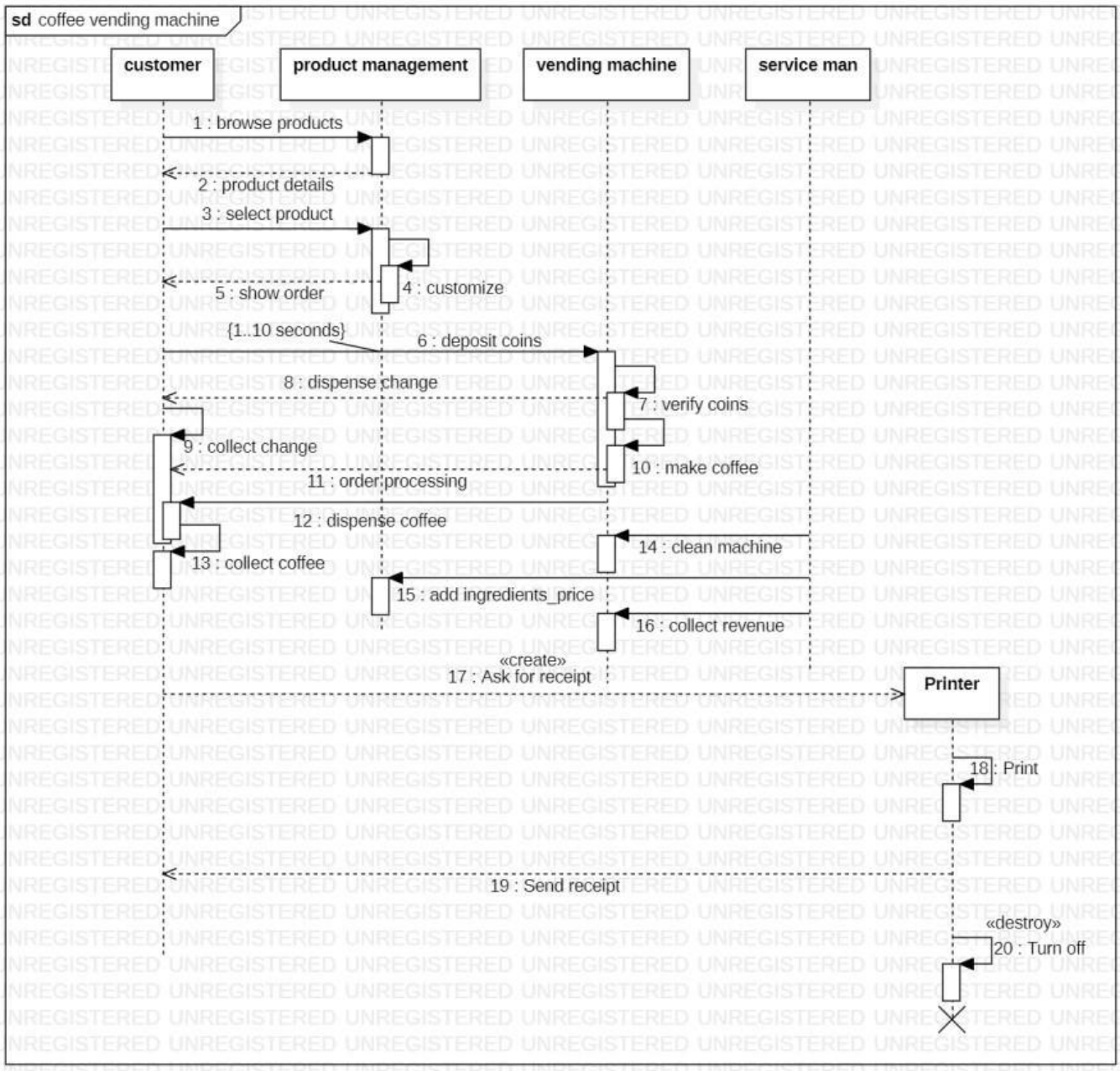
3. Draw the advanced state diagram



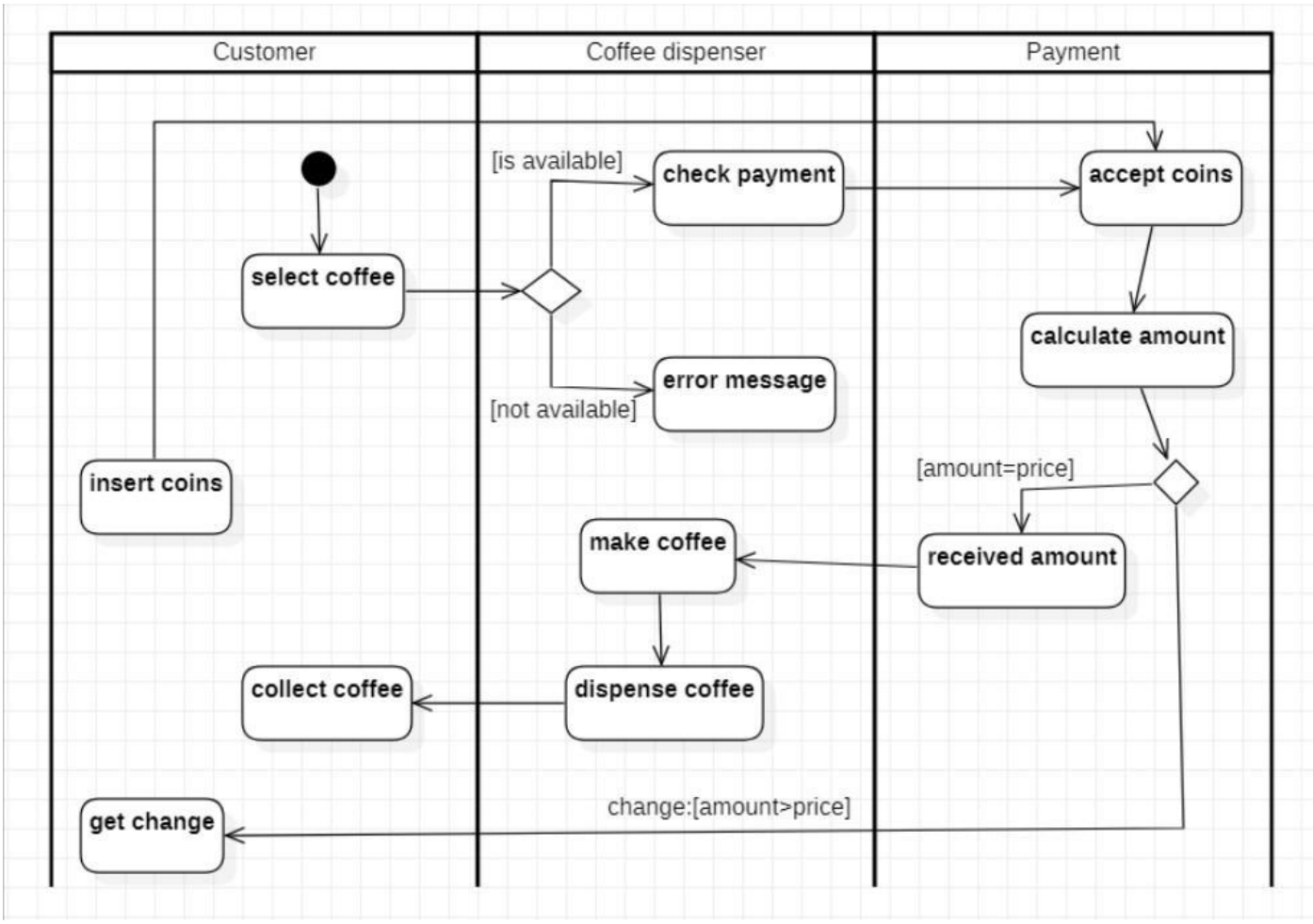
4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram

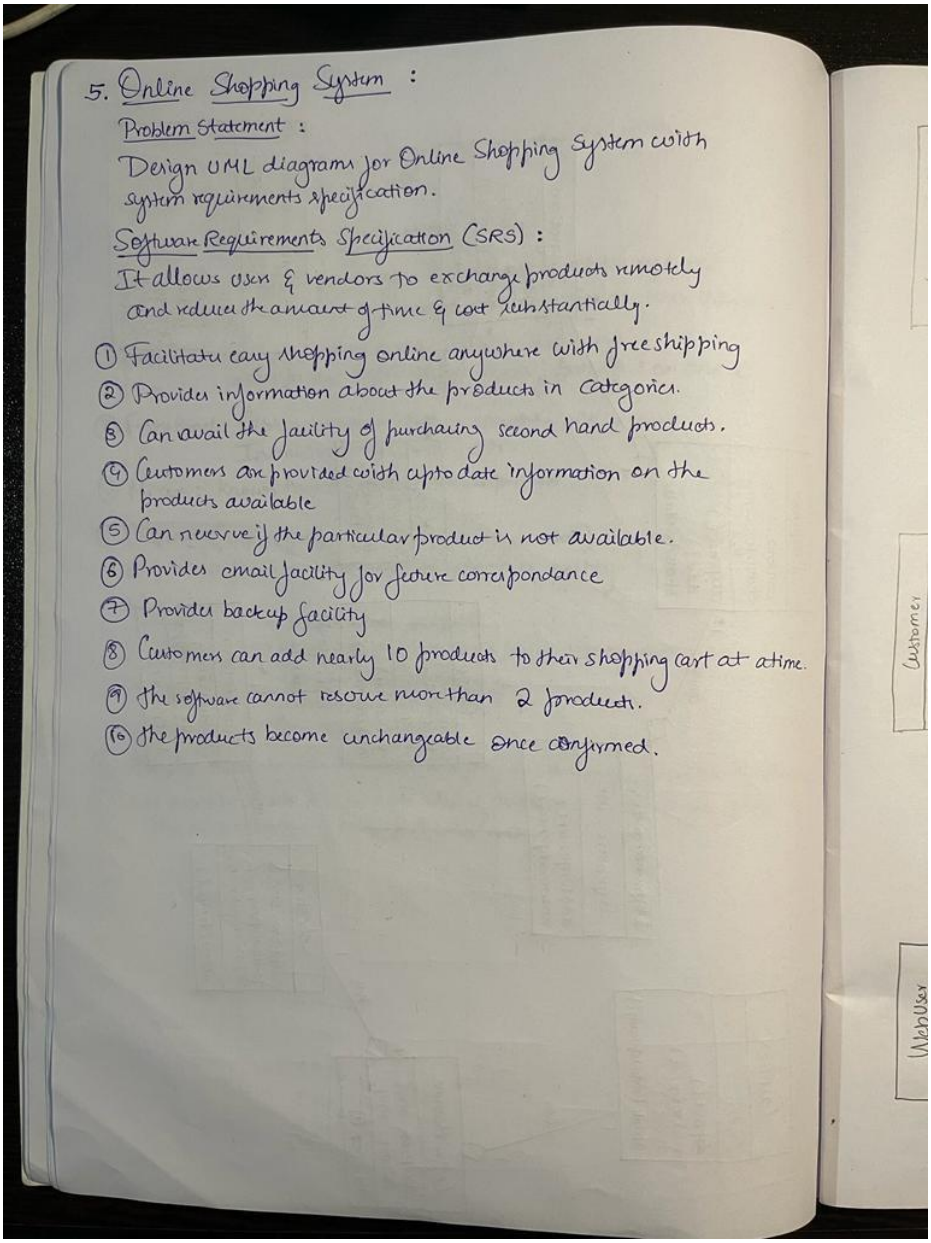


6. Draw the advanced activity diagram



Exercise 5: Online Shopping System

1. Write SRS



5. Online Shopping System :

Problem Statement :

Design UML diagrams for Online Shopping System with system requirements specification.

Software Requirements Specification (SRS) :

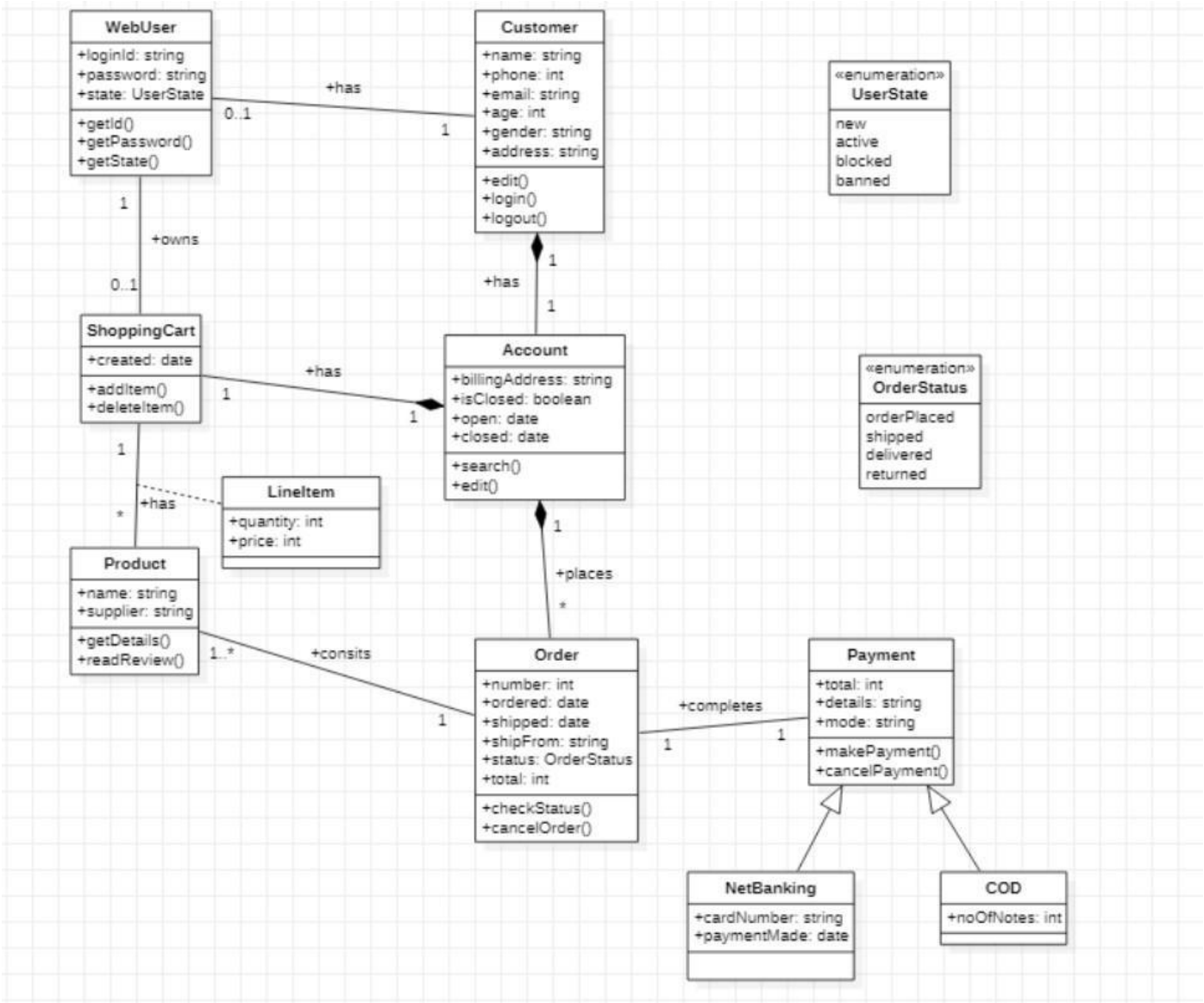
It allows user & vendors to exchange products remotely and reduce the amount of time & cost substantially.

1. Facilitates easy shopping online anywhere with free shipping
2. Provides information about the products in categories.
3. Can avail the facility of purchasing second hand products.
4. Customers are provided with upto date information on the products available
5. Can reserve if the particular product is not available.
6. Provides email facility for secure correspondance
7. Provides backup facility
8. Customers can add nearly 10 products to their shopping cart at a time.
9. The software cannot reserve more than 2 products.
10. The products become unchangeable once confirmed.

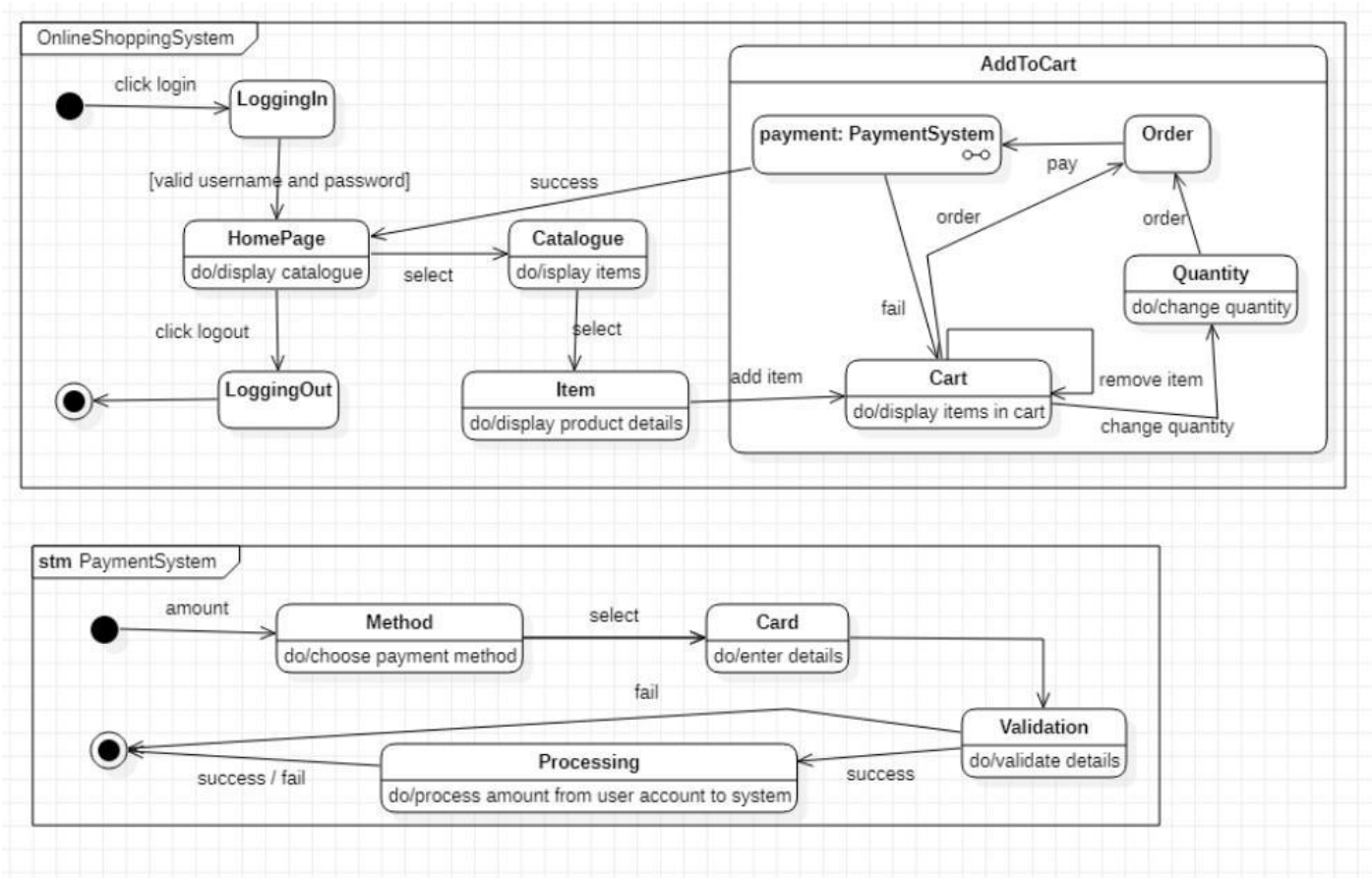
Customer

WebUser

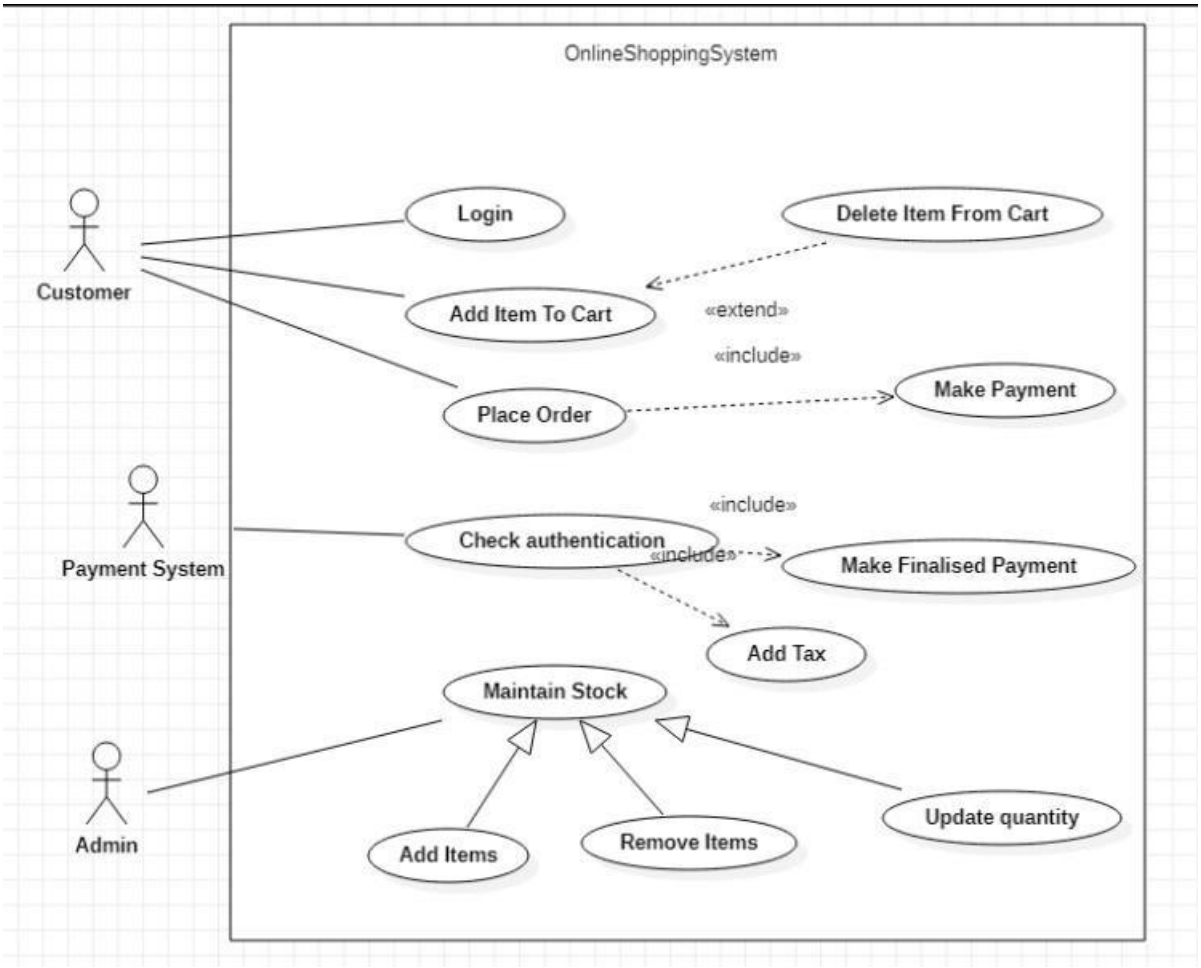
2. Draw the advanced class diagram



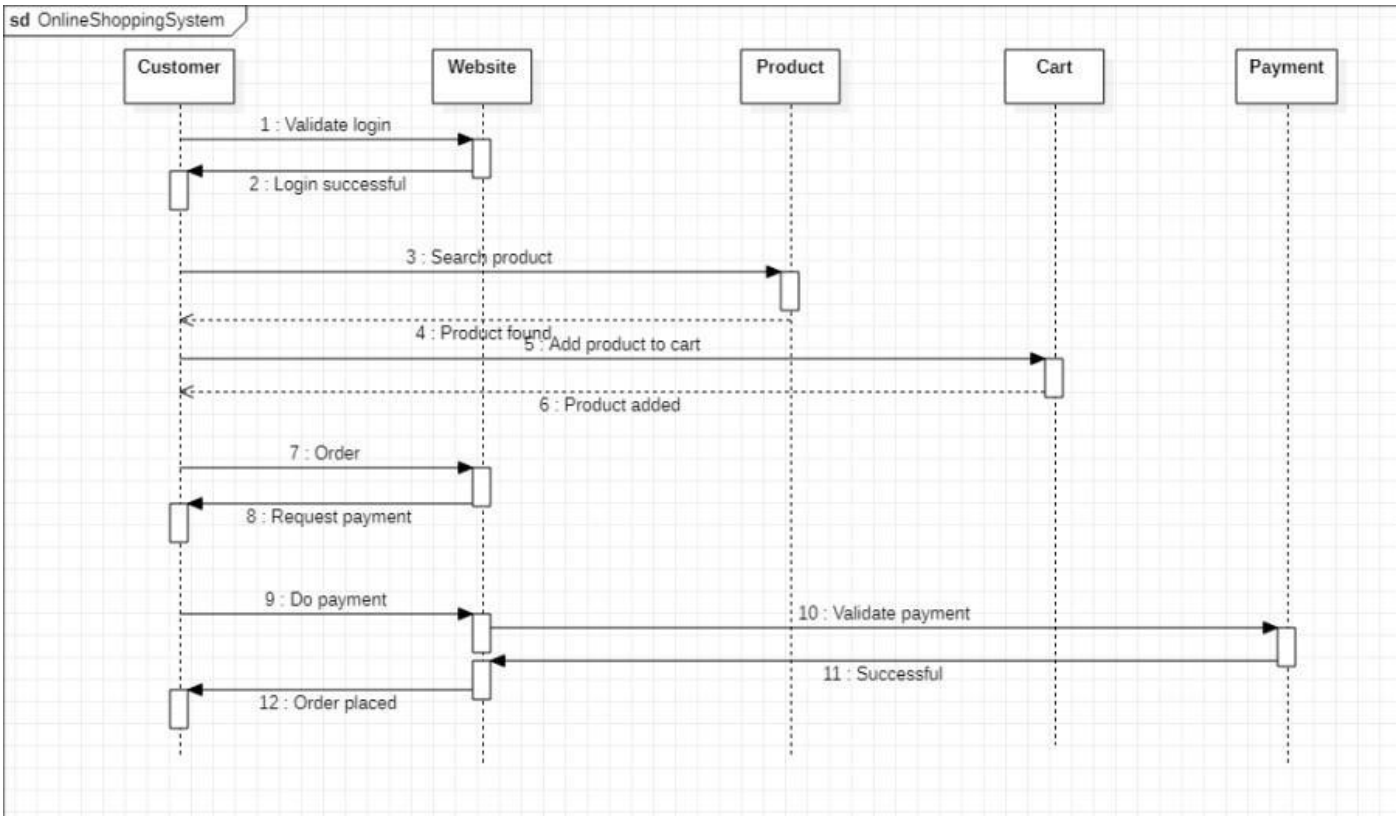
3. Draw the advanced state diagram



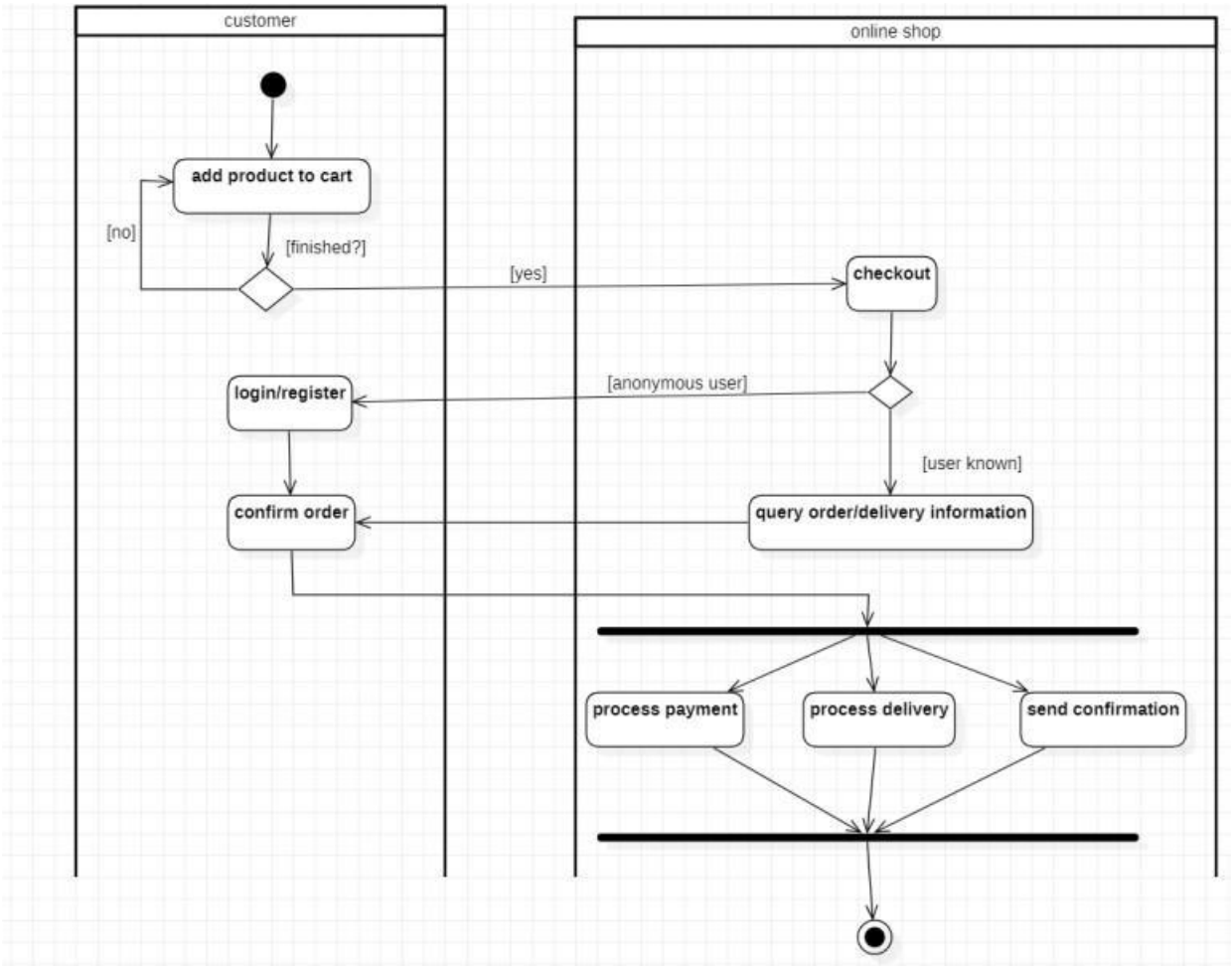
4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram

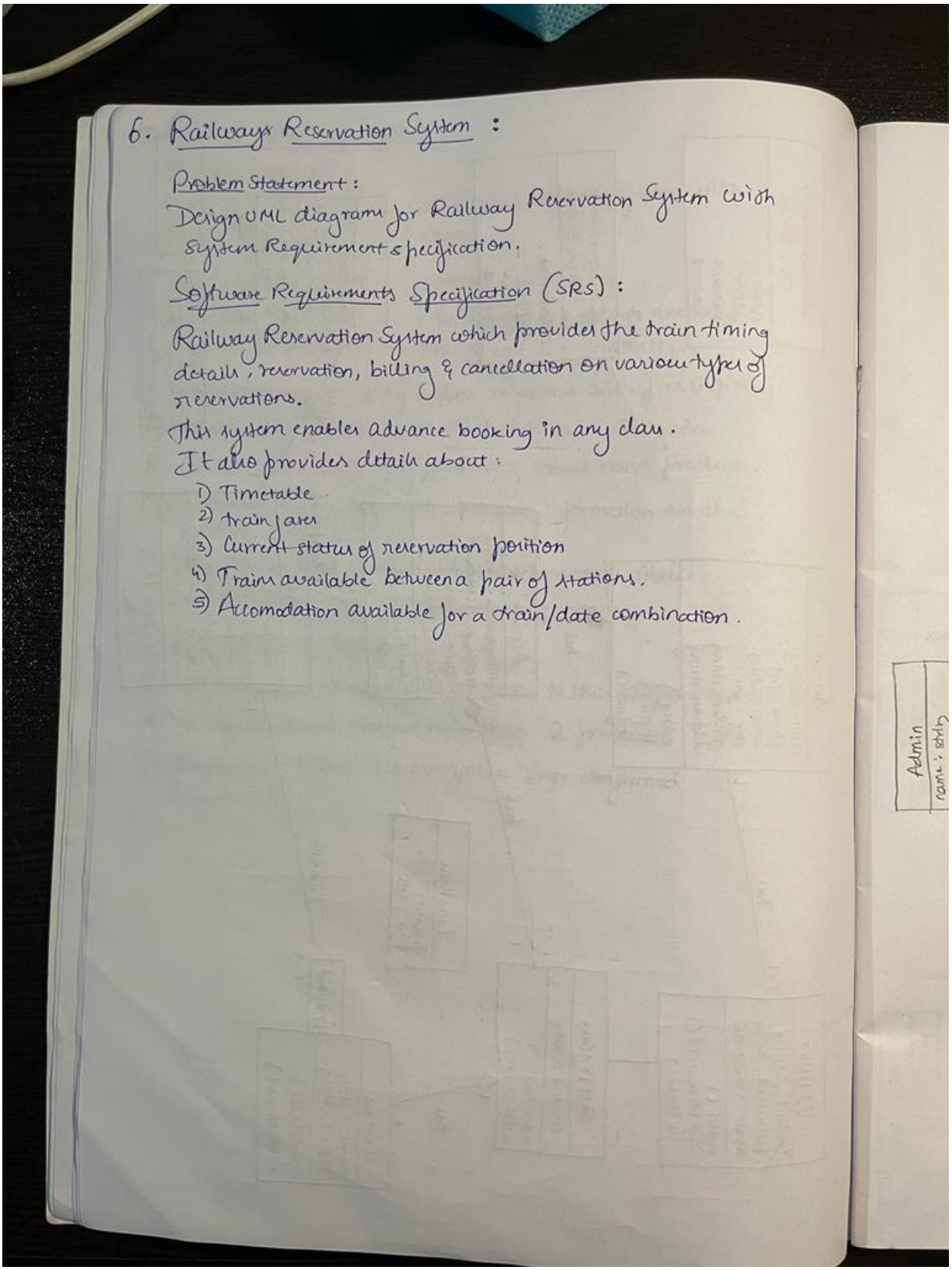


6. Draw the advanced activity diagram



Exercise 6: Railway Reservation System

1. Write SRS



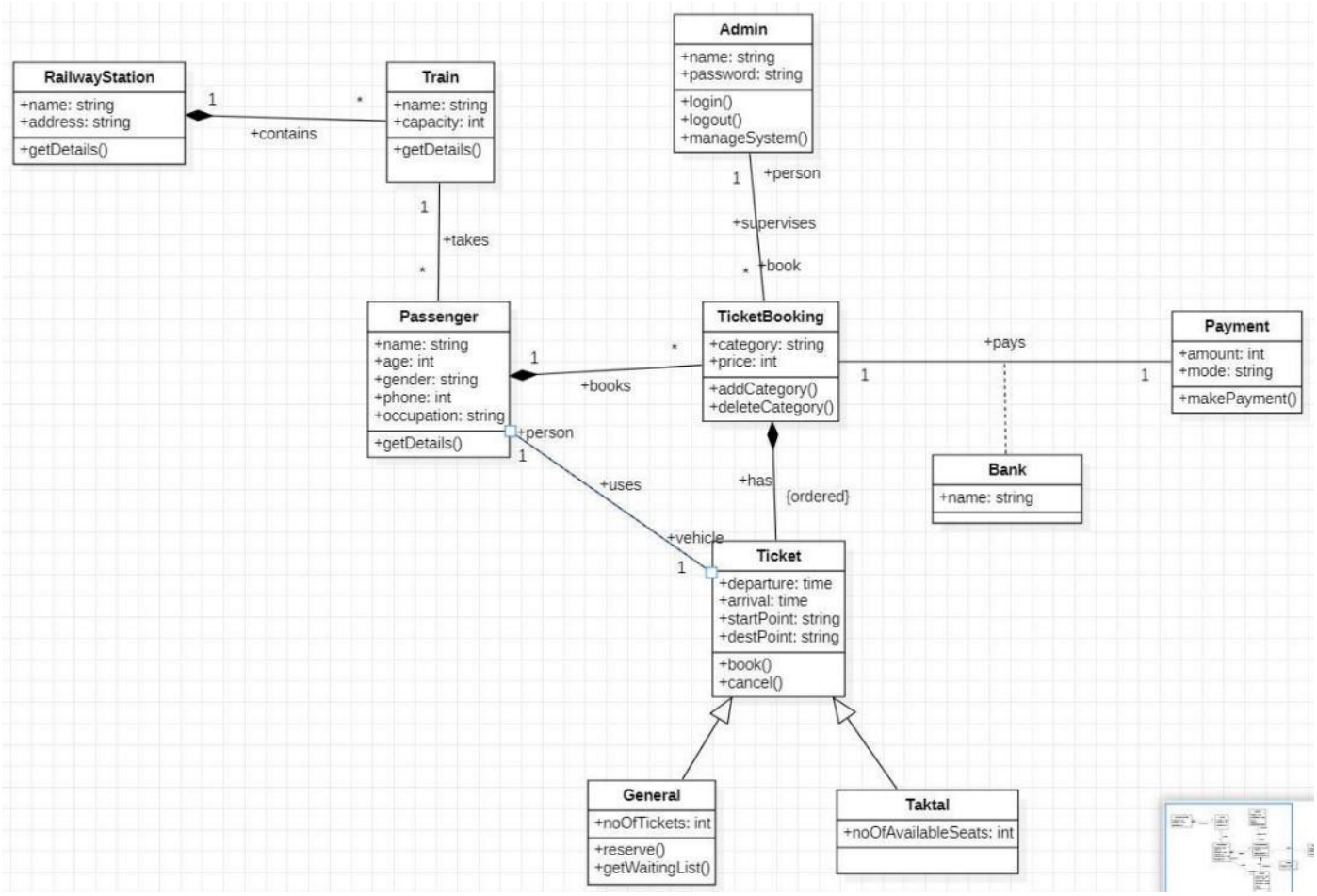
6. Railways Reservation System :

Problem Statement :
Design UML diagram for Railway Reservation System with System Requirement specification.

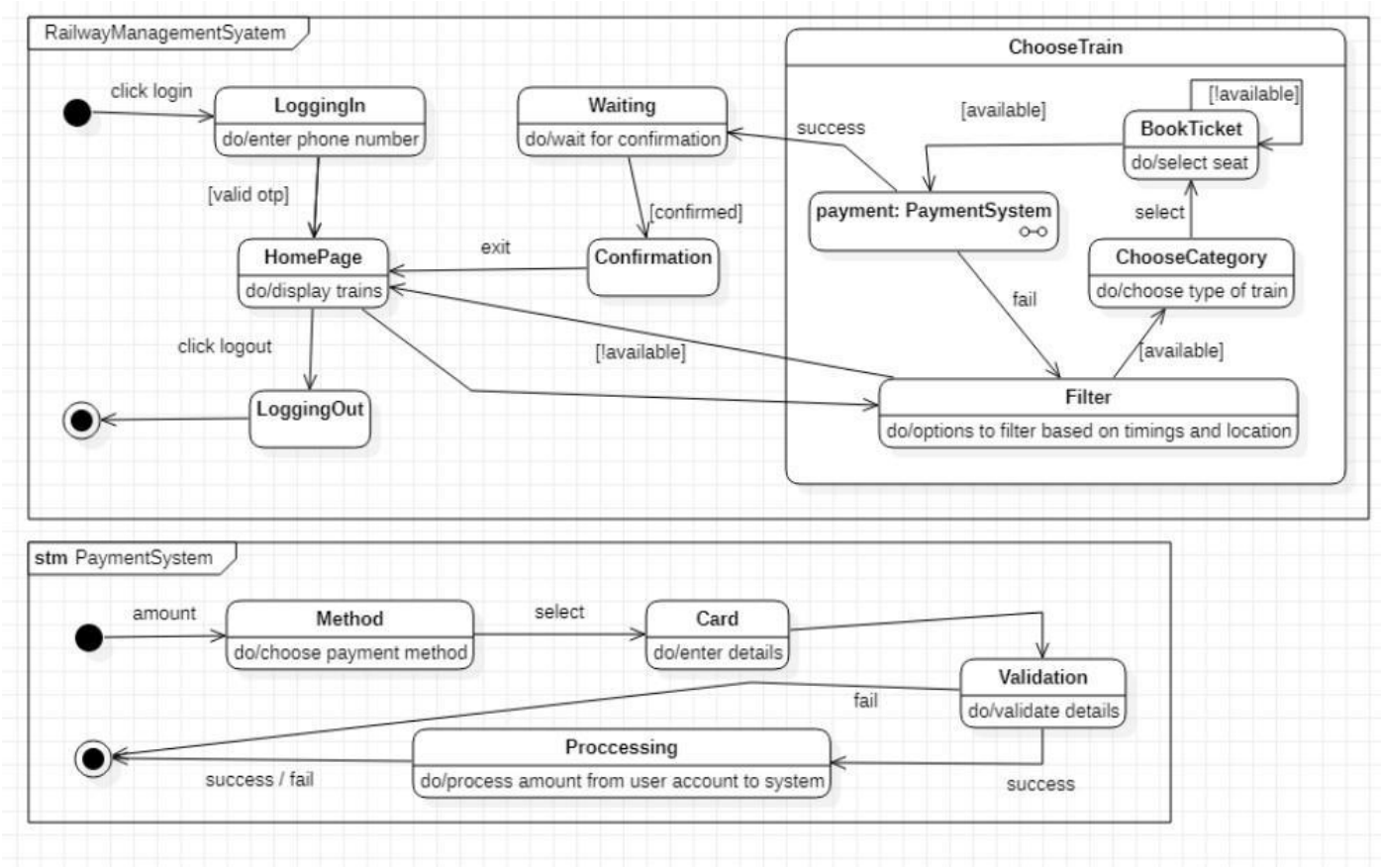
Software Requirements Specification (SRS) :
Railway Reservation System which provides the train timing details, reservation, billing & cancellation on various types of reservations.
This system enables advance booking in any class.
It also provides details about :
1) Timetable
2) train fares
3) Current status of reservation position
4) Trains available between a pair of stations.
5) Accomodation available for a train/date combination.

Admin
name : string

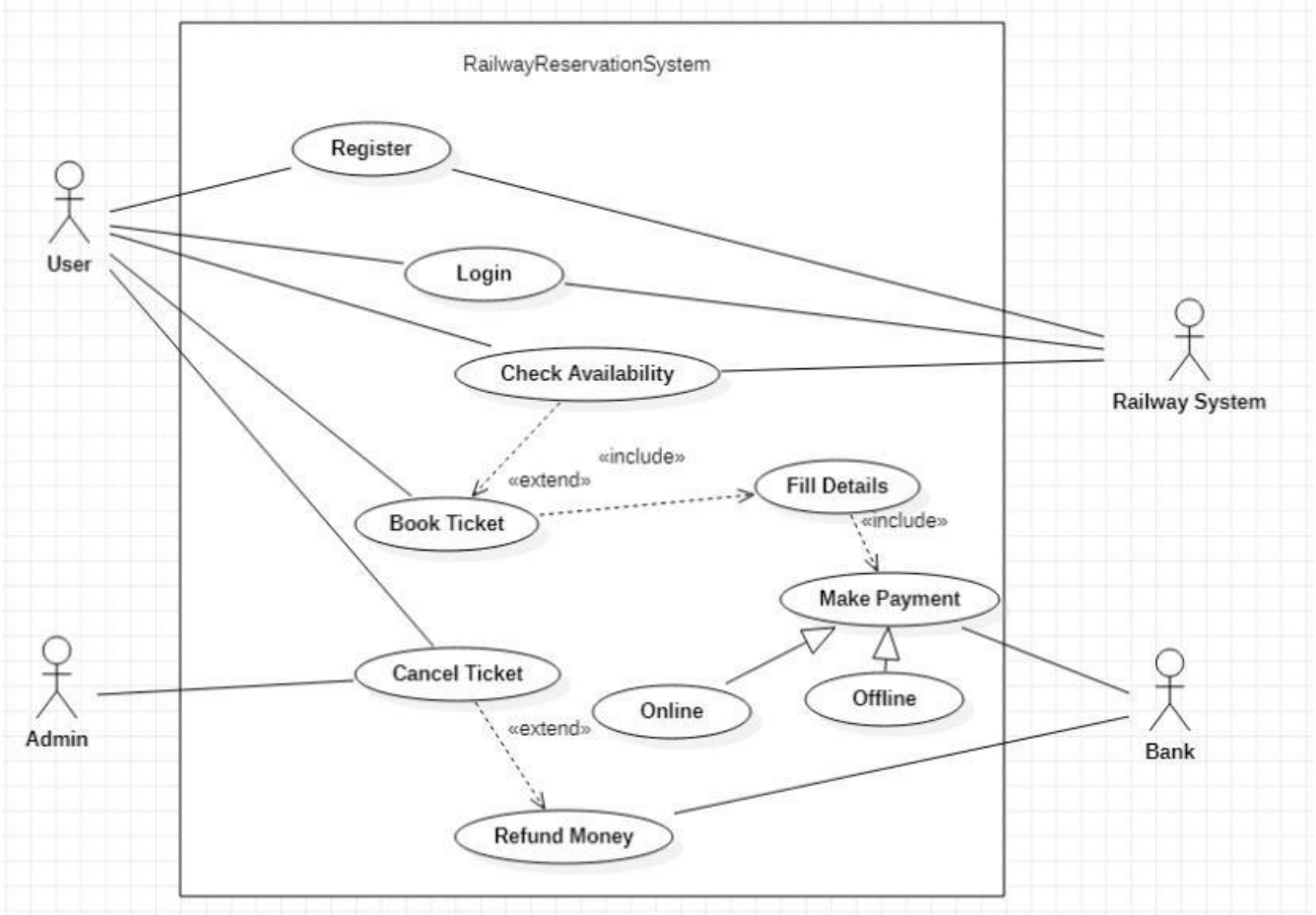
2. Draw the advanced class diagram



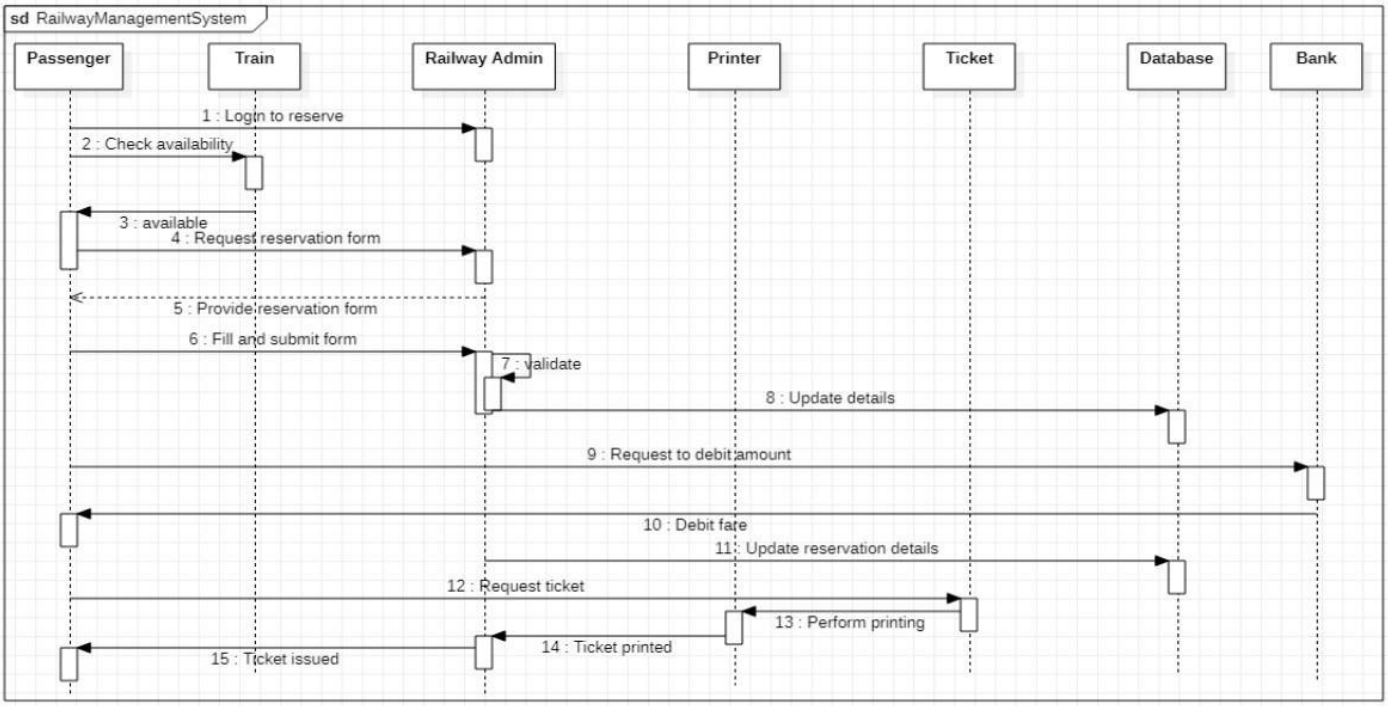
3. Draw the advanced state diagram



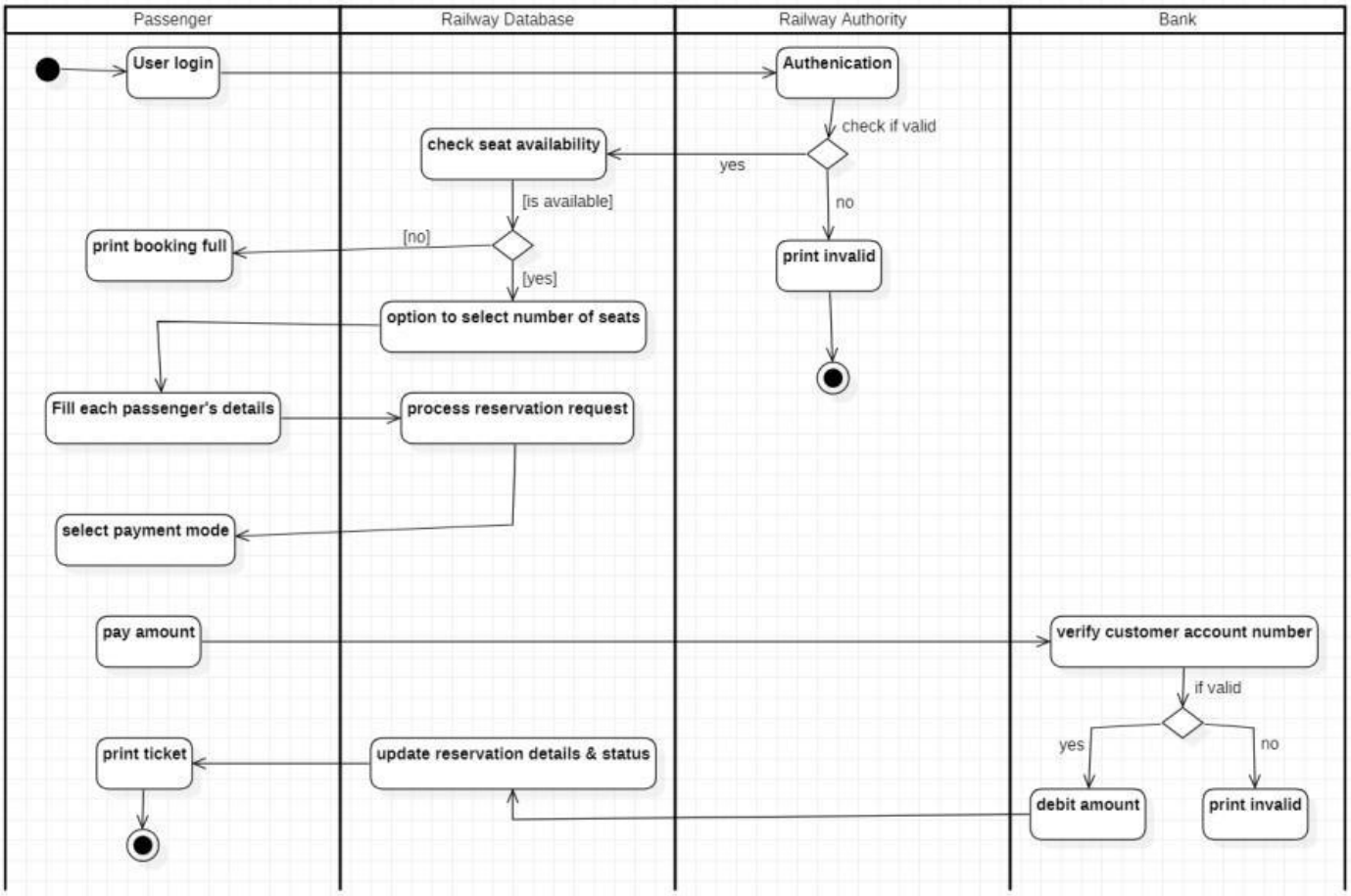
4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram

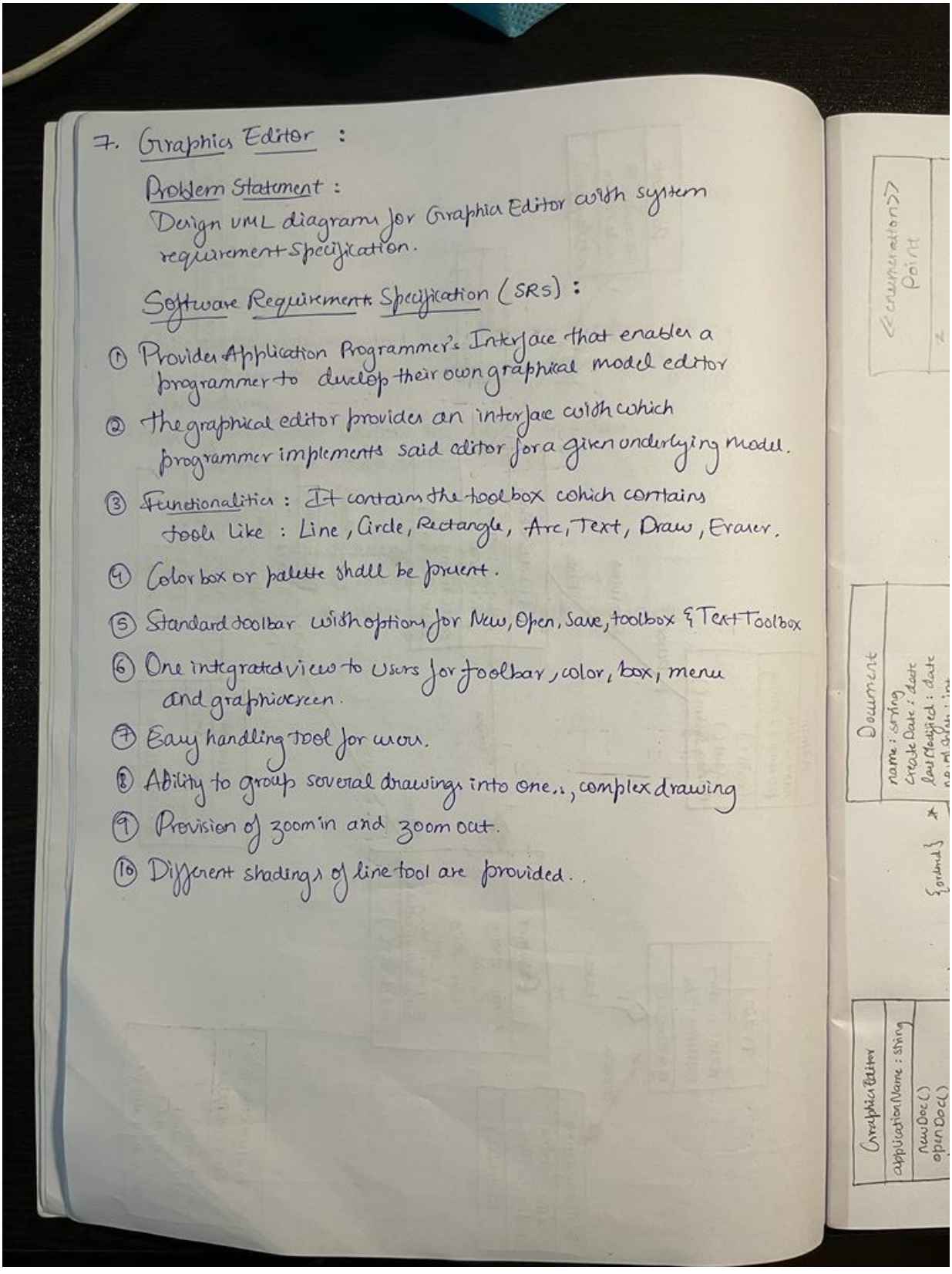


6. Draw the advanced activity diagram



Exercise 7: Graphics Editor System

1. Write SRS



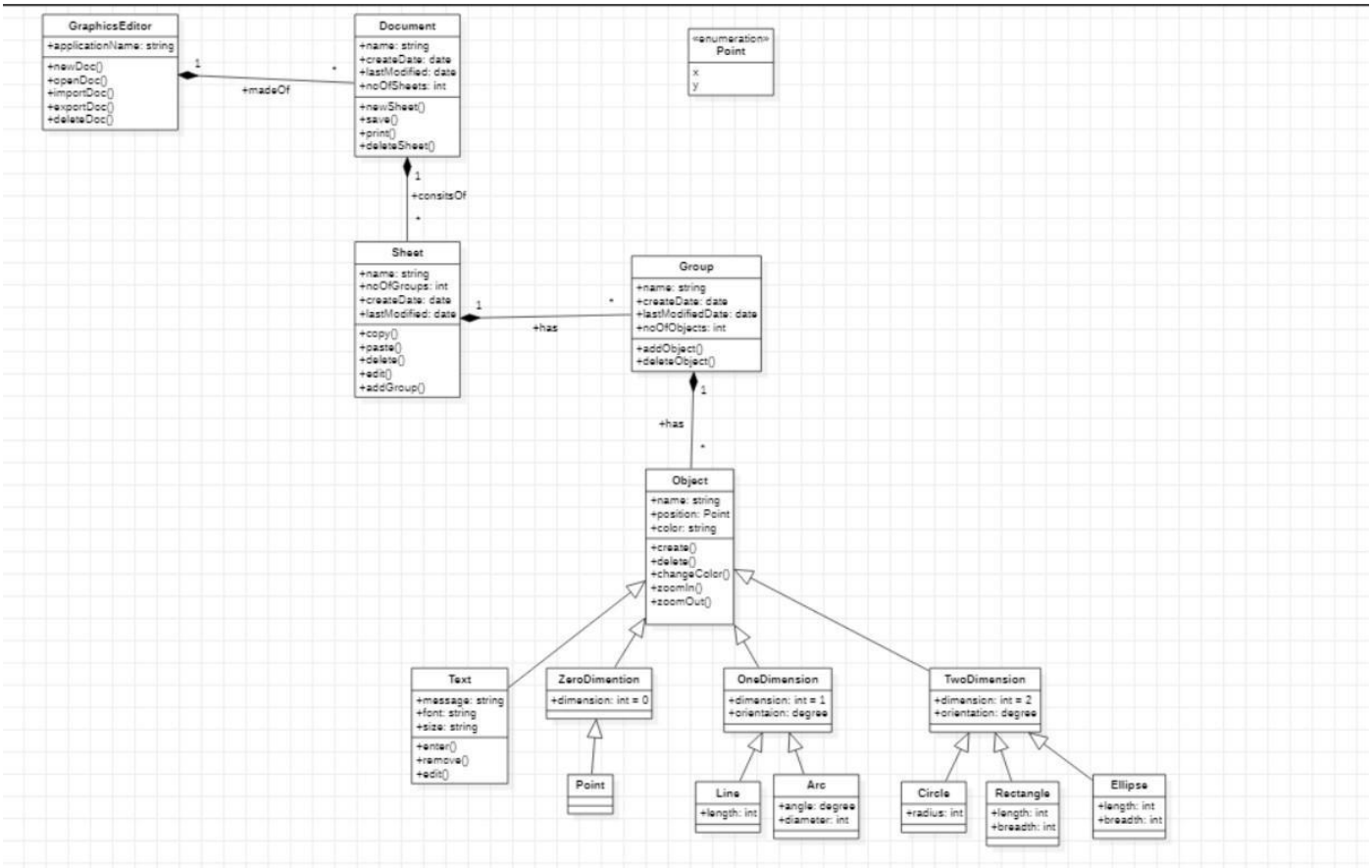
7. Graphics Editor :

Problem Statement :
Design UML diagrams for Graphics Editor with system requirement specification.

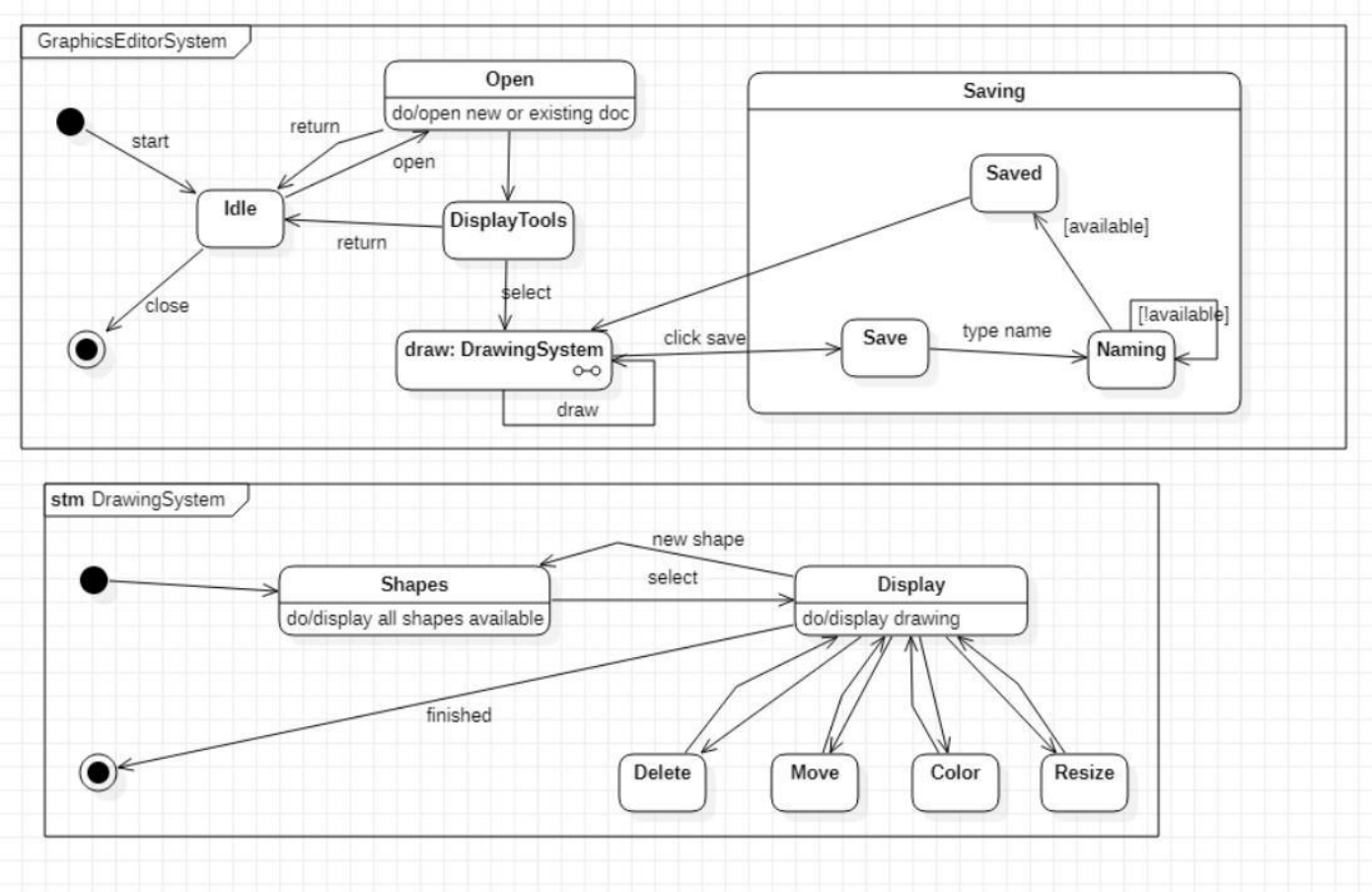
Software Requirement Specification (SRS) :

① Provides Application Programmer's Interface that enables a programmer to develop their own graphical model editor
② the graphical editor provides an interface with which programmer implements said editor for a given underlying model.
③ Functionalities : It contains the toolbox which contains tools like : Line, Circle, Rectangle, Arc, Text, Draw, Eraser.
④ Color box or palette shall be present.
⑤ Standard toolbar with options for New, Open, Save, toolbox & Text Toolbox
⑥ One integrated view to users for toolbar, color, box, menu and graphic screen.
⑦ Easy handling tool for users.
⑧ Ability to group several drawings into one., complex drawing
⑨ Provision of zoom in and zoom out.
⑩ Different shadings of line tool are provided..

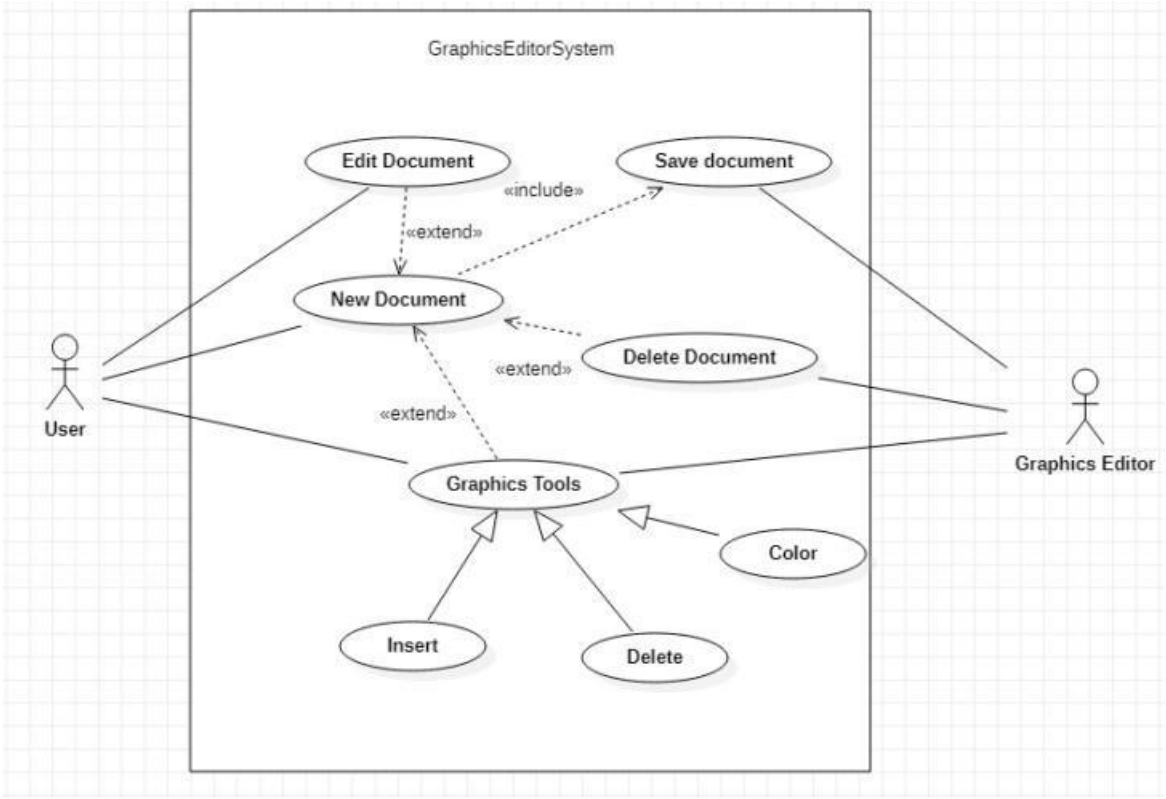
2. Draw the advanced class diagram



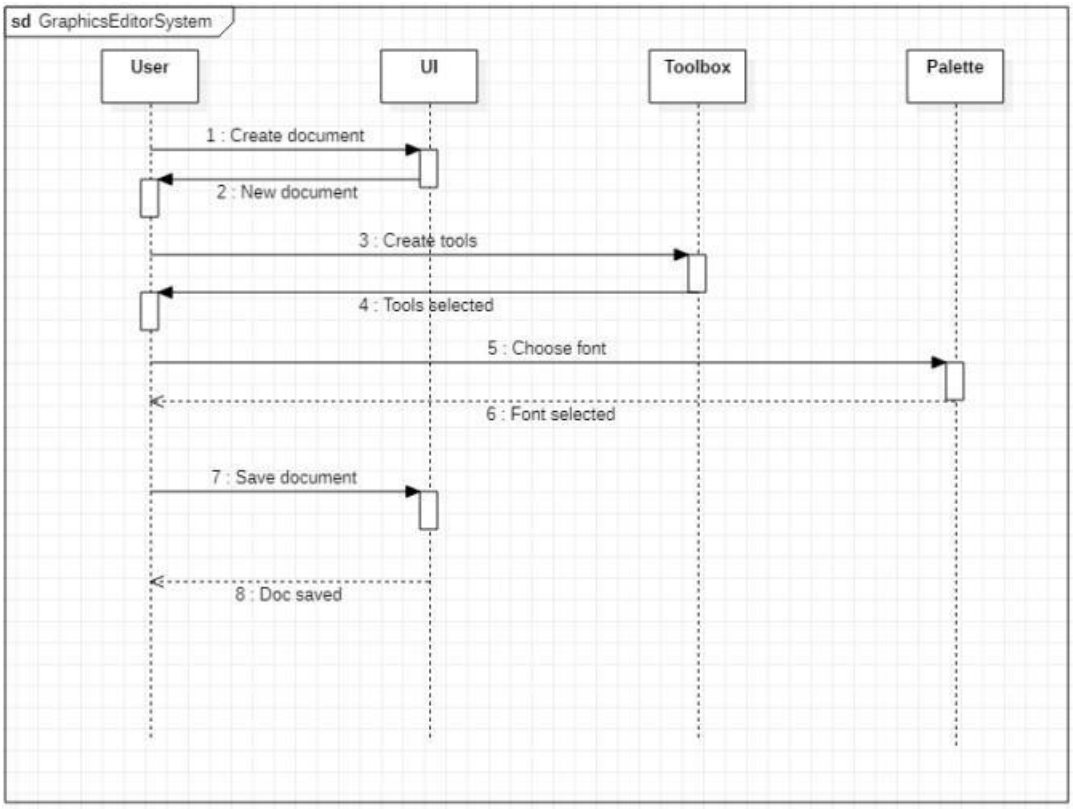
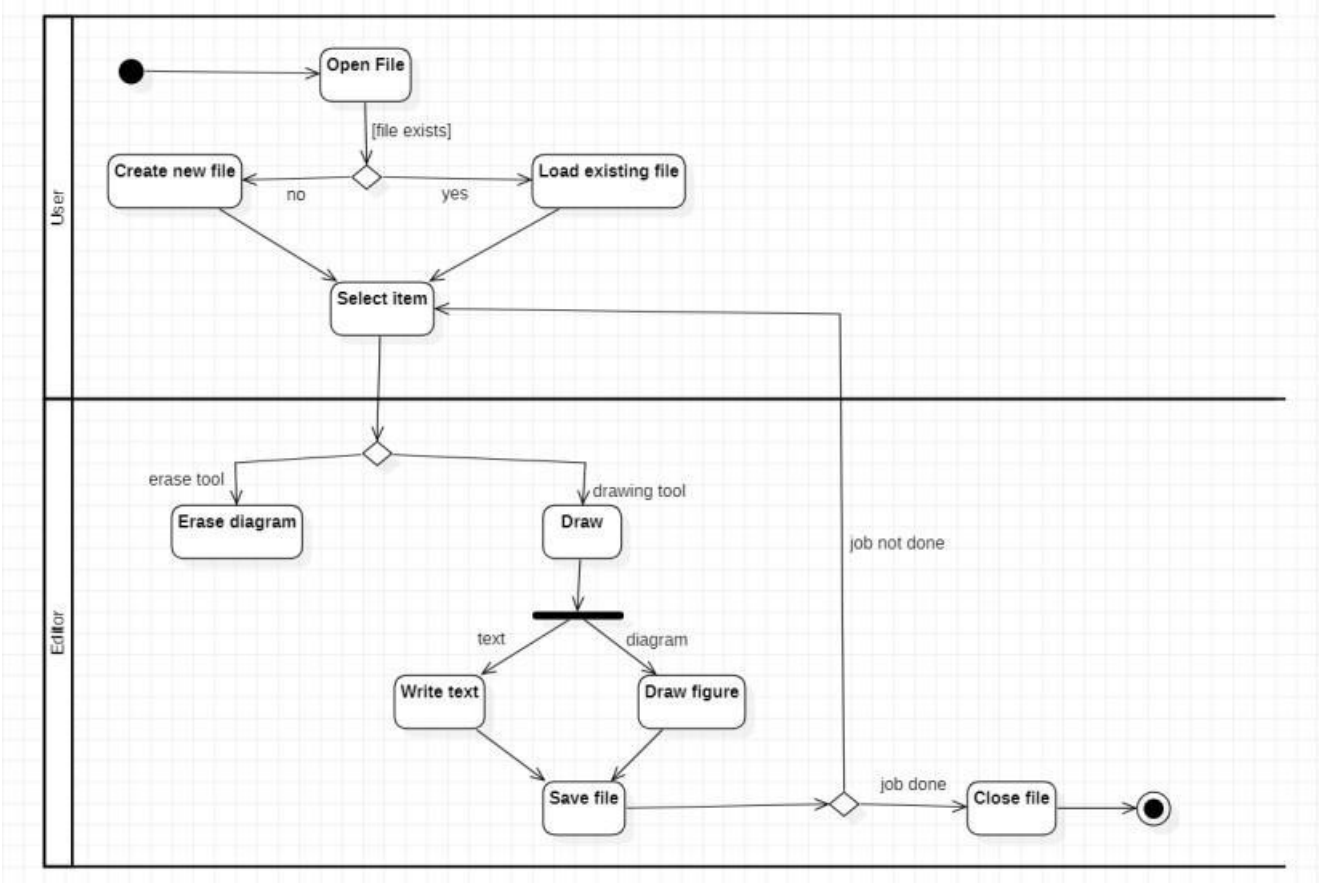
3. Draw the advanced state diagram



4. Draw the advanced use case diagram



5. Draw the advanced sequence diagram



6. Draw the advanced activity diagram