

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT

on

Object Oriented Analysis and Design (20CS6PCOMD)

Submitted by

Priyanshu
Gupta
1BM19CS124

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

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**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 “Object-Oriented Analysis and Design ” carried out by **Priyanshu Gupta(1BM19CS124)**, 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 a - **Object Oriented Analysis and Design (20CS6PCOMD)** work prescribed for the said degree.

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Department of CSE
BMSCE, Bengaluru

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

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Course Outcome

C O	Ability to conduct practical experiment to solve a given problem using Unified Modeling language.
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1. College Information System

Problem statement:

Design UML diagrams for College Information System with system requirements specification.

Software Requirements Specification (SRS):

A centralized approach and system for managing, storing, accessing and updating all the information and details present in relevance to students, and teaching and non-teaching faculty, increasing efficiency and convenience of information management in educational institutions.

- Educational institutions should be able to add, edit and view student personal details, like name, age, gender, email, phone number, address and so on.
- Educational institutions should be able to add, edit and view student academic details, like USN, department, semester and registered courses.
- Faculty should be able to view all student personal details, and should be able to view and edit internal evaluation marks and attendance of students.
- The COE office should be able to view all student details, and view and edit internal and examination marks, and publish results.
- Placement section should be able to view all student details, and add companies coming to the campus for placements.
- Management section should be able to view, add and edit teaching and non-teaching staff details.
- Students should not be allowed to edit their personal or academic details.
- The system should be convenient and easy to use by students, management and faculty.
- The system should be a reliable source of information viewing (most importantly, academic grades) for students, COE and faculty.

⇒ College Information System:-

problem statement:

This system maintains student, staff and department information. And maintains faculties and student courses information. And maintains exam results, placement records and Hostel information of students.

SRS:

1. Student: can edit their details and check their exam timetable and results. can enroll for new courses and apply for placement. can apply / ask for Hostel mess etc.

2. Faculty:

- can add and edit the details of student.
- can conduct exams for student.
- share students marks with COE office.

3. Department:

- can add, delete, edit student and faculty details.
- Give information of all the departments present in college.
- Give information of all the courses available in specific department.

4. Placement Office:

- can check details of student
- can contact students
- can provide placement trainings
- can give information of companies

5. COE office:

- Provide exam time table of students
- announces result of students
- Take care marks of students from faculties

Class Diagram:

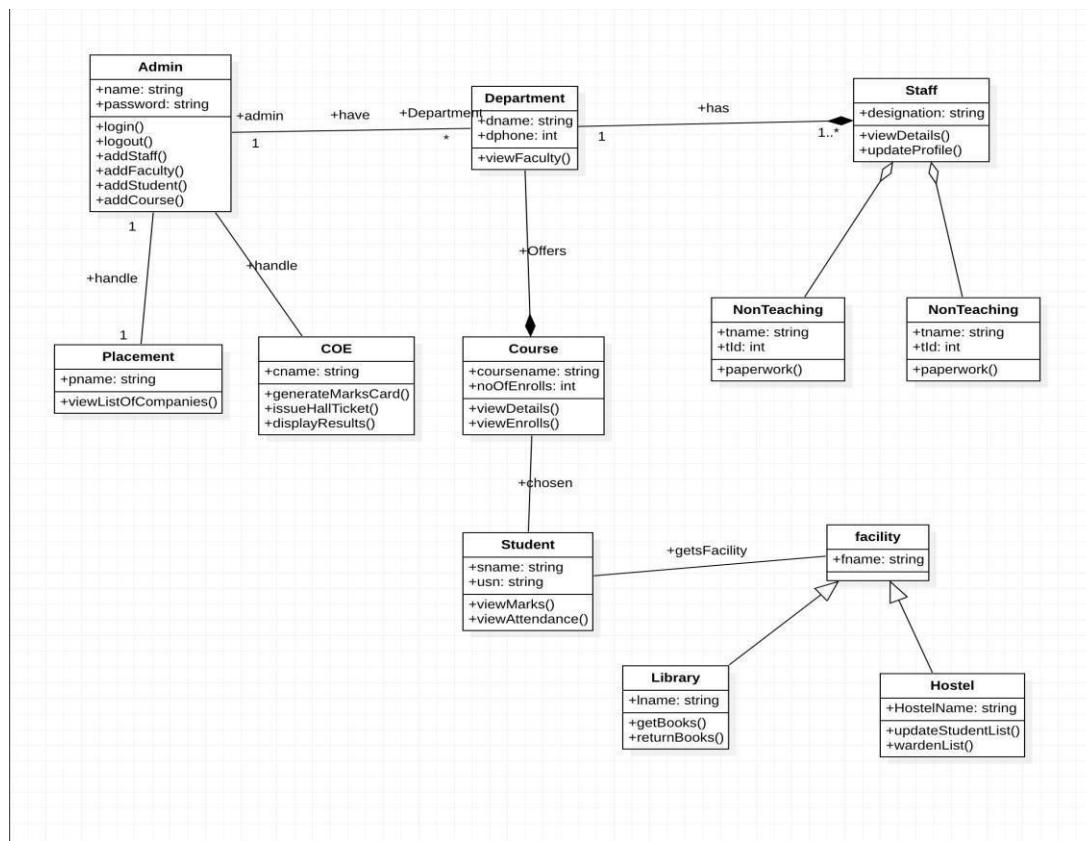
The below shown class diagram contains the following classes: Admin, Department, Staff, Course, Teaching, Non-Teaching, Placement, COE, Student, Hostel, Facility, Library with multiplicities as shown.

Association: Admin handles Department, Placement and COE, Student gets Facility, Courses are chosen by student.

Generalization: Hostel, library are generalized to Facility class.

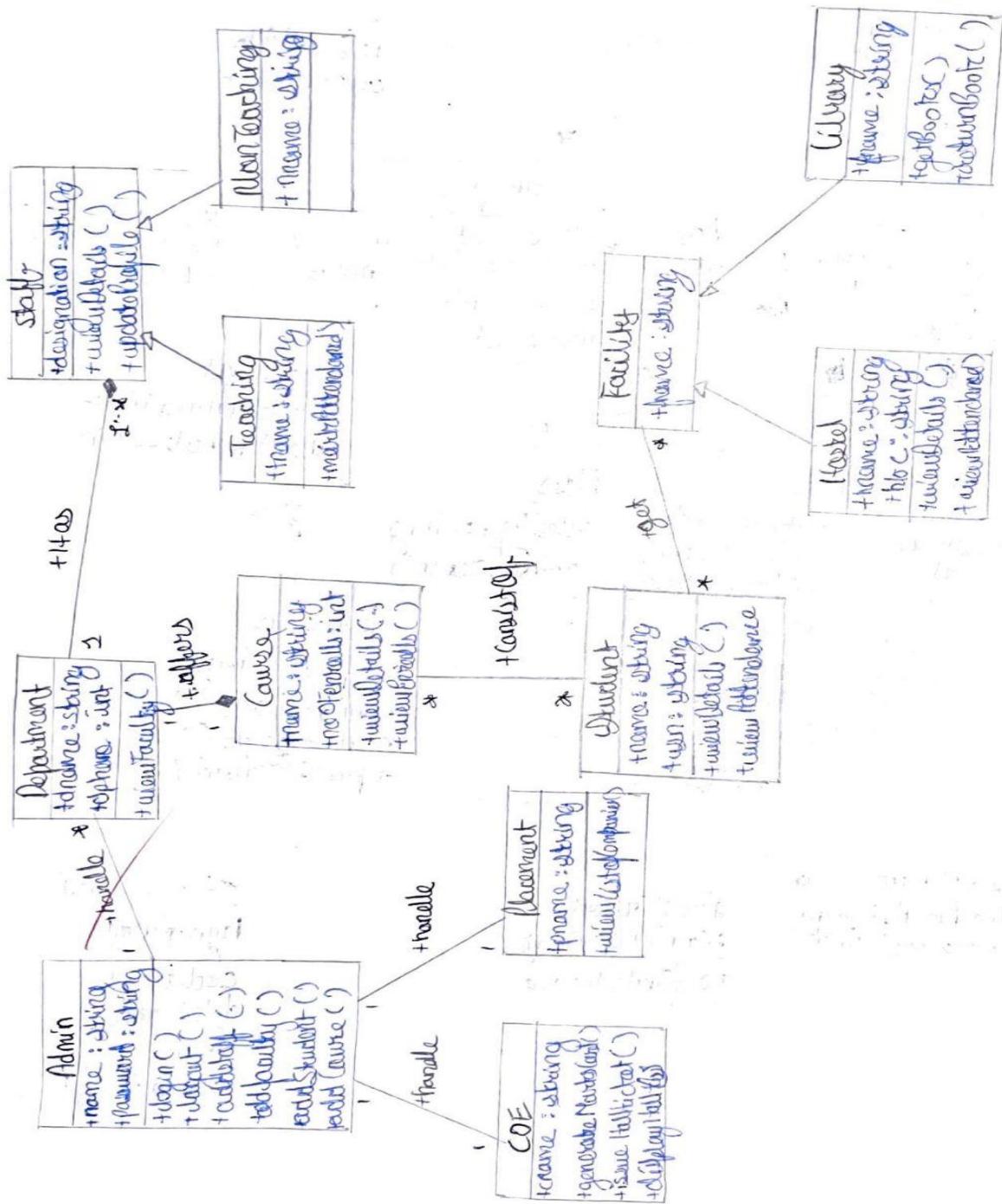
Aggregation: Staff consists (aggregate of) Teaching and

Non-Teaching. Composition: Department has (or is composed of) Course and Staff.



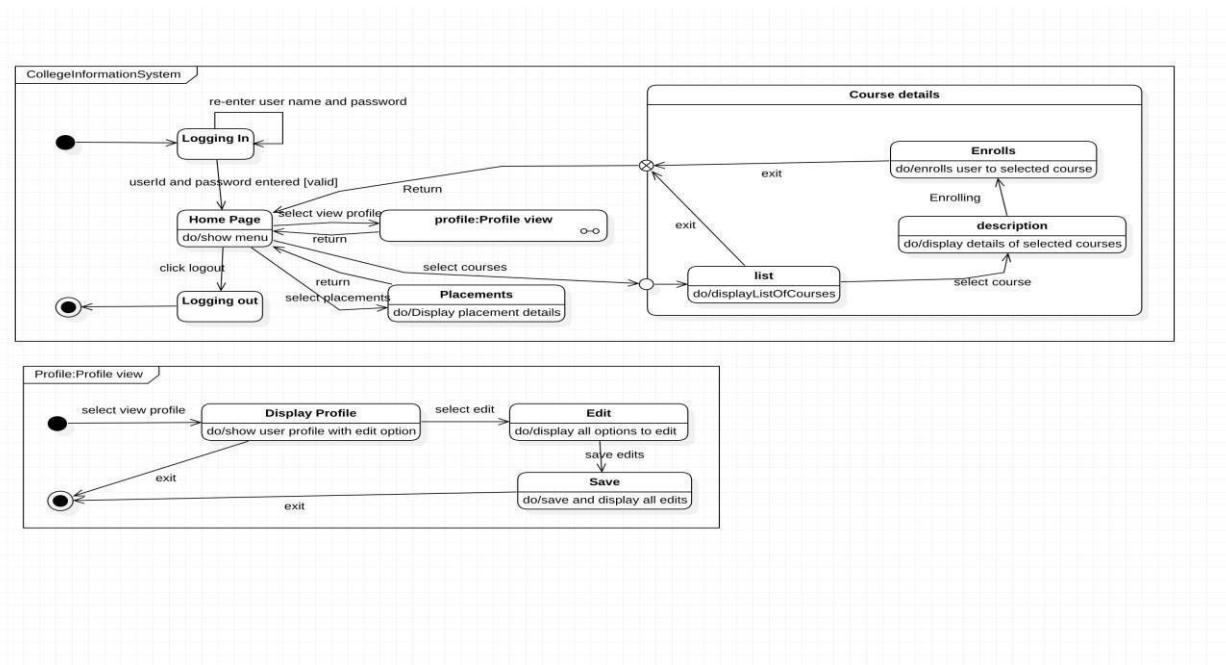
⇒ CLASS DIAGRAM

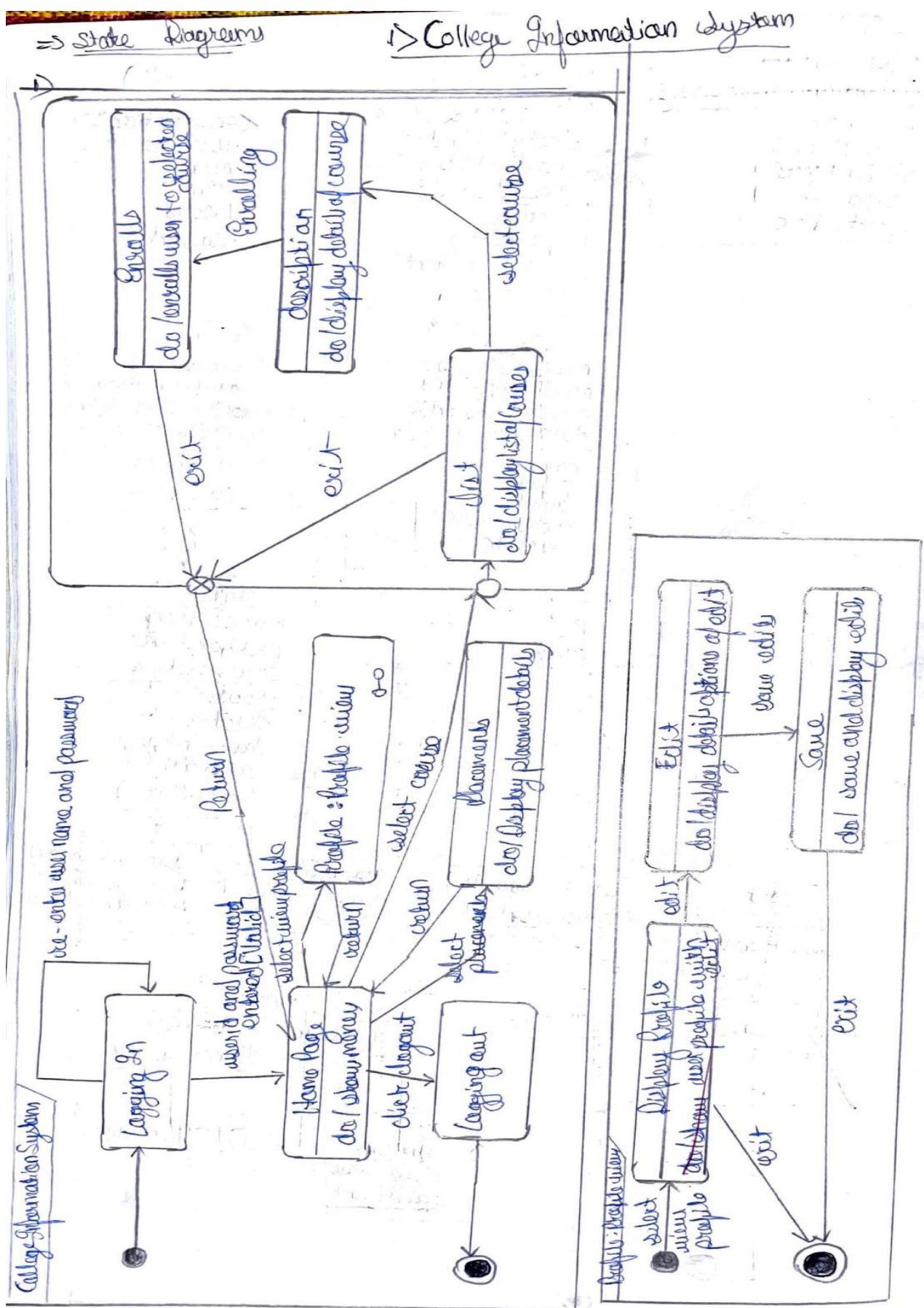
⇒ College Management System



State Diagram:

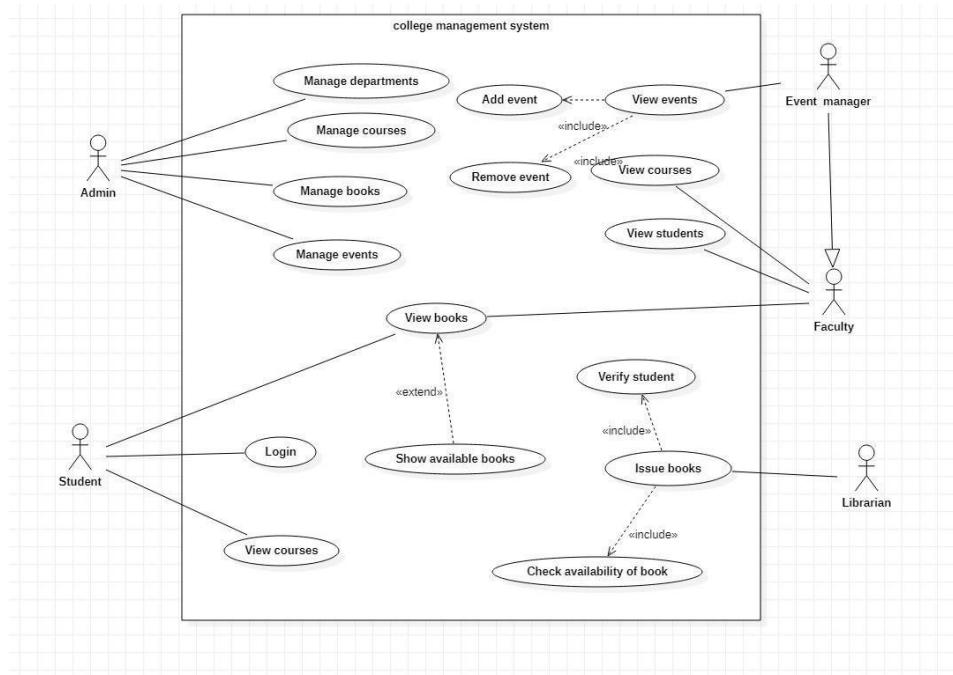
The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the course details and profileView procedure of student. It contains initial state and termination state with Courses as a nested state including the required simple states. It also has a submachine state named ProfileView with initial, termination state along with simple states; Display profile, Edit, Save.



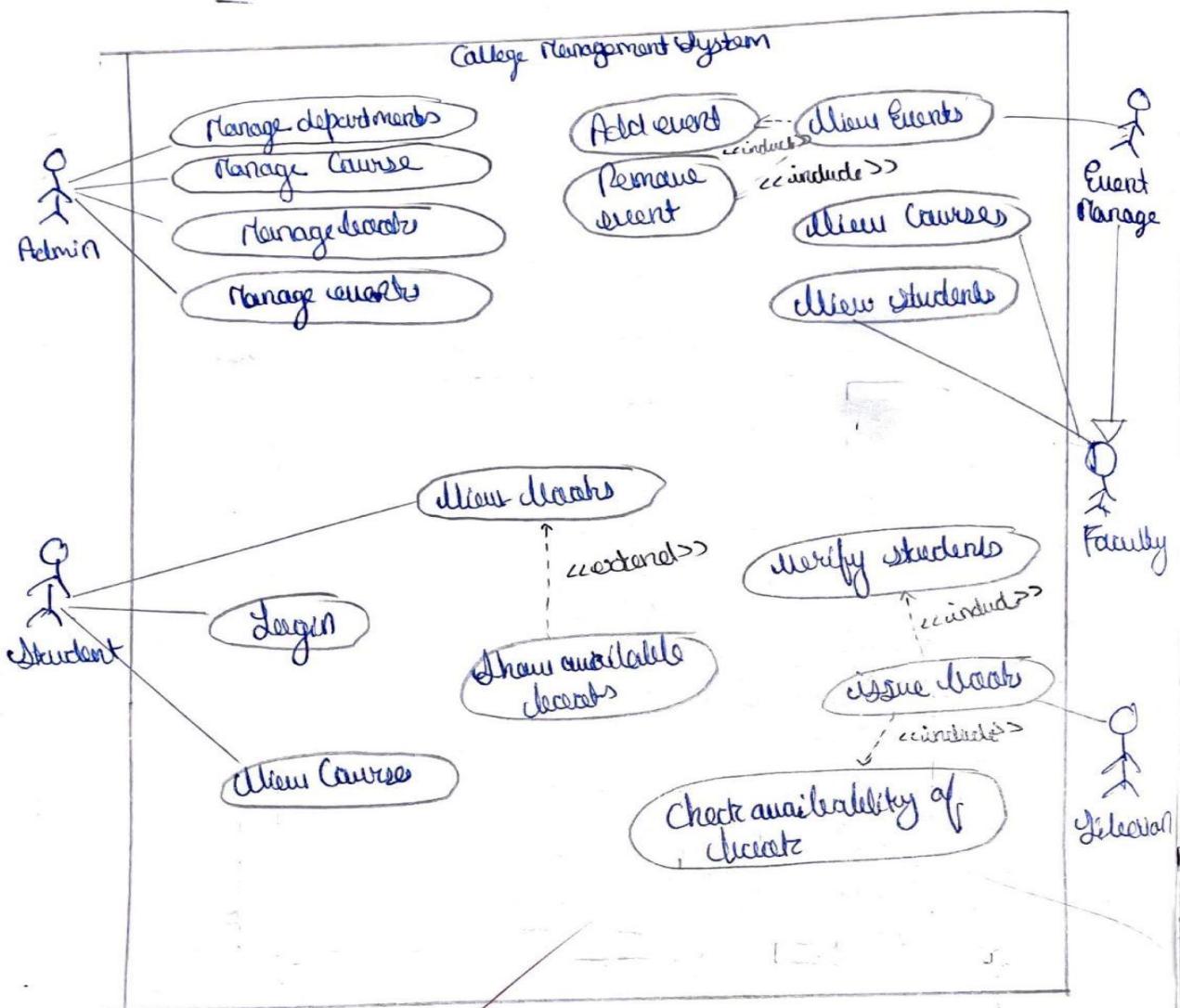


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The show available books use case extends view books use case, view events use case includes add events and remove events, issue books use case includes verify student and check availability of book.



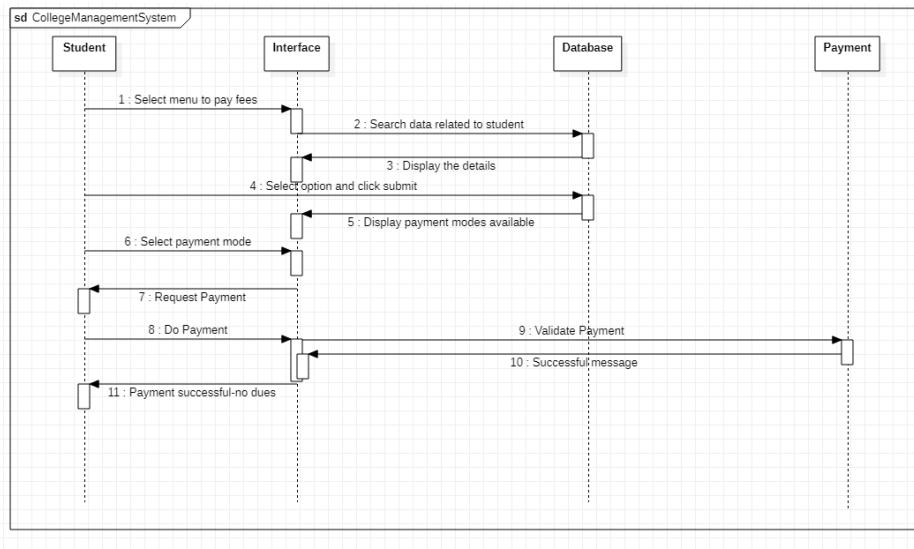
College Management System

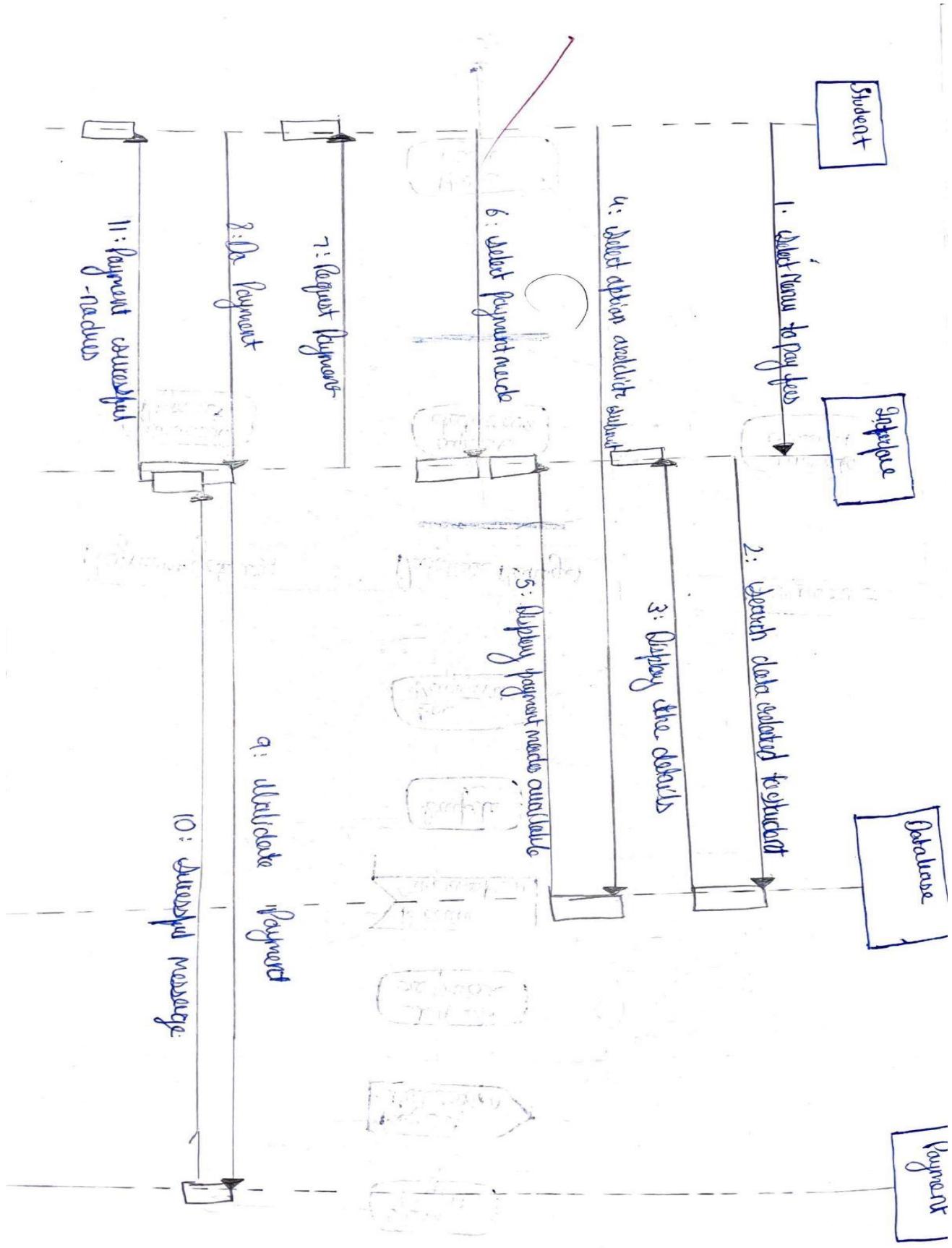


Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

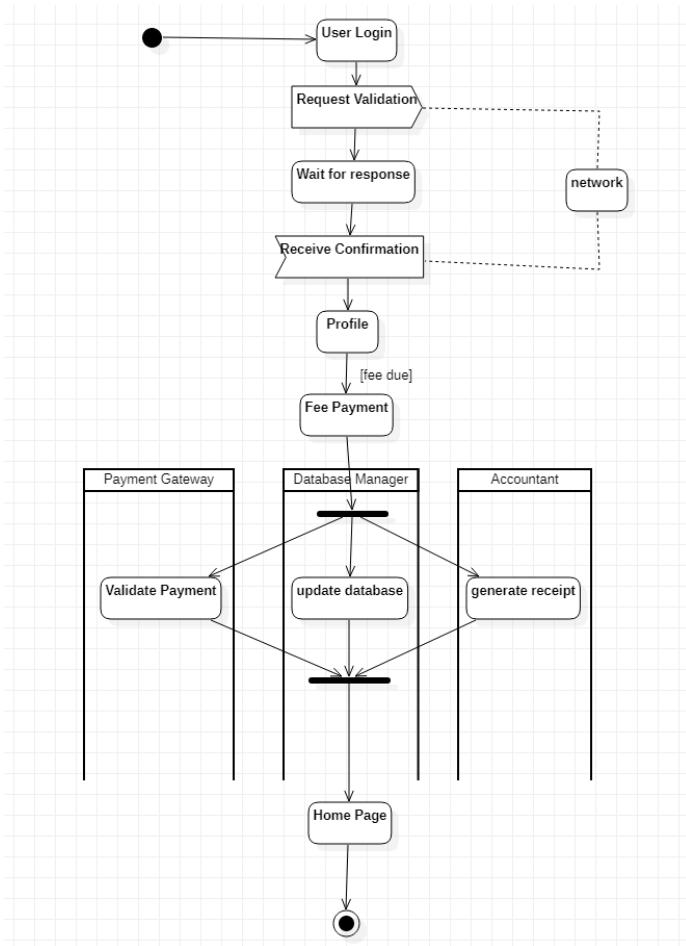
The recursive function of verify is shown by double activation rectangle of verify payment and successful message.

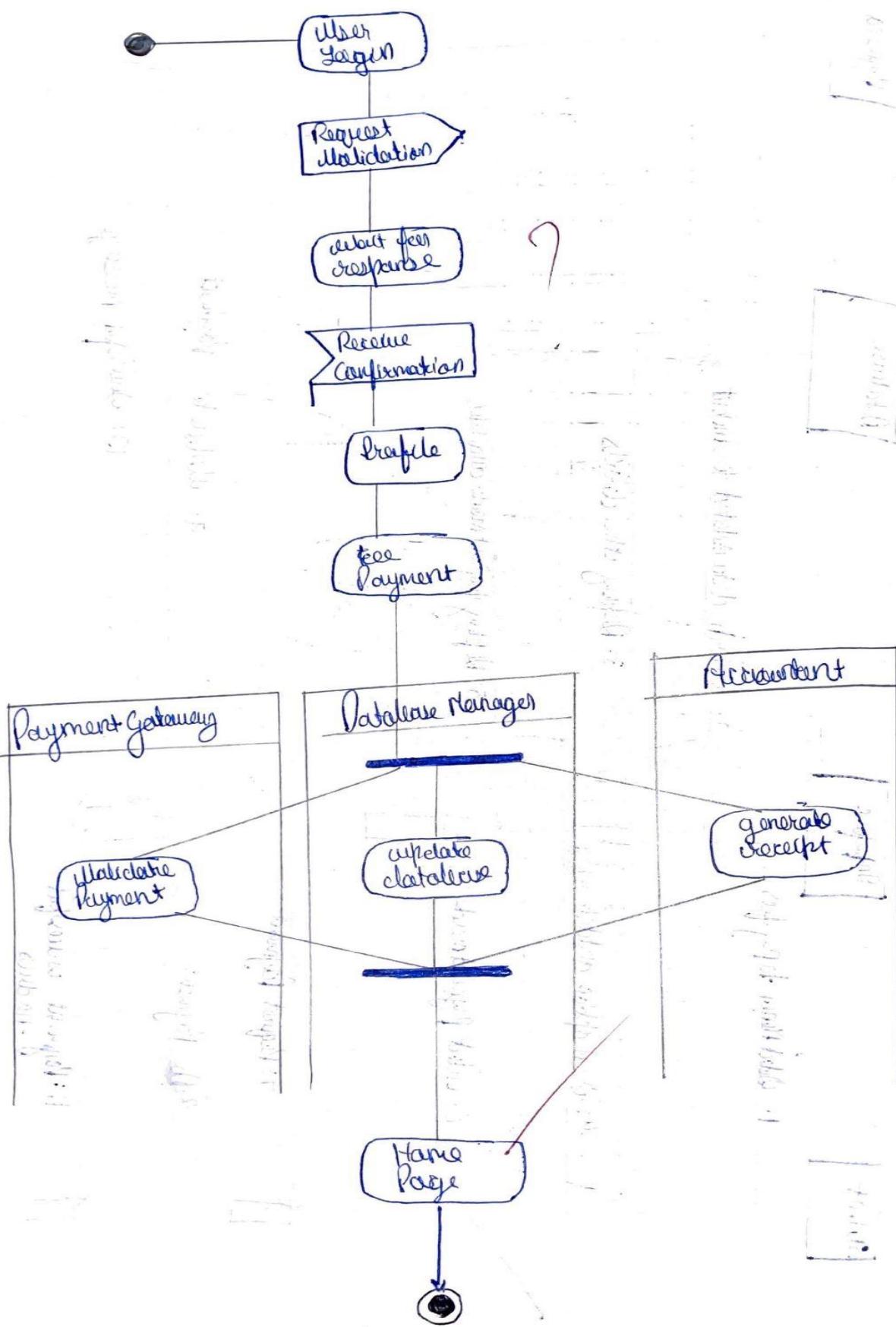




Activity Diagram:

The advanced activity diagram starts from initiation and then user login activity where a signal is sent to the network for request validation and upon confirmation the control flows to profile and then fee payment activity. There are three swimlanes for Payment gateway, Database manager and accountant where validate payment, update database and generate receipt respectively. Then the control flows to the home page and then termination activities.





2. Hostel Management System

Problem statement:

Design UML diagrams for Hostel Management System with system requirements specification.

Software Requirements Specification (SRS):

The purpose of the Hostel Management System is to carry out different operations of a hostel. This system will provide ease of use to the staff of the hostel by performing all work on computers. It helps to manage student and staff records.

- Admin can login using credentials provided to him.
- Admin can allot room to students.
- Students can login using the credential provided and can give feedback about staff.
- Admin can review the feedback provided by students.
- Admin can appoint staff.
- Students can provide message feedback.
- Mess managers can review the mess feedback.
- Mess manager can update the menu list.
- Admin can assign work to staff members.
- The system should be easy to handle.
- System should give expected performance results.
- The response time should be small.

2) Hostel management system:

Hostel management system provides college student accommodation to the university. Hostel manage efficiently. Also keeps details of celebrities, headed by warden. This system minimizes human work and makes hostel allocation easier. It also helps students to maintain their studies better with group activities.

SRS:

class:

- * Hostel staff: who is in charge will handle all
- * Student: there is made place which has info
- * Admin: who is responsible for managing all
- * Mess: who is in charge of kitchen who maintains all
- * Feedback: who is responsible for giving feedback to students.
- * Complaint

* Hostel: who is in charge of managing all students who stay in the hostel.

* Hostel Management System: who admin who manages the hostel, allocates room to student, and takes care of the payment.

- * When the students awards to vacate the room, the admin makes the changes in the database.
- * The students can give feedback and complaint.
- * The details of student will see information like name, place, address, contact details etc.
- * Hostel categorised into 2 types like boys and girls. Each Hostel has different cost, warden and name.
- * Mess keeps track of mess account of each student.
- * System allows viewing the student's registration every year the rooms of hostel are compound of table and beds, where a count of same is maintained.

Class Diagram:

The below shown class diagram contains the following classes: Person, Student, Administrator, Warden, Hostel, Rooms_allocation, Receipt_generation, Rooms, Bed with multiplicities as shown.

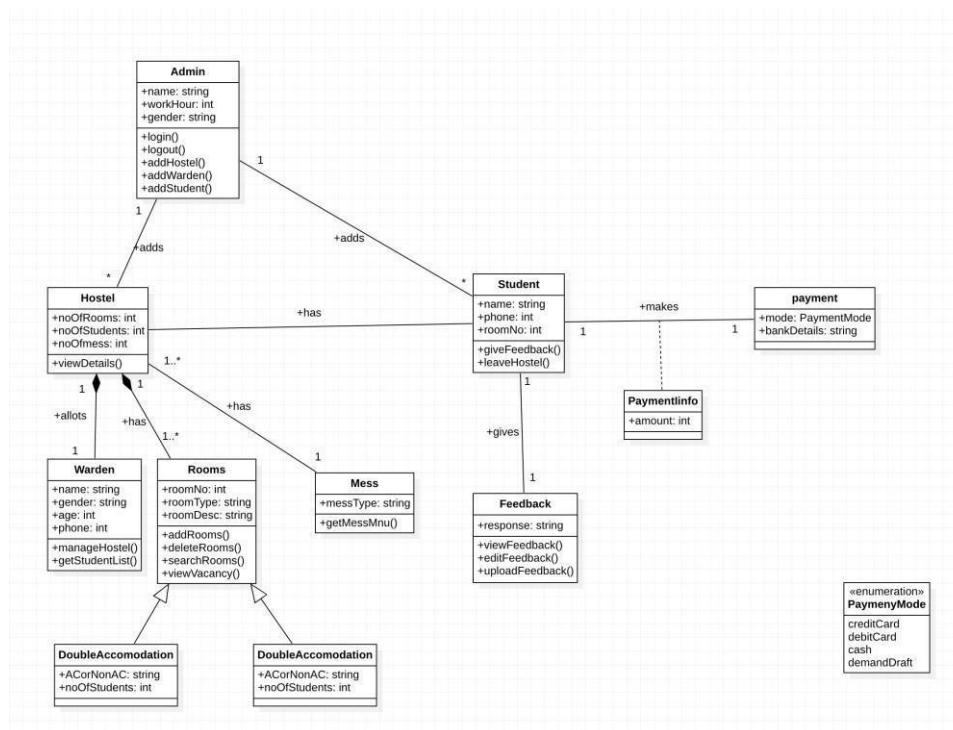
Association: Warden manages Student, Student stays_in Hostel, Student is allocated to Room_allocation, Administrator decides_room Room_allocation, Administrator generates Receipt_generation.

Generalization: Student, Administrator and Warden are generalized to Person class.

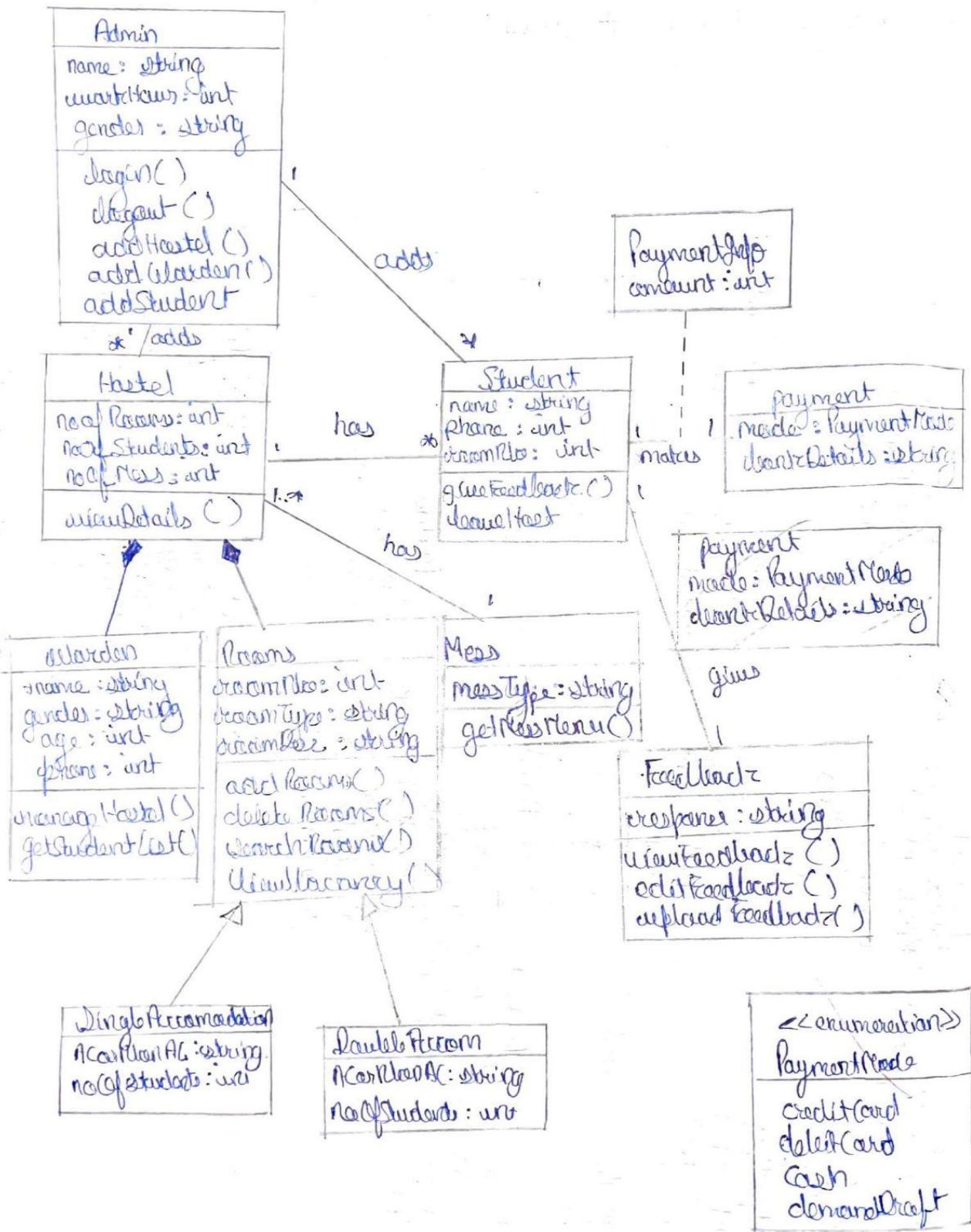
Aggregation: Rooms class (composed of) with Bed class.

Composition: Hostel has (or is composed of) Rooms.

Enumeration: RoomType.

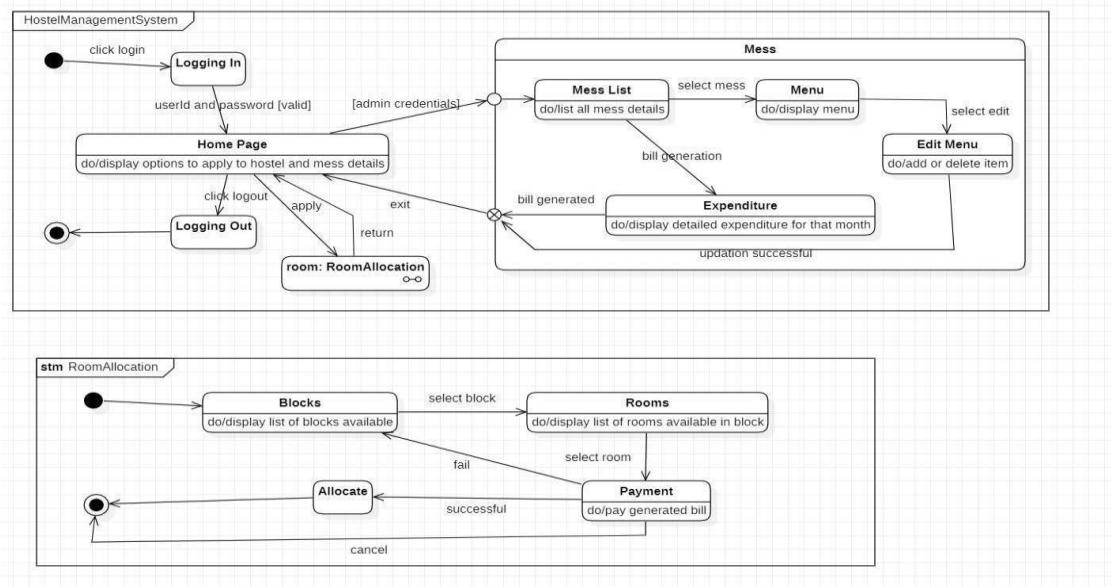


2) Hostel Management System

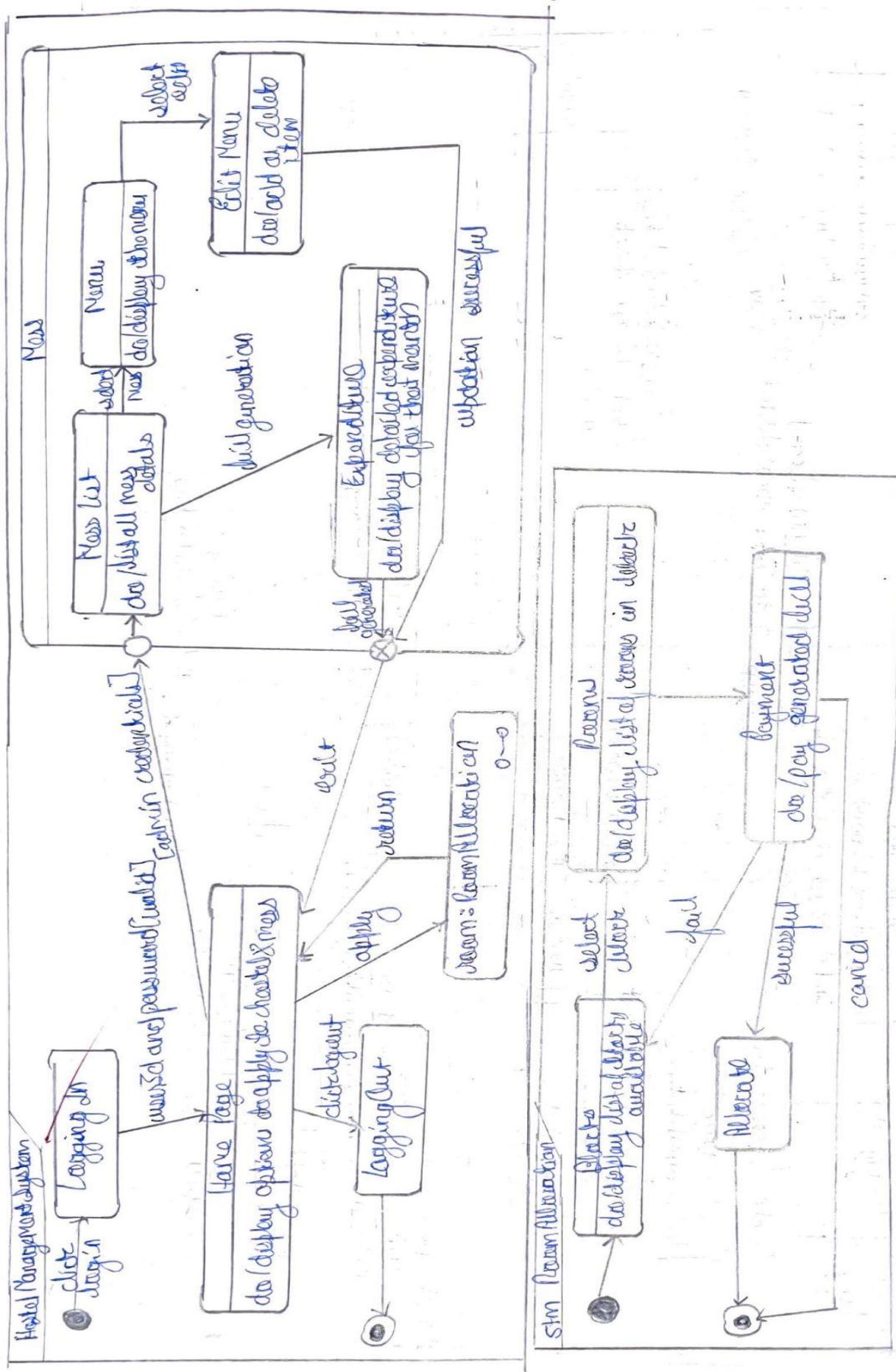


State Diagram:

The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the mess details and room allocation procedure. It contains initial state and termination state with Mess as a nested state including the required simple states. It also has a submachine state named RoomAllocation with initial, termination state along with simple states; Blocks, Rooms, Allocate,Payment.

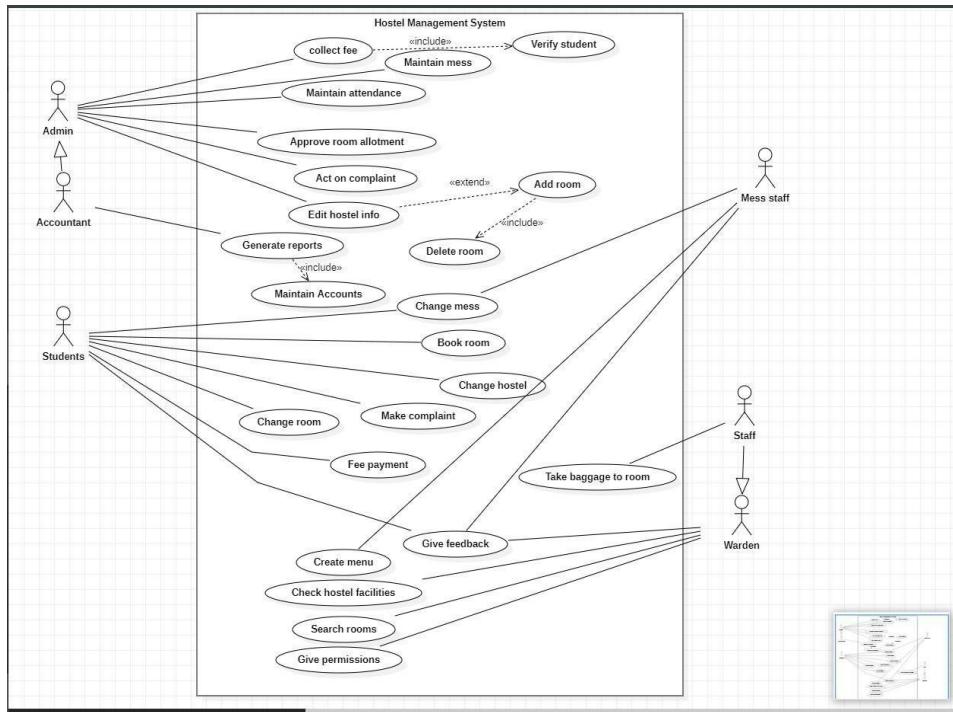


2) Hotel Management System

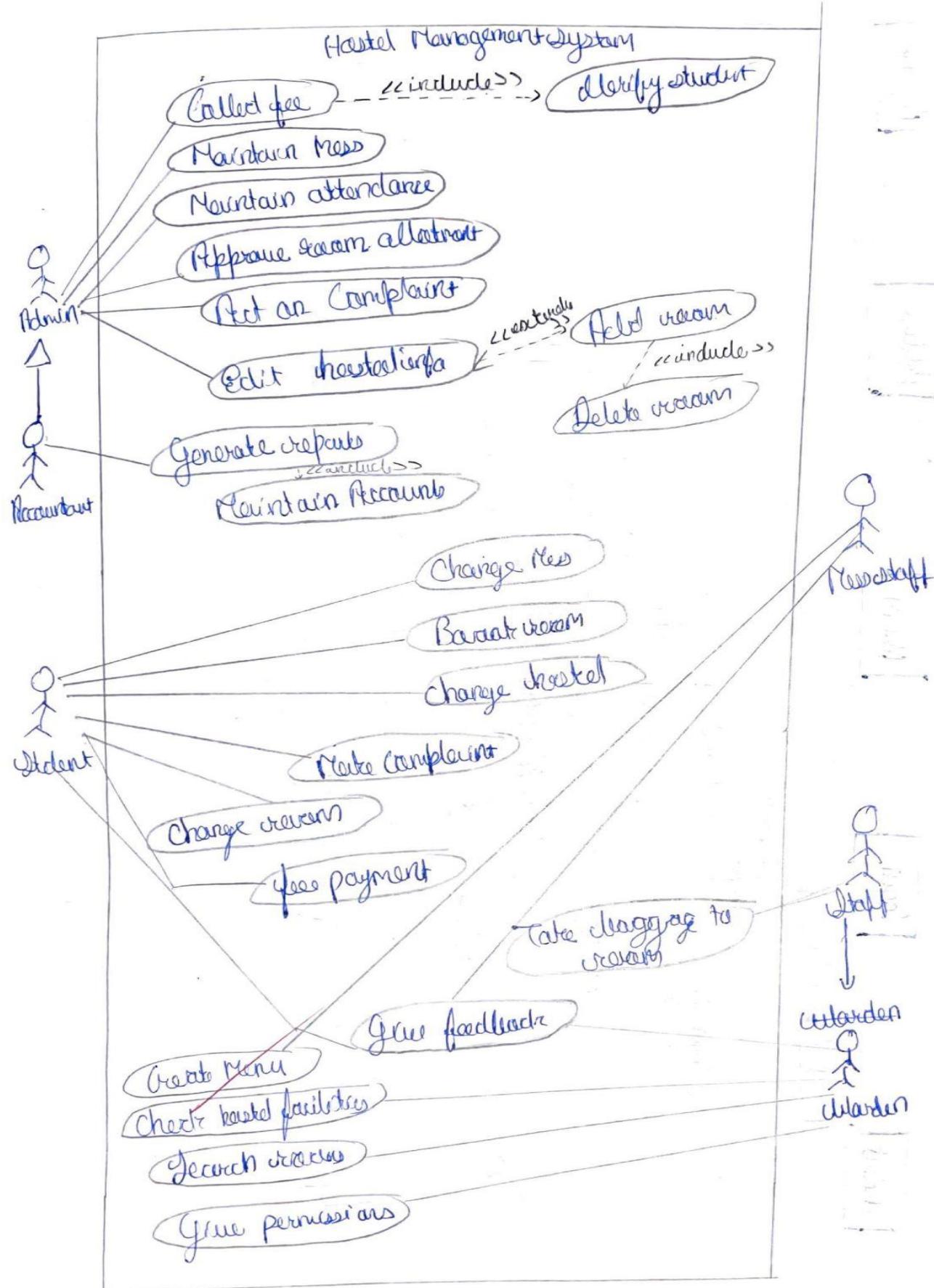


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The edit hostel info use case extends add room use case, collect fee use case includes verify student, add room use case includes delete room use case.



2) Hostel Management system

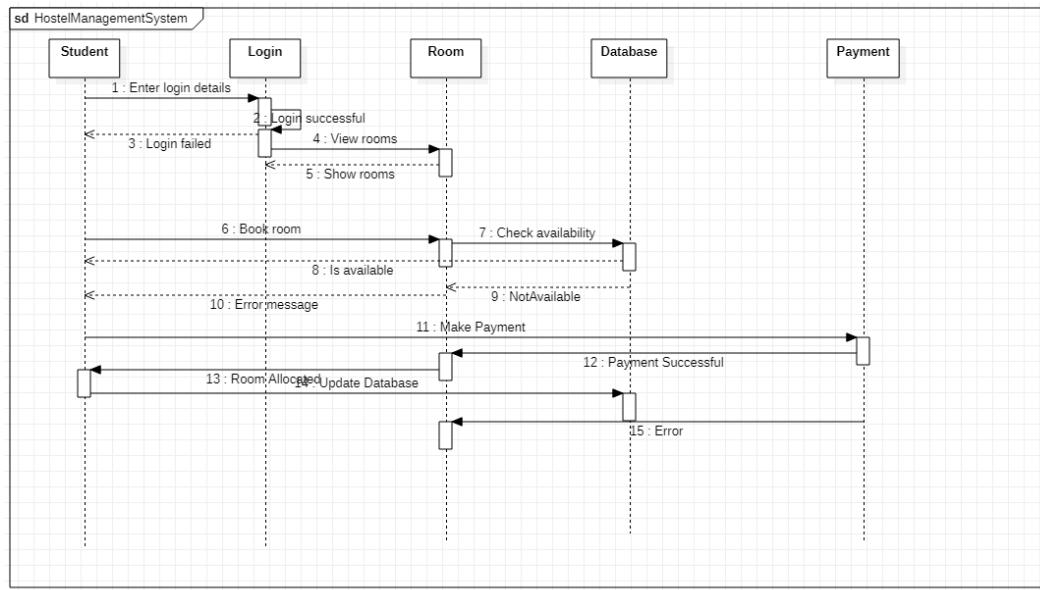


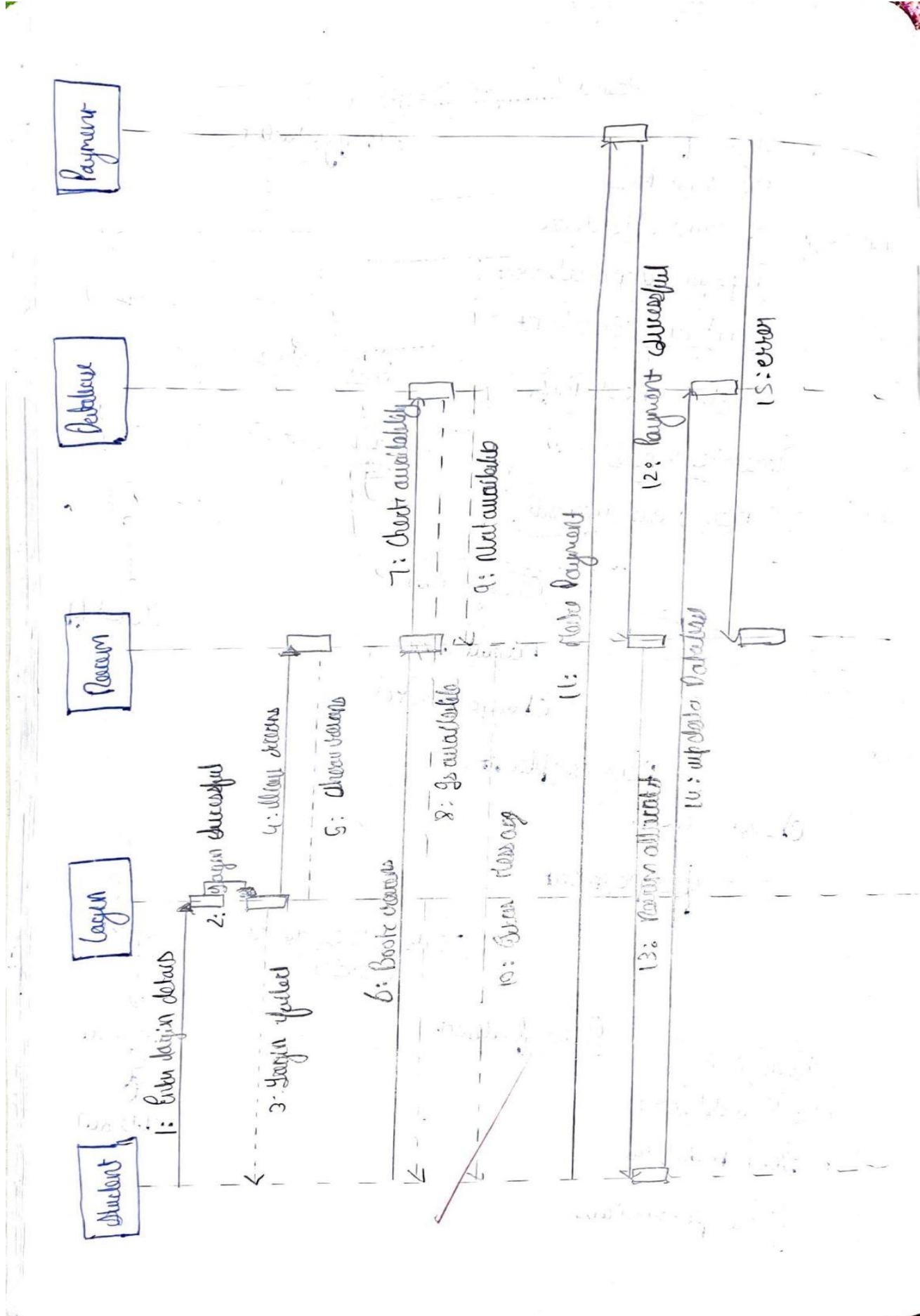
Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

The Login actor has self-message to check with the registration of the student.

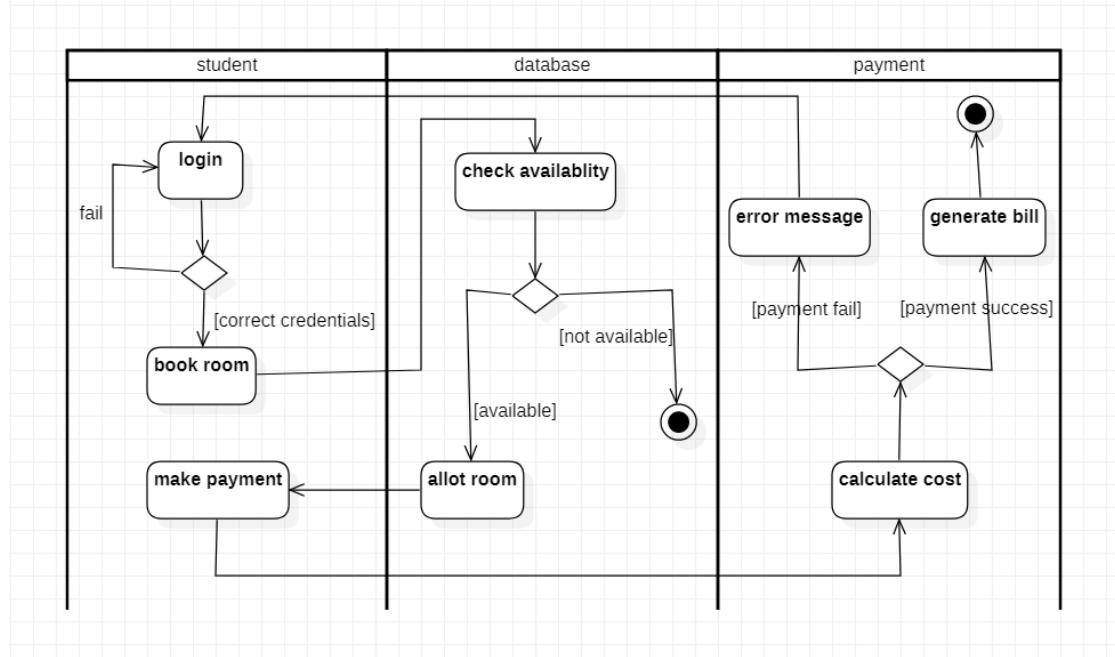
Async and sync signal replies (dotted line) are used to reply back with specificity to the object.

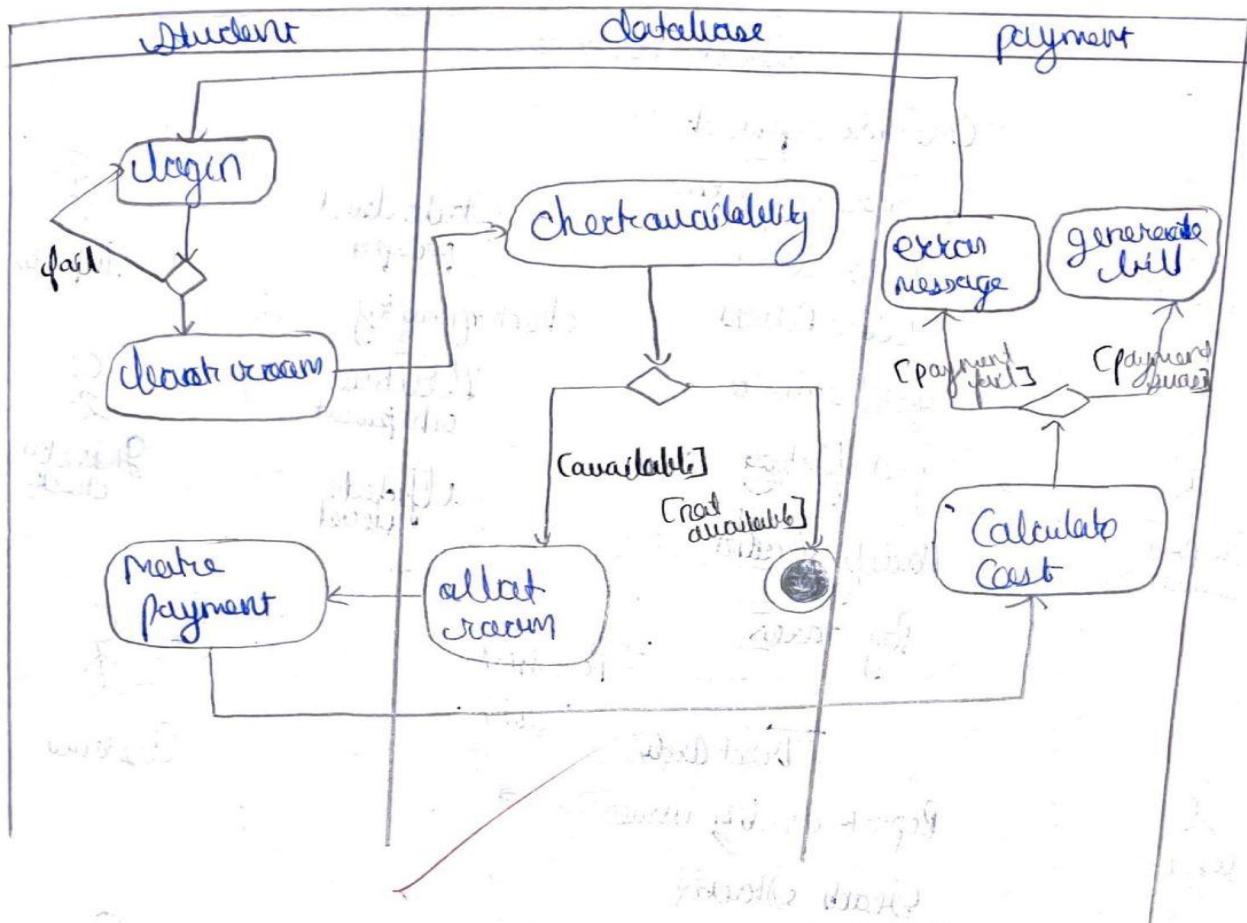




Activity Diagram:

The advanced activity diagram starts from initiation and then in the student swimlane, student login activity where a signal is sent to the network for request validation and upon confirmation the control flows to profile and then book room activity. There are three swimlanes namely student, database, payment where validate student, update database and confiem payment respectively. Then the control flows to the home page and then termination activities.,





3. Stock Maintenance System

Problem statement:

Design UML diagrams for Stock Maintenance System provided with system requirements specification.

Software Requirements Specification (SRS):

The stock maintenance system will allow the employees to record information of the items available in the store and generate reports based on the total amount of sales. The new system will have a windows-based desktop interface to allow employees to enter the information of sales, purchase orders, change employee preferences and create reports. The system retains information on all the items in the shop. The system retains the records of the cost, expiry date, vendor details, discount, quantity. The employee maintains the information of the sale of the item. He can add the items at the right time and update the database. The customer can view the availability of the required items and the price of the items. The customer can just view them but cannot make any changes.

The process of the stock maintenance system is that the customer logs in to the particular site to place the order for the customer product. The stock maintenance system is described sequentially through steps

- The customer logs in to the particular site.
- They fill the customer details.
- They place the orders for their product.
- The vendor logs in and views the customer details and orders

3) Stock Maintenance System:

The system is basically for customers who access the system and information about the stock and receives the information of the stock. This allows employees to record information of the products available in the store. The vendor deals with information about supplies giving the product.

SRS:

- Customer can purchase one or more products on any day, which will have a code, price and quantity.
- Customer will need to pay the bill for the products he or she has purchased. The bill numbers, type, description and customer info.
- Stock of products is maintained separately. Deals with information about product name, of the product, brand generated, quantity, cost etc.
- Vendor deals with the information about the details of the suppliers giving product to the organization.
- Vendors consist of details such as vendor name, address, email-id, sales doc number etc.
- Products are displayed in stores across the city or world, store id, name, address and type are used to locate any product.
- Website links for buying, example stock list and product list with prices and other info.

Class Diagram:

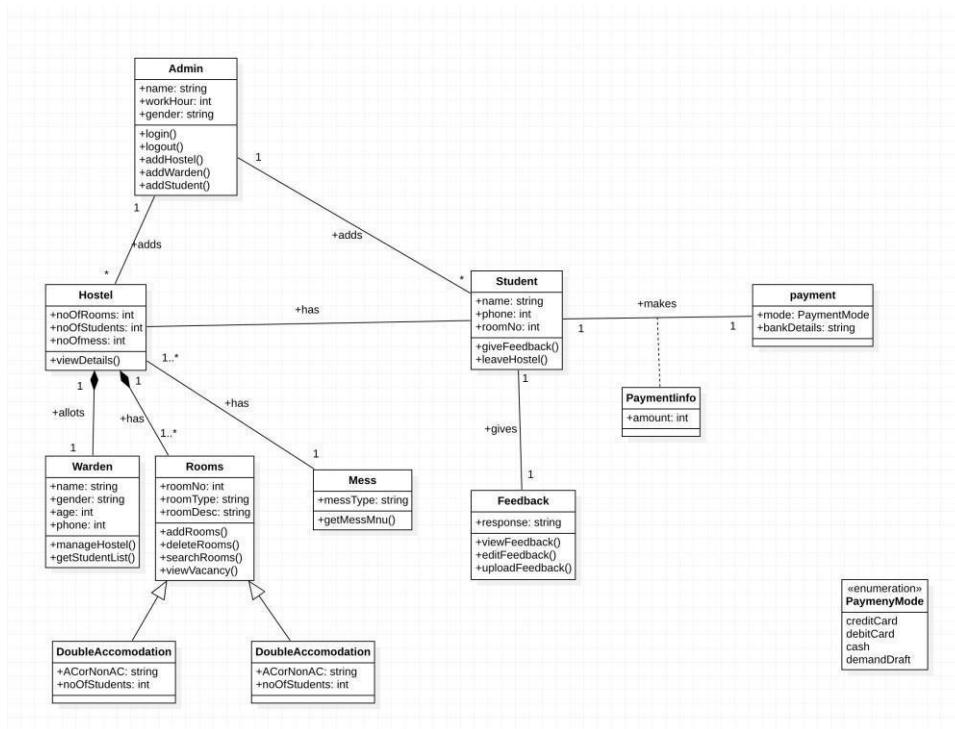
The below shown class diagram contains the following classes: Role, Permisssion, Store, User, Stock, Product, Customer and Payment with multiplicities as shown.

Association: Customer buys Product, Customer buys Stocks, Customer pays Payment.

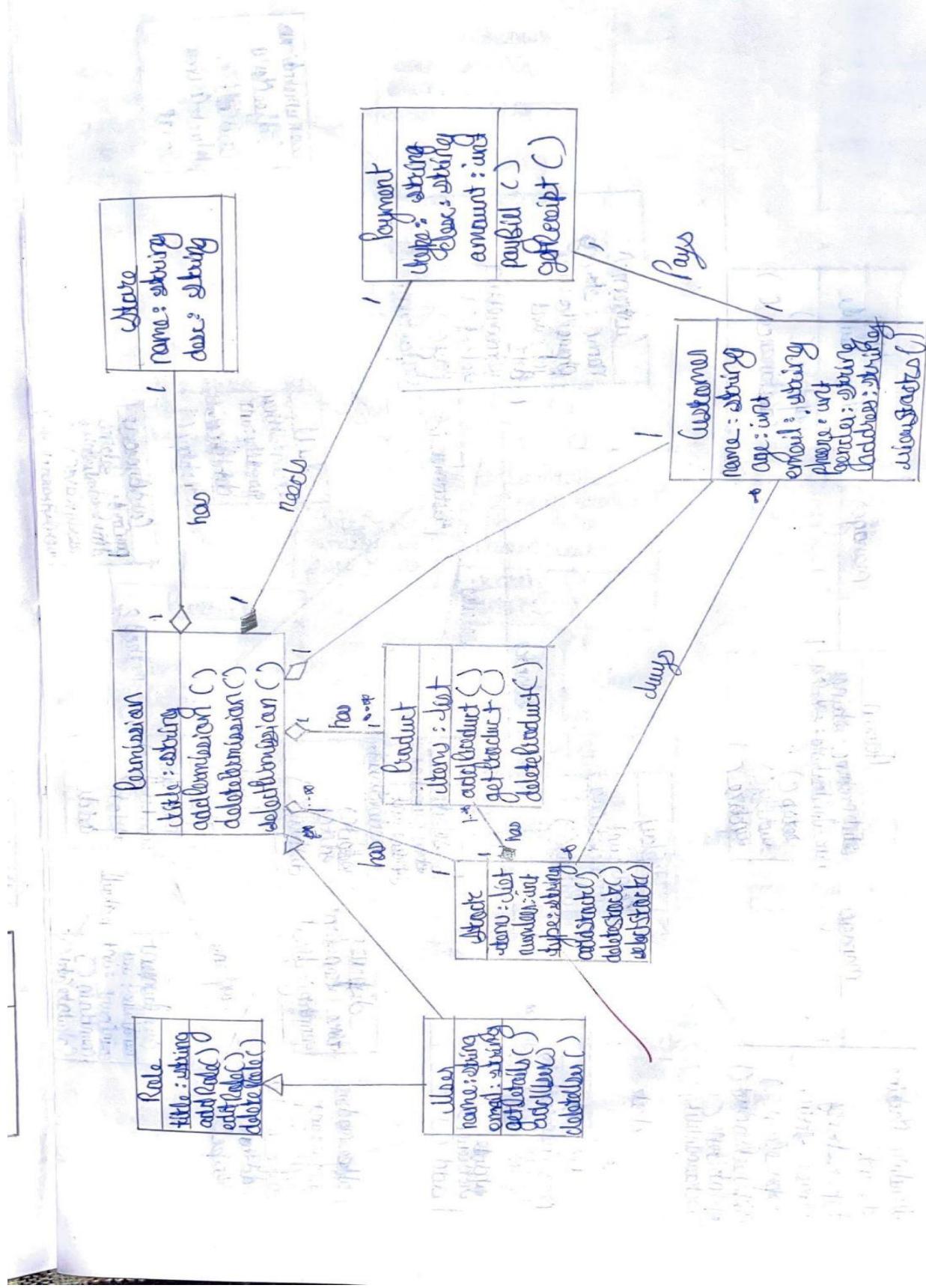
Generalization: User is generalized to Permission class and User is Generalized to Role.

Aggregation: Stock class, Product class, Store class, Customer class are (composed of) with Permission class.

Composition: Payment needs (or is composed of) Permission and Stock (or is composed of) has Product.

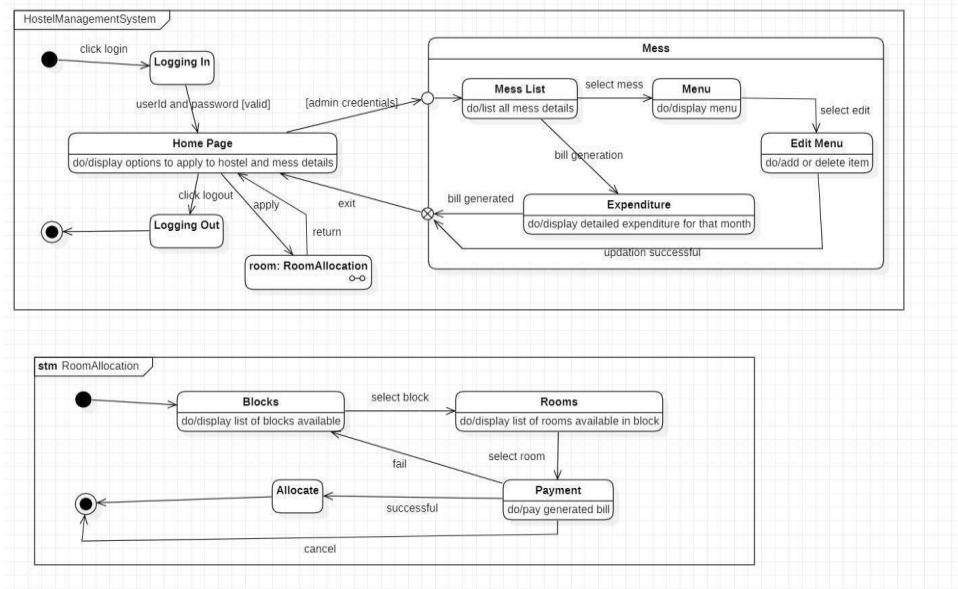


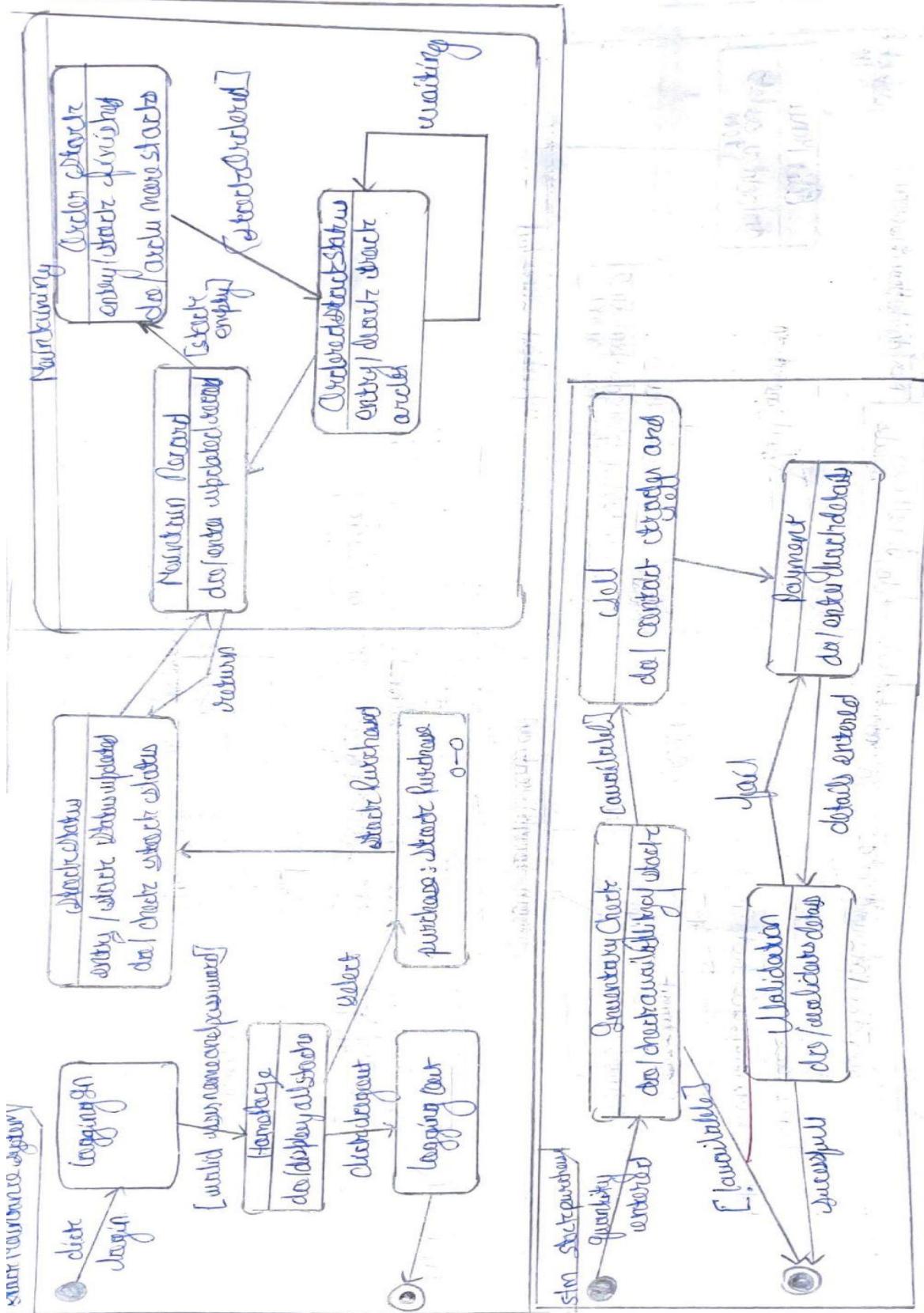
3) Stock Management System



State Diagram:

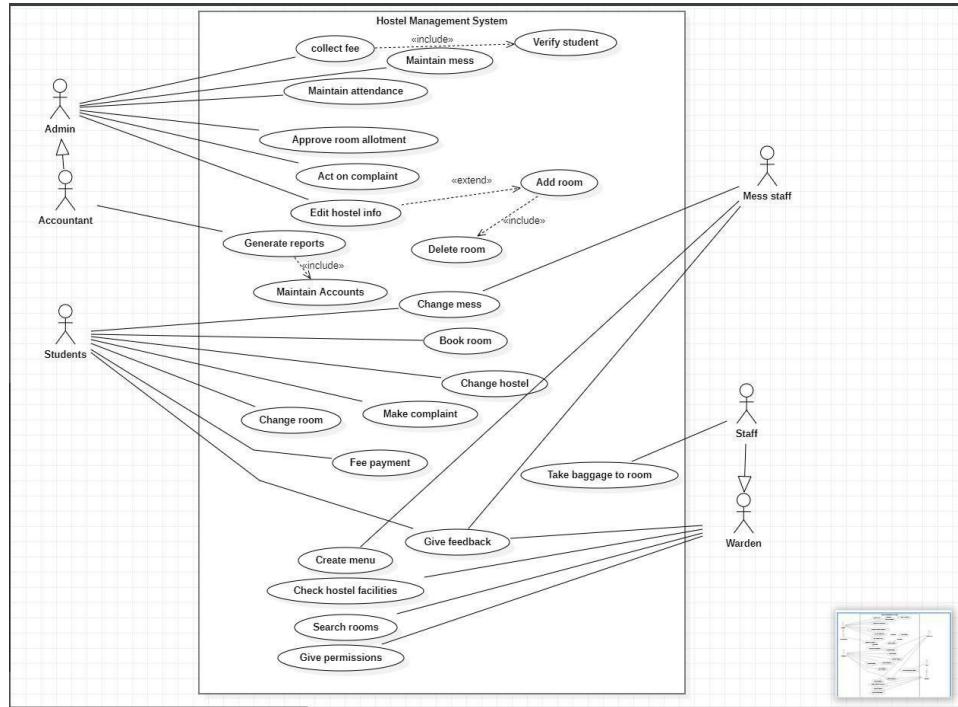
The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the StockStatus details and StockPurchase procedure. It contains initial state and termination state with Maintaining as a nested state including the required simple states. It also has a submachine state named StockPurchase with initial, termination state along with simple states; Inventory check, Sell, Payment, Validation.



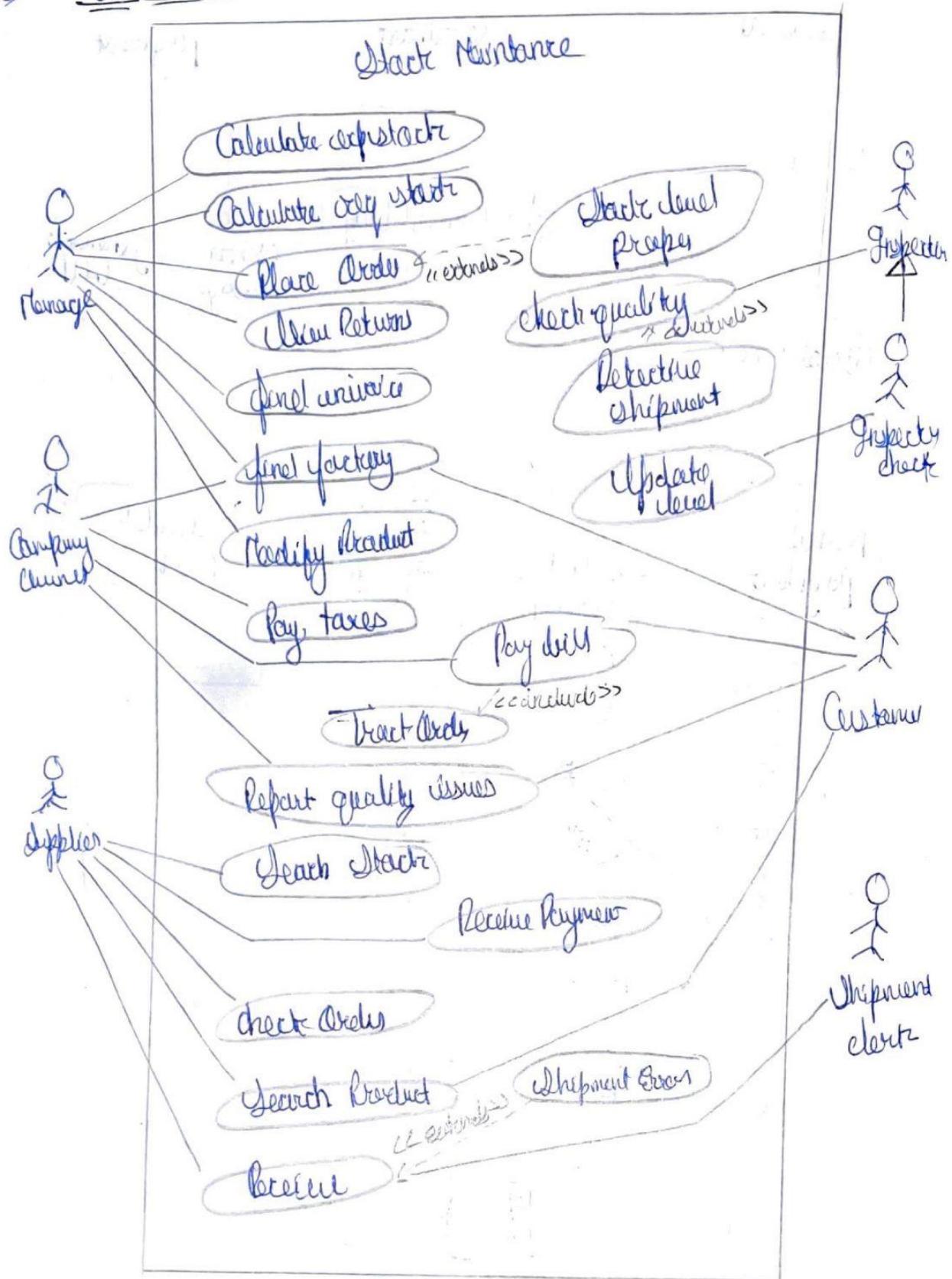


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The stock level use case extends place order use case, detective shipment use case extends check quality criteria use case , shipment error use case extends receive shipment with bill use case, pay bill use case includes track order use case.



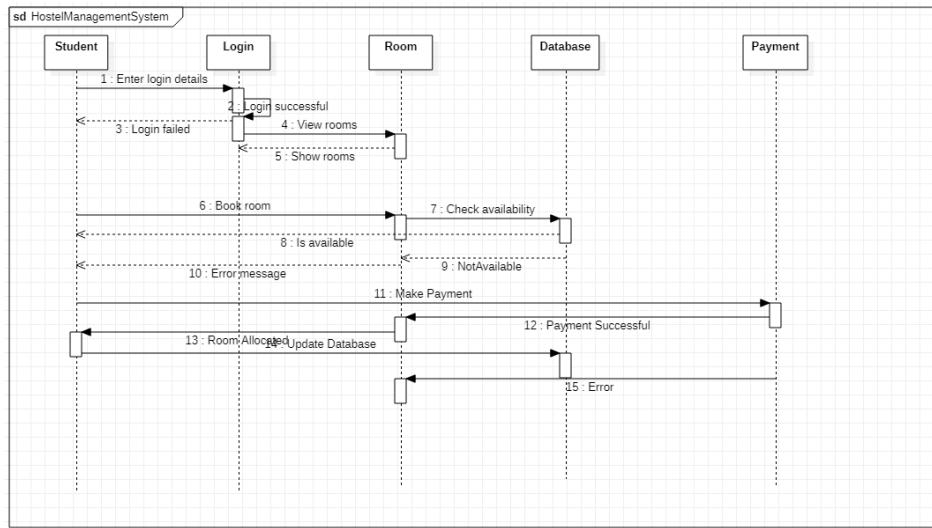
3) Stack Maintenance

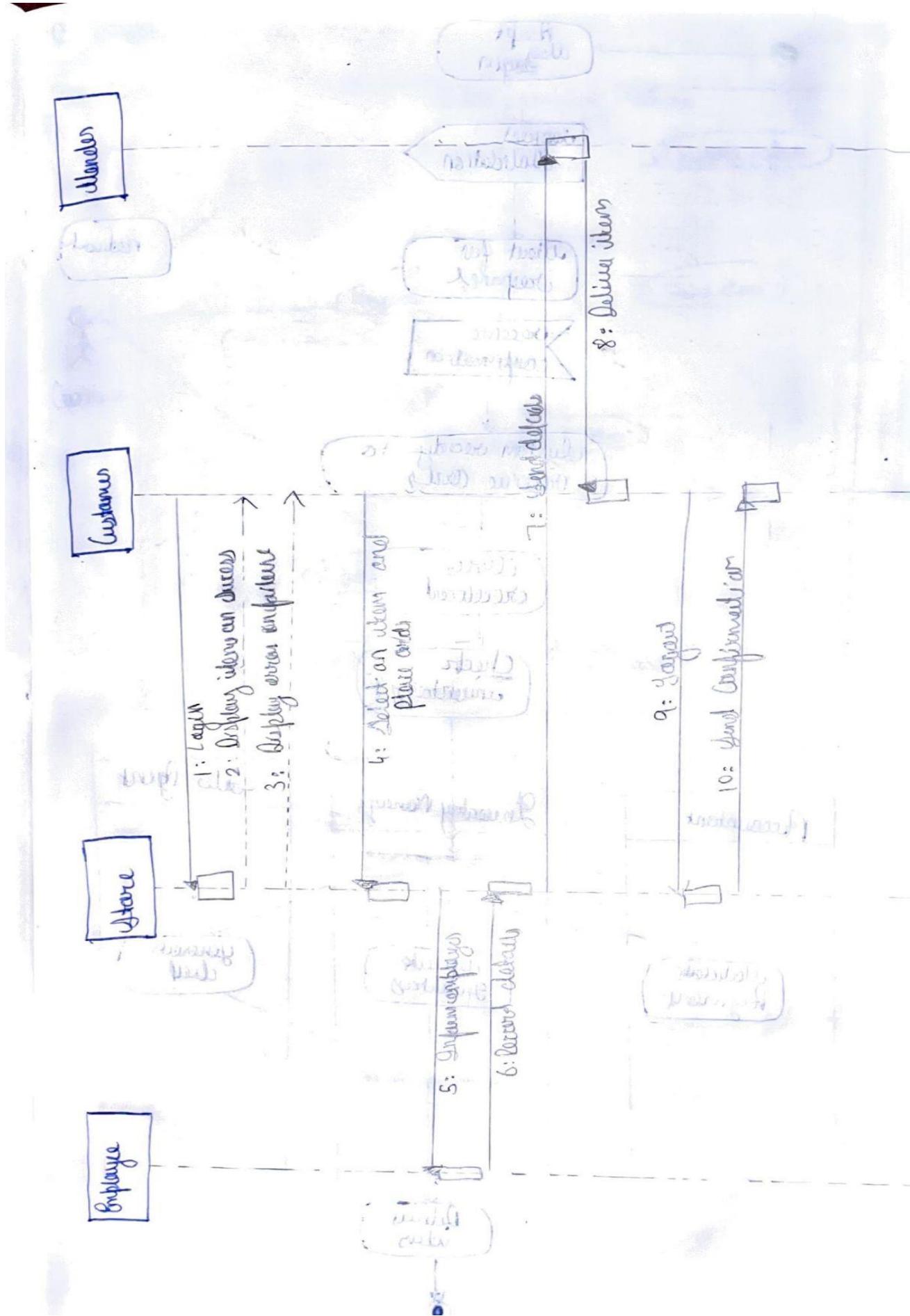


Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

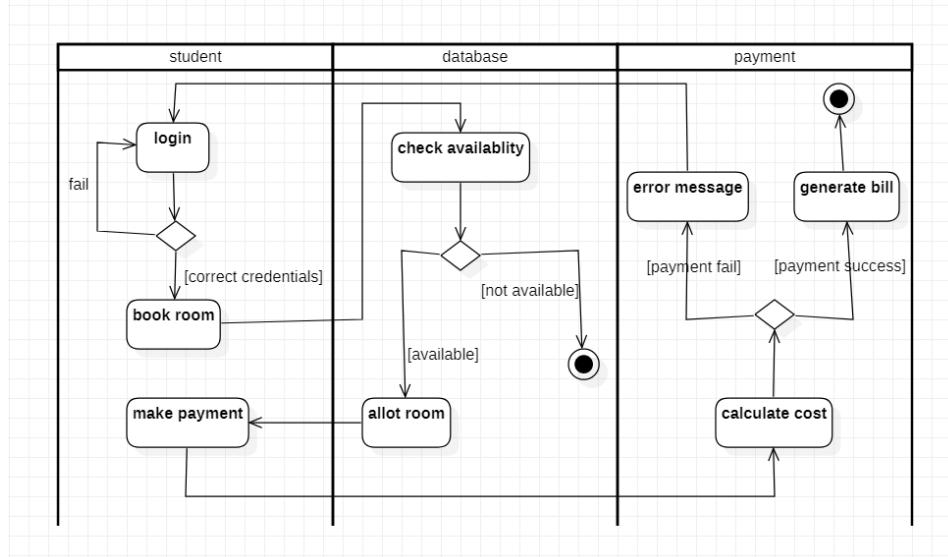
Create message signal is used to indicate the display of failure in any failure situation.

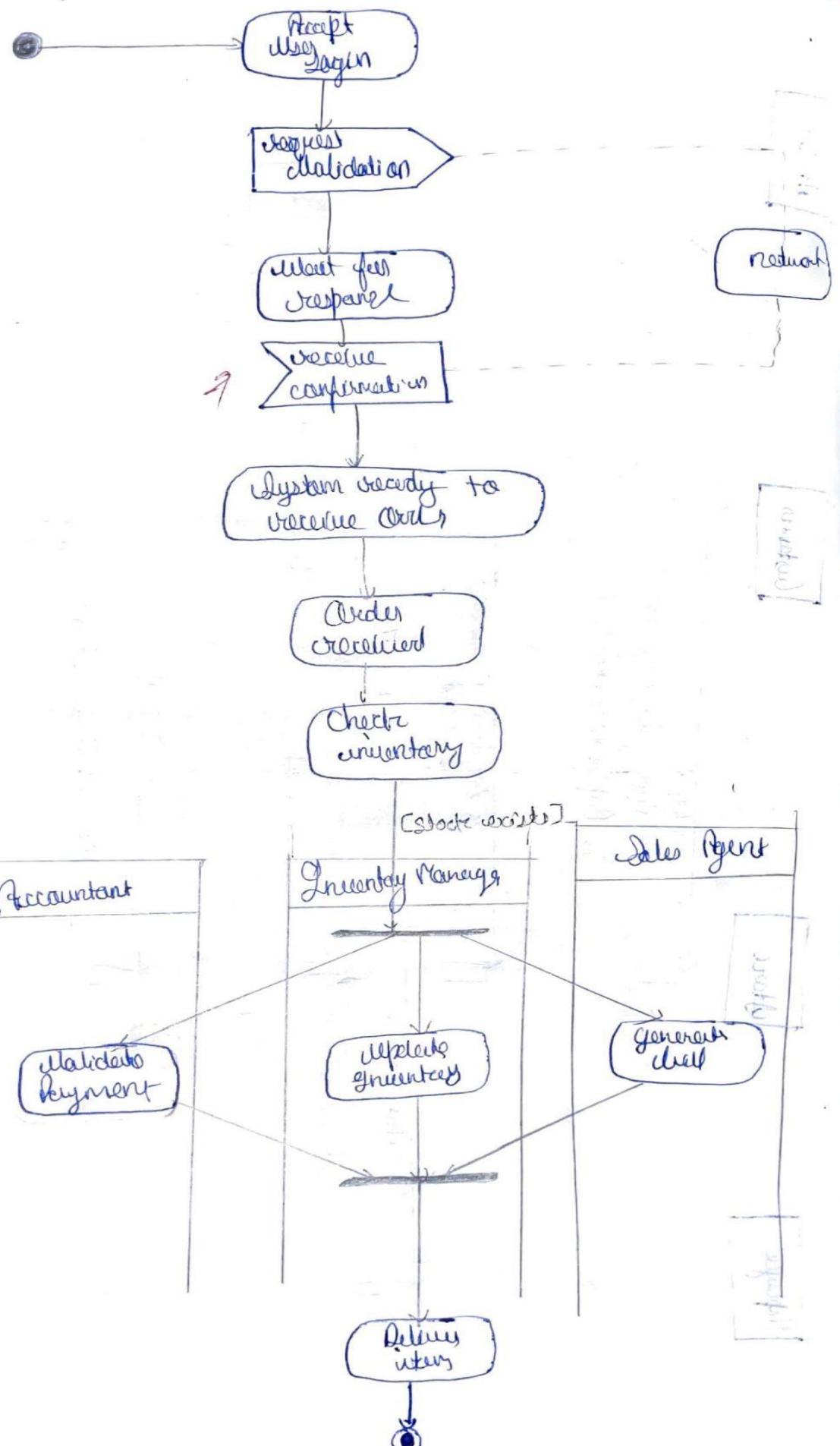




Activity Diagram:

The advanced activity diagram starts from initiation and then user login activity where a signal is sent to the network for request validation and upon confirmation the control flows to order received and then check inventory activity. There are three swimlanes namely inventory manager, accountant and sale agent where update inventory, update payment and generate bill respectively. Then the control flows to the home page and then termination activities.





4. Coffee Vending Machine

Problem statement:

Design UML diagrams for Coffee Vending Machine with system requirements specification.

Software Requirements Specification (SRS):

The Objective of the system is to prepare a coffee vending machine for commercial purposes. The system will be able to prepare coffee by processing all its required ingredients. Users will be provided with sophisticated and easy to use user interfaces.

There are many different types of coffee makers using a number of different brewing principles, in the most common devices, coffee grounds are placed in a paper or metal filter inside a funnel, which is set over a glass or ceramic coffee pot, a cooking pot in the kettle family. Cold water is poured into a separate chamber, which is then heated up to the boiling point, and directed into the funnel.

- Cash Box:Knows amount of money put in; Give change; Knows price of coffee; Turns front panel on and off.
- Front panel:Captures selection; Knows what to mix in each; Instructs mixer when to mix.
- Mixer:Knows how to talk to the dispensers.
- Dispenser [cup-, coffee powder-, sugar-, creamer-, water-]:Knows how to dispense a fixed amount, knows when it is empty.

Features:

- Small carbon footprint
- Energy saving advanced power management system
- Comprehensive drink range
- Simple user interface
- One touch

servicing Working:

Coffee vending machines are quite simple and basic. The way they work is not too different to how a tabletop coffee machine or even a drip coffee machine operates. If you think about it, making coffee is simply adding together coffee beans or grounds to hot water and mixing with milk and sugar, that's exactly what a hot drink vending machine does.

Functions:

- Add heat:to heat the coffee we have 3 options. We could use a heating element where the water gravity fed into a tubular heating element, external to the water reservoir, and boiled out. Secondly, we could use a submersible heating element placed inside of the water reservoir to heat all of the water at once. Thirdly, we could use an external hot plate to heat one or multiple walls of the water reservoir and thus heat the water through surface convection.

- Direct Water: The fluids could be directed from the water reservoir to their final destination via tubing, gravity reed, and pump.
- Contain Water/Coffee: To contain the water and coffee we could use one reservoir, two reservoirs or a funnel. If one reservoir was used for both the water and coffee container, our design would be a percolating or French press coffeemaker.
- Reduce Noise: To reduce the overall noise we consider two options: noise dampening material and internal brew mechanism. To lessen the noise produced by our designs we could fill or cover the outer shell of a noise dampening material. We could also keep the brew mechanism, whether it is drip spout.

Maintenance: When it comes to the ways in which coffee vending machines work, it's not all about the coffee, it's also about the upkeep and maintenance of the machine. With regular visits, suppliers should empty the cash drawer, reconcile the proceeds against sales, empty the waste grounds, refill ingredients and cups, and generally undertake any work to both the interior and exterior to keep everything running smoothly, such as ensuring there's no build up of dirt around the exterior buttons that could cause them to stick, and making sure nothing is blocking the internal sensors that could prevent some ingredients from being added to the mixing chamber.

4) Coffee Blending machine

For those customers who buy coffee by themselves without third party involvement. It sells different type of coffee's, each type has unique name and price. Customer can choose and pay through same system.

- SRS
- Blending machine must have money slot, coin slot, display screen and products.
 - User on selecting a coffee, coffee machine must dispense the selected coffee to user.
 - User shall get empty cup placed right below the filter. User shall be able to choose his preferred beverage (coffee, tea, milk).
 - There must be buttons (start, pause, stop, coffee, tea, milk), for user to interact.
 - System checks for properly inserted coins. System shall be able to dispense coffee after a coin has been inserted.
 - System must accept coins of different amount and compare the item cost with inserted coins (Validity). If the price is less than the amount then dispense coffee.
 - Also detect if quantity of sugar, cups or coffee is less through sensors.

Class Diagram:

The below shown class diagram contains the following classes: Coffee Machine, Cash Box, Selector, Dispenser Register, Dispenser, Ingredient, Recipe, Product, Product Register. with multiplicities as shown.

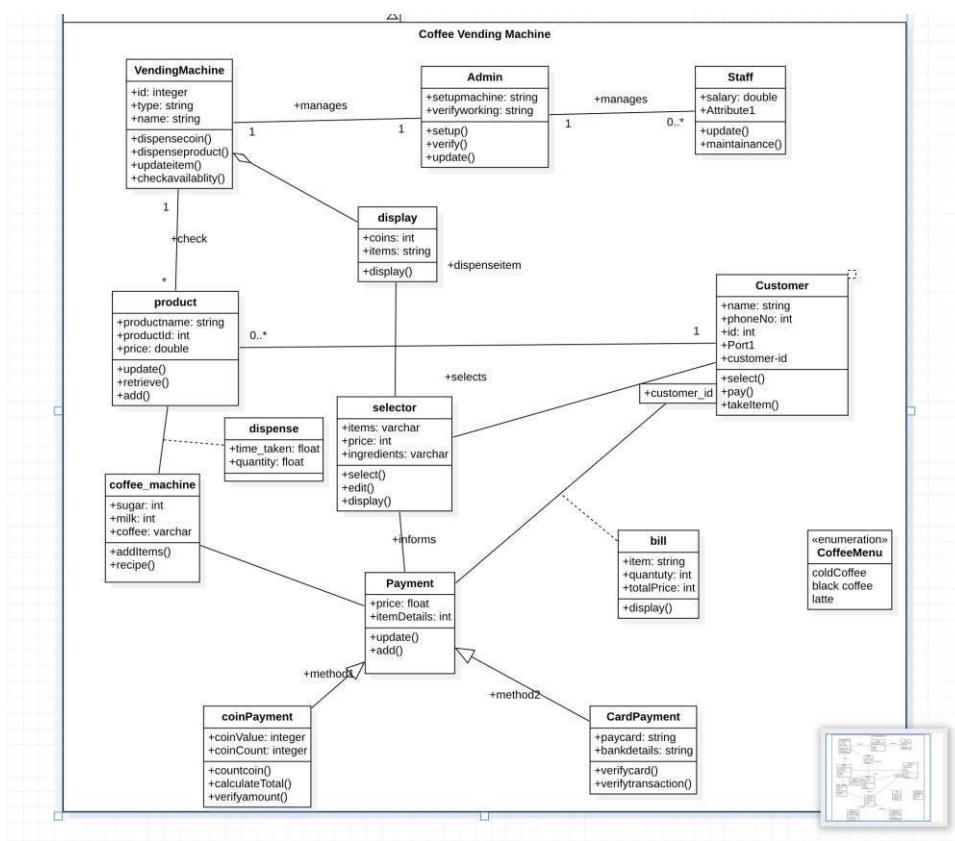
Association: Customer buys Product, Customer buys Stocks, Customer pays Payment.

Generalization: User is generalized to Permission class and User is Generalized to Role.

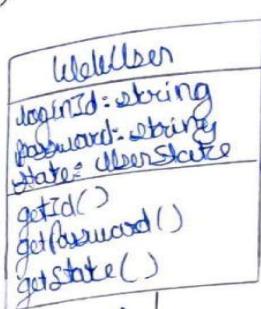
Aggregation: Coffee Machine contains Cash Box, Selectors, Dispense Register has Dispenser, Dispenser is composed of Ingredients.

Composition: Recipe is made up of

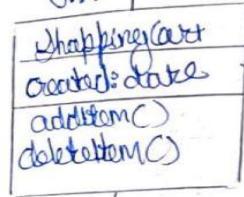
Ingredients Enumerations: TypeOfCoffee



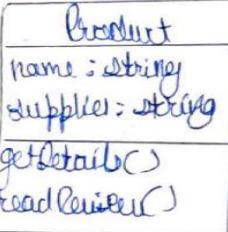
5) Online Shopping System



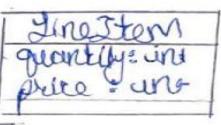
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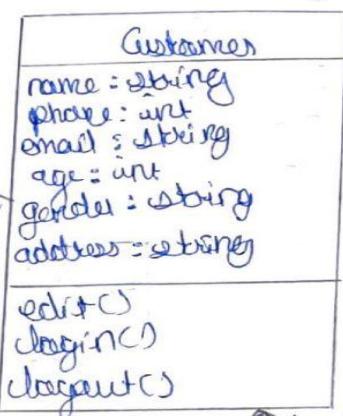
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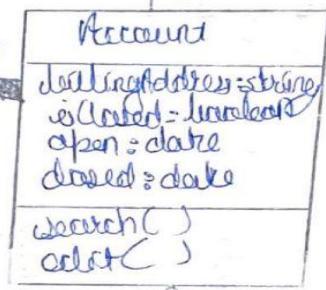


1..1 has



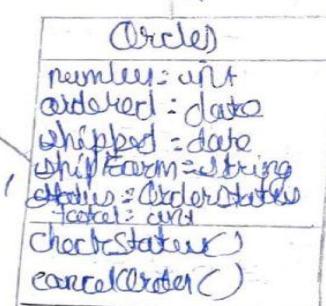
edit()
 login()
 logout()

had

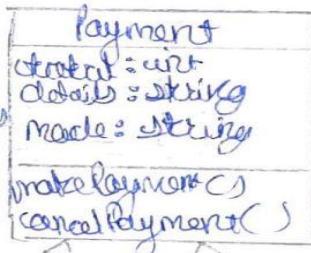


search()
 edit()

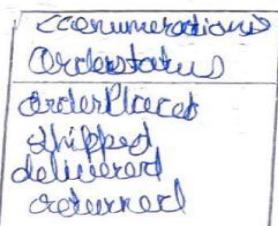
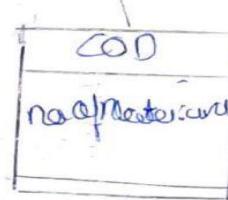
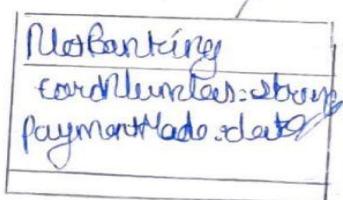
places



completes

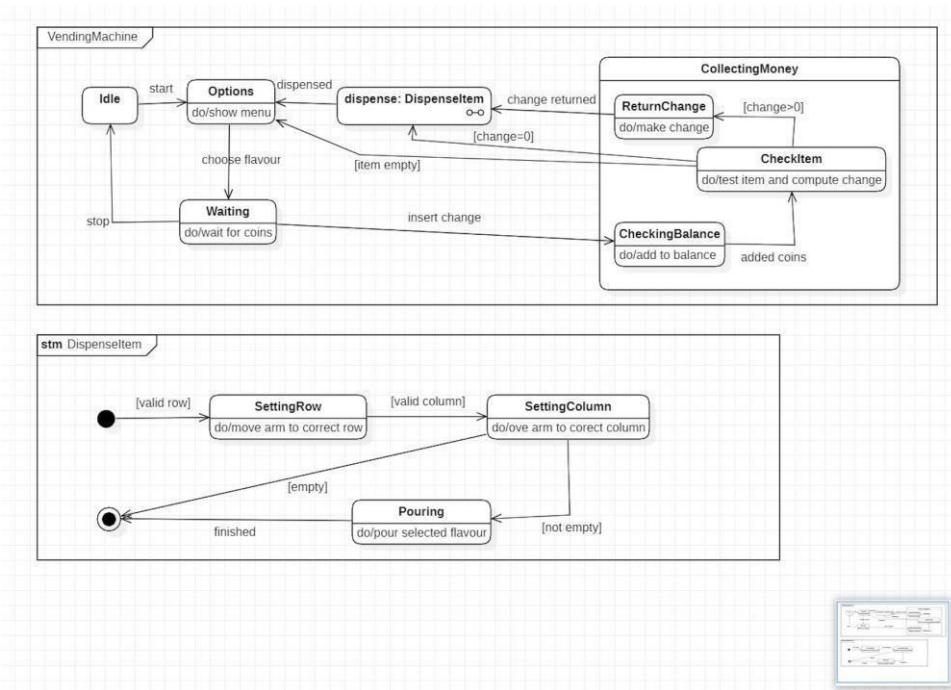


makePayment()
 cancelPayment()

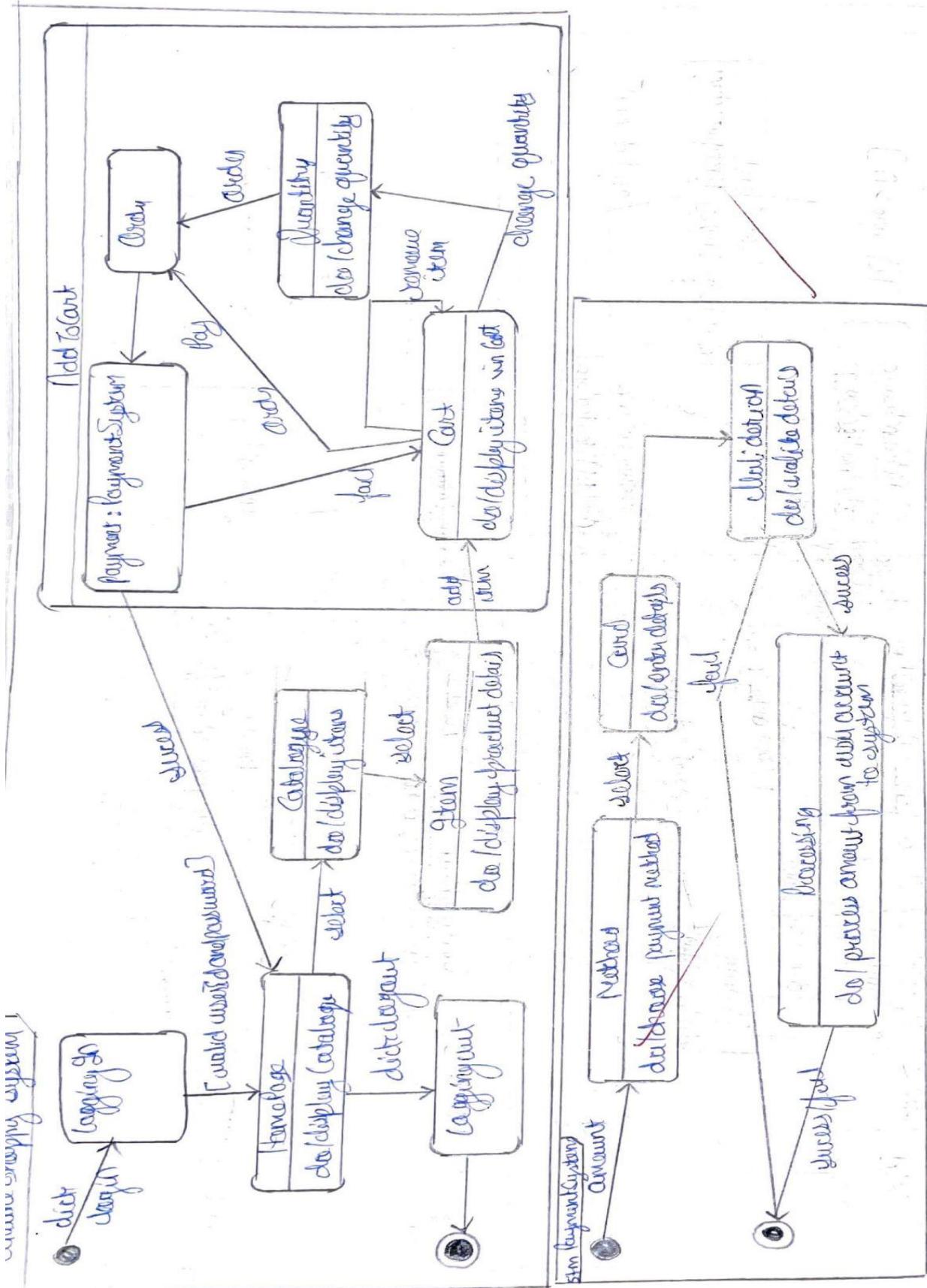


State Diagram:

The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the CollectingMoney procedure and DispenseItem procedure. It contains initial state and termination state with CollectingMoney as a nested state including the required simple states. It also has a submachine state named DispenseItem with initial, termination state along with simple states; SettingRow, SettingColumn, Pouring.

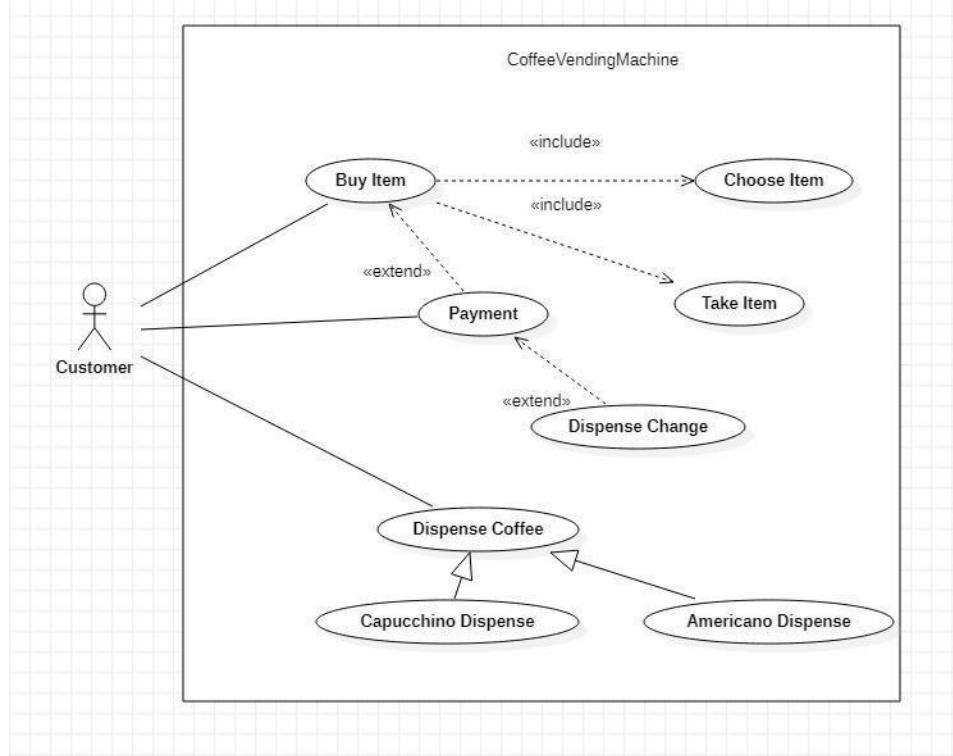


5) Online Shopping system

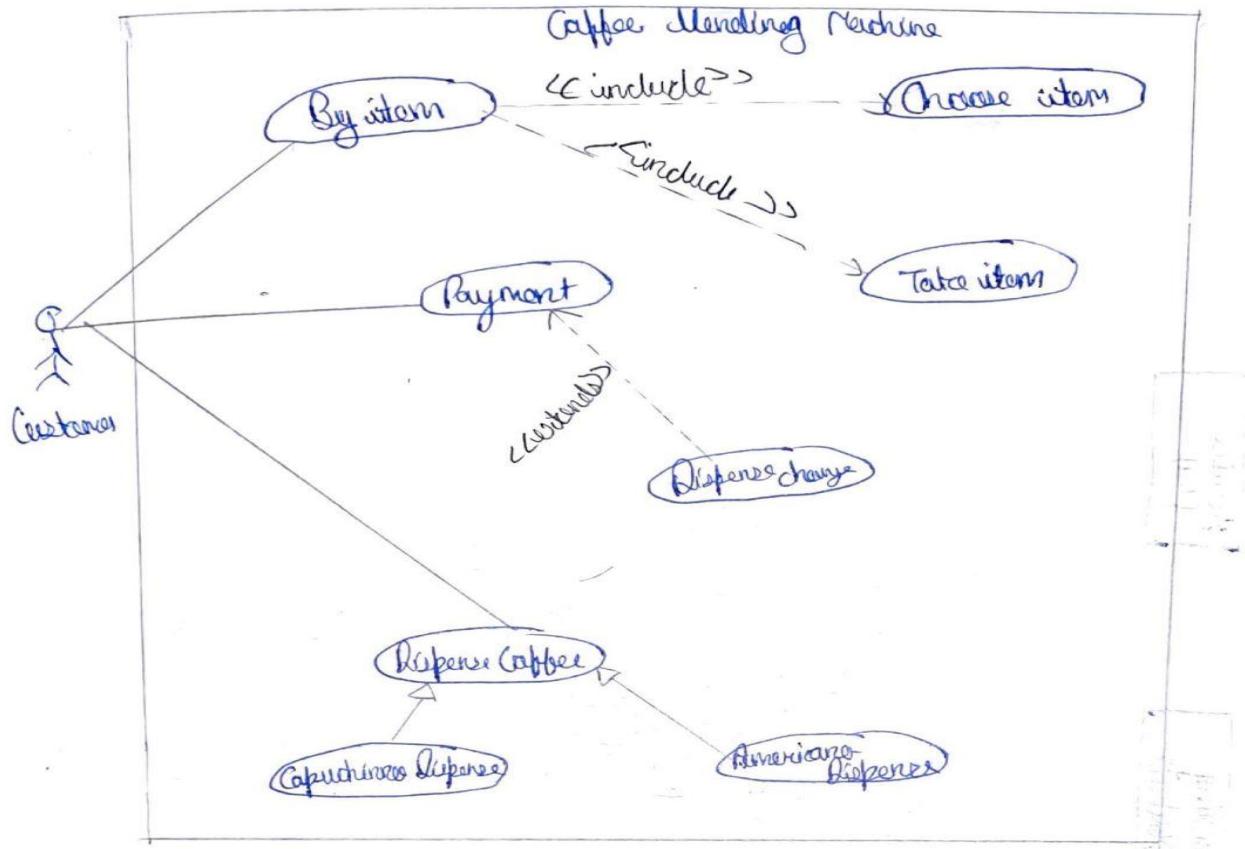


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The dispense change use case extends payment use case, payment use case extends buy item use case, buy item use case includes choose item and take item use case. Capuccino dispense and Americano dispense is generalized to super class dispense coffee.



4) Coffee Blending Machine



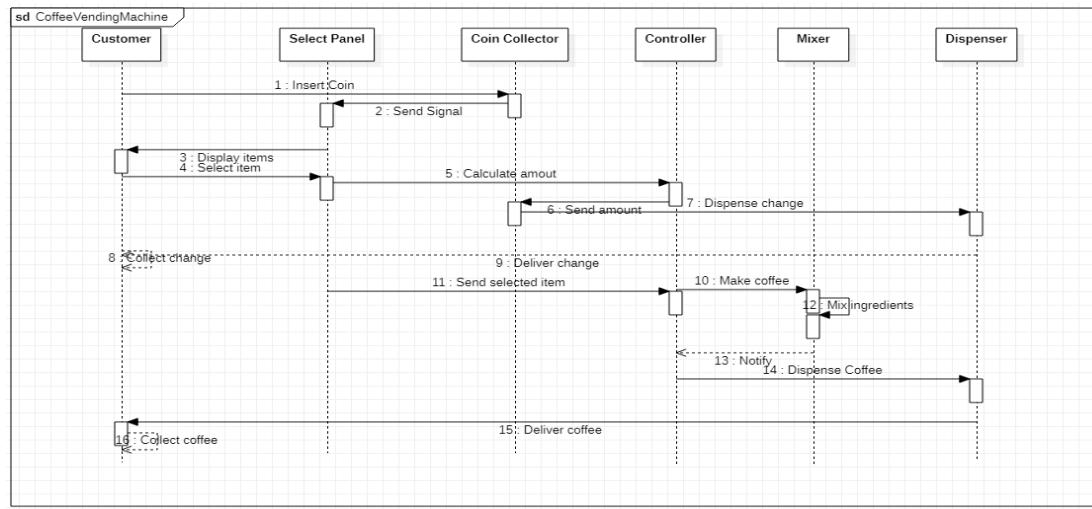
Sequence Diagram:

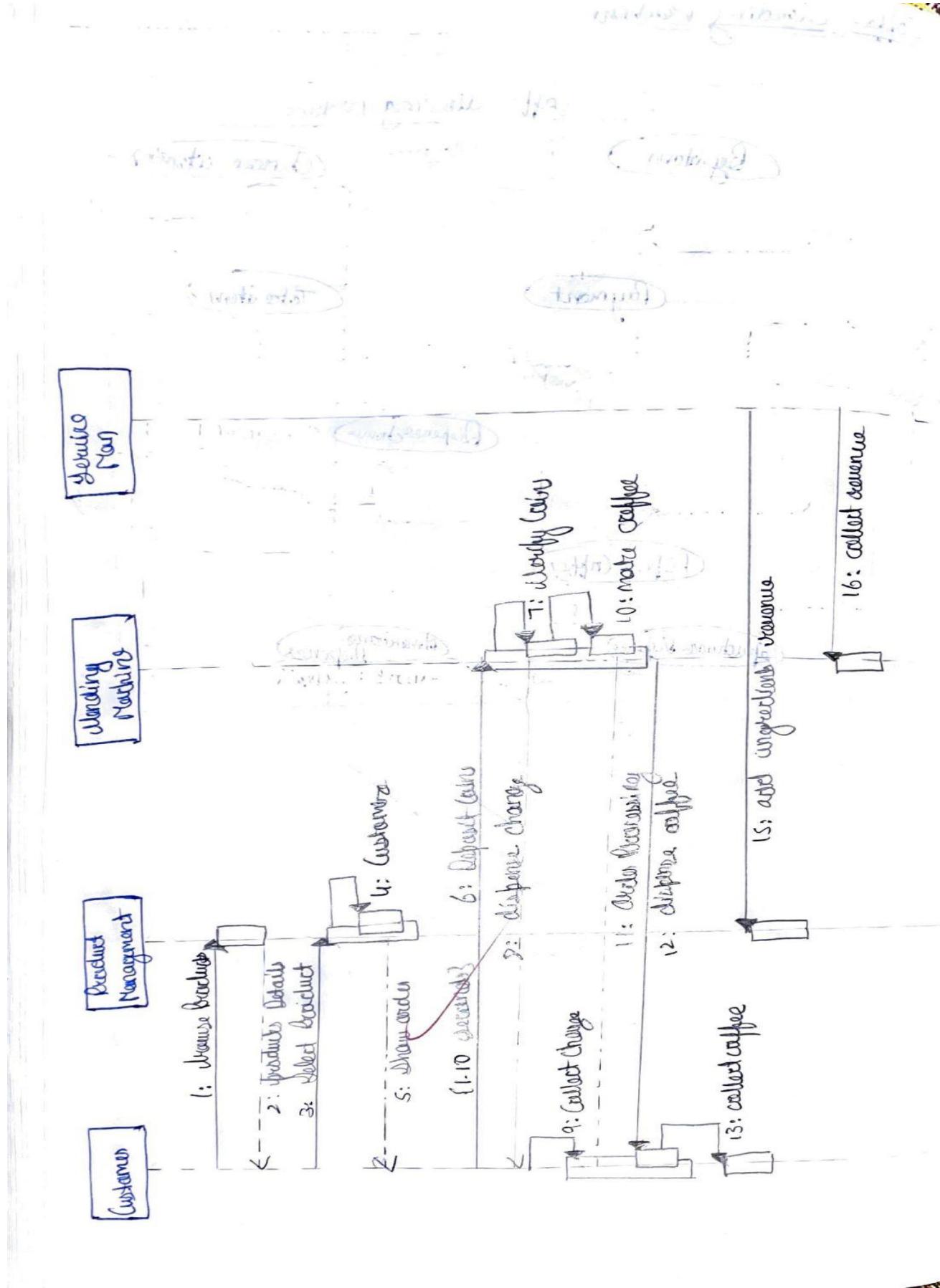
The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

The recursive function of customise is shown by double activation rectangle of customise and verify coins.

The passive object Printer is created when the customer asks for printing and is destroyed (turned off) after sending the receipt.

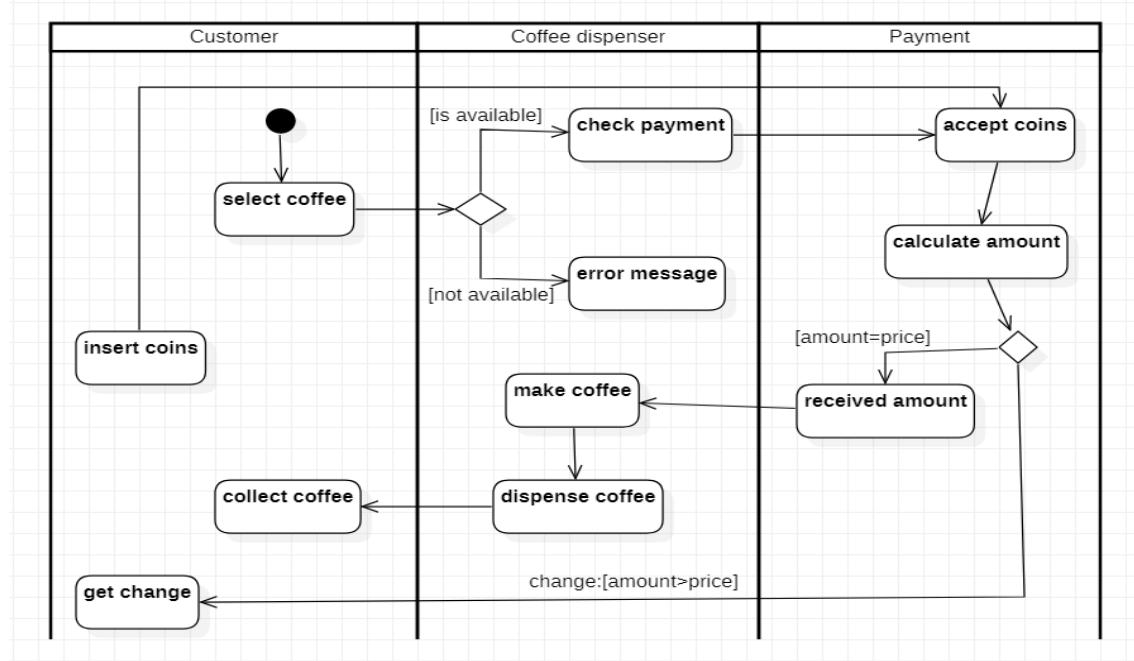
A time constraint of 1 to 10 seconds is given for depositing coins by the customer in the vending machine.

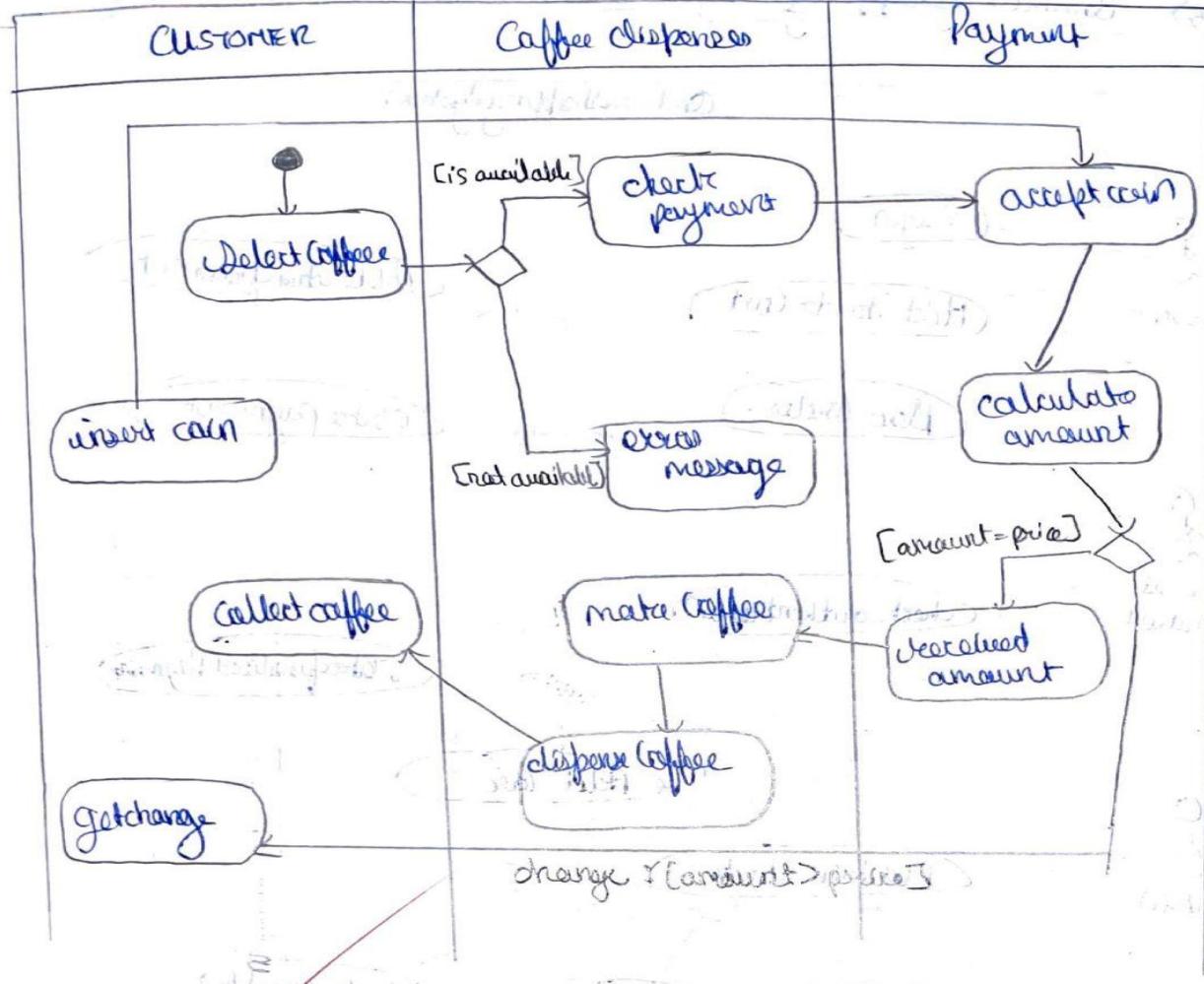




Activity Diagram:

The advanced activity diagram starts from initiation and in the customer swimlane, customer login activity where a signal is sent to the network for request validation and upon confirmation the control flows to order received and then check inventory activity. There are three swimlanes namely customer, coffee dispenser and payment where customer perform operations like order coffee, dispenses coffee and collect coins respectively. Then the control flows to the home page and then termination activities.





5. Online Shopping System

Problem statement:

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

Software Requirements Specification (SRS):

The online shopping system allows the users and vendors to exchange products remotely and reduces the amount of cost and time substantially. The software provides the following facilities to the customers:

- Facilitates easy shopping online anywhere with free shipping (conditions apply).
- Provides information about the products in categories
- Can avail the facility of purchasing second hand products
- Can reserve if the particular product is not available
- Customers are provided with up to date information on the products available
- Provides email facility for future correspondence
- Provides backup facility
- Can add nearly ten products to their shopping cart at a time

The software will not provide the following facilities to the customers:

- Cannot reserve the product for more than two days.
- Cannot reserve more than two products
- Responsibility of damages
- The product cannot be changeable once confirmed

The software provides the following facilities to the merchants:

- Facilitates easy bidding facility
- Provides complete information about the customers
- Provides complete information about their products

5) Online Shopping System.

- For all kinds of products a web application is intended to provide complete solution for vendors as well as customers through internet. The administration module will enable a system administrator to approve and reject request from new shops and maintain various list of shop category.
- Customer must have an account in the online website where he/she can purchase products.
 - If customer wants to buy the product then he/she must be registered.
 - Customer login the system by entering valid user id and password.
 - Various categories like men, women, kids and home products.
 - Customer continues all available products, compare them and make a choice for purchasing the products.
 - For customers there are many type of sure billing will be prepaid or debit or credit card or post paid or after shipping, cheque or bank draft the security will provide by third party.
 - After the payment is over the product customers can logout.

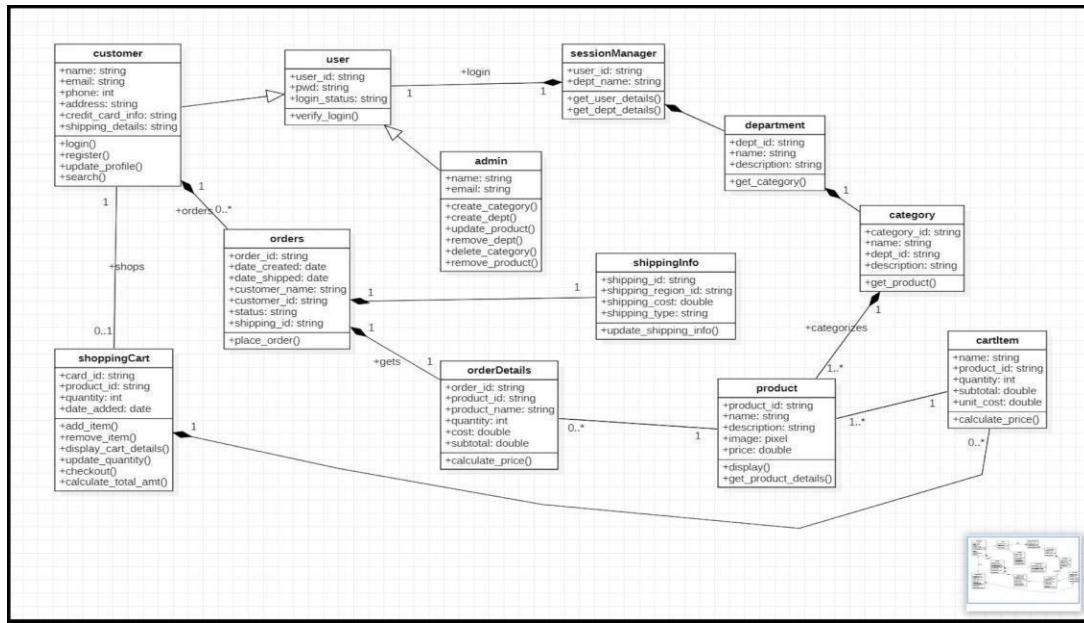
Class Diagram:

The below shown class diagram contains the following classes: WebUser, Customer, ShoppingCart, Account, Product, Order, Payment, Netbanking, COD with multiplicities as shown.

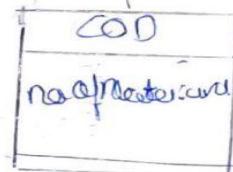
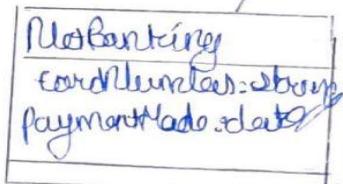
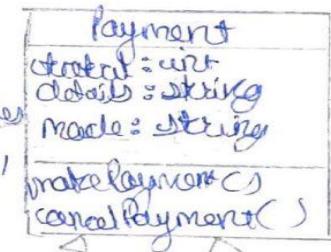
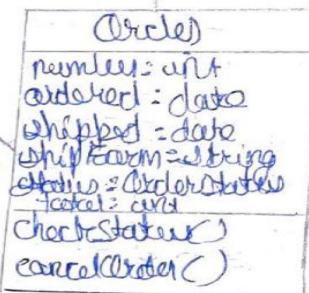
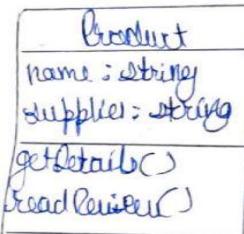
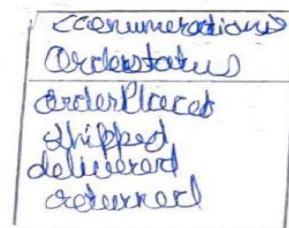
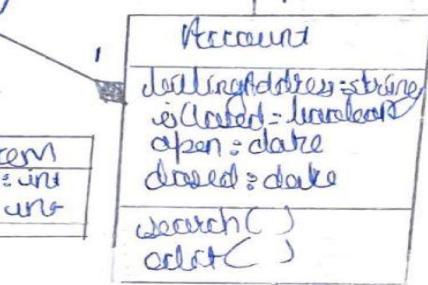
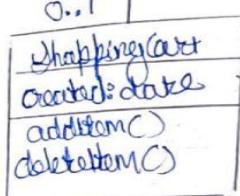
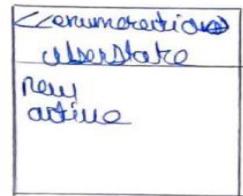
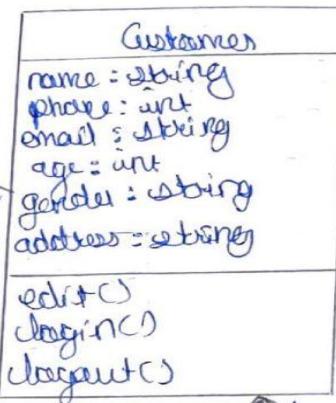
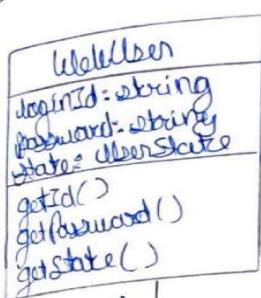
Association: WebUser owns ShoppingCart, ShoppingCart has Product, Order consists of Product, Payment completes Order.

Generalization: Netbanking and COD are generalized to Payment class. Association class: LineItem with ShoppingCart and Product

Composition: Account is composed of ShoppingCart, Customer, and Order. Enumerations: UserState, OrderStatus

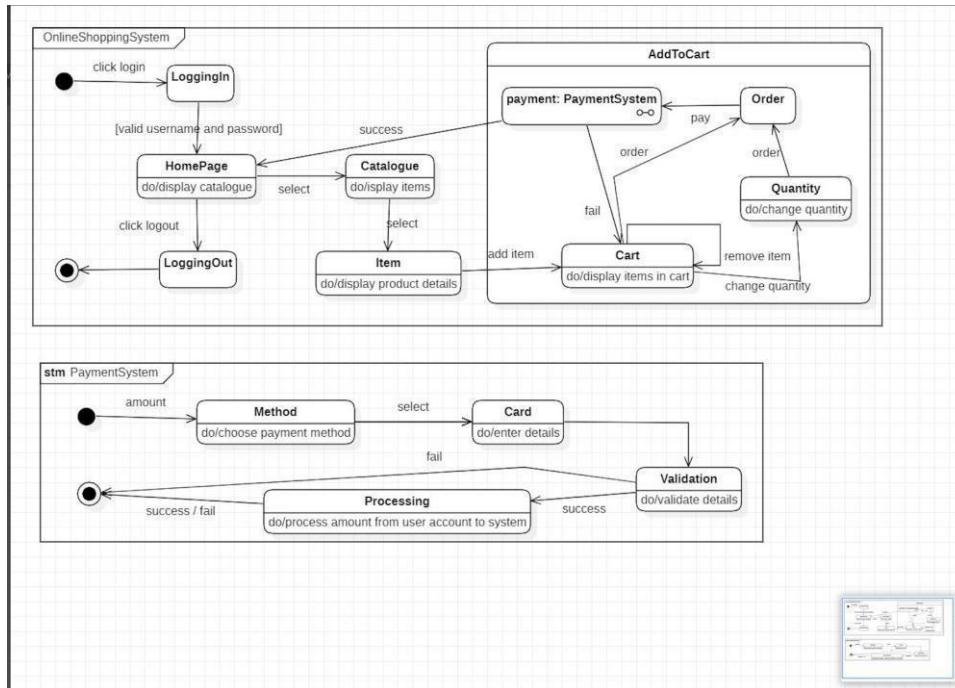


5) Online Shopping System

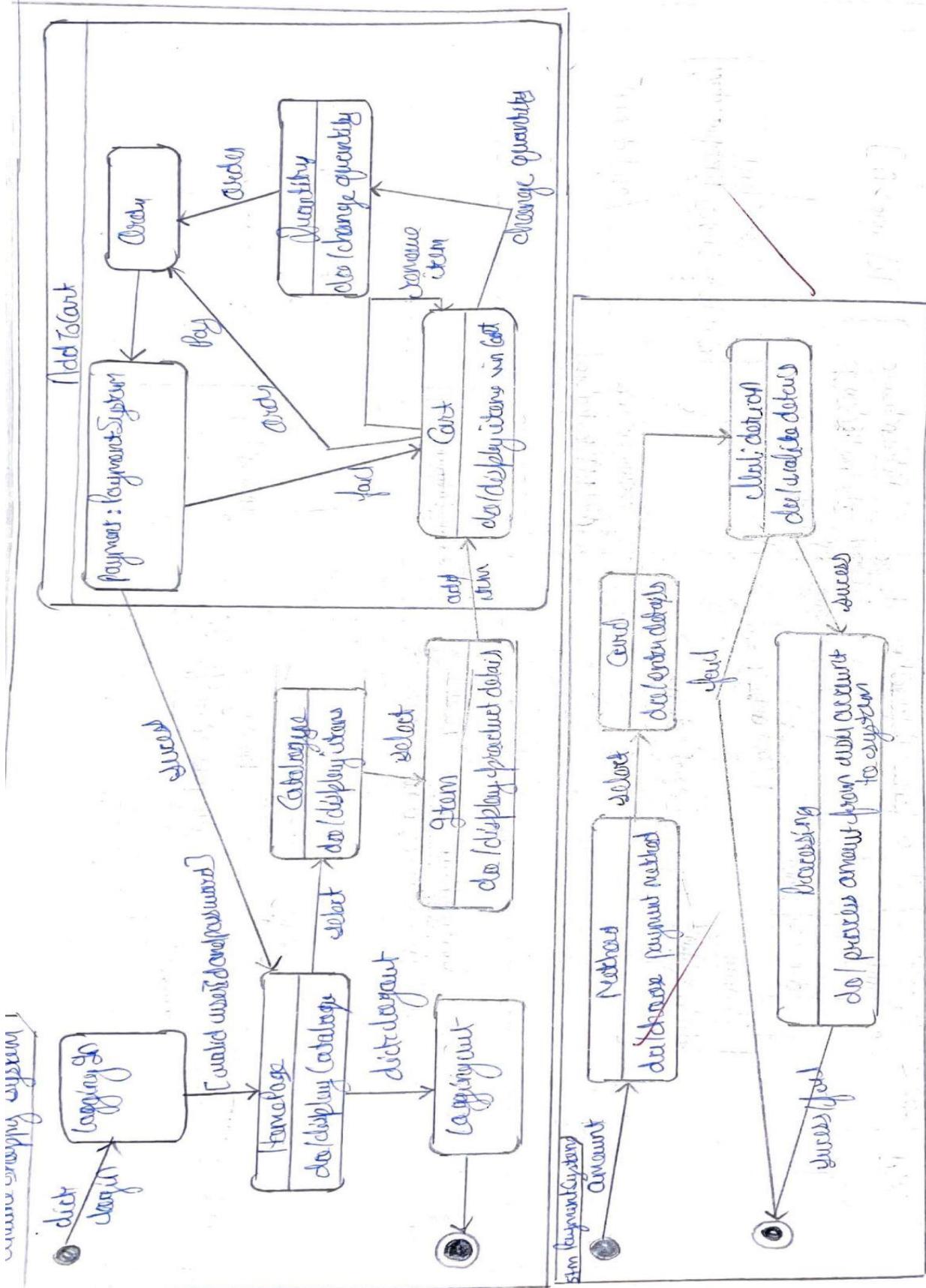


State Diagram:

The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the AddToCart procedure and PaymentSystem procedure. It contains initial state and termination state with AddToCart as a nested state including the required simple states. It also has a submachine state named PaymentSystem with initial, termination state along with simple states; Method, Card, Validation, Processing.

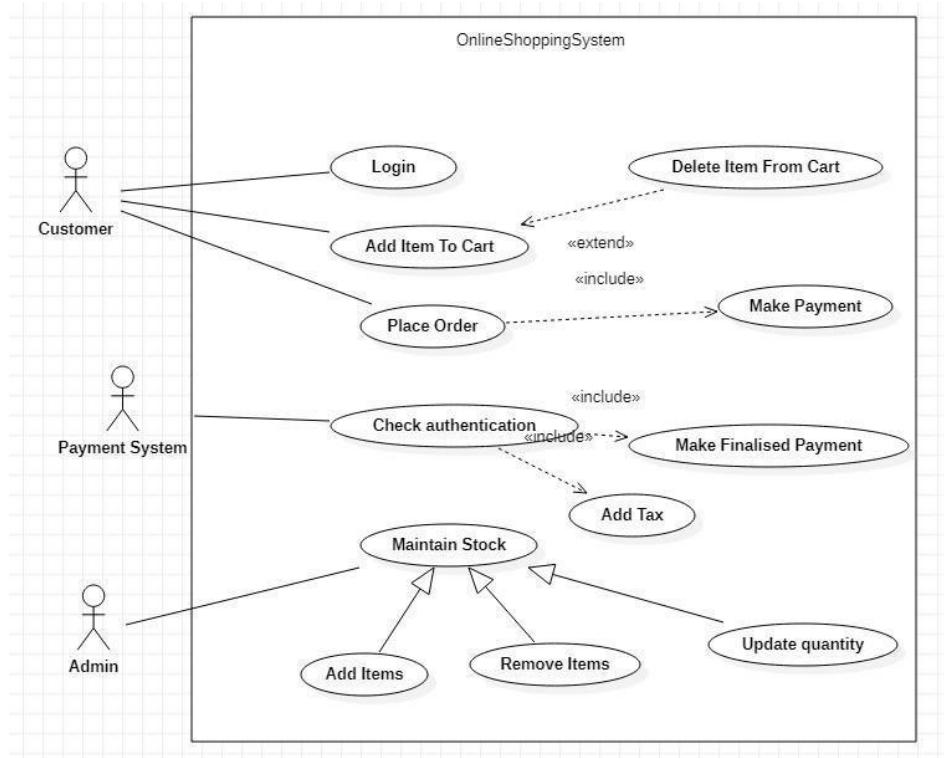


⑤ Online shopping system

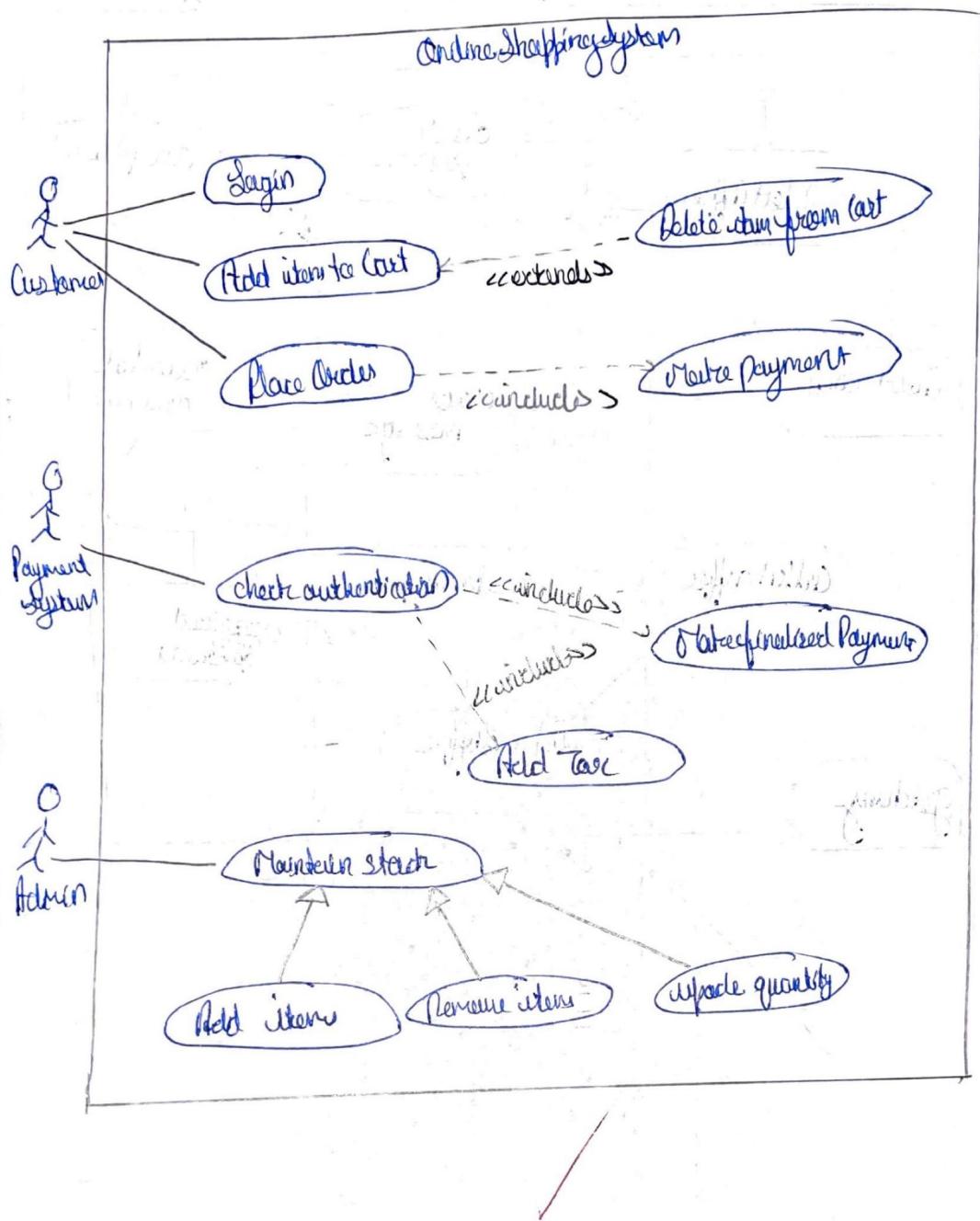


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The delete from cart use case extends add item to cart use case, place order use case includes make payment use case, check authentication use case includes make finalized payment and add tax use case. Add item, remove item and update quantity is generalized to super class maintain stock.



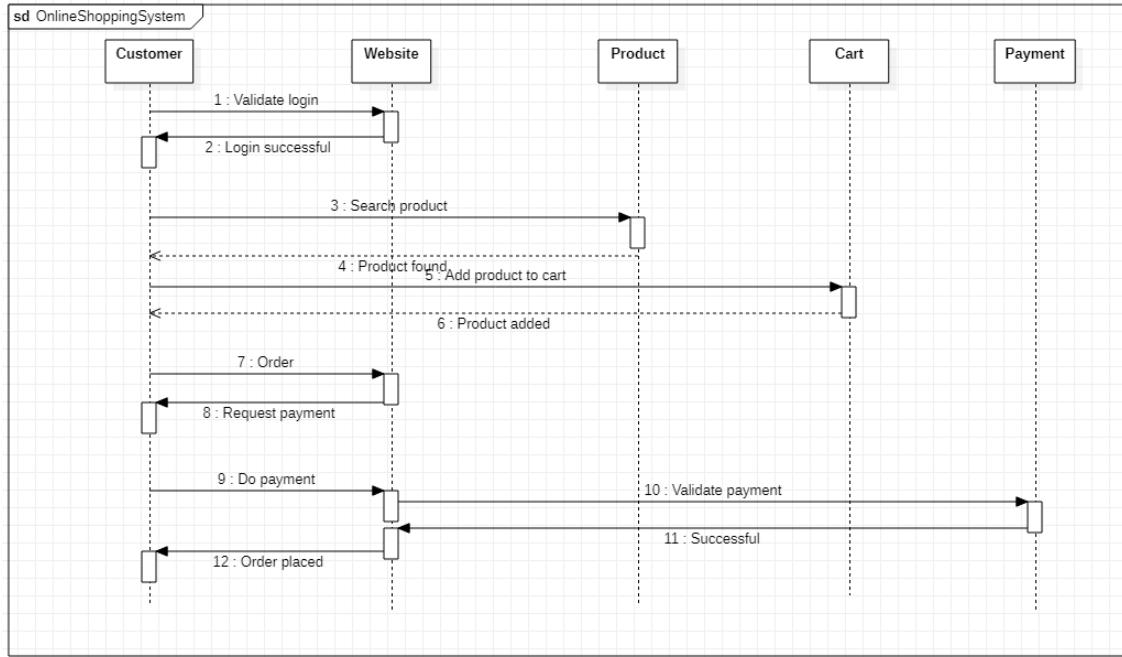
5) Online Shopping System

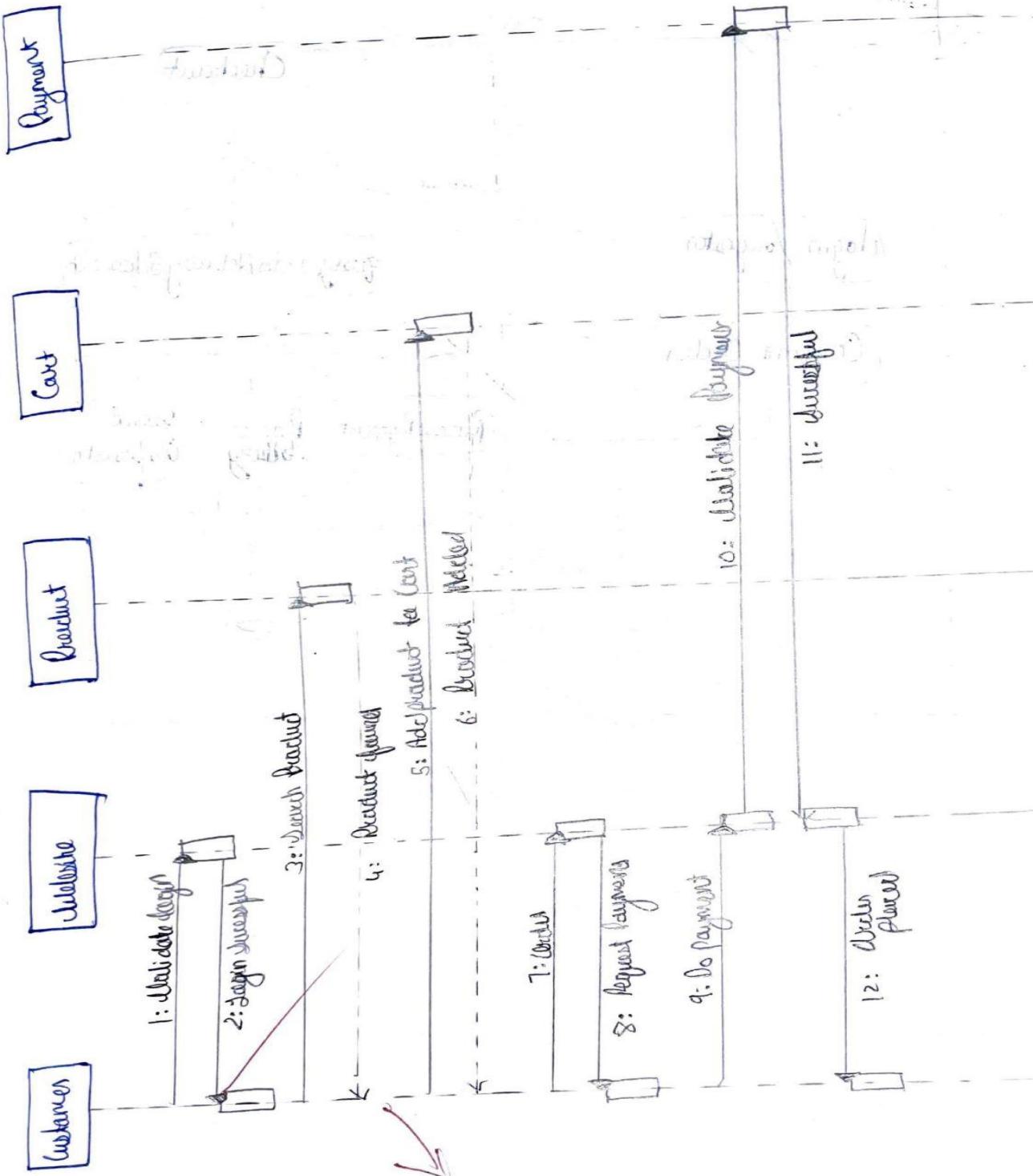


Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

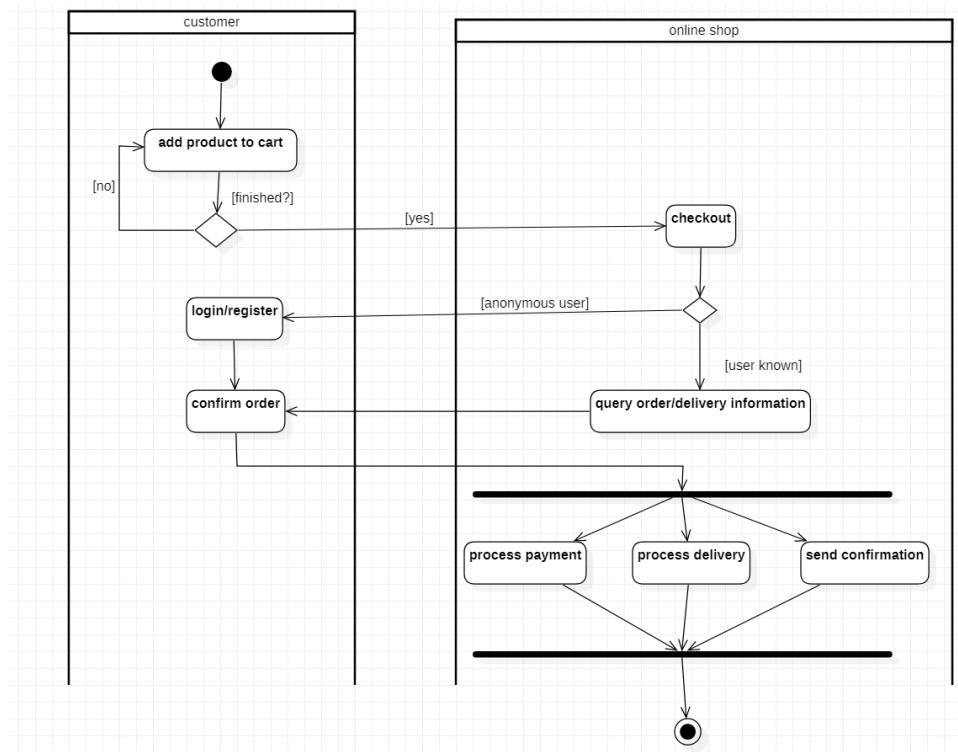
Reply message is used to return back to lifelines with the required message.

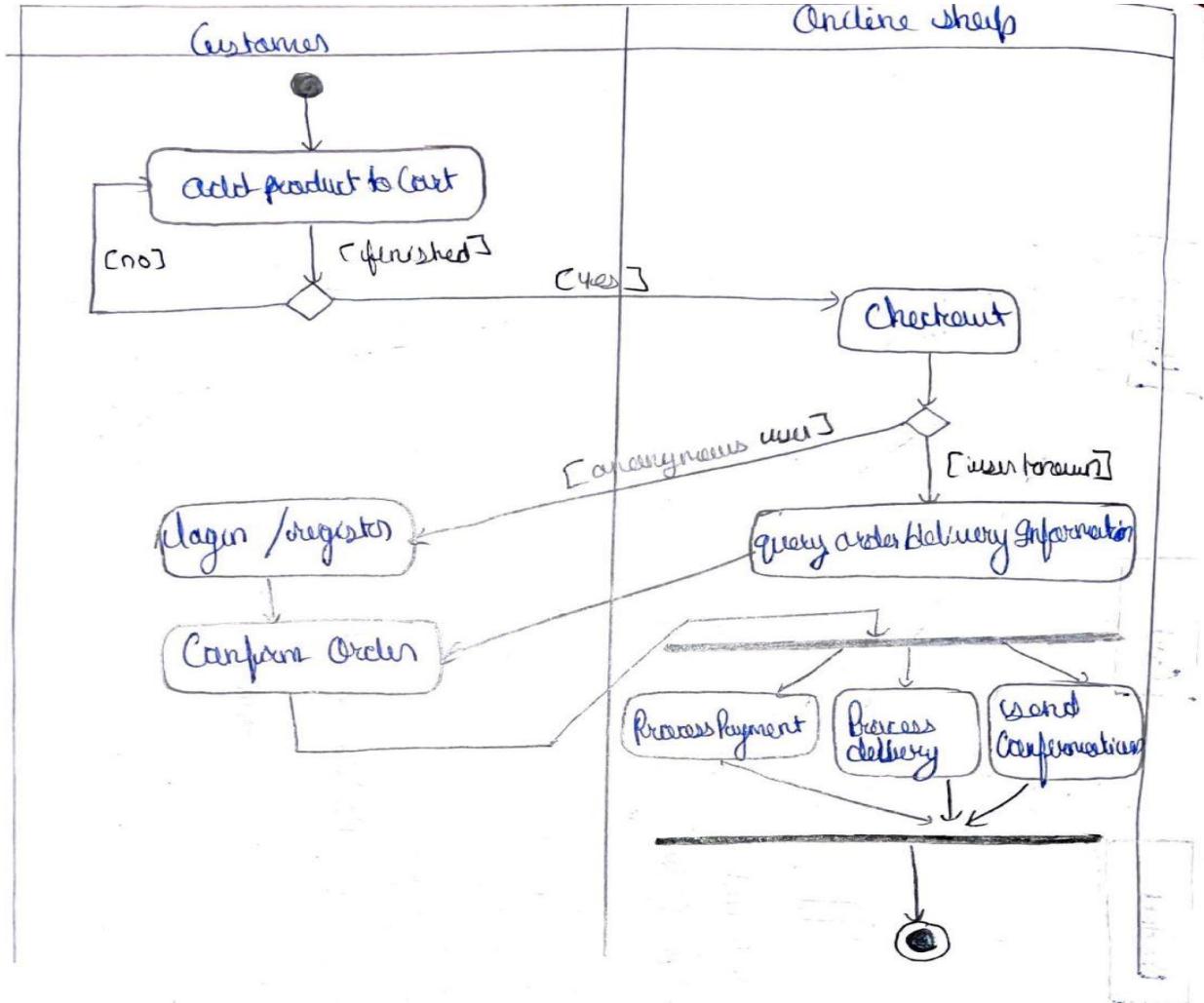




Activity Diagram:

The advanced activity diagram starts from initiation and in the customer swimlane, the customer login activity where a signal is sent to the network for request validation and upon confirmation the control flows to add product and checkout activity. There are two swimlanes namely customer and online shop where it confirms the order and delivery, payment process respectively. Then the control flows to the home page and then termination activities.





6. Railway reservation system

Problem statement:

Design UML diagrams for Railway Reservation System with system requirements specification.

Software Requirements Specification (SRS):

To develop a user-friendly Railway Reservation System to enable passengers to book tickets online and make payment online as well. Railway reservation system project which provides the train timing details, reservation, billing and cancellation on various types of reservation namely,

- Confirm Reservation for Seat.
- Reservation against Cancellation.
- Waiting list Reservation.
- Online Reservation.
- Tatkal Reservation

This system enables the Advance booking in any class, against general and ladies quota, on payment of fare in full for adults and children, a maximum of six berths/seats at a time, for journey between any two stations served by a train. It also provides details about

1. Timetable
2. Train Fares
3. Current status of reservation position
4. Train available between a pair of stations
5. Accommodation available for a train/date combination Types of tickets: General and Tatkaal

6) Railway reservation system:
Need for developing tickets over internet. Any customer can book tickets for different train. Software has to be developed for automating the manual reservation system.

SRS

- Each user should have a user id and password. Record should be kept on day file. Provision should be made for full backup of system.
- Customer can view the trains available at any day, the cost and number of tickets available for any train.
- Customer can book a ticket by initially filling details in a form.
- Ticket can be booked in 2 ways i-ticket and e-ticket.
- In case i-ticket are carried, customer can book online and tickets are issued. A ticket may need to be printed.
- For cancellation of ticket, the customer has to go at reservation office and fill cancellation form and ask the clerk to cancel the ticket. Then the refund is transferred to customer account.
- After booking ticket the customer has to check out by paying fare amount to clerk.
- The system displays the details of train which will enter the market. The information is saved and corresponding updating takes place in database.

Class Diagram:

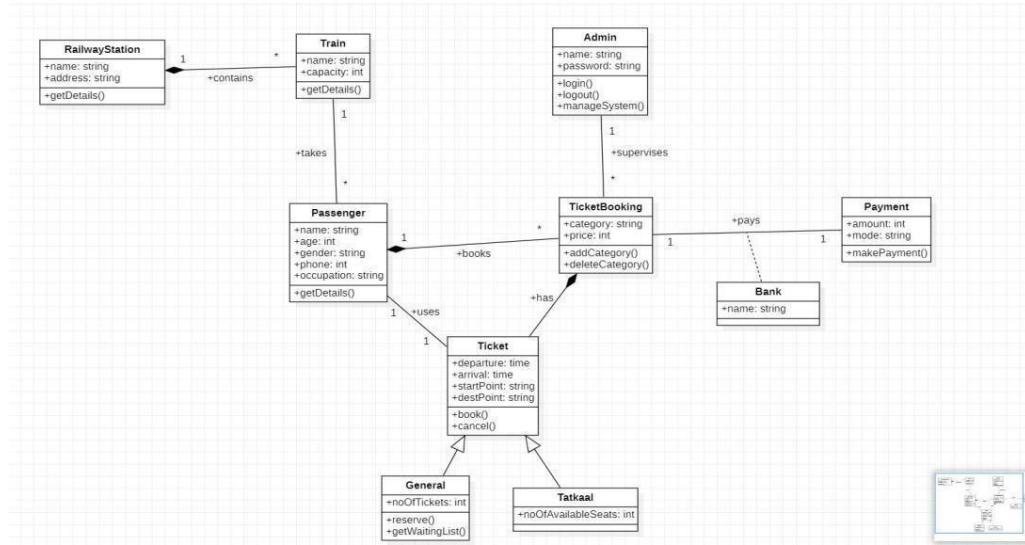
The below shown class diagram contains the following classes: RailwayStation, Train, Admin, Passenger, TicketBooking, Payment, Ticket, General and Tatkal with multiplicities as shown.

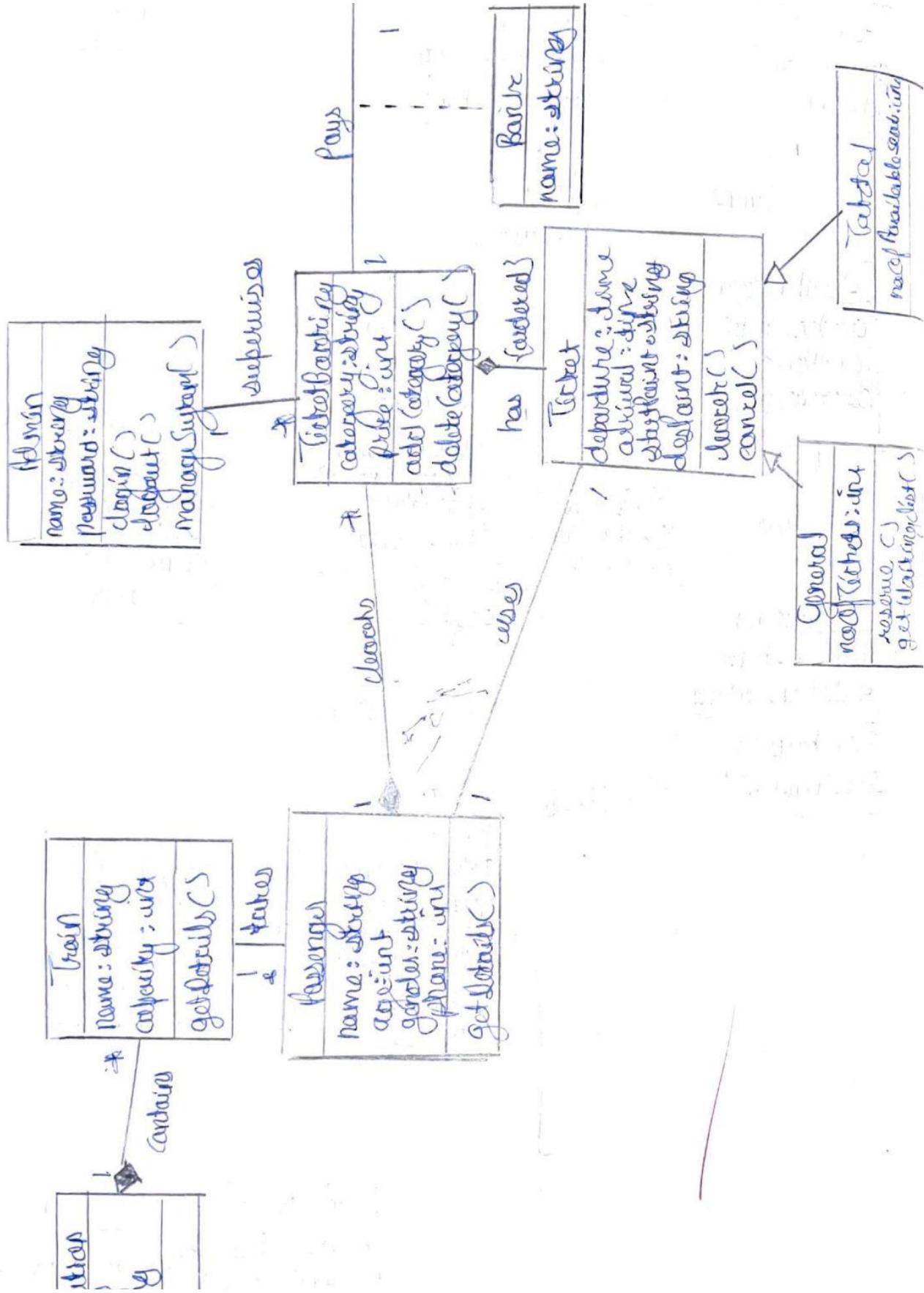
Association: Passengers takes Train, Admin supervises TicketBooking, TicketBooking pays Payment.

Generalization: General and Tatkal are generalized to Ticket class.

Association class: Bank with TicketBooking and Payment

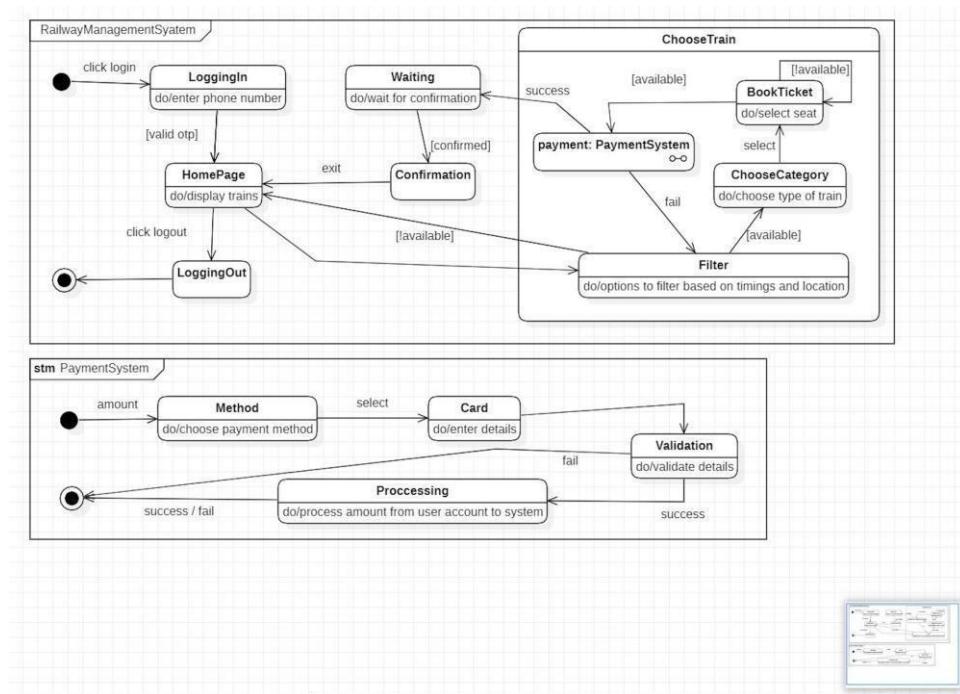
Composition: RailwayStation contains train, Passenger books TicketBooking, TicketBooking has Ticket.



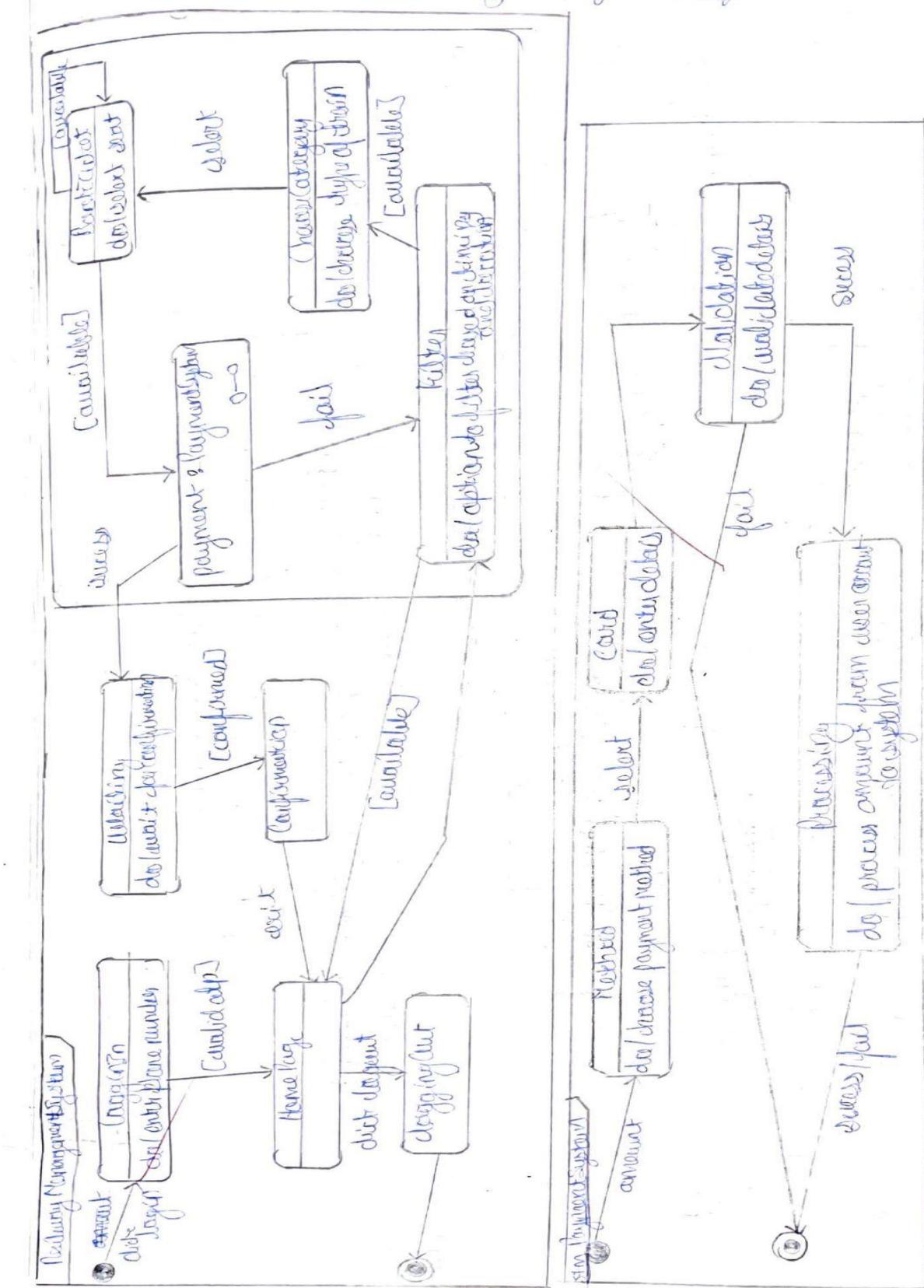


State Diagram:

The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the ChooseTrain details and PaymentSystem procedure. It contains initial state and termination state with ChooseTrain as a nested state including the required simple states. It also has a submachine state named PaymentSystem with initial, termination state along with simple states; Method, Card, Validation, Processing.

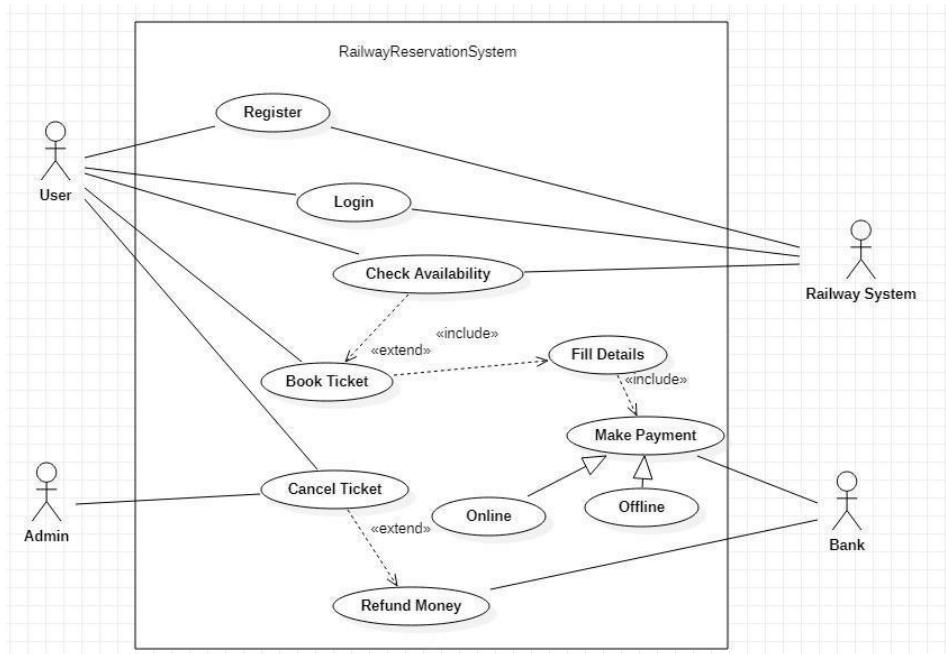


b) Railway Management systems

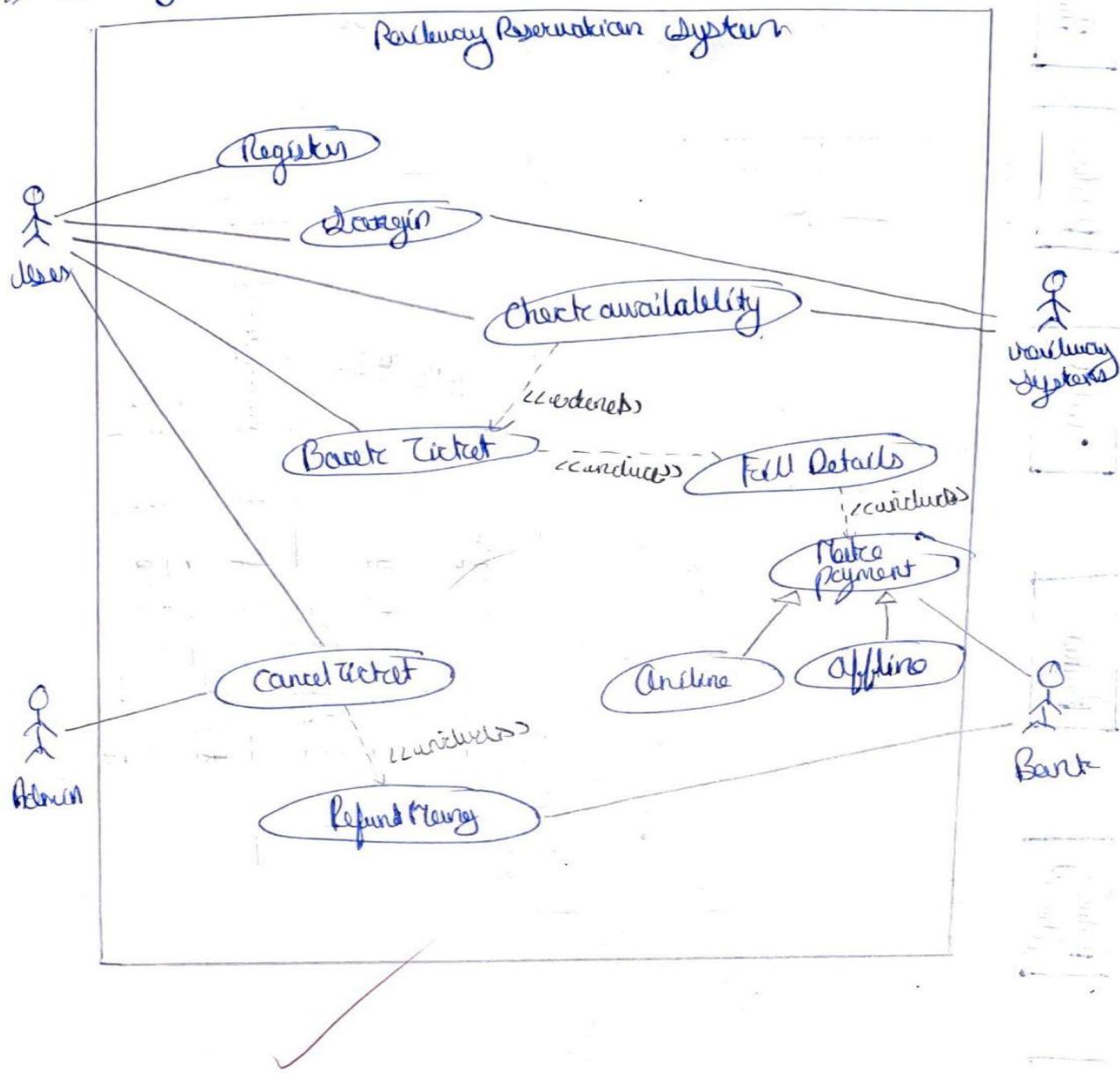


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The cancel ticket use case extends refund money use case, check availability use case extends book ticket use case, book ticket use case includes fill details use case, fill details use case includes make payment. Online and offline is generalized to super class make payment.



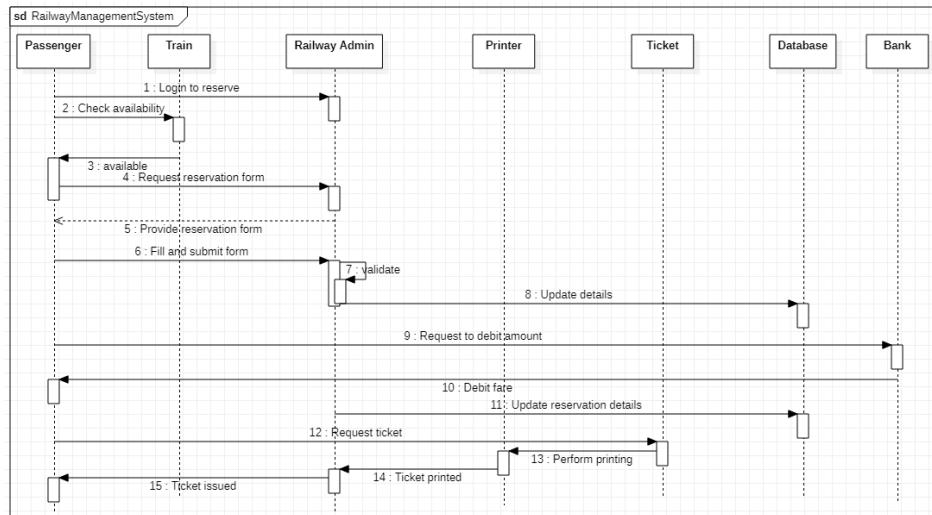
e) Railway Reservation System

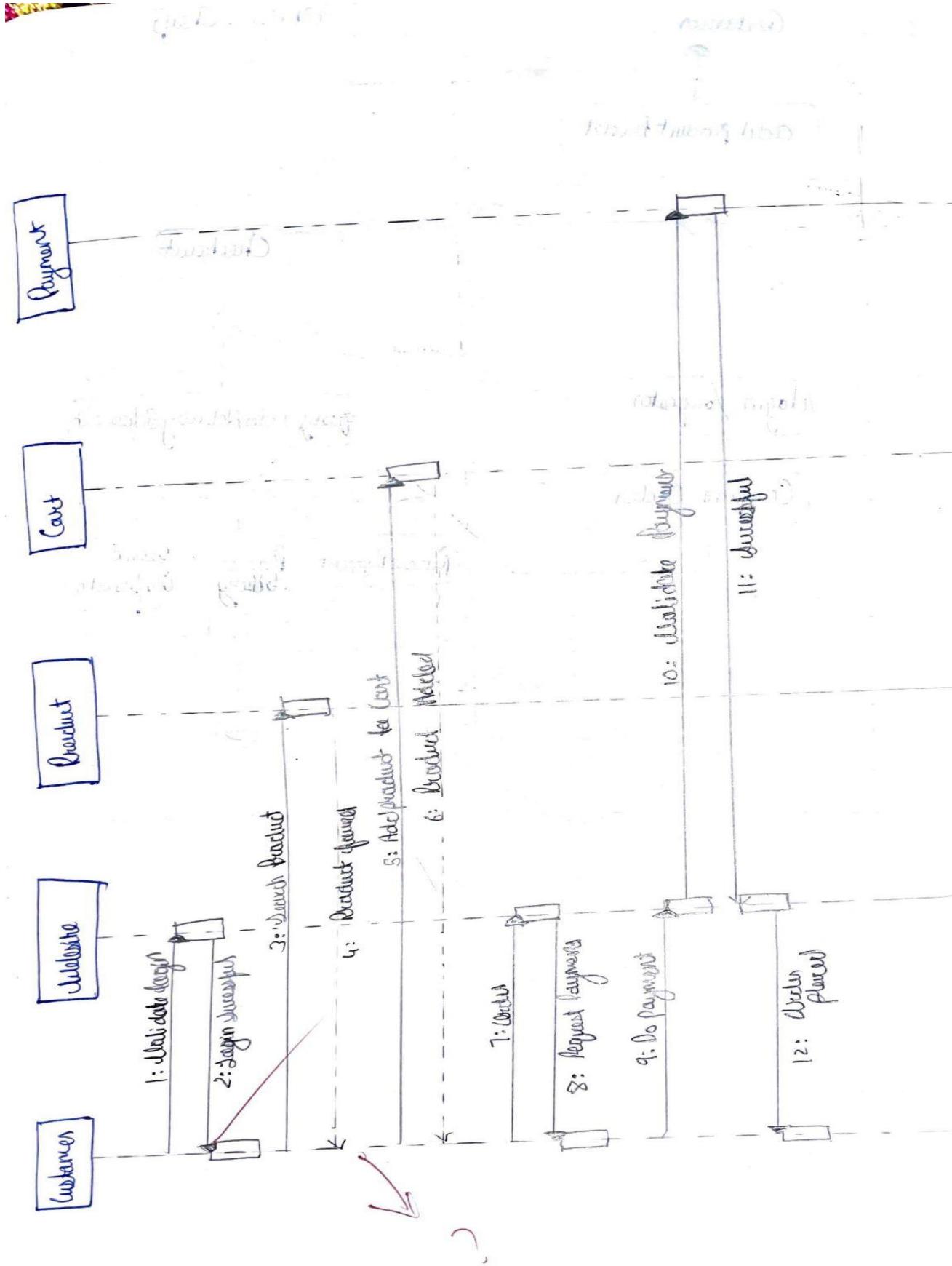


Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

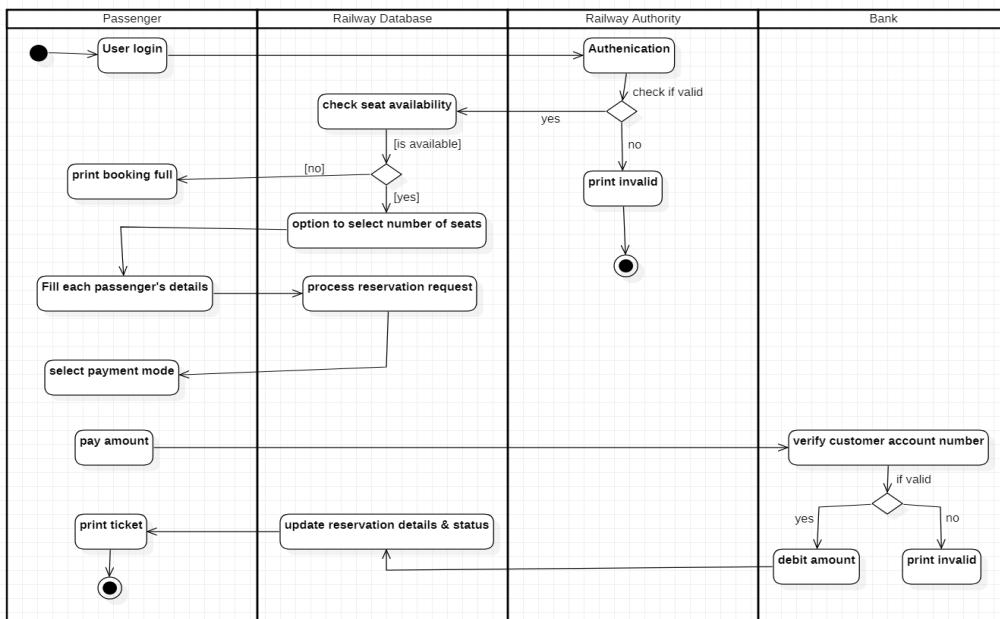
The recursive function of validation is shown by double activation rectangle of validation with self-transition and verify user.Reply message is used to return back to lifelines with the required message.

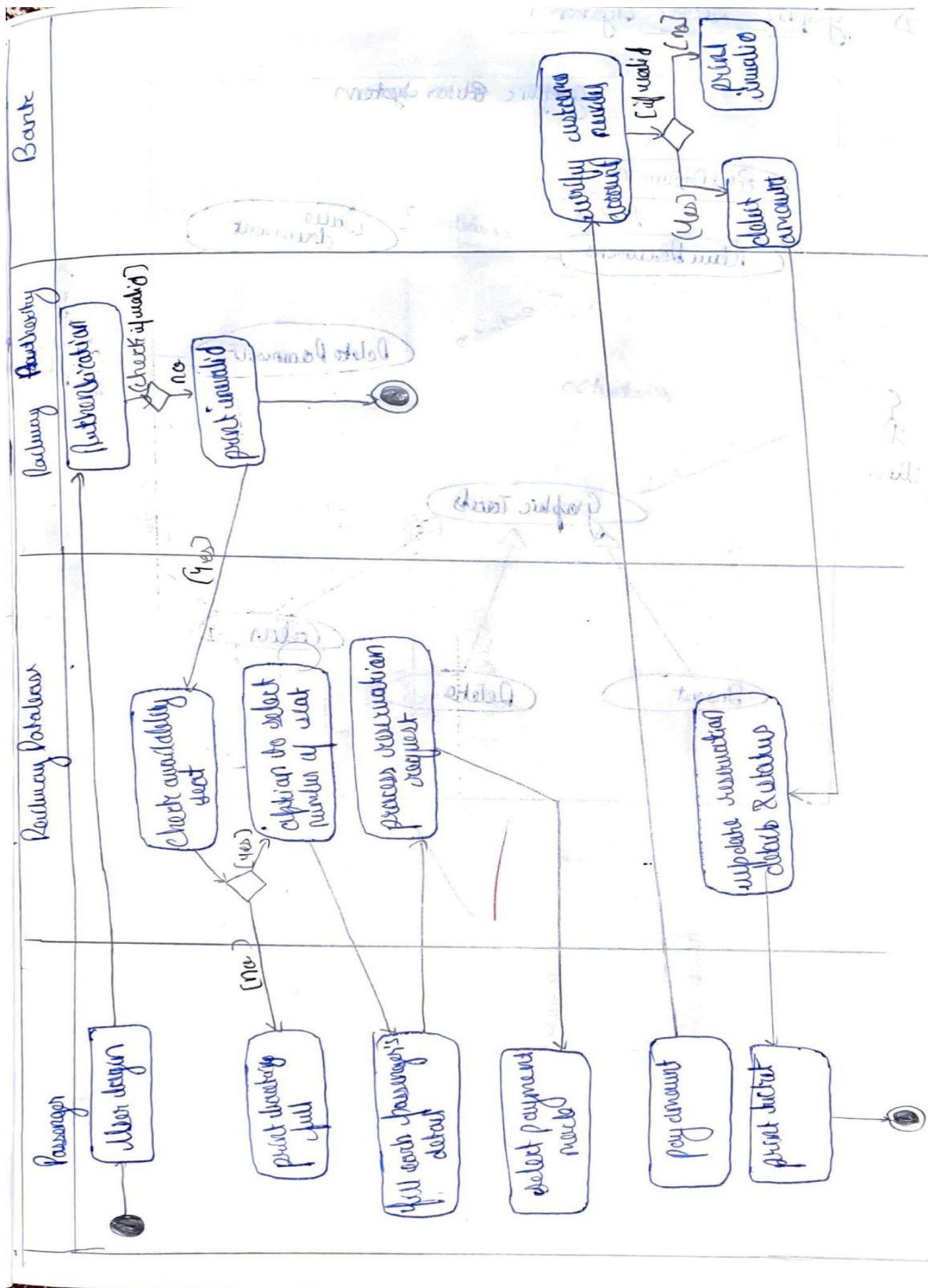




Activity Diagram:

The advanced activity diagram starts from initiation and in the passenger swimlane, the passenger login activity where a signal is sent to the network for request validation and upon confirmation the control flows to check seat availability activity. There are four swimlanes namely passenger, railway database, railway authority and bank where each one indicates the passenger operations, check seat availability, check validation, confirm payment respectively. Then the control flows to the home page and then termination activities.





7. Graphics Editor

Problem statement:

Design UML diagrams for Graphics Editor with system requirements specification.

Software Requirements Specification (SRS):

The graphics editor provides an Application Programmer's Interface that enables a programmer to develop their own graphical model editor for a specific type of model. This API in turn, relies on extending the Eclipse Graphical Editing Framework to provide an environment in which the editor functions, and the programmer can create a graphical editor and palette of shapes in order to modify an underlying model. The graphical editor provides an interface with which the programmer implements said editor for a given underlying model. Such an instance of the graphical editor allows a user to drag objects from a specified model into a working graphical diagram.

It should support following functionalities:

- It contains the toolbox which contains tools like: Line, Circle, Rectangle, Arc, Text, Draw, Eraser
- Color box or palette
- Standard toolbar with options for New, Open, Save, toolbox and Text Toolbox.
- One integrated view to users for toolbar, color box, menu, and graphic screen.
- Easy handling of tools for users.
- Ability to group several drawings into one i.e., complex drawing.
- Provision of zoom in and zoom out.
- Different shadings of line tool are provided

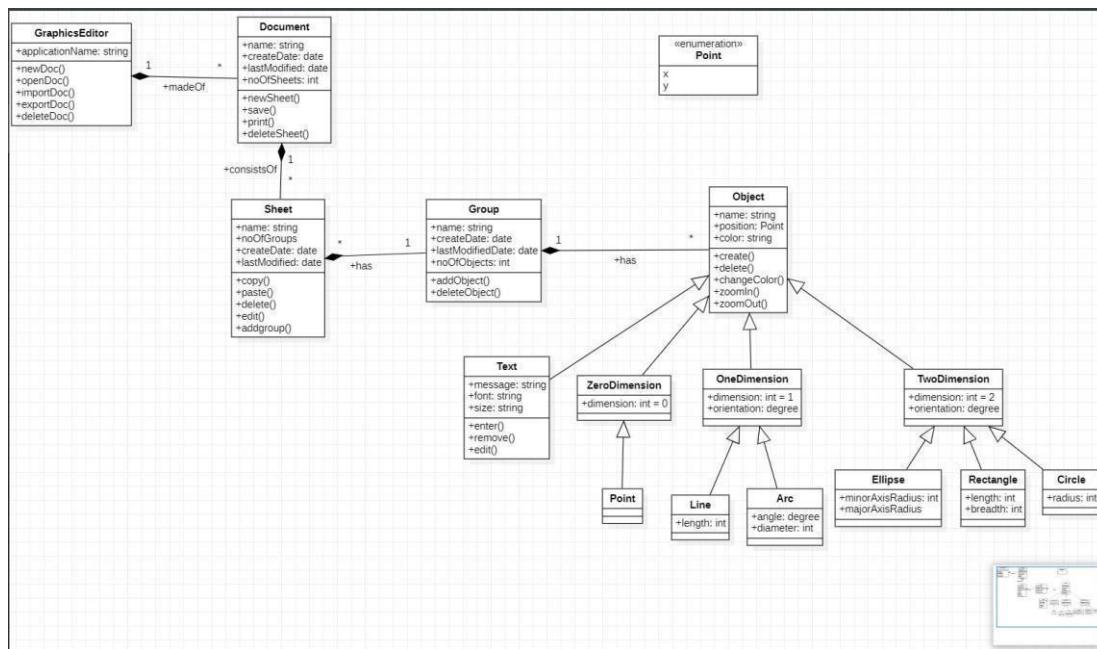
Class Diagram:

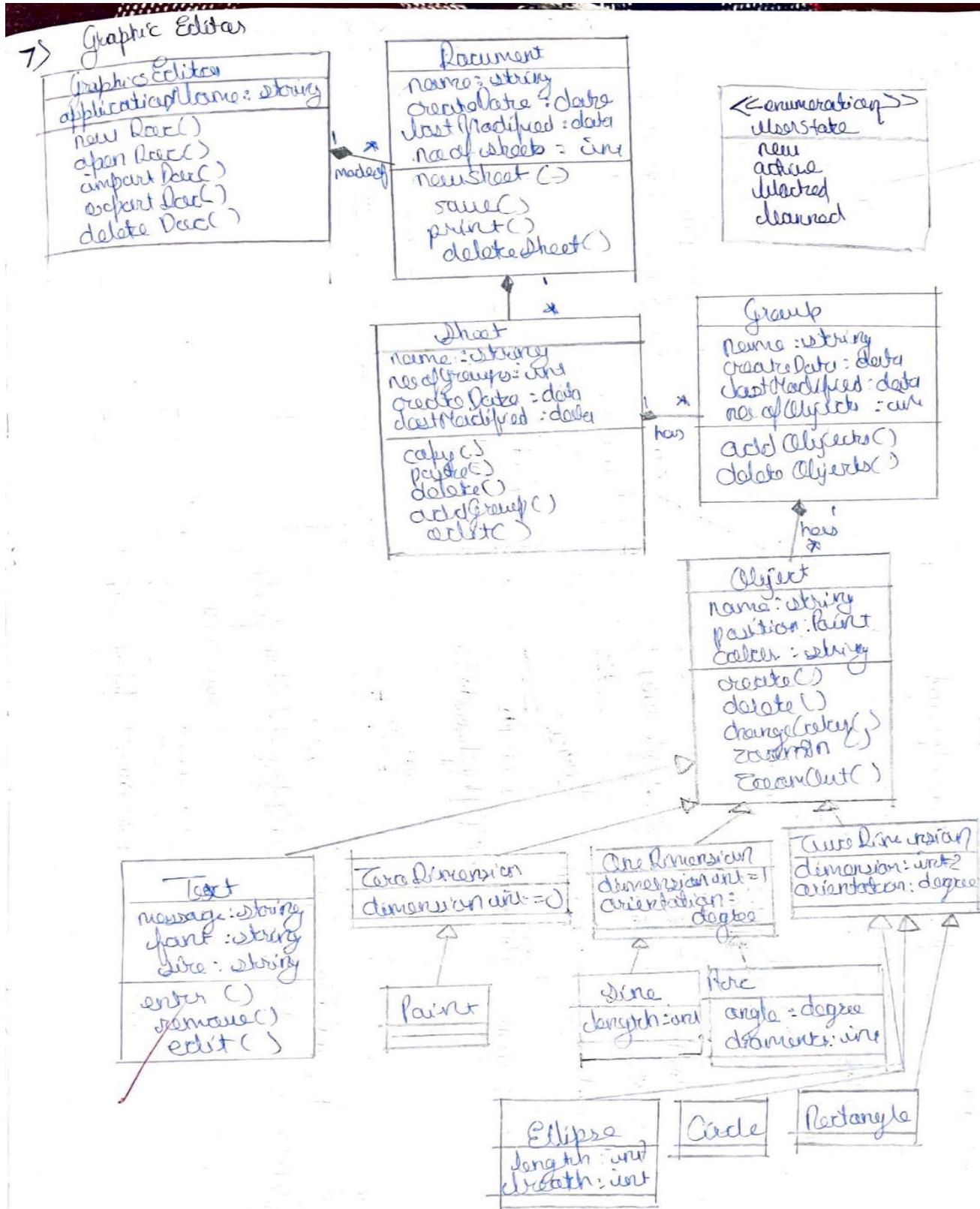
The below shown class diagram contains the following classes: GraphicEditor, Document, Sheet, Group, Object, Text, ZeroDimension, OneDimension, TwoDimension, Point, Line, Arc, Circle, Rectangle, Ellipse with multiplicities as shown.

Generalization: Text, ZeroDimension, OneDimension, and TwoDimension are generalized to Object class. Point is generalized to ZeroDimension, Line and Arc are generalized to OneDimension, Circle, Rectangle and Ellipse are generalized to TwoDimension.

Composition: GraphicsEditor madeof Document, Document containsOf Sheet, Sheet has Group, Group has Object.

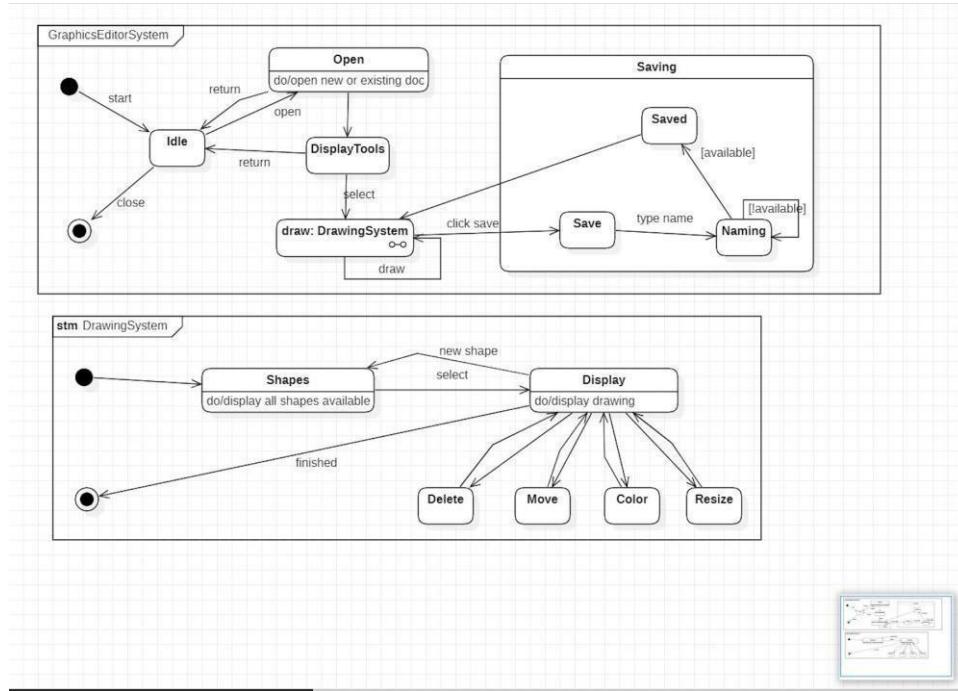
Enumeration: Point

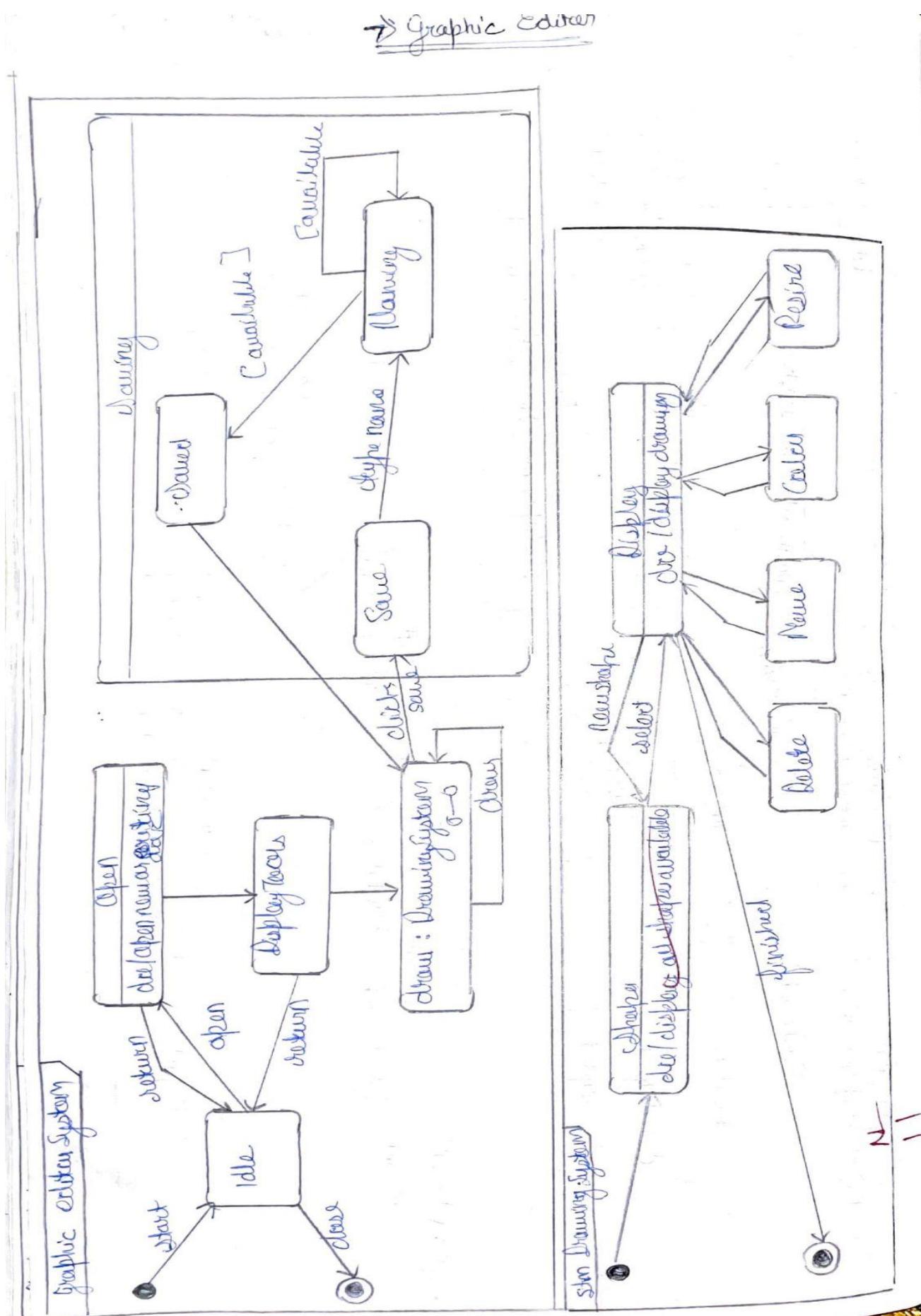




State Diagram:

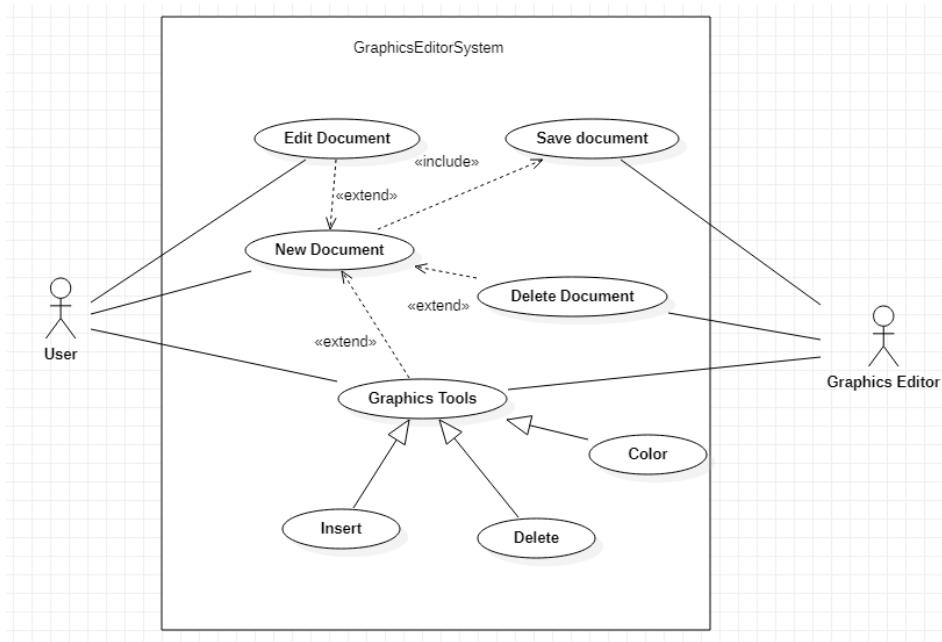
The advanced state diagram depicted below contains one nested state and one submachine, which on successful login shows the Saving procedure and DrawingSystem procedure. It contains initial state and termination state with Saving as a nested state including the required simple states. It also has a submachine state named DrawingSystem with initial, termination state along with simple states; Shapes, Display and format each shape.



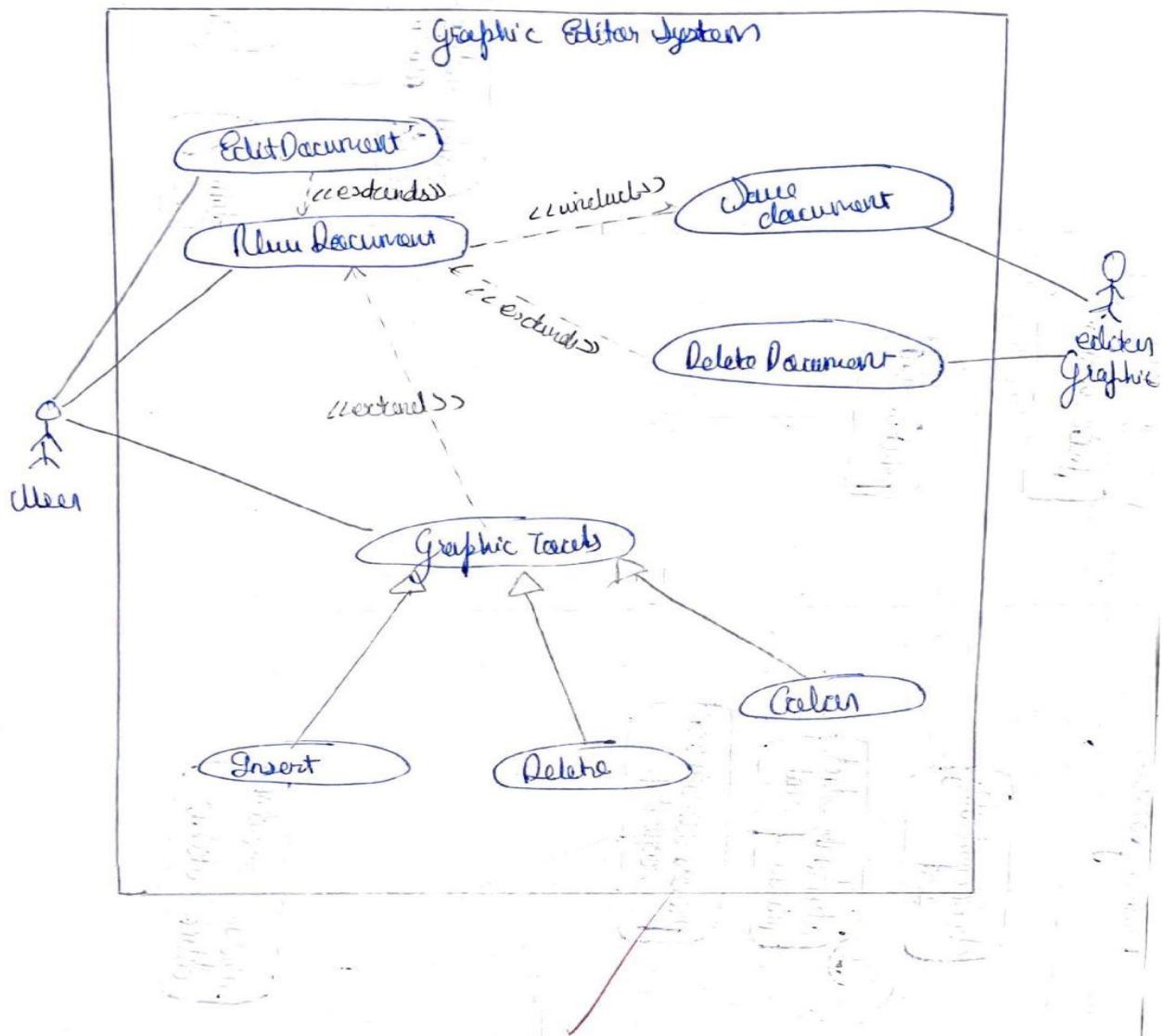


Use Case Diagram:

The advanced use case diagram has extra functionalities which includes extends, includes and generalization. The edit document use case extends new document use case, delete document use case extends new document use case, graphic tools use case extends new document use case, new document use case includes save document use case. Insert, delete and color is generalized to super class graphics tools.



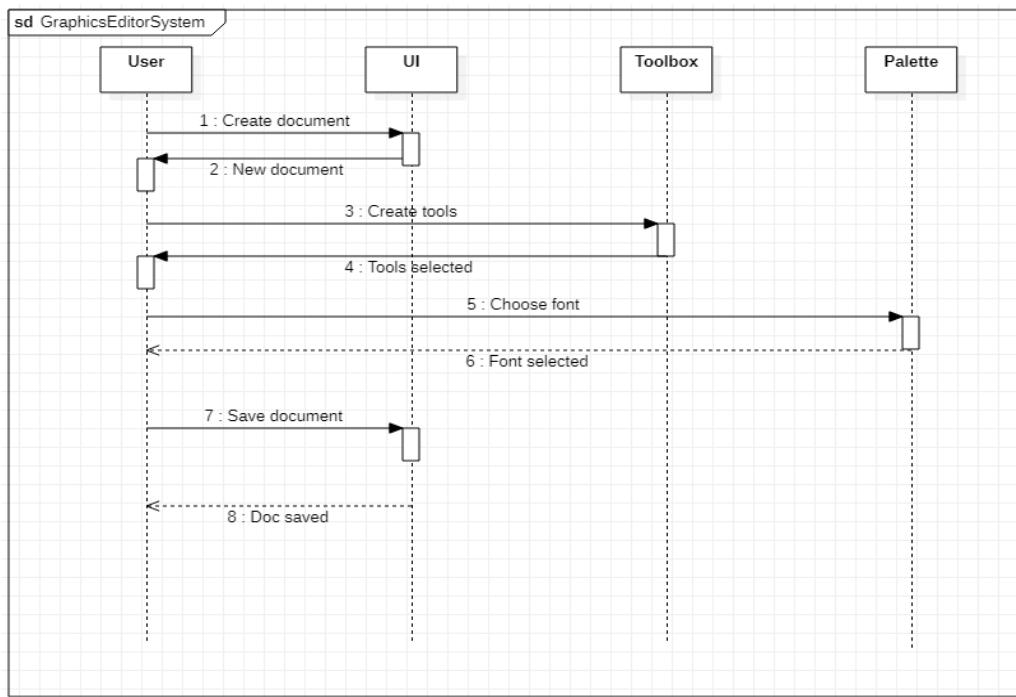
2) Graphic Editor System

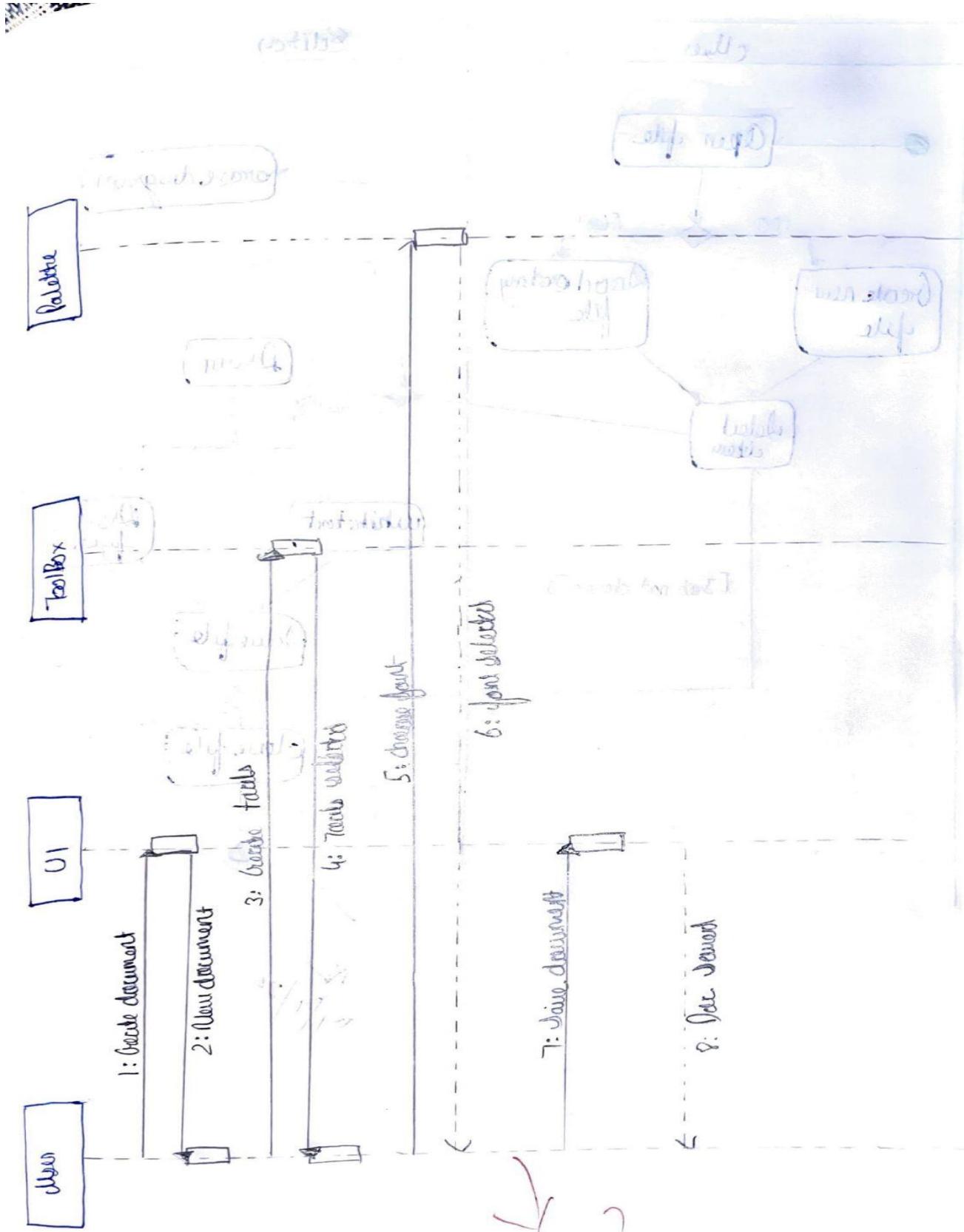


Sequence Diagram:

The lifeline is the dotted line and the rectangles represent the period of time the object is executing and is hence called activation.

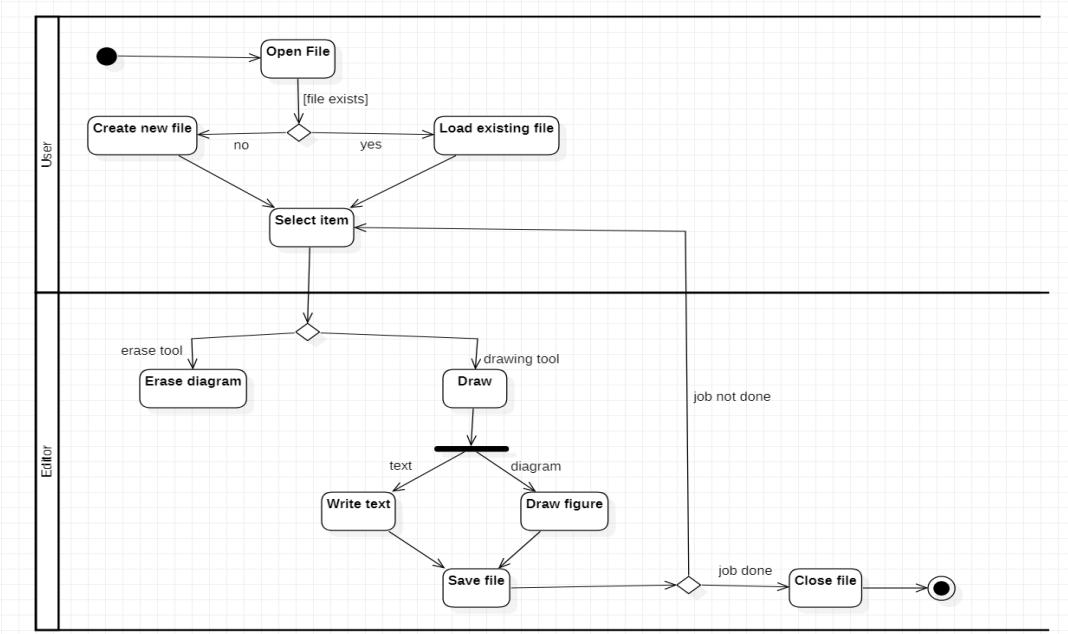
Reply message is used to return back to lifelines with the required message.

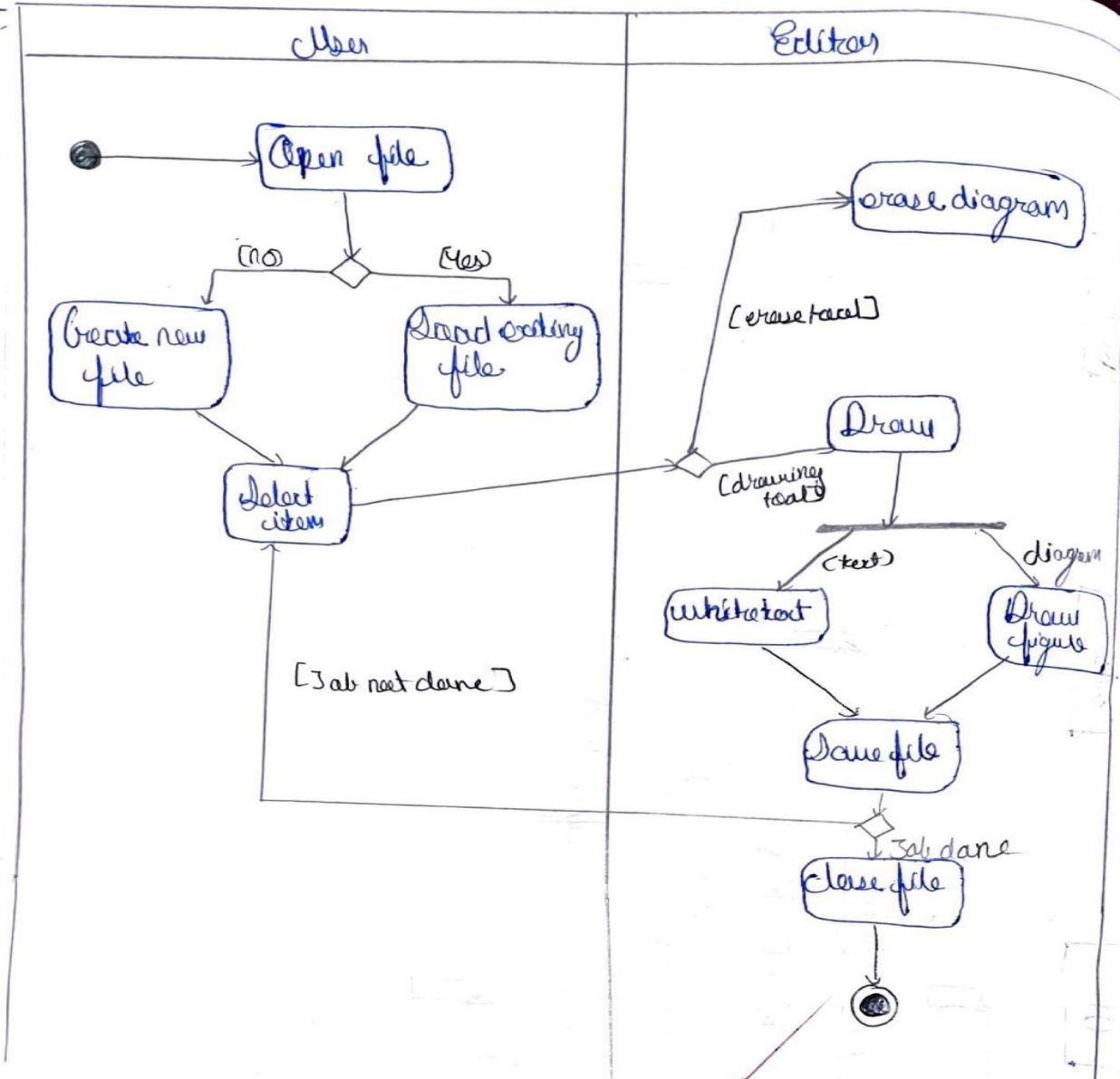




Activity Diagram:

The advanced activity diagram starts from initiation and in the user swimlane, the user login activity where a signal is sent to the network for request validation and upon confirmation the control flows to open file activity. There are two horizontal swimlanes namely user and editor where each one indicates the user operations and drawing a diagram respectively. Then the control flows to the close file activity and then termination activities





✓
1/1/22