

# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.



## LAB REPORT on **Object Oriented Modelling and Design**

*Submitted by*

**Mallika Prasad (1BM19CS081)**

*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**



**CERTIFICATE**

This is to certify that the Lab work entitled “Lab Report” carried out by **Mallika Prasad (1BM19CS081)**, 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 Modelling and Design - (Course code)** work prescribed for the said degree.

**Dr. Madhavu R P**  
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## **Index Sheet**

<b>Sl. No.</b>	<b>Experiment Title</b>
<b>1.</b>	<b>College Information Management System</b>
<b>2.</b>	<b>Hostel Management System</b>
<b>3.</b>	<b>Stock Maintenance System</b>
<b>4.</b>	<b>Coffee Vending Machine</b>
<b>5.</b>	<b>Online Shopping System</b>
<b>6.</b>	<b>Railway Reservation System</b>
<b>7.</b>	<b>Graphics Editor</b>

### **Course Outcome**

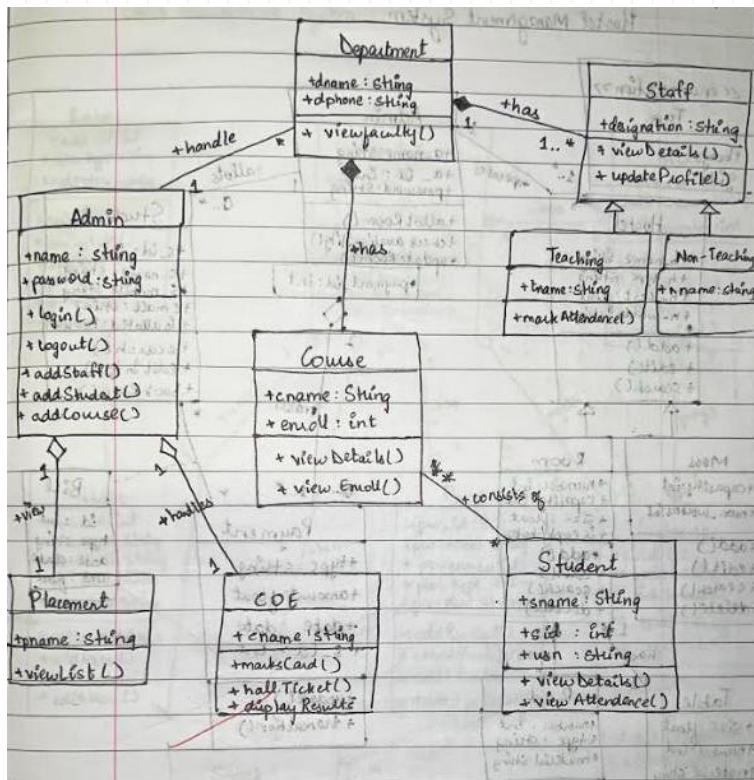
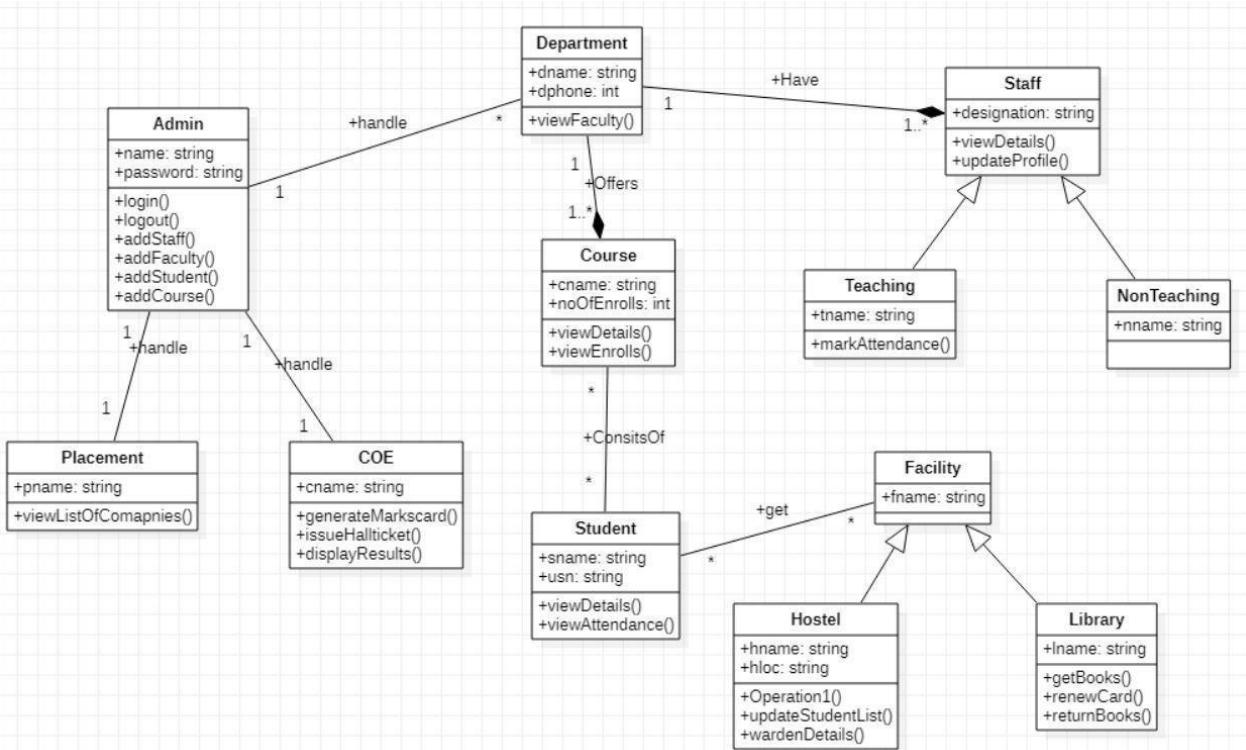
<b>CO4</b>	Ability to conduct practical experiment to solve a given problem using Unified Modeling language.
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# College Information System

## 1. Software Requirement Specification

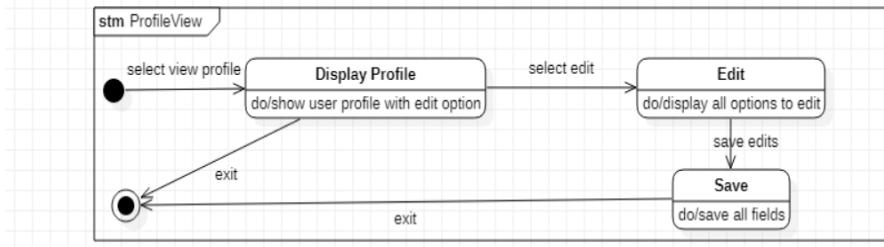
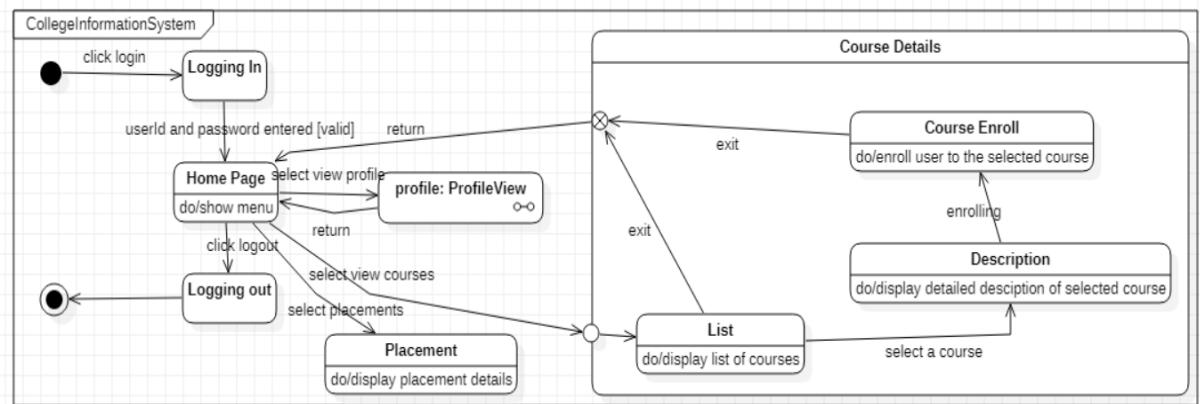
Software Requirement Specification SRS	
College Information System	
→ Administration	<ul style="list-style-type: none"><li>→ should add details of new student</li><li>→ should add details of new faculty</li><li>→ should add new courses, etc</li></ul>
→ Student	<ul style="list-style-type: none"><li>→ view information about courses and department</li><li>→ should be able to view results and attendance</li><li>→ choose courses / electives</li></ul>
→ Faculty / Staff	<ul style="list-style-type: none"><li>→ view courses and list of students enrolled</li><li>→ add attendance of students and marks of CIE</li><li>→ view staff attendance and apply for leave/vacation</li></ul>
→ Department	<ul style="list-style-type: none"><li>→ add information about staff and students</li><li>→ add attendance and view results of students</li><li>→ edit the courses offered by the department</li></ul>
→ Placement	<ul style="list-style-type: none"><li>→ information / database of students</li><li>→ companies visiting college for placements</li><li>→ job offers and internship confirmations</li></ul>
→ Course	<ul style="list-style-type: none"><li>→ list of courses offered by all the departments in one database</li><li>→ list of students enrolled for each course.</li><li>→ appointment of teachers for each course allotment</li></ul>

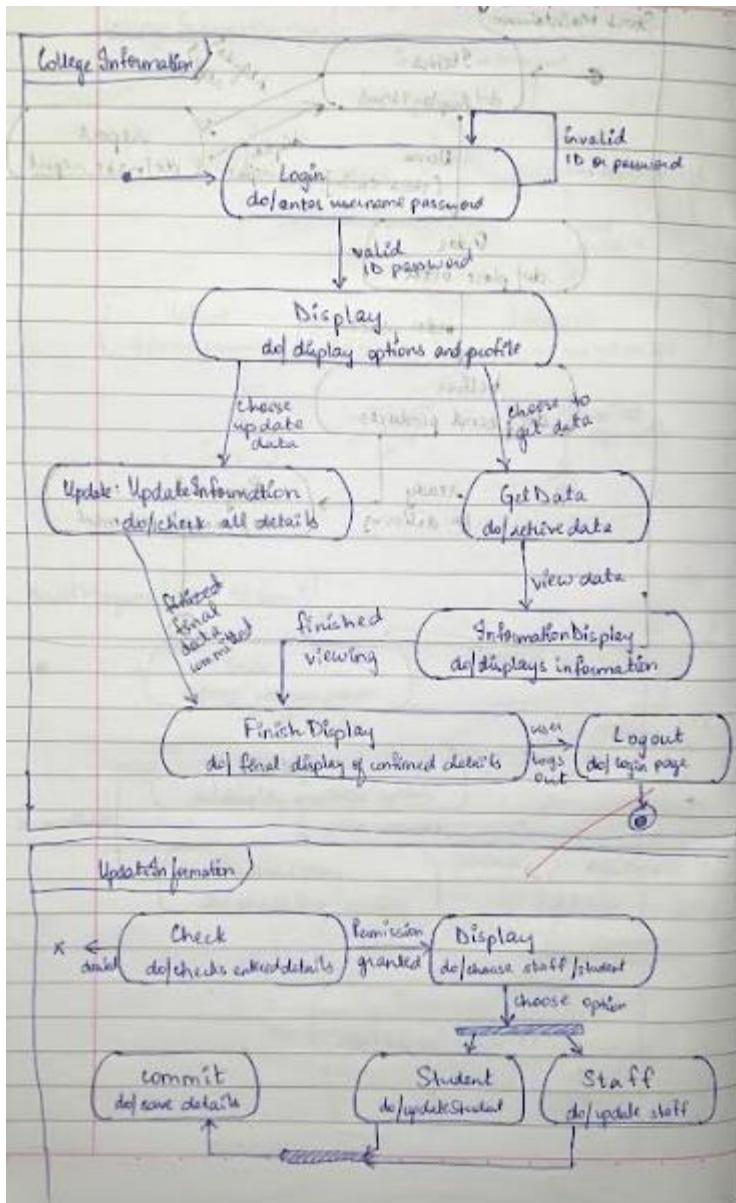
## 2. Advanced Class Diagram



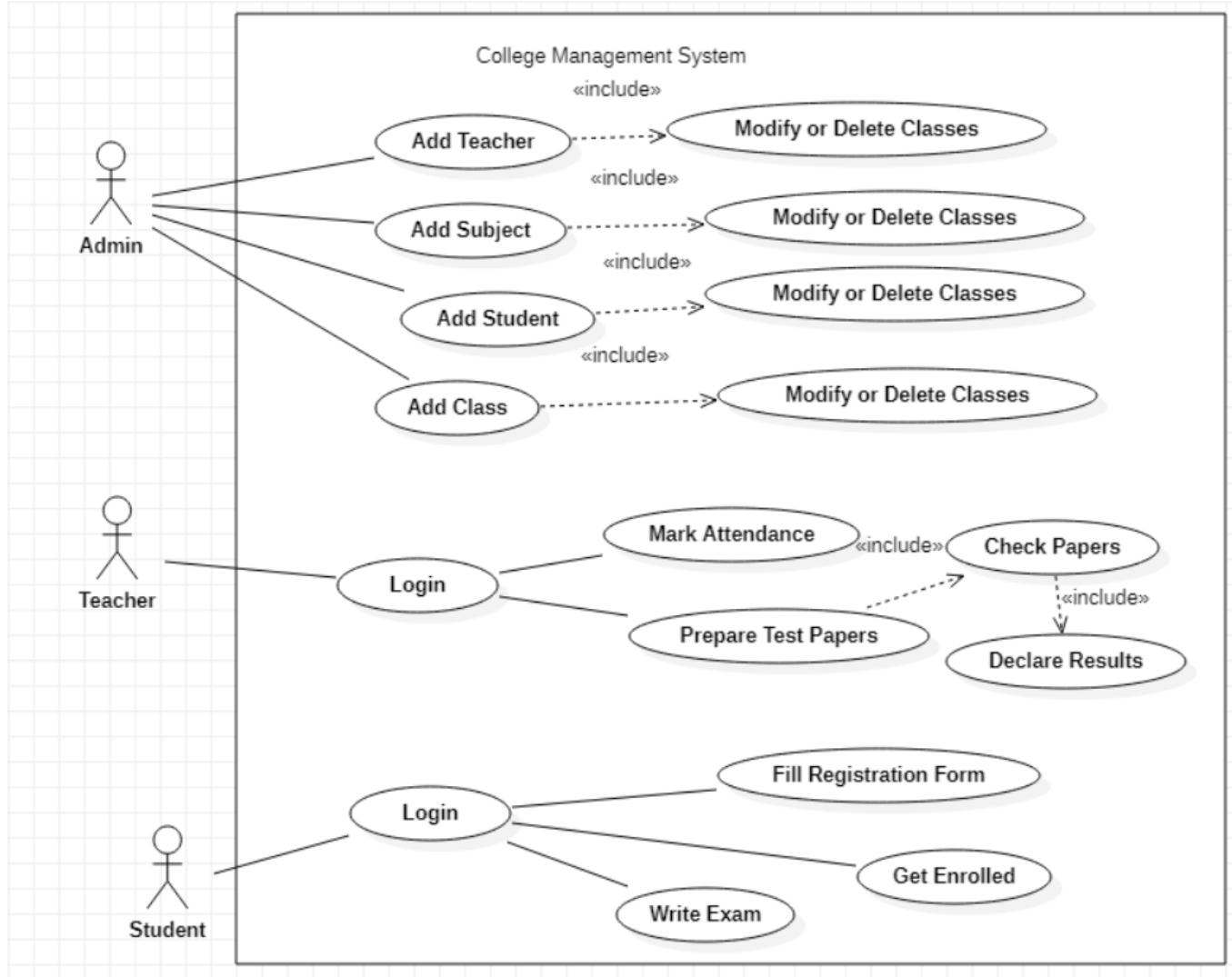
### 3. Advanced State Diagram

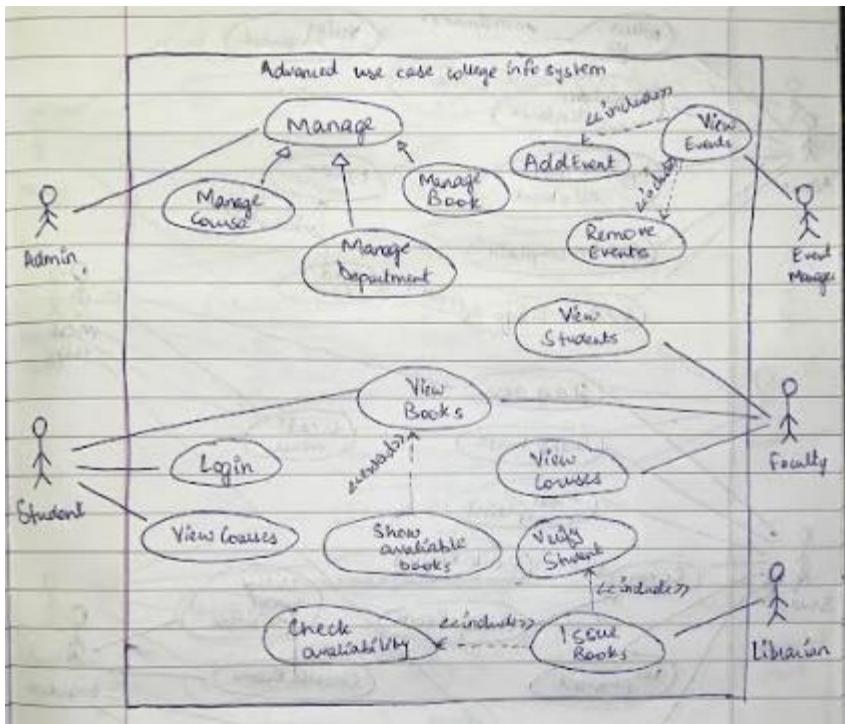
The state diagram describes the states the admin goes through in uploading information of student, staff and department. The admin first needs to login which then leads to the validate state, where the login id and password are validated. If invalid it then goes back to the login state or goes to the get information state. Upon receiving the correct information it goes to the upload state and then to commit state to save all changes. The admin first needs to login and be cleared of their permissions. The admin can then manage information related to the student, teacher ,or department. After necessary changes the admin can update the information and logout from the system





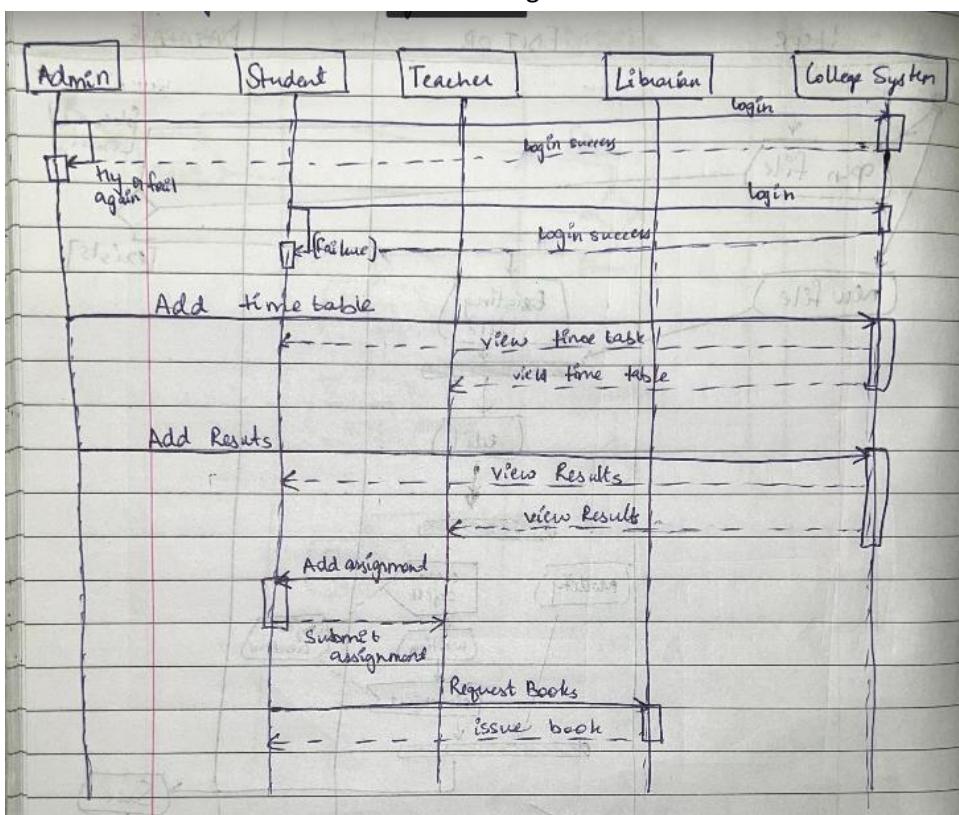
## 4. Advanced Usecase Diagram

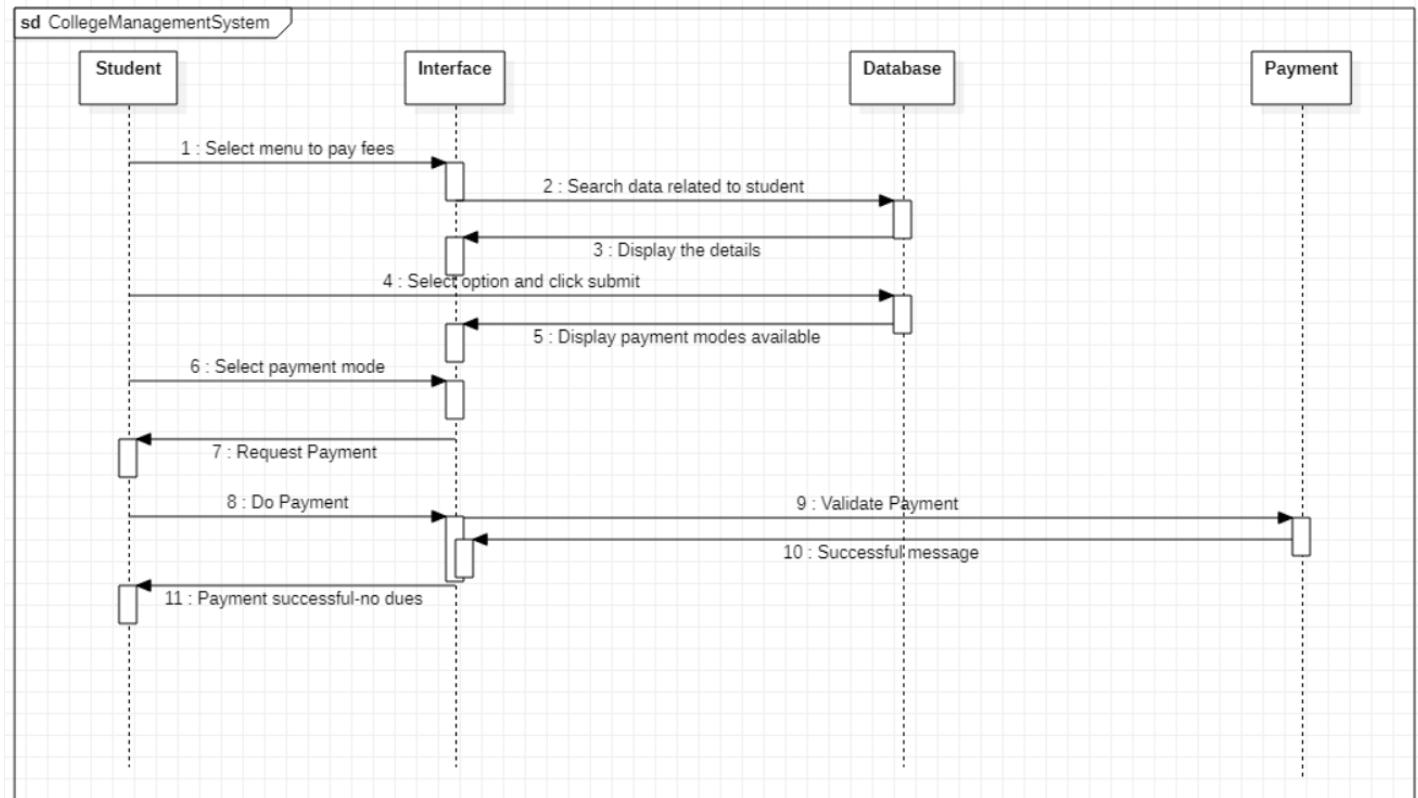




## 5. Advanced Sequence Diagram

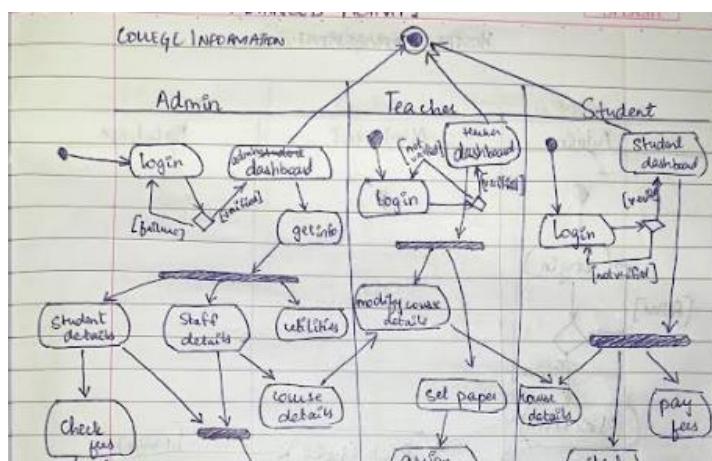
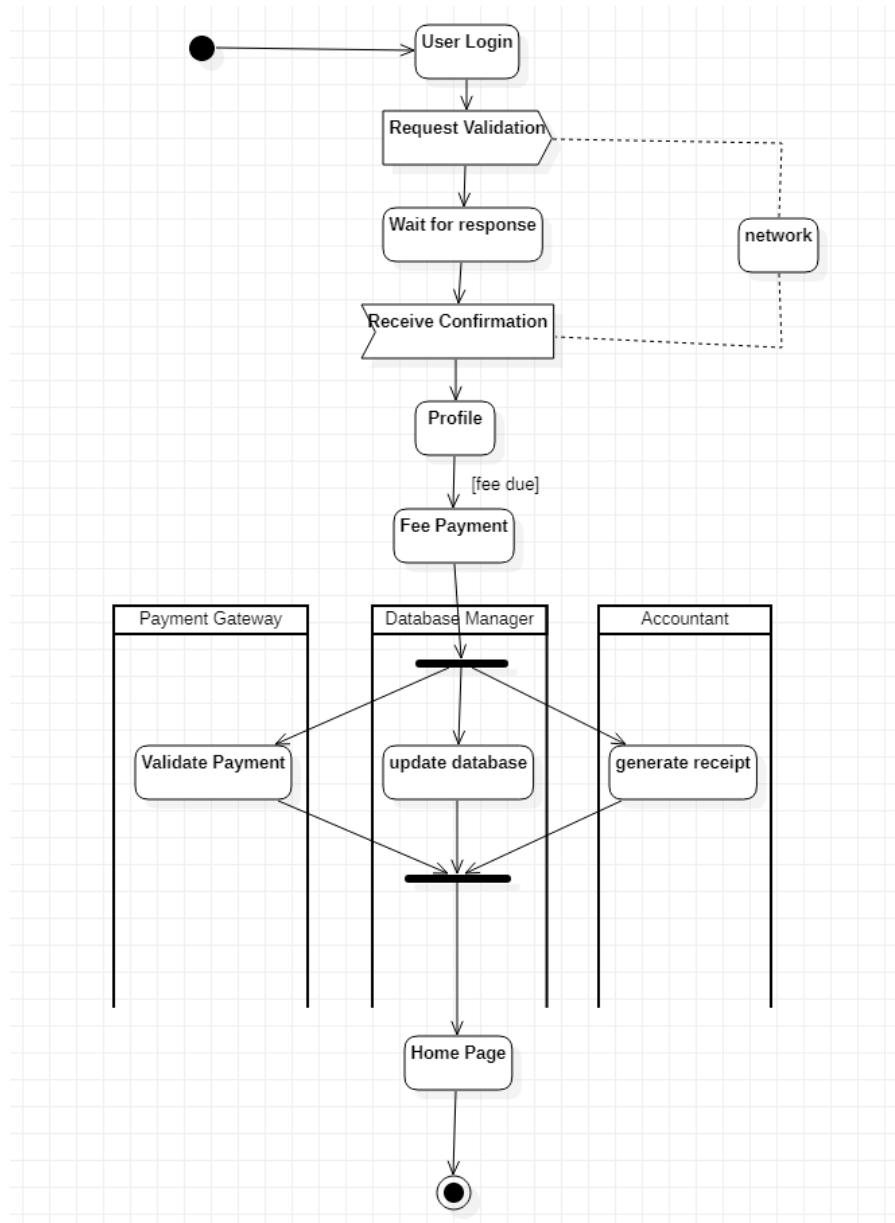
The sequence diagram gives us the steps in accessing the marks ,events and timetable of the student and staff from the database if the login was success





## 6. Advanced Activity Diagram

The activity diagram has three swim lanes Admin, Teacher and Student. The admin can login and manage information. The database verifies the login information and on success has two options. He teacher can view attendance, view course details, and view student list.

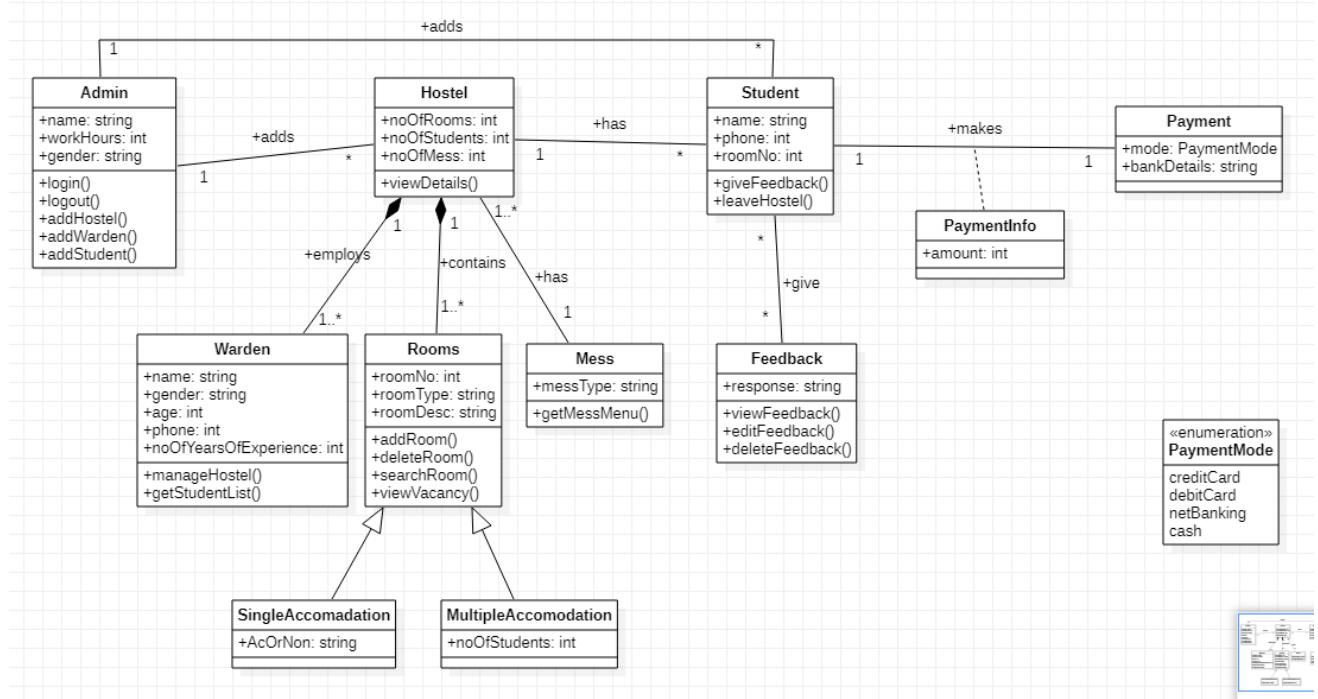


# Hostel Management System

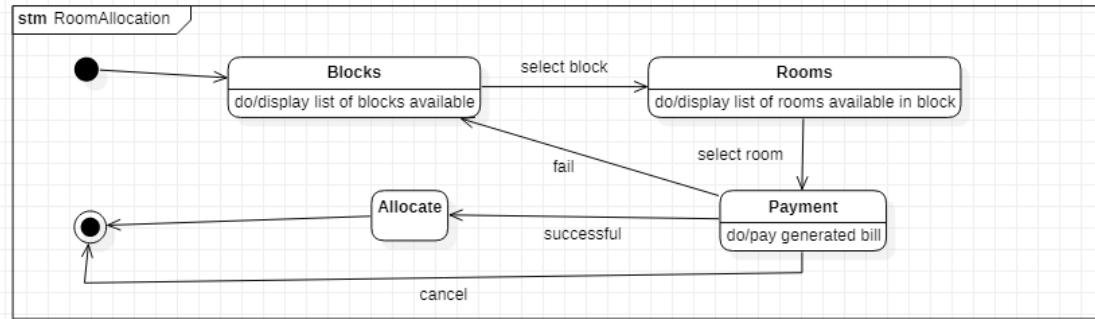
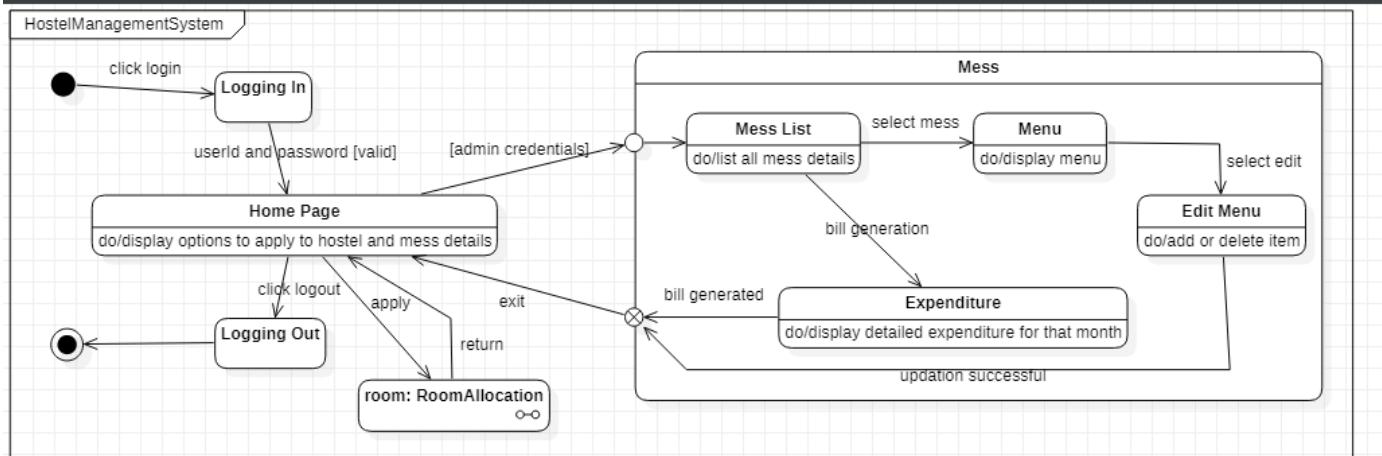
## 1. Software Requirement Specification

Hostel Management System	
Date _____	Page _____
LEADER	SPLASH
→ Hostel	→ view details of rooms in the hostel → total number of rooms and students → allocation of each student and student details
→ Administration	→ add new Student who enters in the hostel → view details of all Students and facilities chosen → mess food and details about cooks and helpers → add new warden and view details
→ Student	→ student's information and details to be editable → give feedback about hostel and room, complains → enquiry / request for change of room or hostel
→ Warden	→ edit information about warden → view details of no. of rooms → view student information of rooms and attendance
→ Rooms	→ type of rooms classification and details → student allocated in room, details and view → occupancy and vacancy of rooms
→ Mess	→ food-available menu for the day → request for special type of food

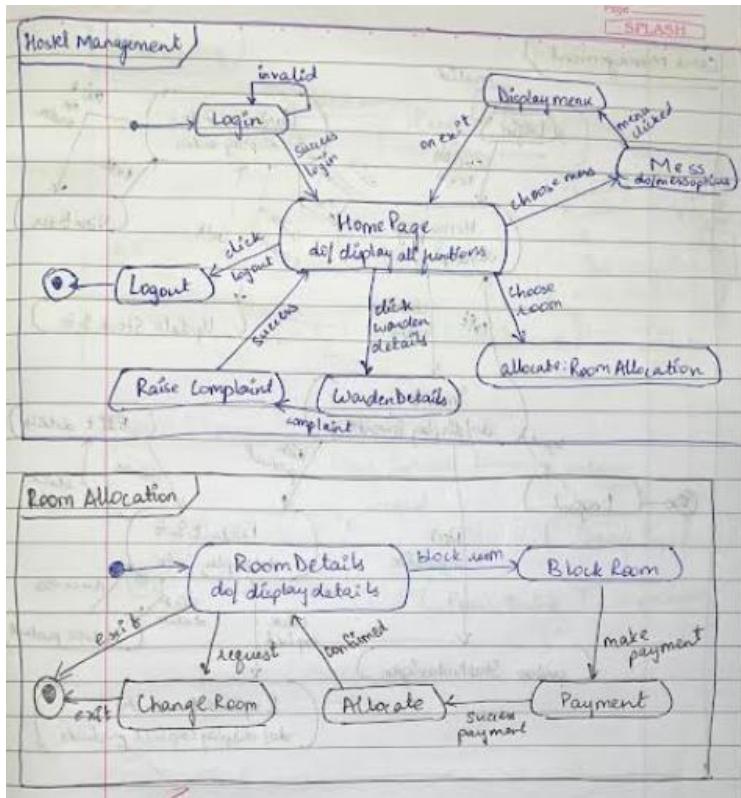
## 2. Advanced Class Diagram



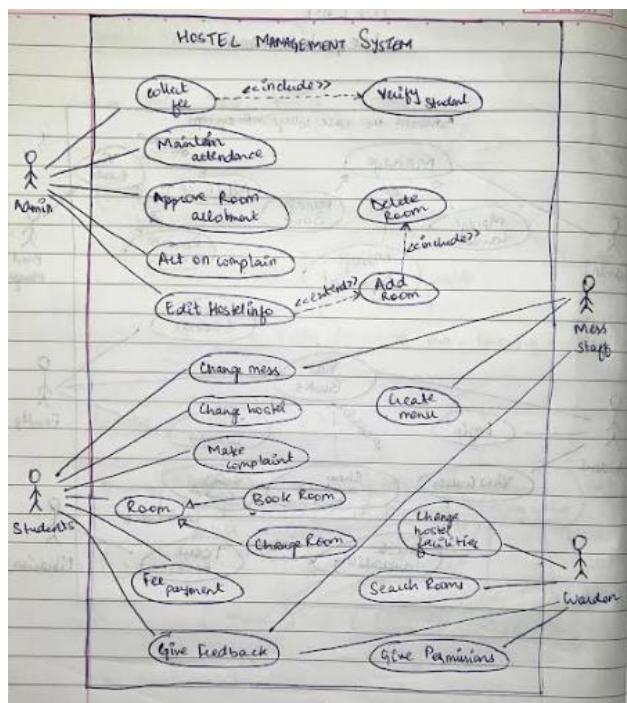
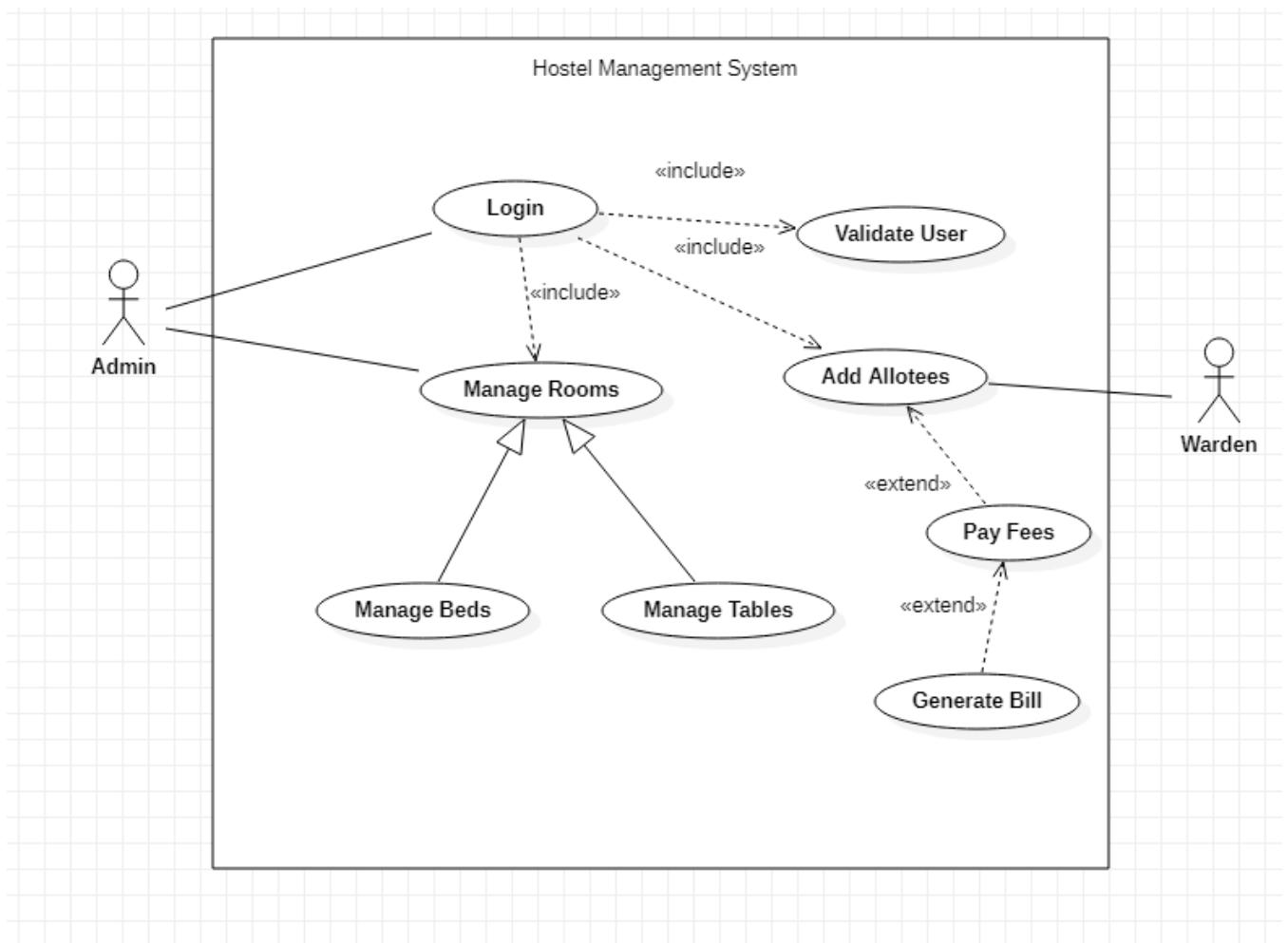
### 3. Advanced State Diagram



The above state diagram gives the of states in allotting a room to a student. The admin allots rooms for students. The admin first login s to the database ,which displays a set of options. the admin then chooses to allot rooms and finds the availability for rooms. If rooms are available then the admin allots room to the student and when successful the student makes the payment. If no rooms are available, a message is displayed and control goes back to the display state.

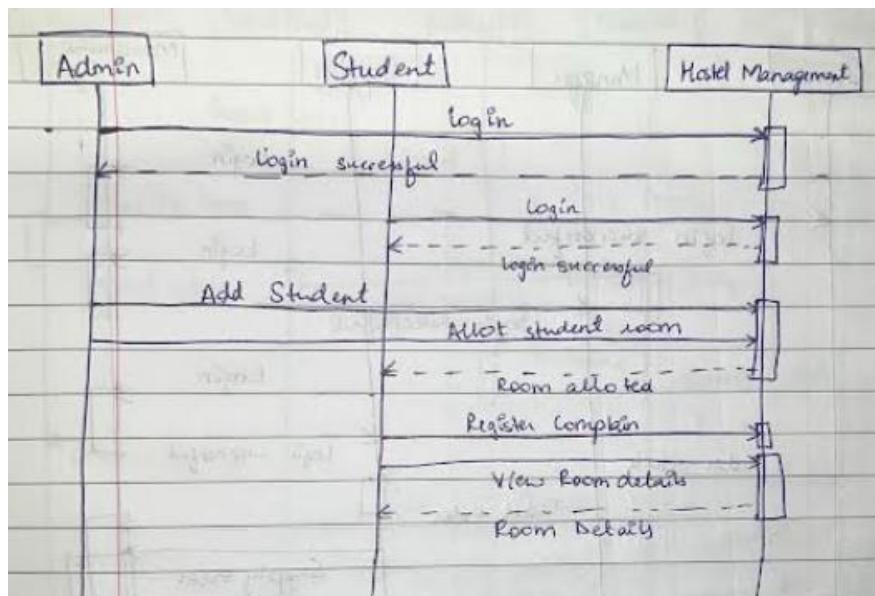
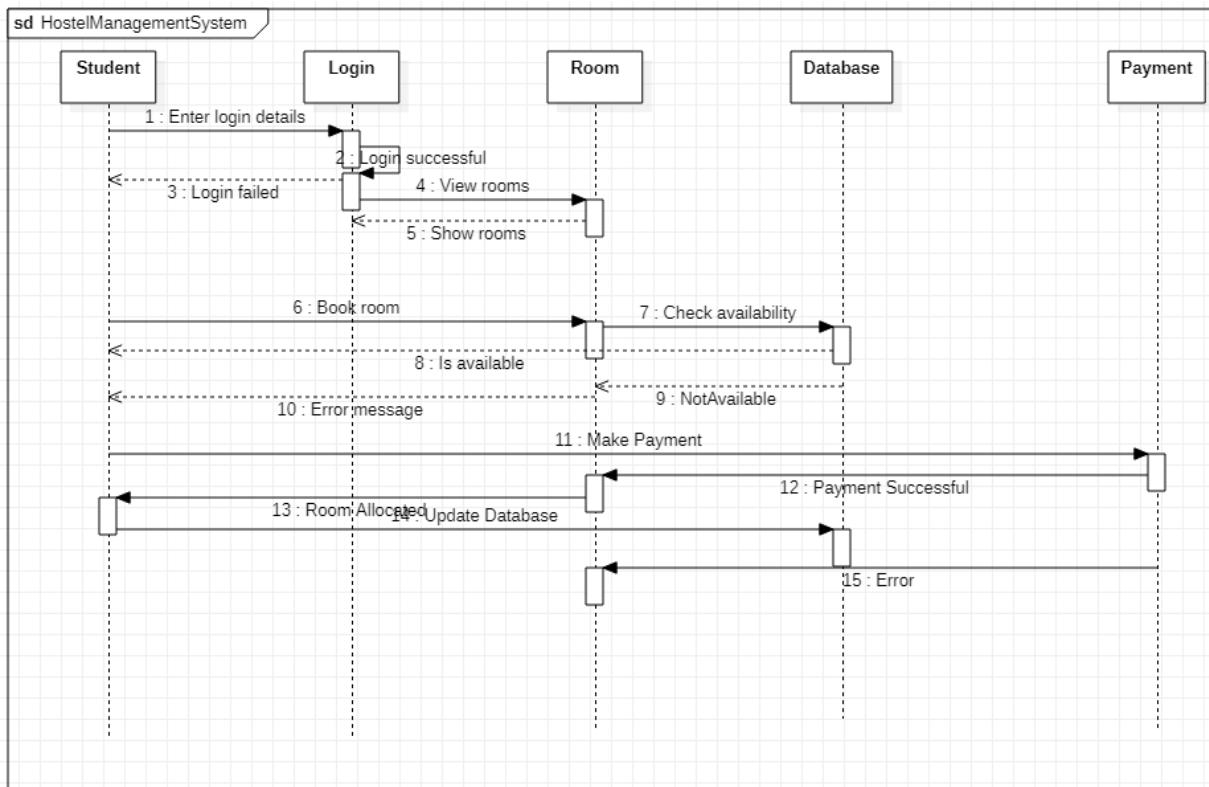


#### 4. Advanced Usecase Diagram



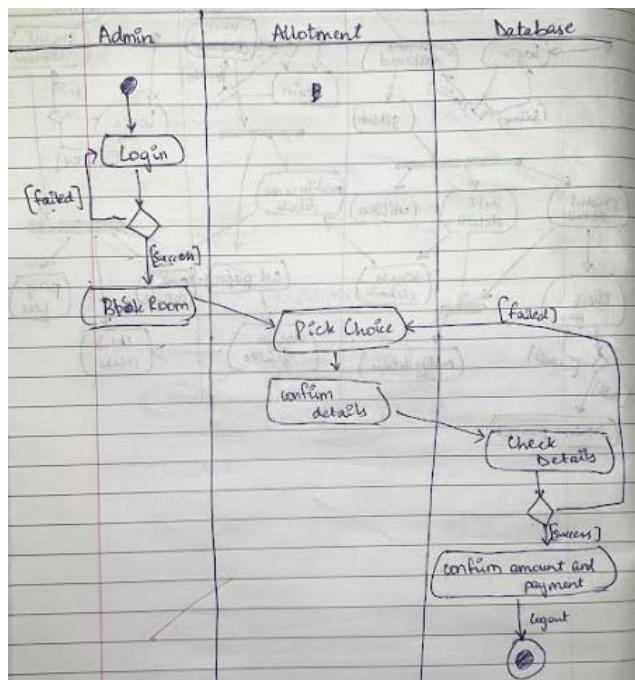
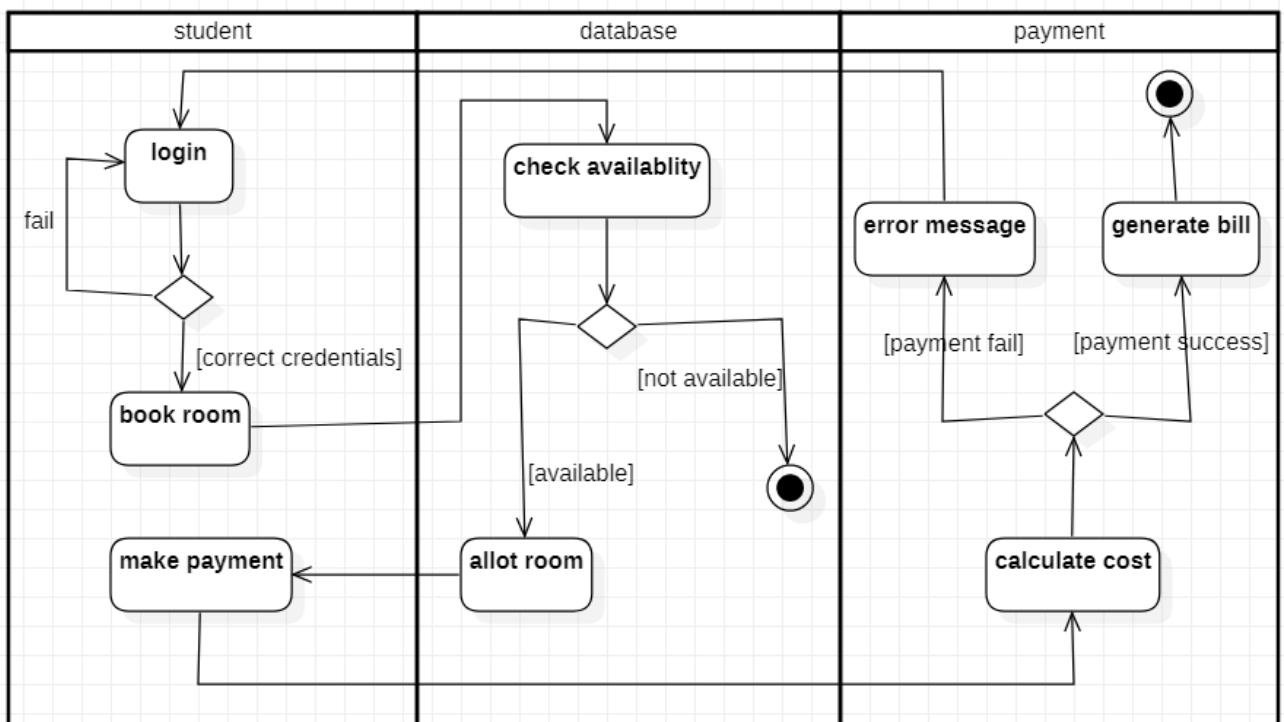
## 5. Advanced Sequence Diagram

The above sequence diagram give the steps involved in a student logging in, booking a room, registering complains and viewing feedbacks which is verified in the system.



## 6. Advanced Activity Diagram

The activity diagram tells about the activities involved in payment of fees. The above activity diagram give the steps involved in a student logging in, booking a room, which is verified in the database and the payment for the same is made by the student.

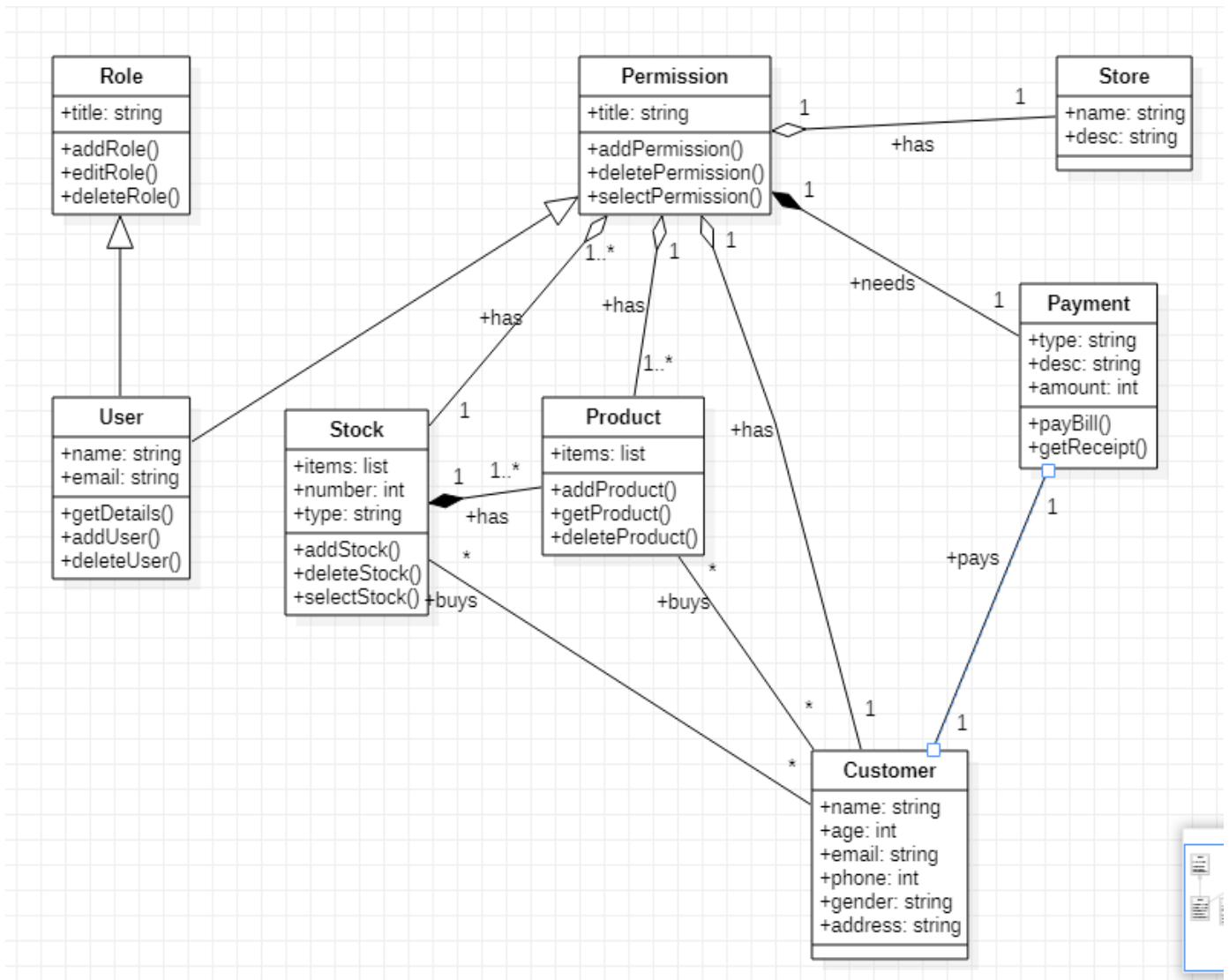


# Stock Maintenance System

## 1. Software Requirement Specification

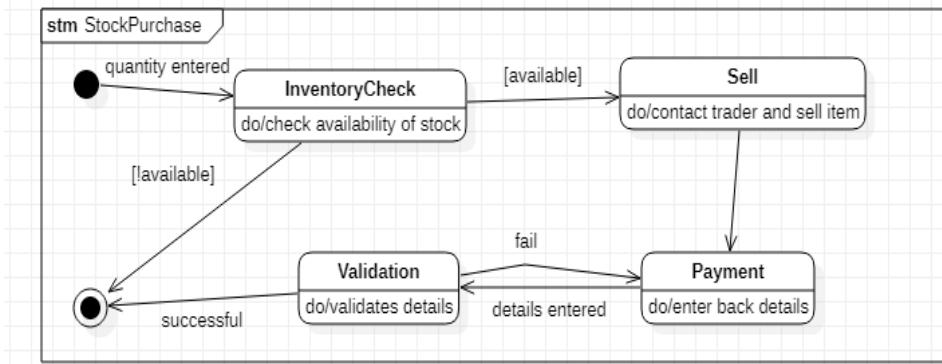
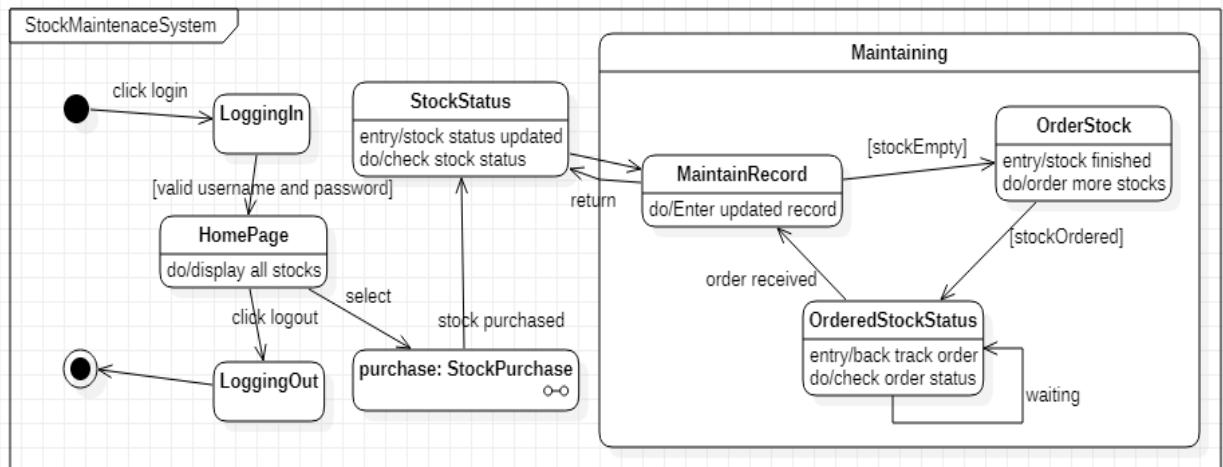
- Stock Maintenance System
- User
    - details of user and email address
    - add and remove users
    - stocks bought and sold by the user
  - Stock
    - details about the stock and availability
    - no. of stocks bought with the price
    - list of stocks and companies to be viewed
  - Product
    - add details of the product
    - edit and delete product information
    - all the products and stocks to be stored in a list.
  - Customer
    - details of the customer
    - stock bought previously
  - Permission
    - should provide access to view stock details and also purchase or sell stocks
  - Payment
    - methods of payment available
    - Bill details and information
    - provide receipt after payment

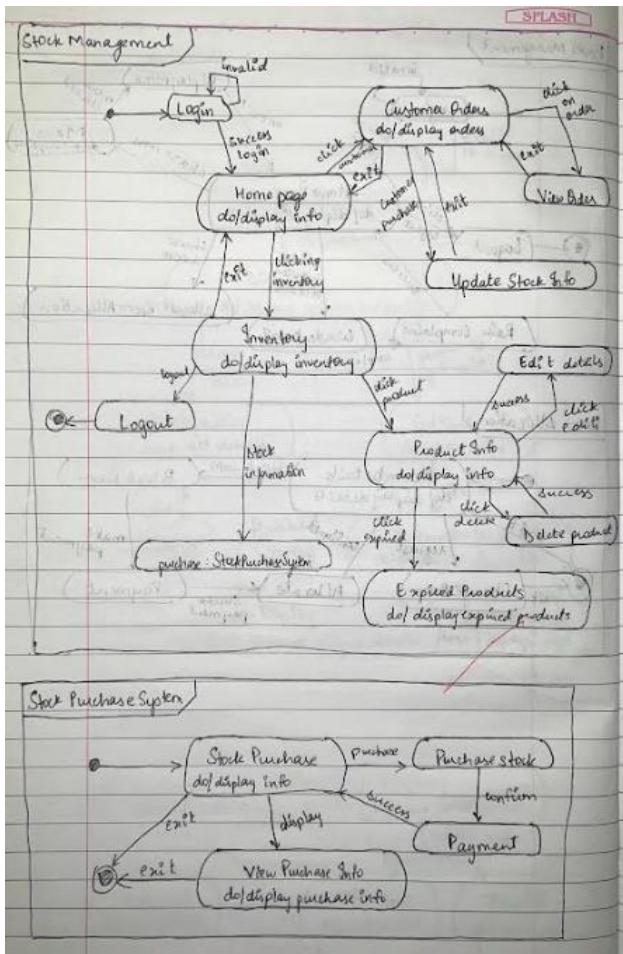
## 2. Advanced Class Diagram



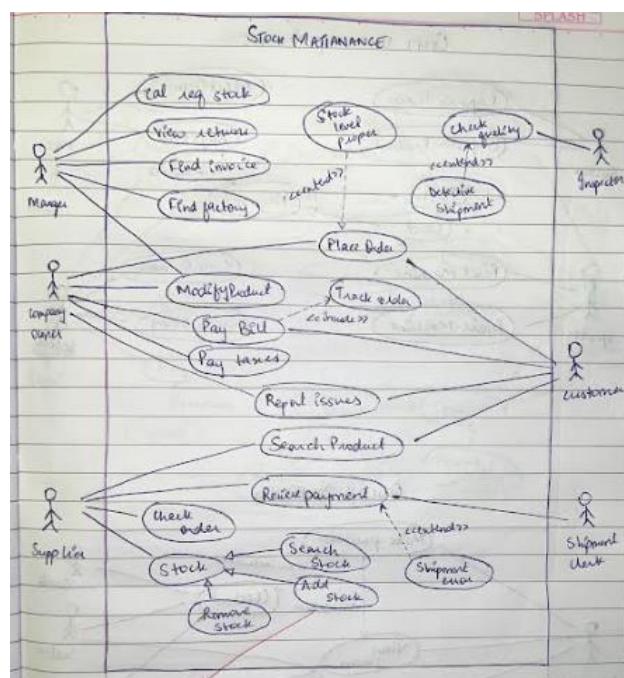
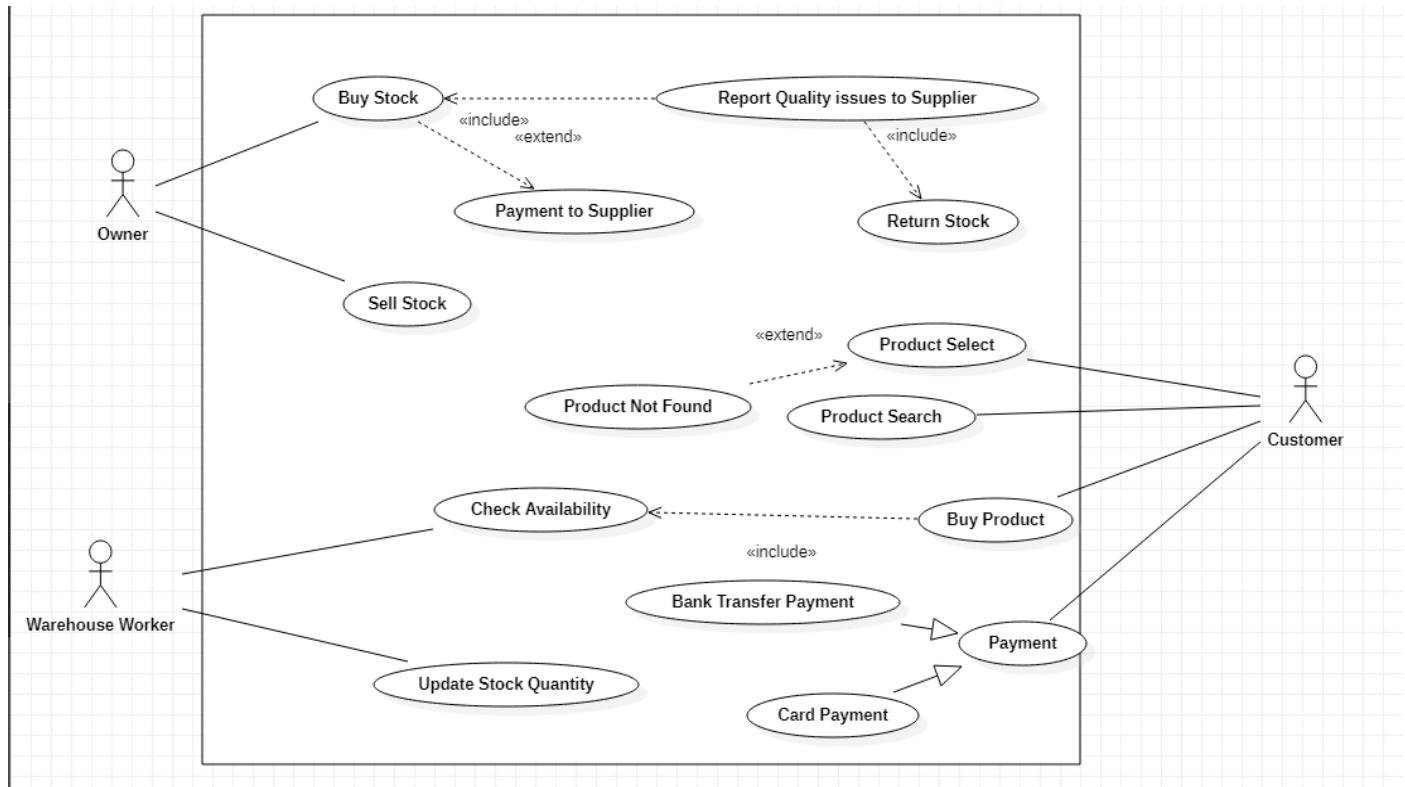
### 3. Advanced State Diagram

The state diagram gives us the states involved in purchasing a product and placing the order for the same. There is first an inventory check ,where is stock of products is noted and if the stock is less than minimum an order is placed by first searching for suitable trader . if a suitable trader is found , the order is placed and verified by the accountant. After the accountant has verified a payment is made for the product



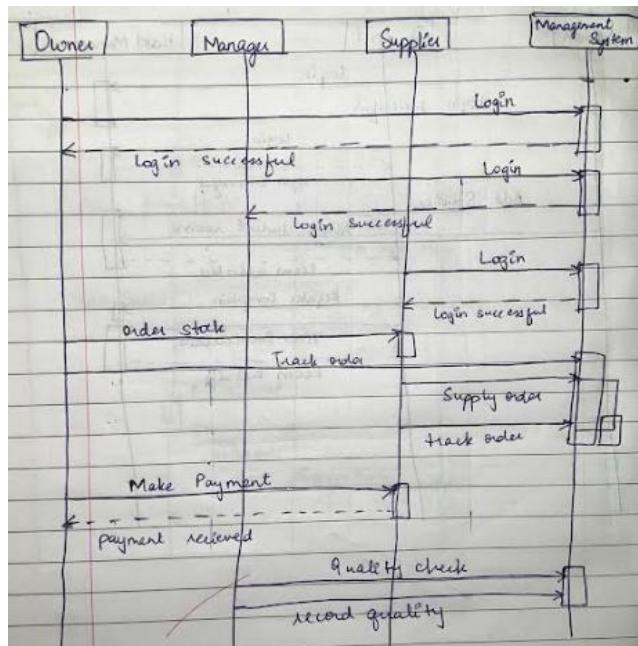
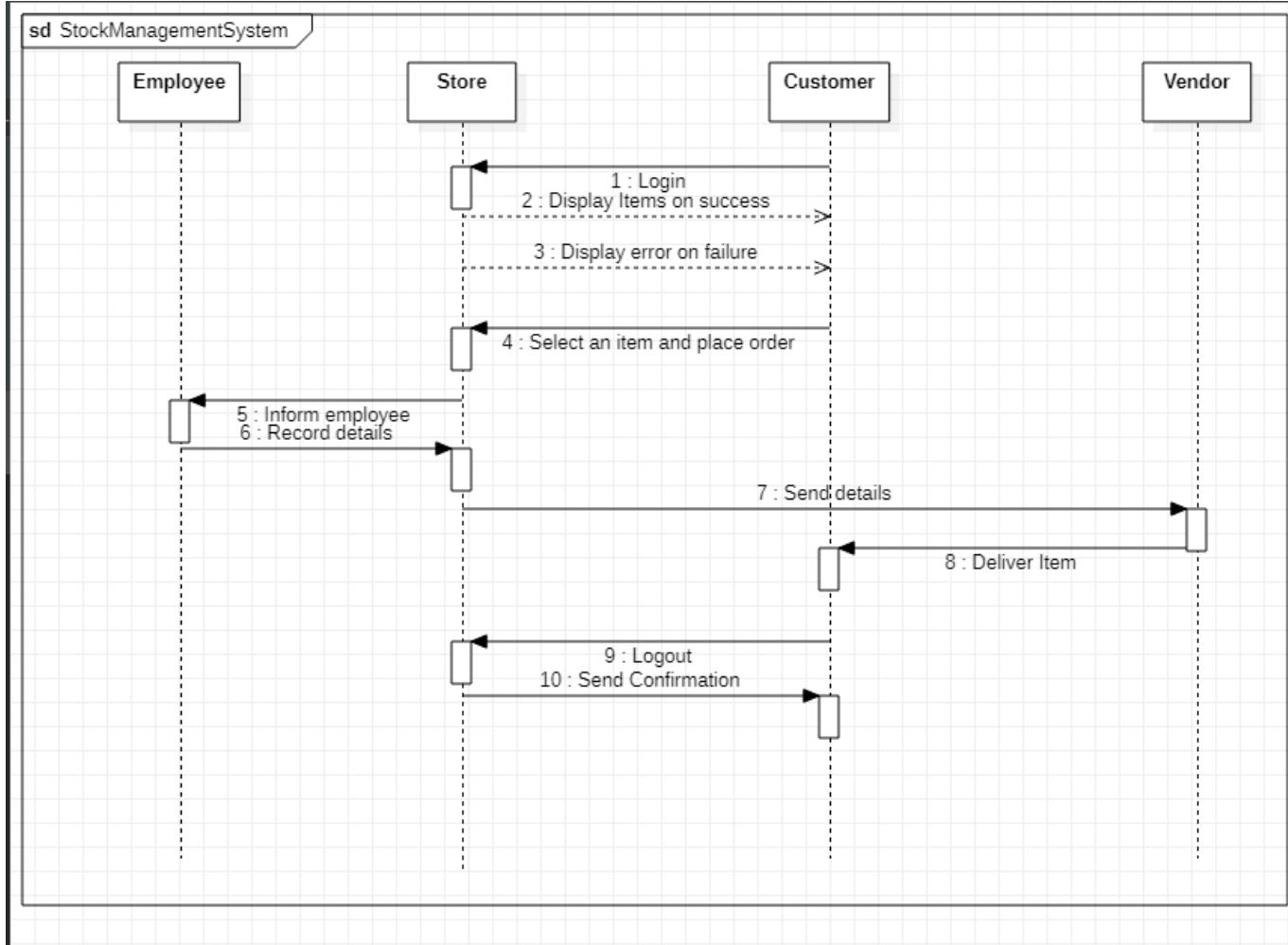


#### 4. Advanced Usecase Diagram



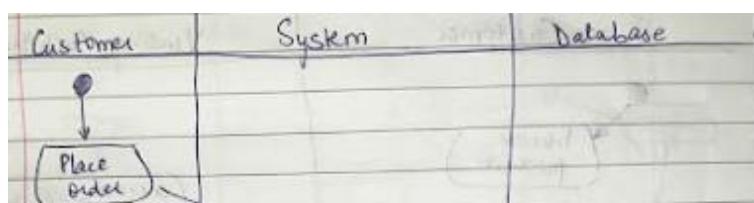
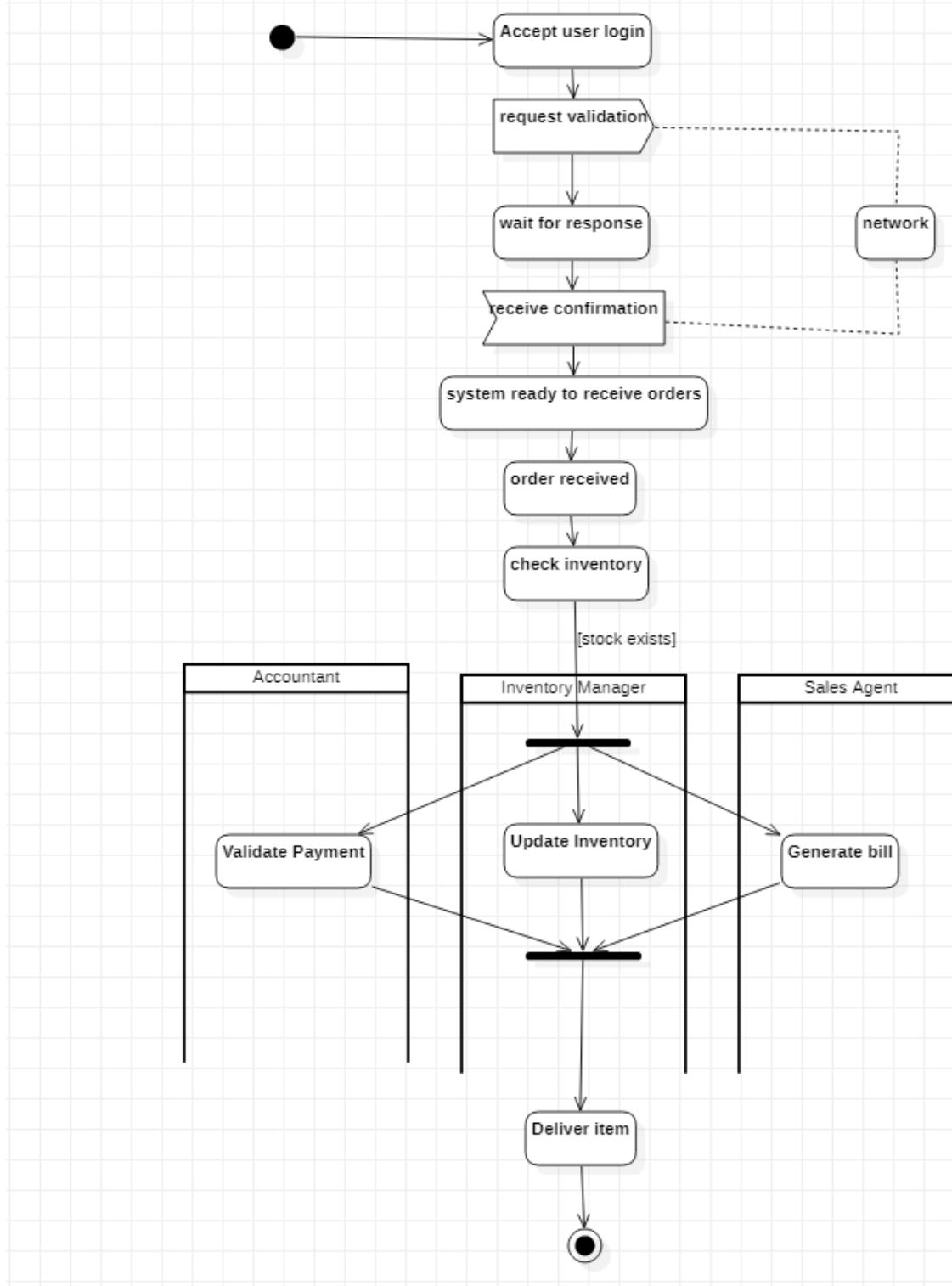
## 5. Advanced Sequence Diagram

The above sequence diagram give the steps involved in an owner logging in, placing order for the stock, making payment and checking quality which is updated in the system.



## 6. Advanced Activity Diagram

The activity diagram tells about the activities involved in placing the stock order. The above activity diagram give the steps involved in a customer placing the order, system verifying the order details, which is verified in the database and the invoice is prepared for the same

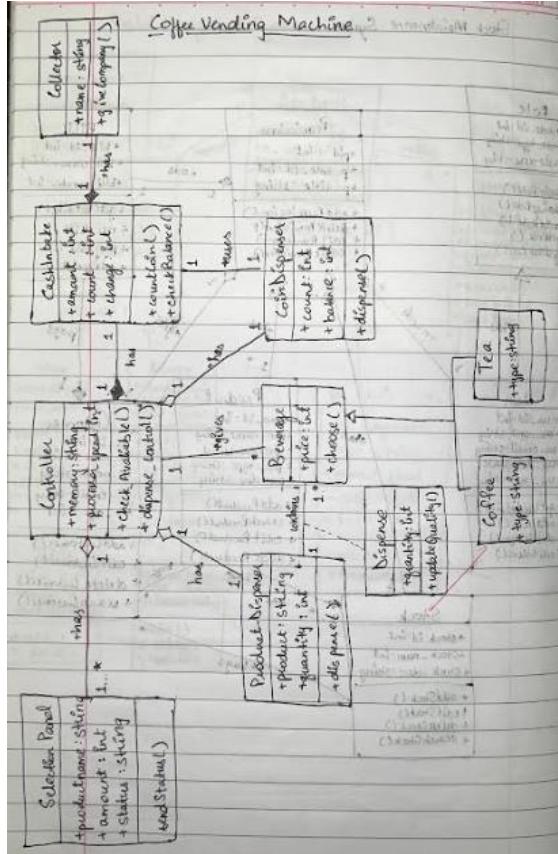
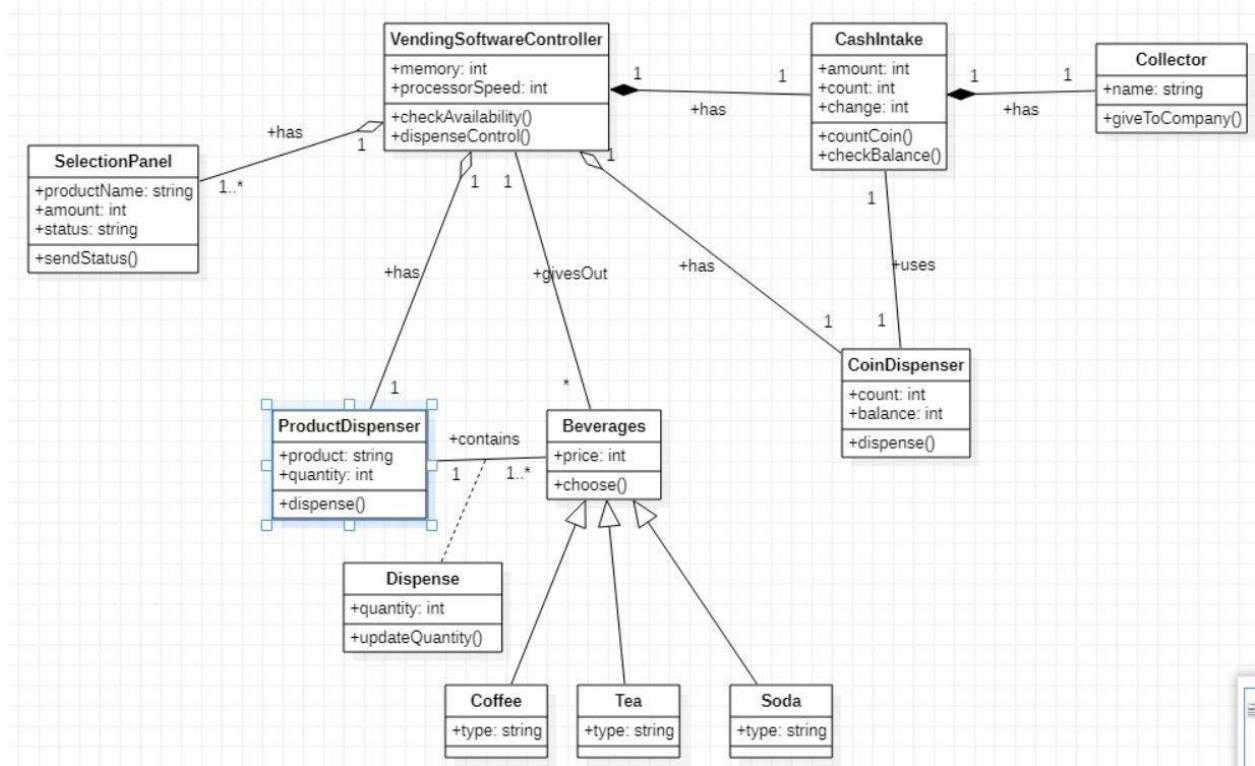


# Coffee Vending Machine

## 1. Software Requirement Specification

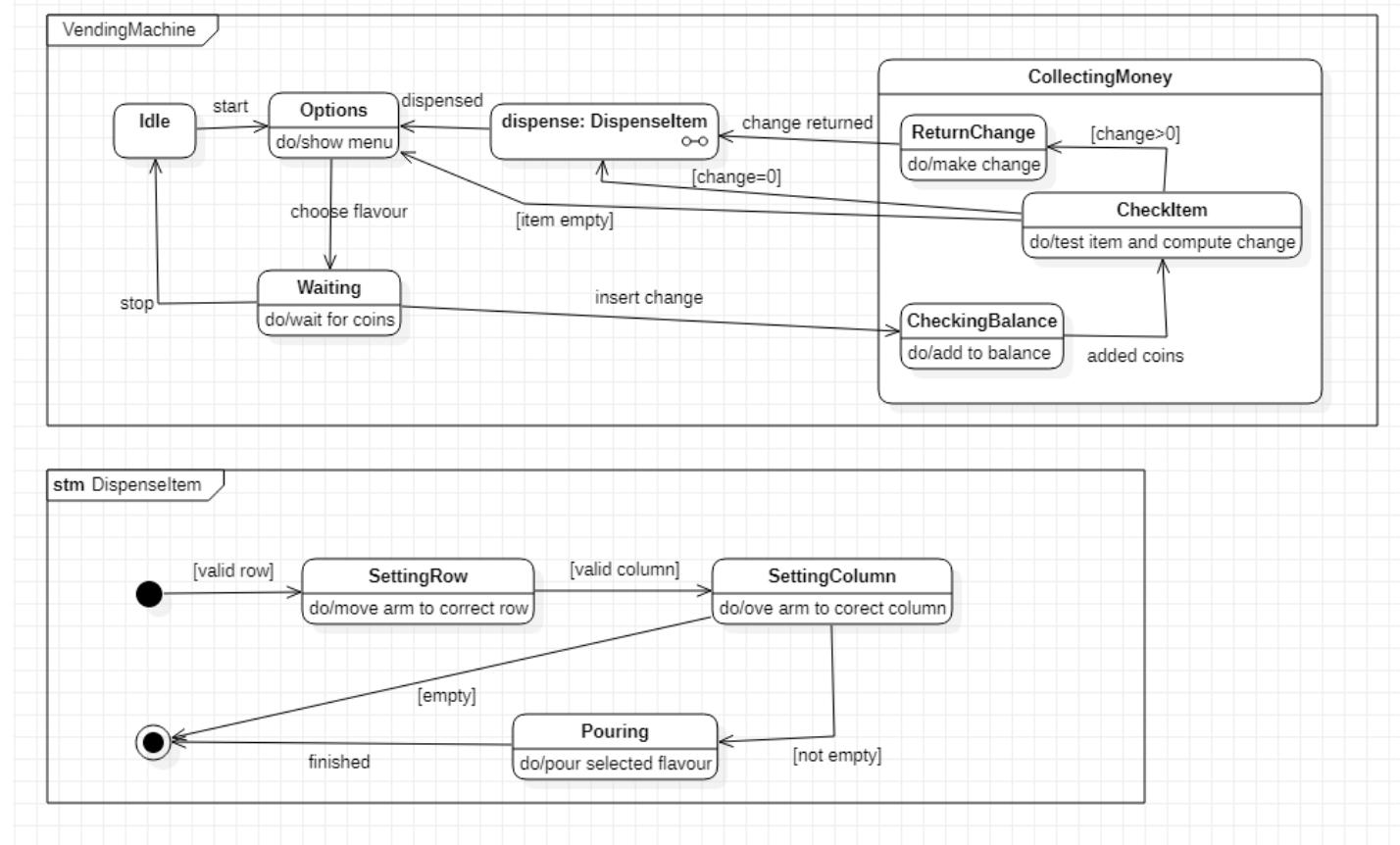
Coffee Vending Machine	
→ Vending Controller	→ checks availability of raw materials → collects payment and checks it and only then gives the product permission → memory of order or history of coffee → give commands to all the parts of the machine
→ Selection Panel	→ displays all products available along with their costs and choices → displays the status of the operation → accepts input from the customer
→ Dispenser	→ makes the coffee according to the order given by the controller → consists of all the raw materials and has access to it
→ Beverages	→ the complete list of all the beverages provided and available in the machine → it collects the raw materials required by the dispenser
→ Cash collect	→ collects the money put into the machine → gives out the change → provides the bill slip

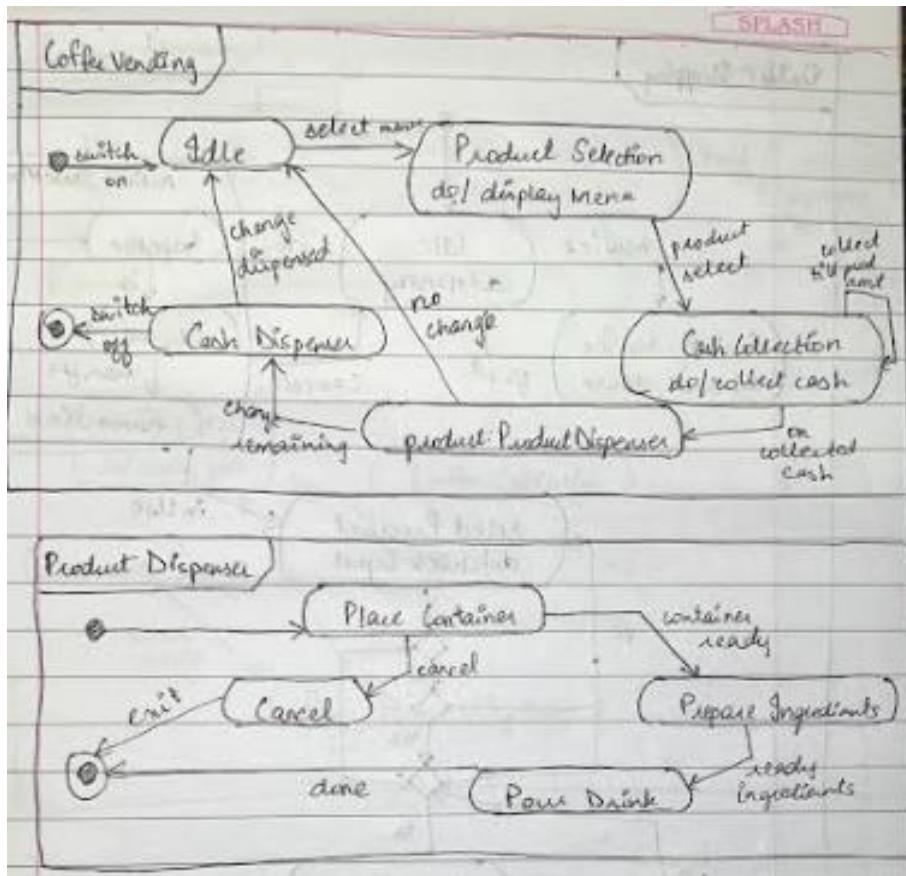
## 2. Advanced Class Diagram



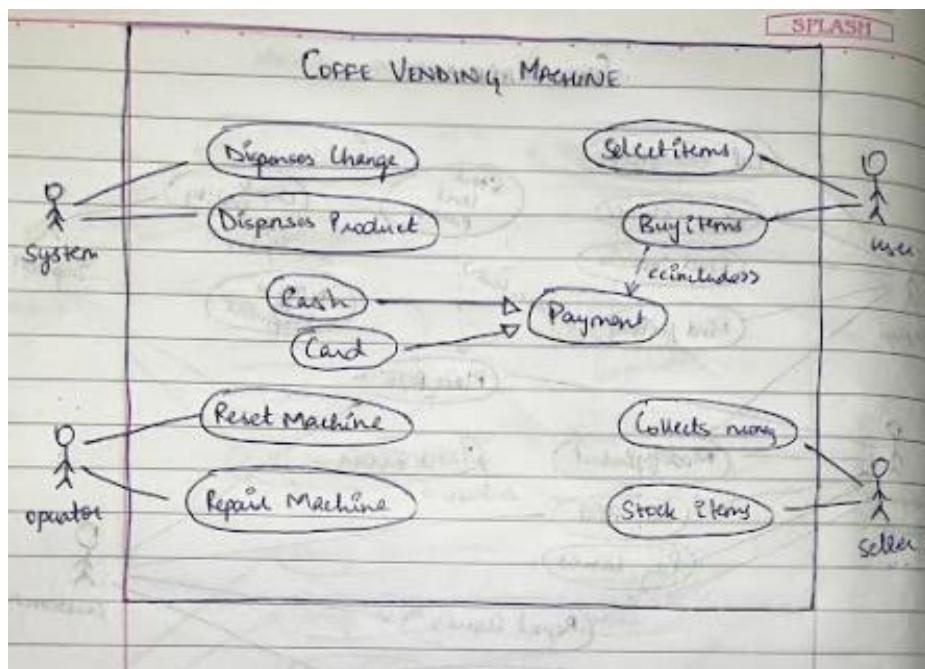
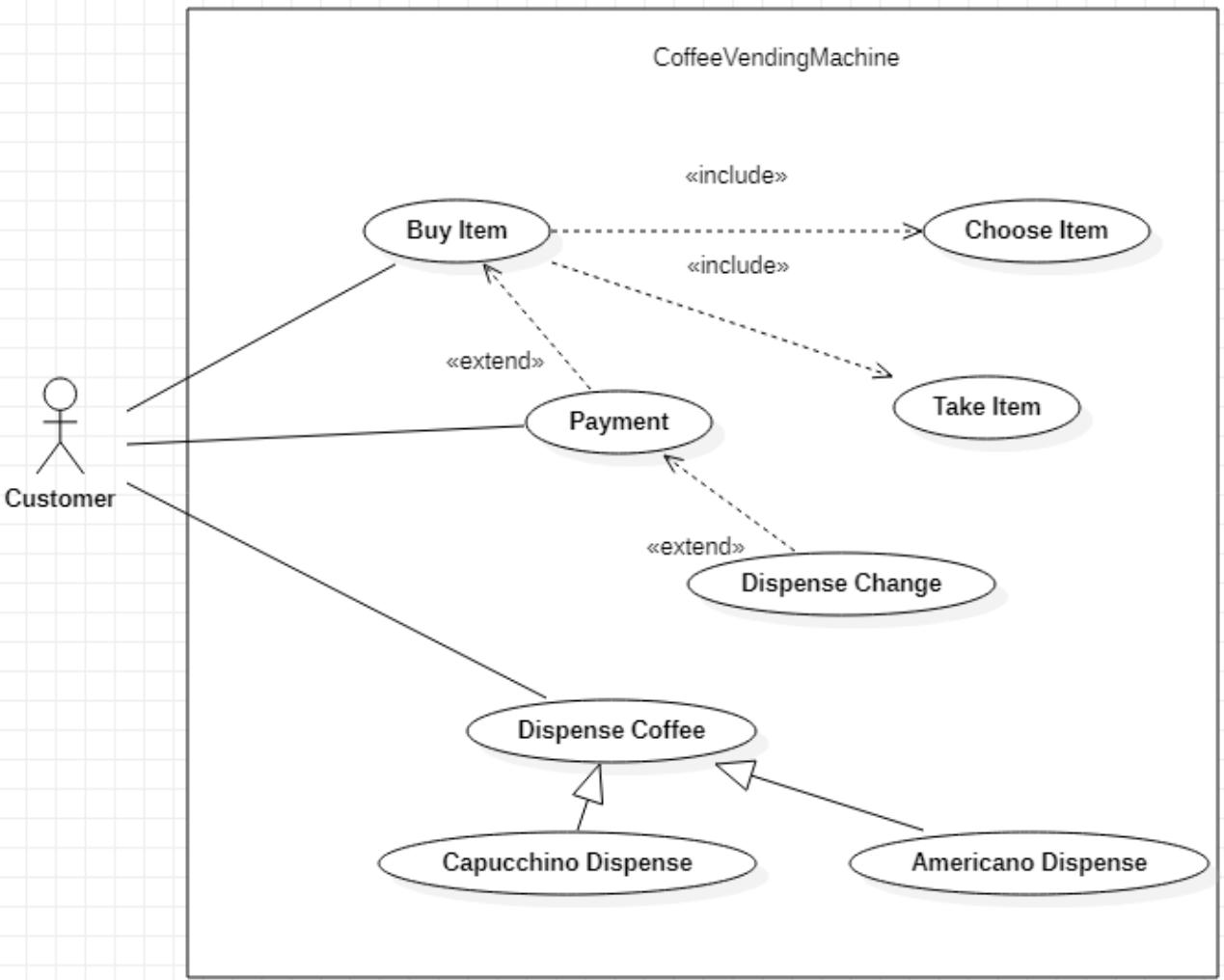
### 3. Advanced State Diagram

Initially the vending machine is in the idle state. The machine displays the selected item selected by the user. When the person inserts the cash the machine adds the amount to the cumulative balance. After adding some coins, a person can select any item. The machine dispense the item and returns the appropriate change. The state diagram for coffee vending machine has a submachine called dispense Item ,which has the states for dispensing an item from the vending machine. the arm of the machine first moves to an appropriate row ,when ready ,moves to an appropriate column and when the arm is ready it finally dispences the item from the machine.



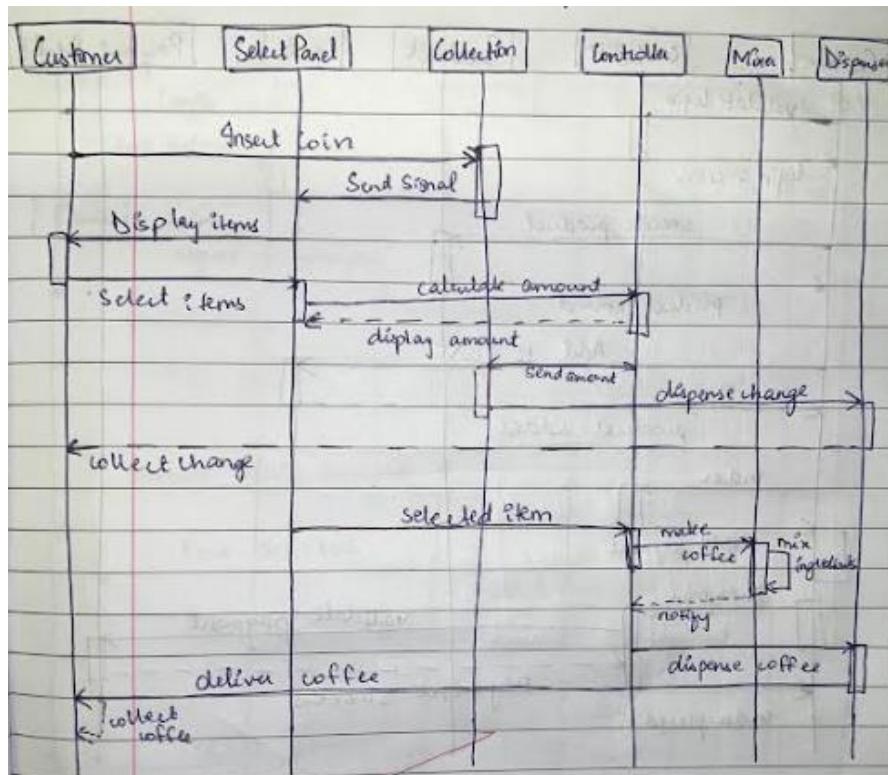
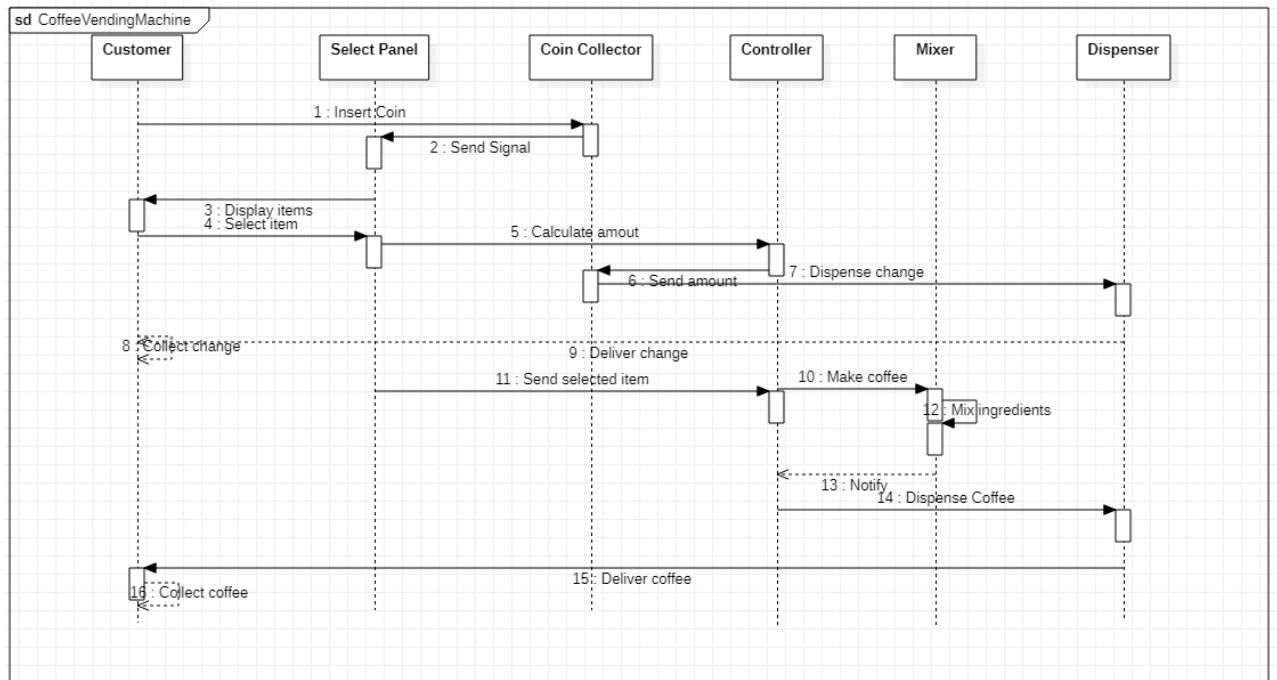


#### 4. Advanced Usecase Diagram



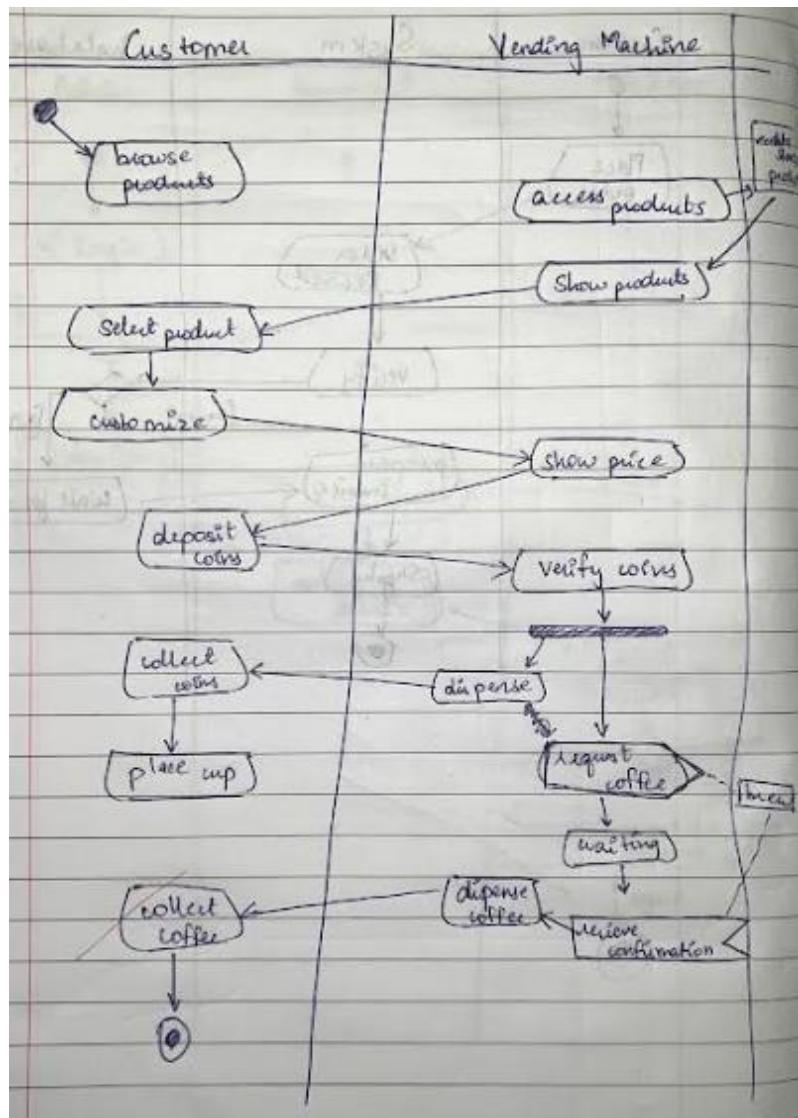
## 5. Advanced Sequence Diagram

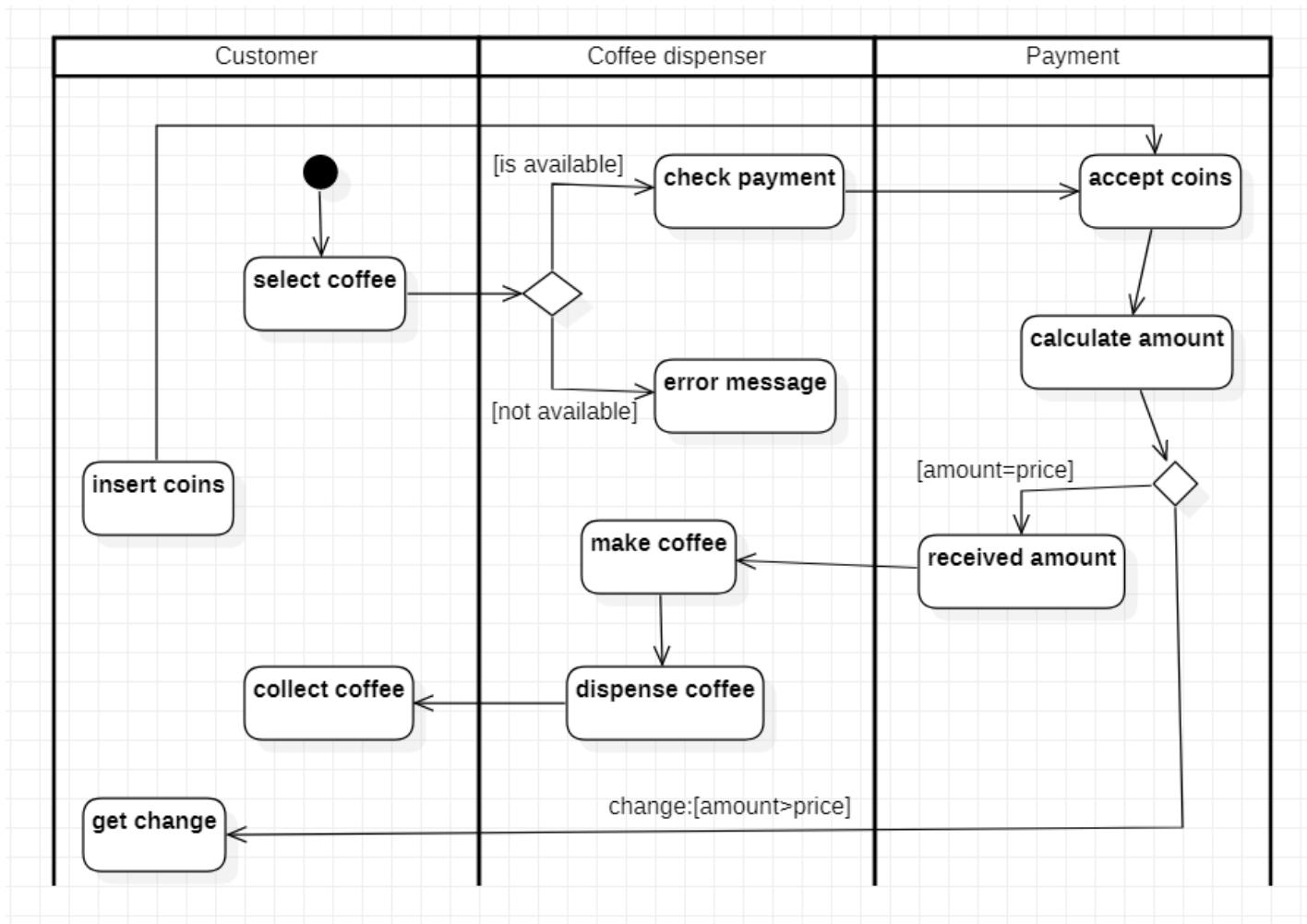
The sequence diagram gives us the steps involved in dispensing a product from the coffee machine. First an enquiry for the product is made and if available the coins are inserted and calculated , if correct the product is dispensed .



## 6. Advanced Activity Diagram

The activity diagram tells about the activities involved in ordering coffee from the vending machine. The activity diagram give the steps involved in a customer placing the order, system verifying the order details, calculating the change to be dispensed, coffee being prepared and both coffee and money getting dispensed.



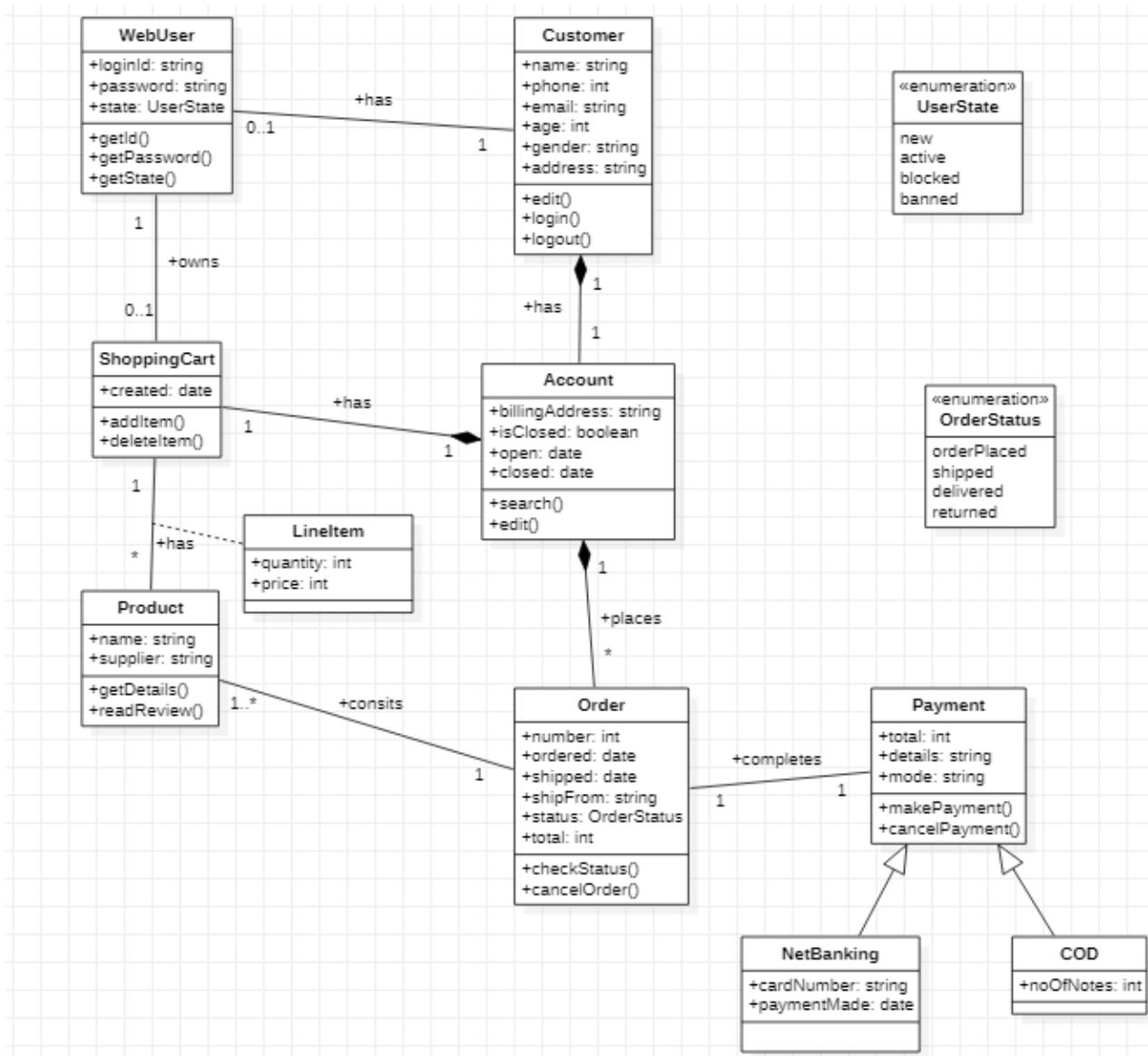


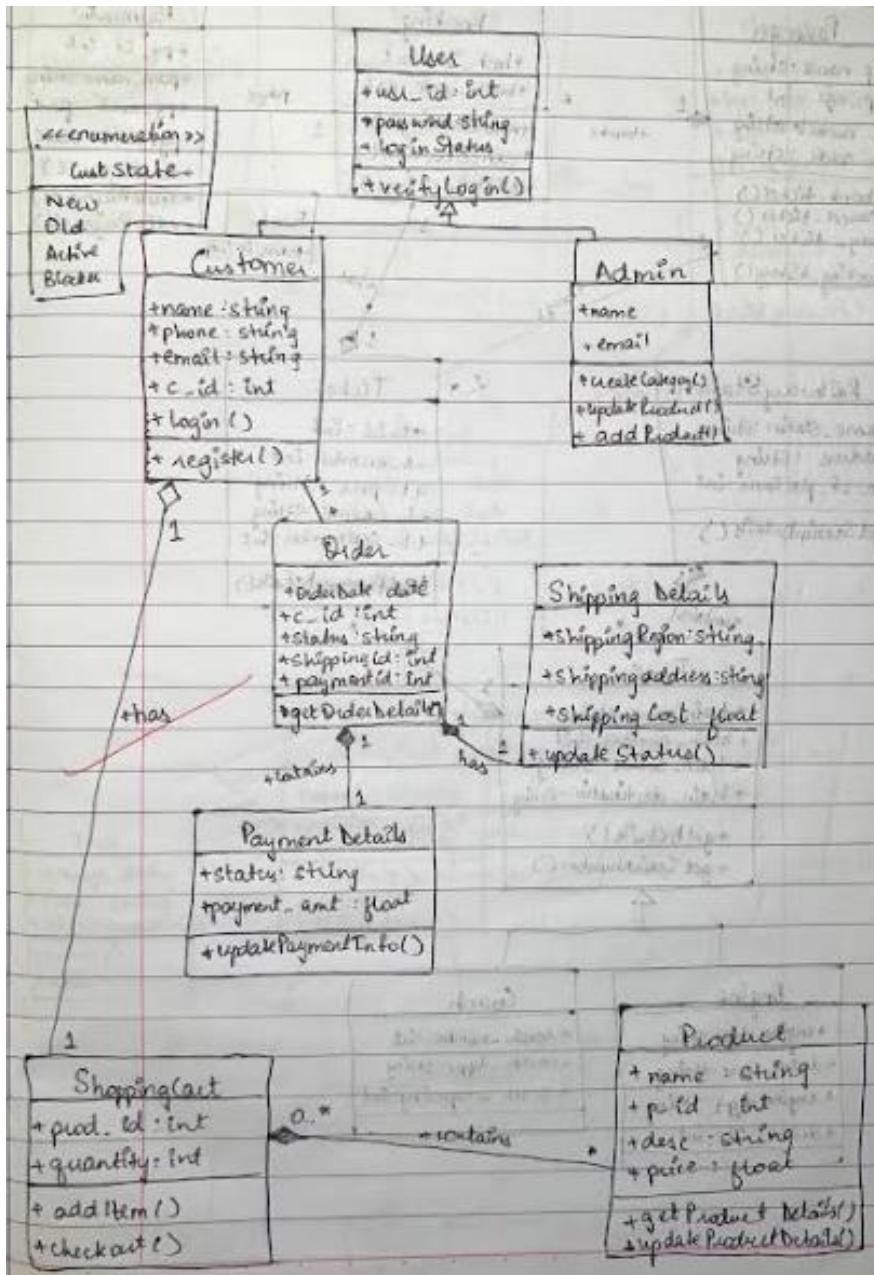
# Online Shopping System

## 1. Software Requirement Specification

Online Shopping System	
→ Customer	→ all details of the customer to edit and view → stores history of products bought → contains payment details of the customer
→ Order	→ should take customer details who placed the order → should create order number → details of product ordered → quantity of product ordered
→ Account	→ payment information of the customer → billing address of the customer which can be edited → provides information of open and closing of account
→ ShoppingCart	→ consists of collects all the products which the customer chooses → details of the products → edit and delete details of products
→ Product	→ contains details of products and supplier → new products can be added and removed → provide reviews of the product given by the customer.

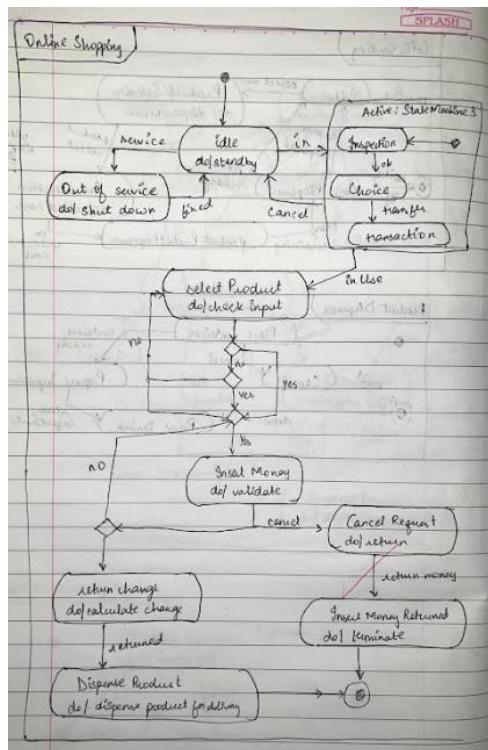
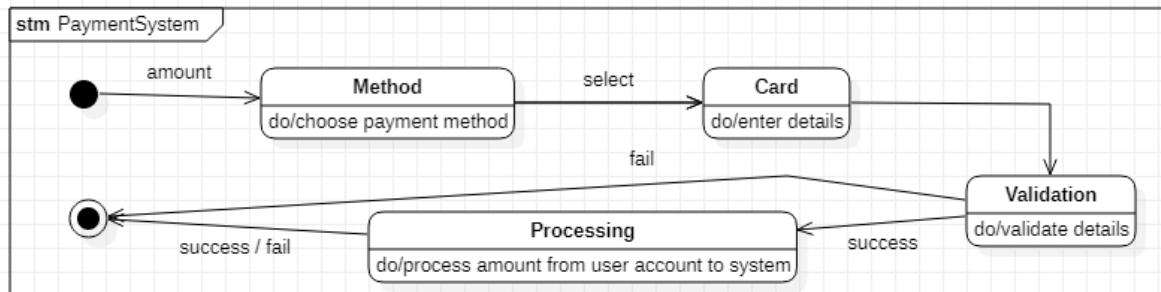
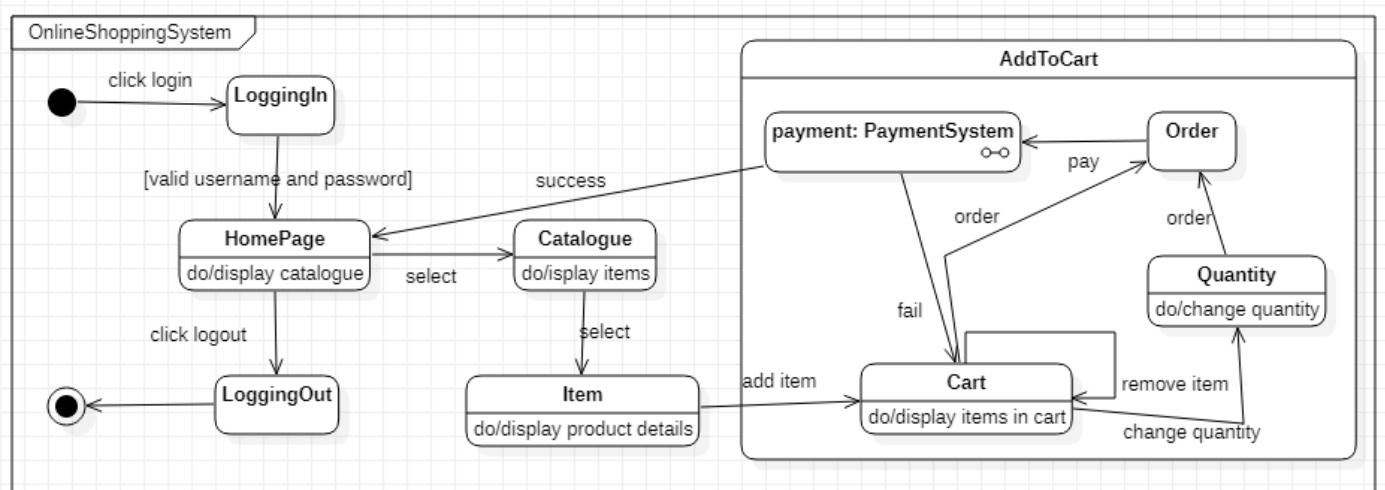
## 2. Advanced Class Diagram



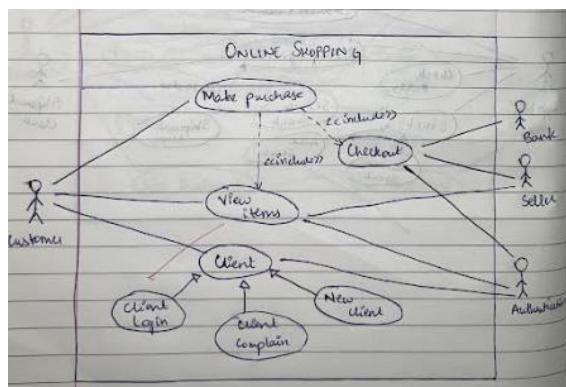
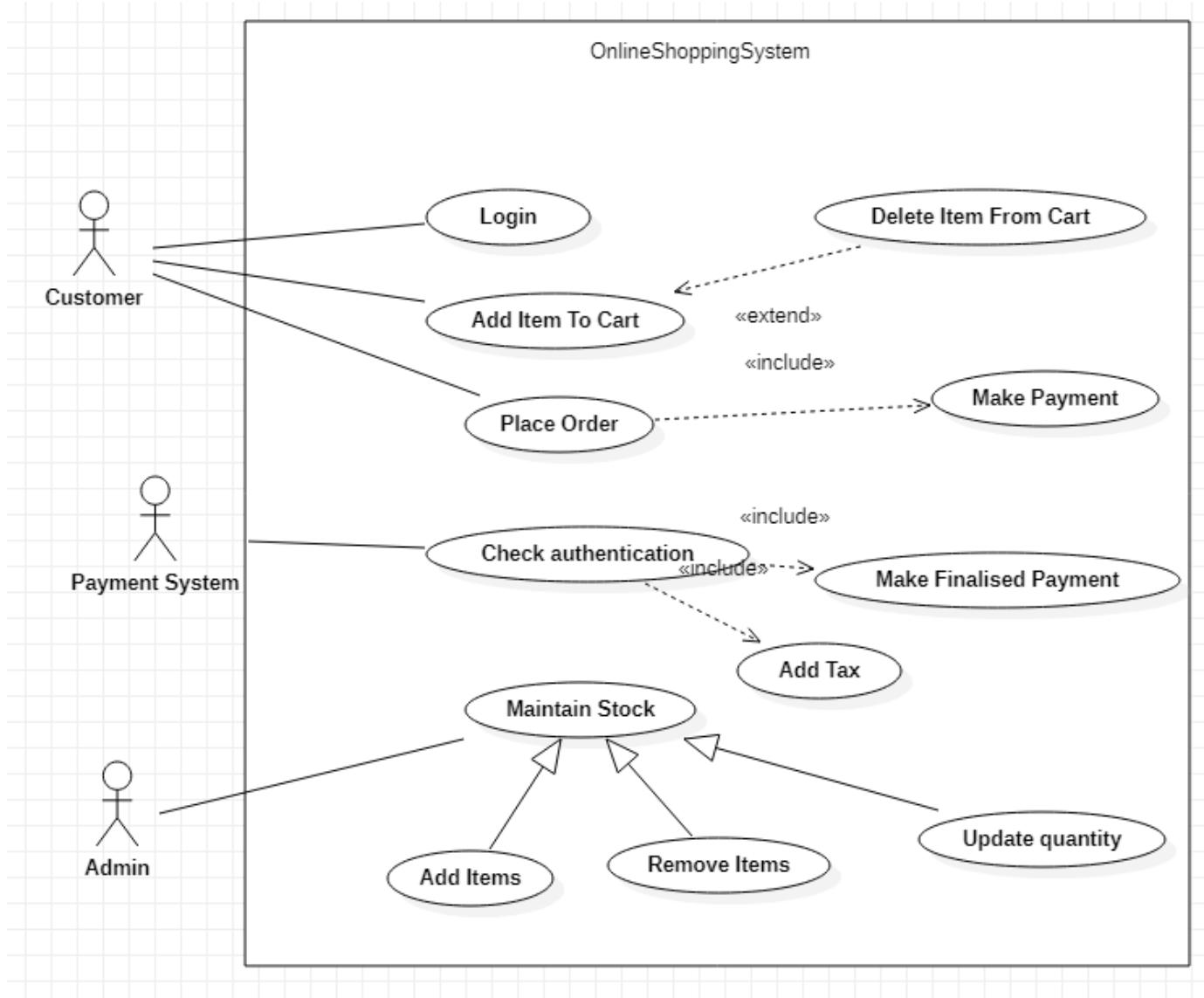


### 3. Advanced State Diagram

The advanced state chart diagram has states explaining the product purchase and payment. It has two sub machines i.e active state and out of service After the product is selected it is verified and then the money is collected. Cancel request option is available along with refund

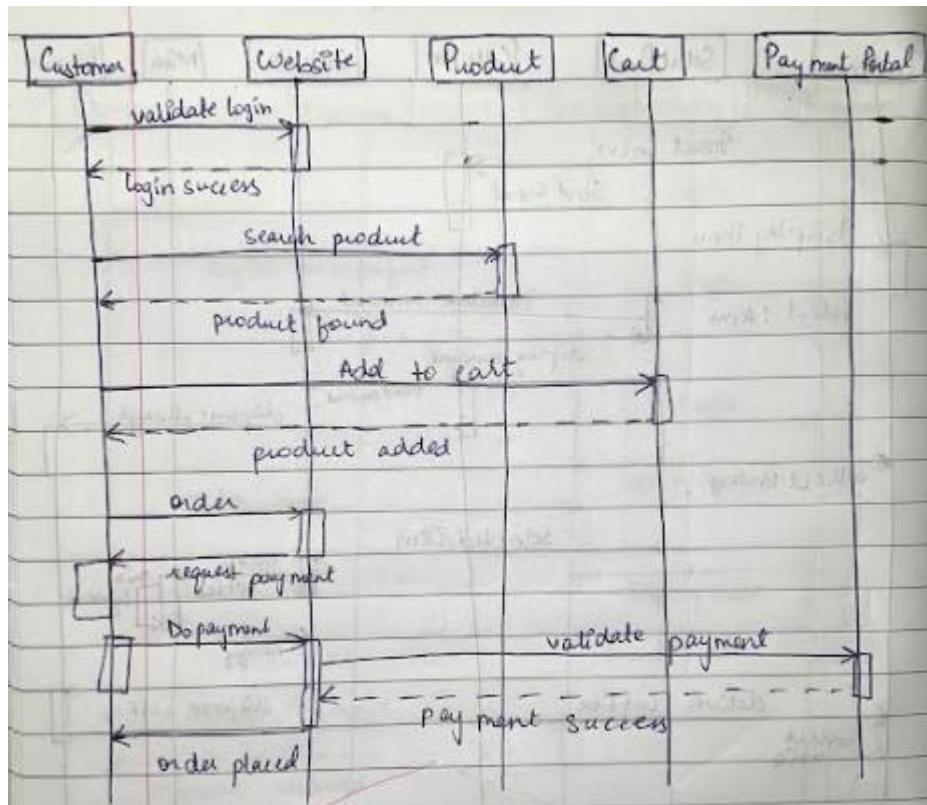
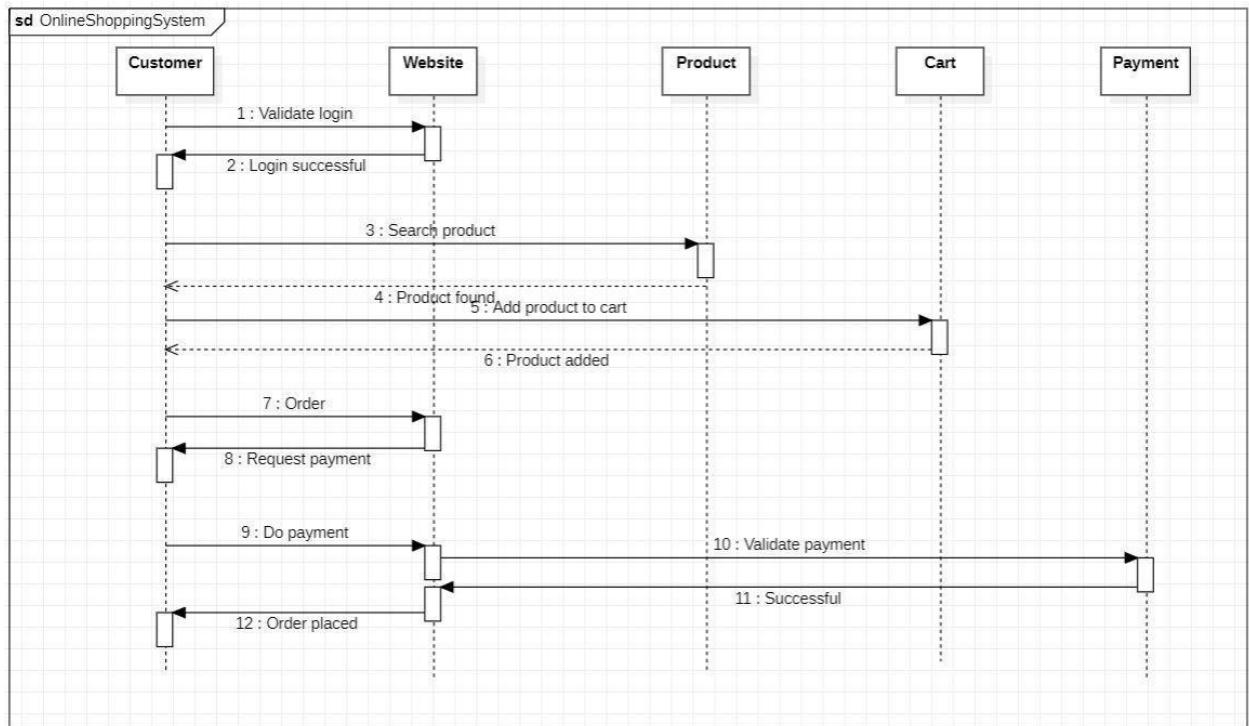


## 4. Advanced Usecase Diagram



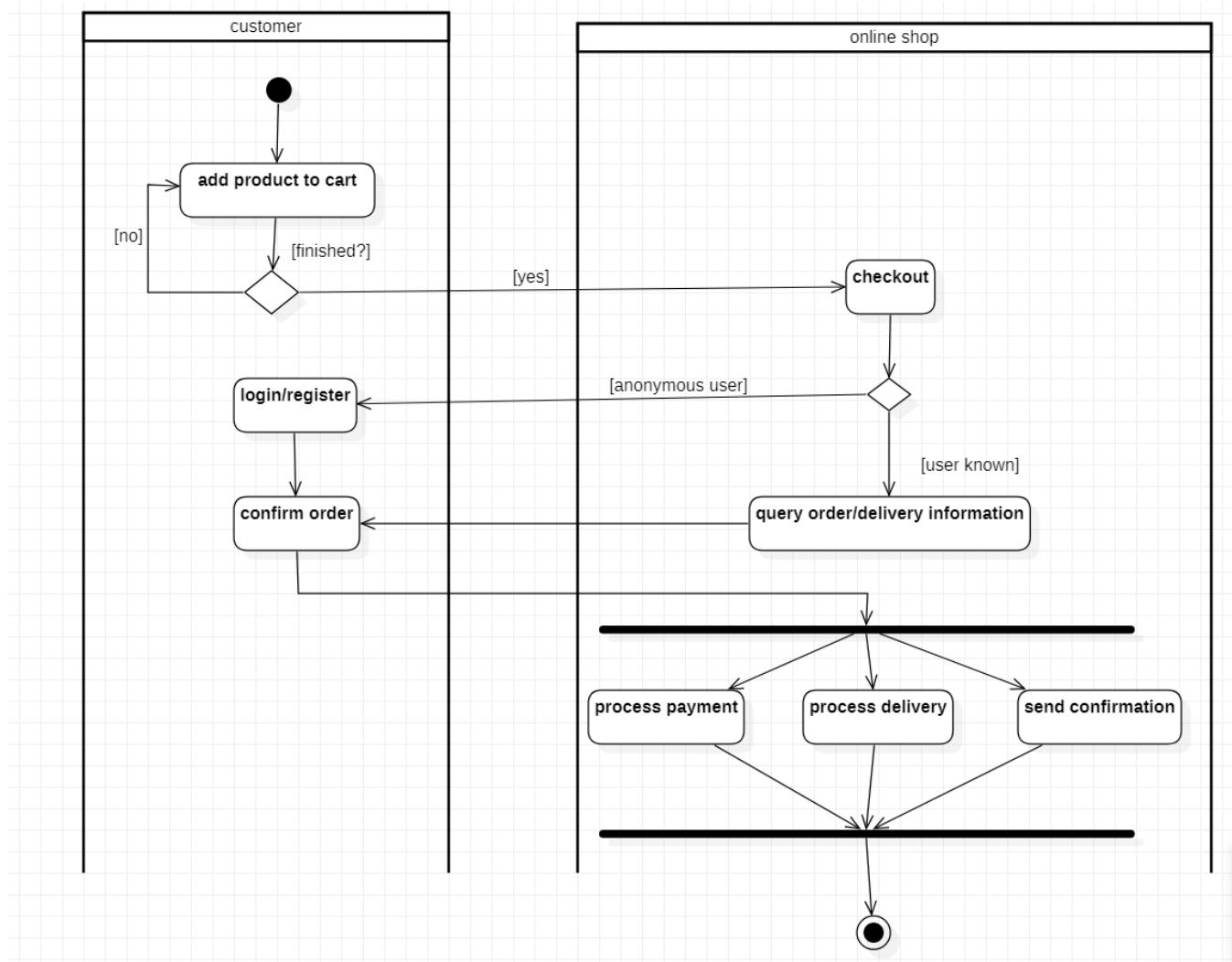
## 5. Advanced Sequence Diagram

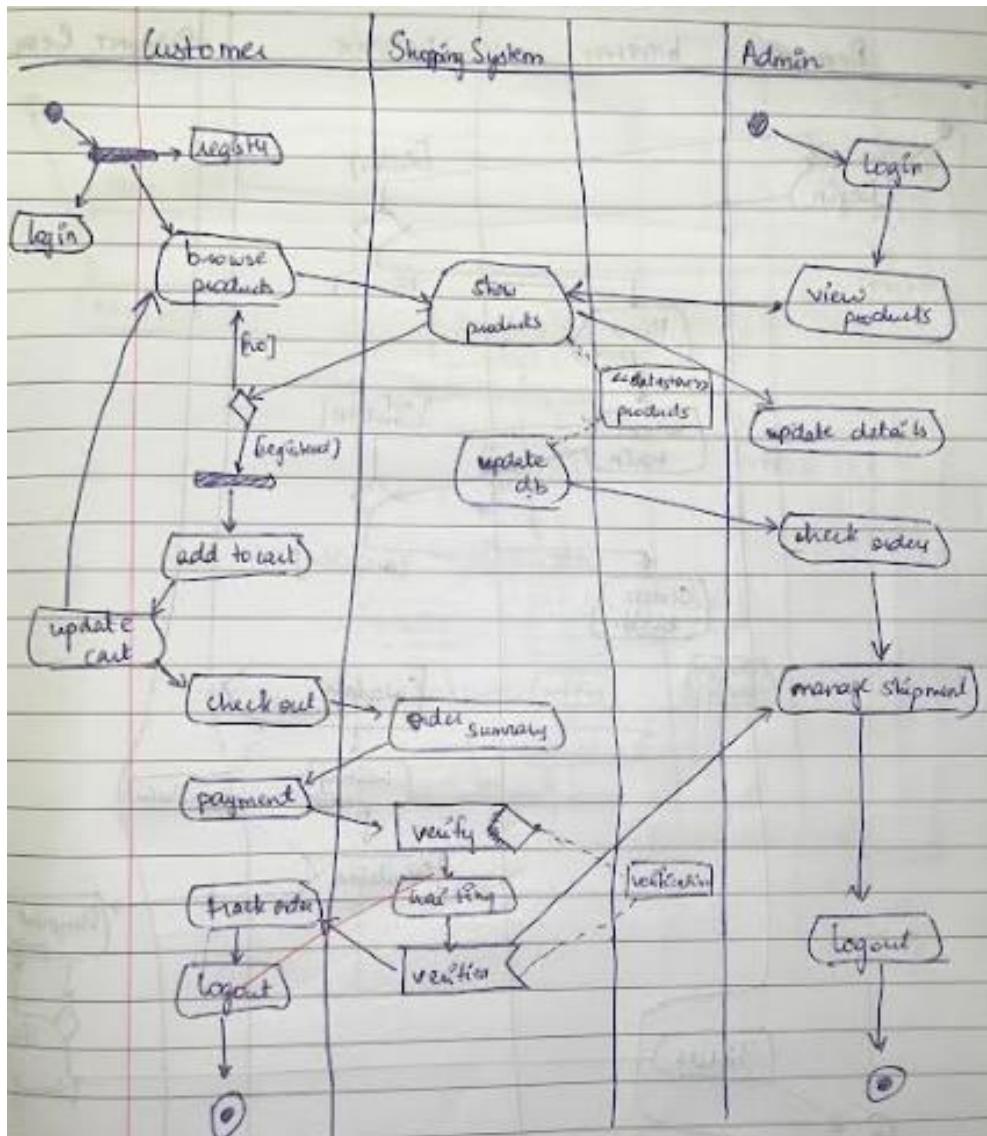
The sequence diagram gives us the steps involved in the customer logging in and placing order. First a search for the product is made and added to the cart and then the payment is done and it is validated after which the order is placed successfully.



## 6. Advanced Activity Diagram

The activity diagram tells about the activities involved in ordering products available on the online shopping platform. The activity diagram give the steps involved in a customer browsing through the products, placing the order, system verifying the order details, calculating the amount to be paid, verifying payment and checking order status.



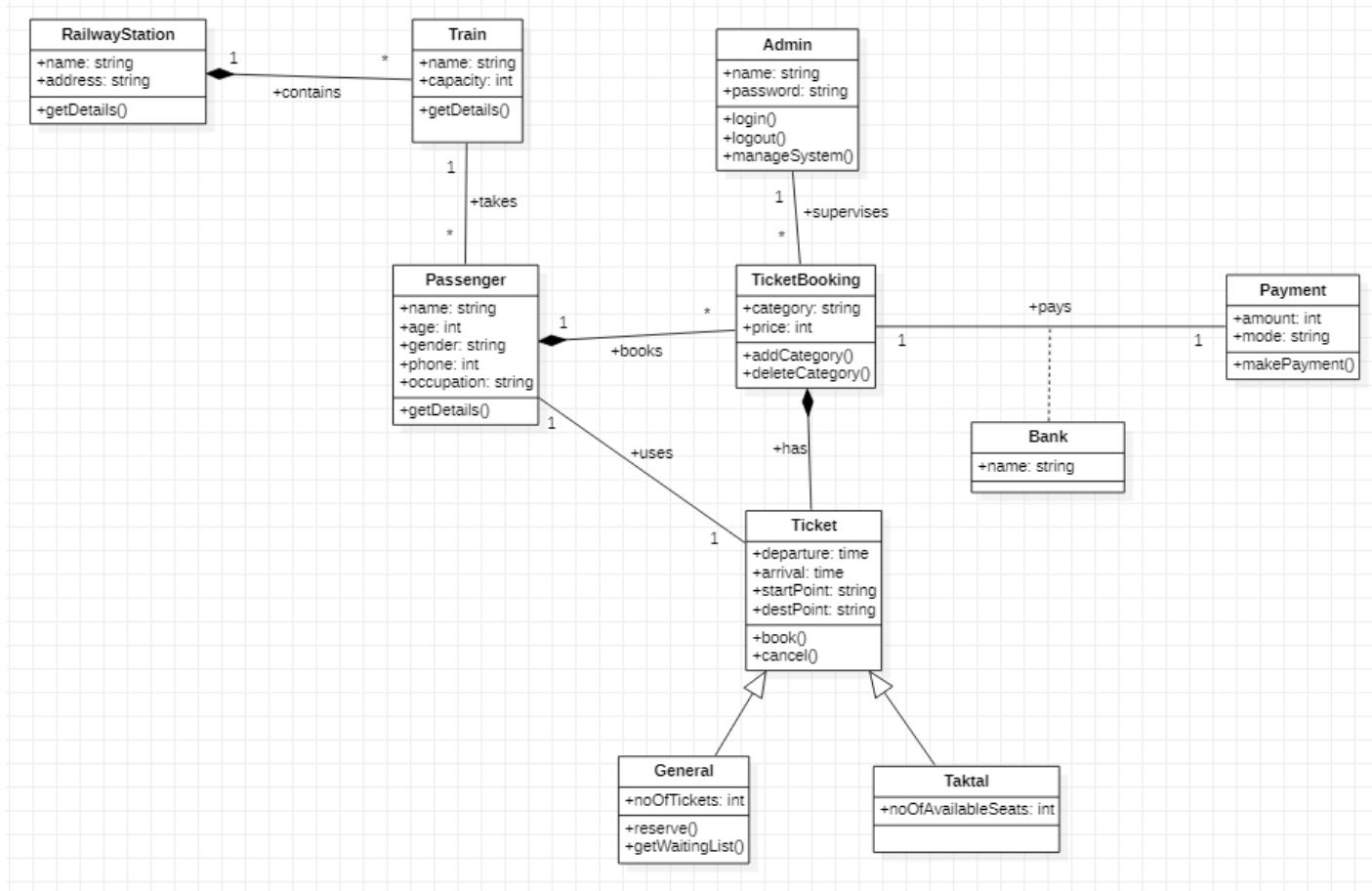


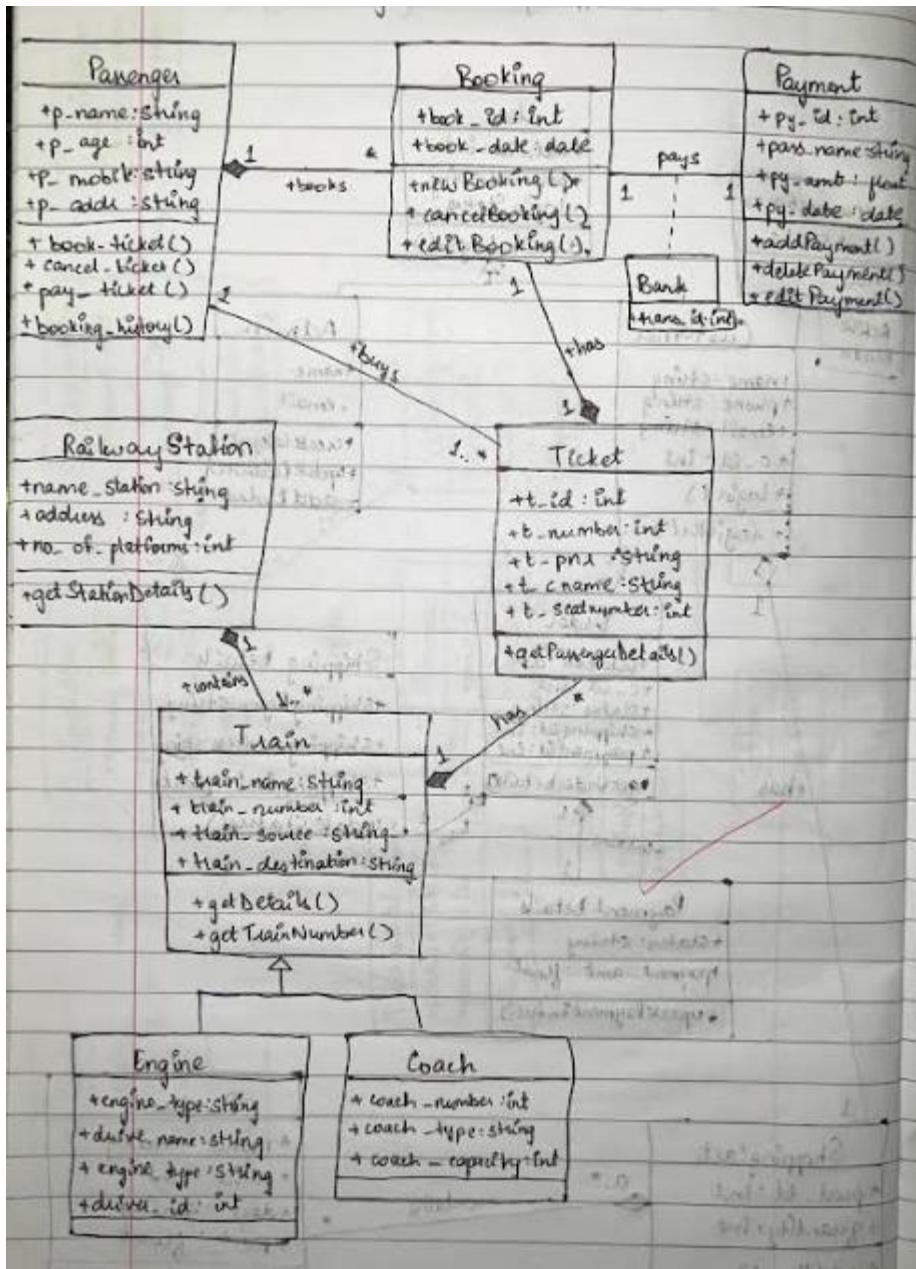
# Railway Reservation System

## 1. Software Requirement Specification

Railway Reservation System	
→ Passenger	→ should add a new passenger → edit details of the passenger
→ Train	→ display train details including arrival and departure time → list of trains → add a new train or edit details of trains
→ Ticket	→ selects the train chosen by the customer passenger and blocks the available seat → allow cancellation of ticket → details of train to be printed on ticket
→ Booking	→ has the list of available seats in a particular train → details of the train → should allot a seat if available
→ Payment	→ should accept various methods of payment → should make the bill → print the receipt of the payment and payment details.

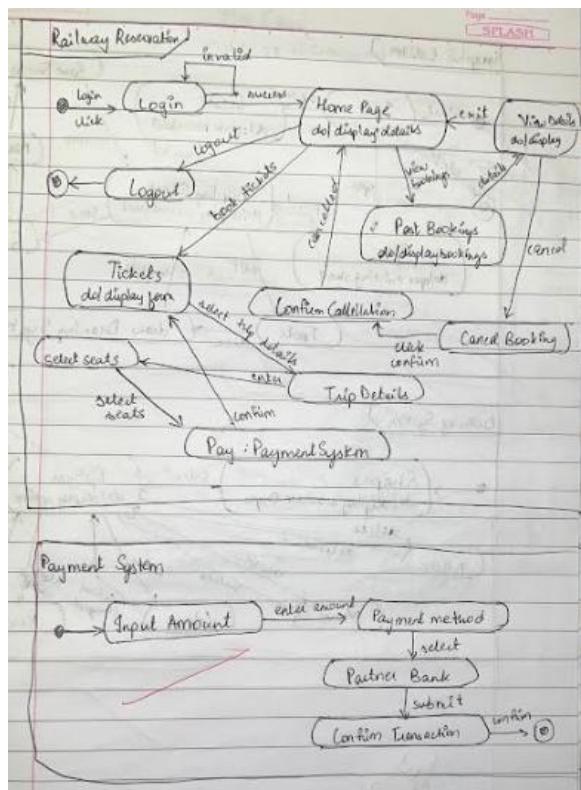
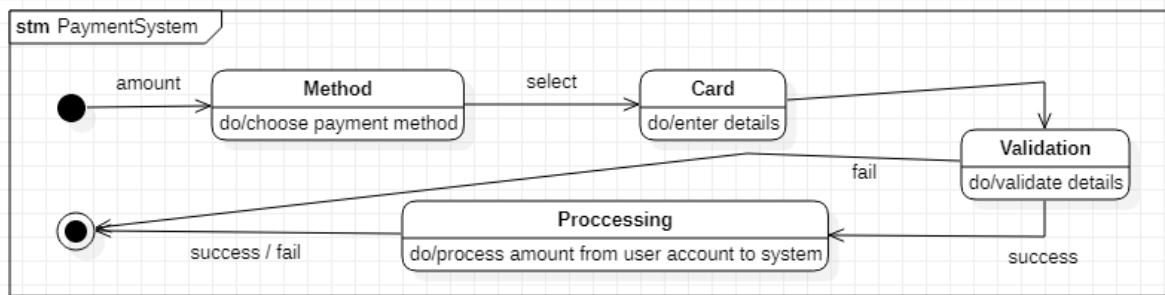
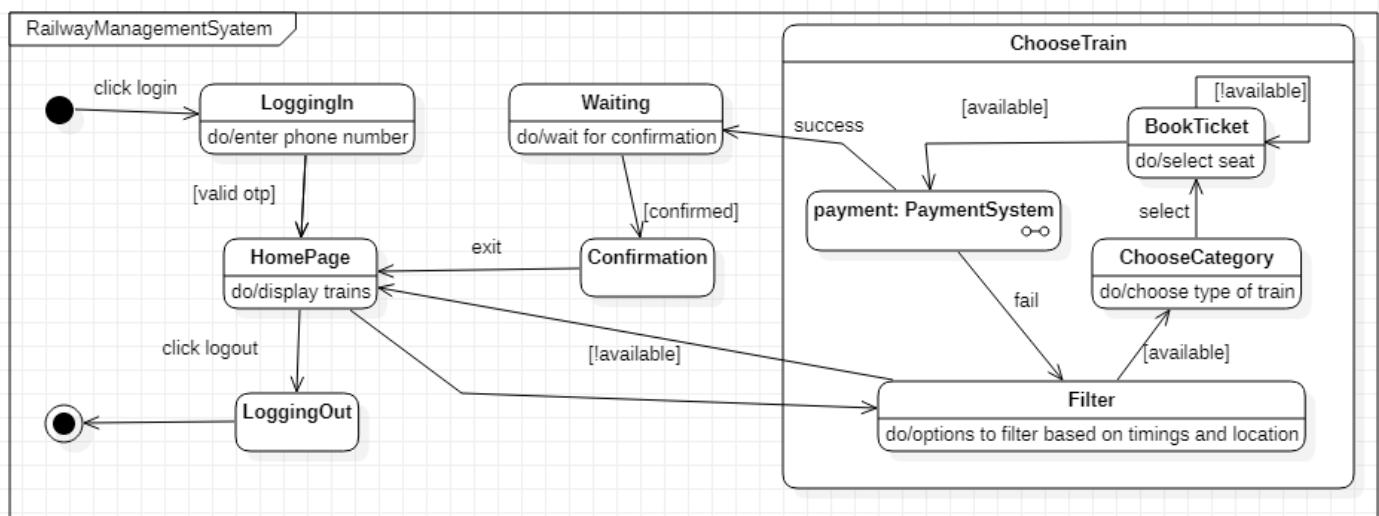
## 2. Advanced Class Diagram



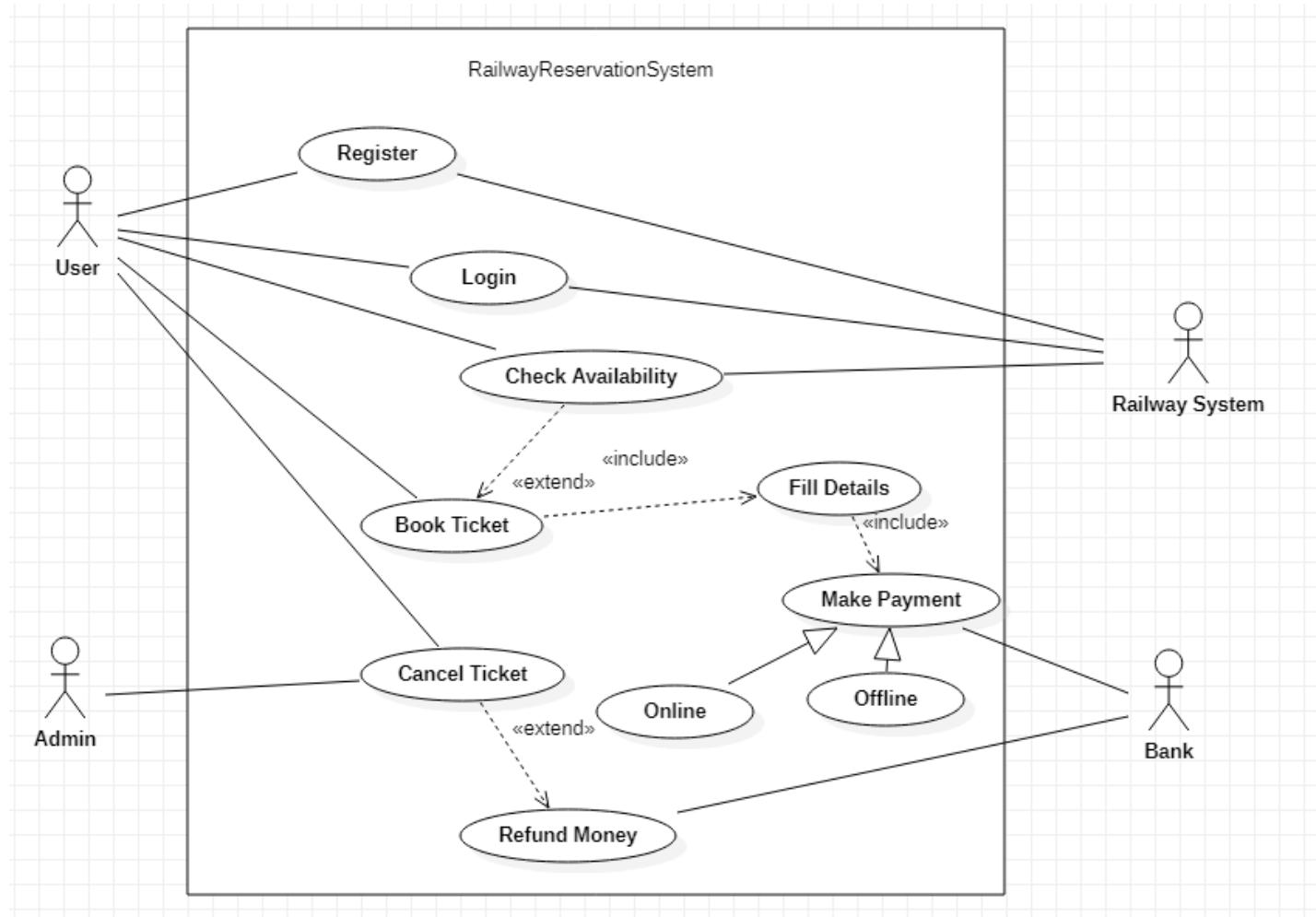


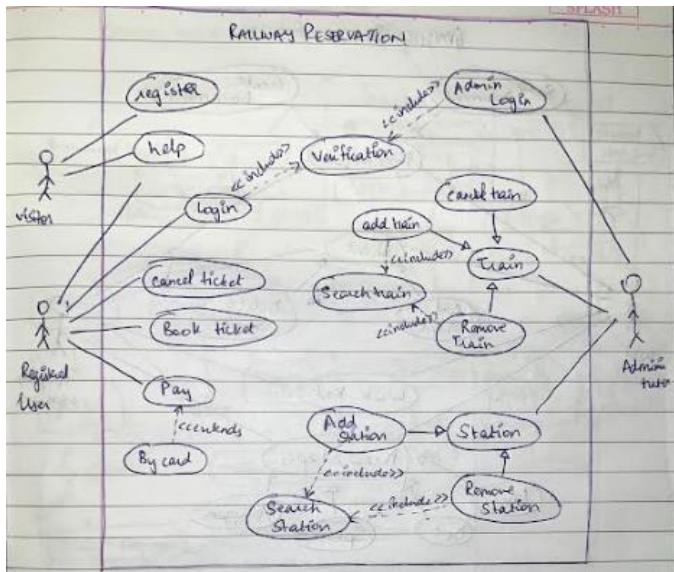
### 3. Advanced State Diagram

The advanced state chart diagram has states explaining the login, ticket purchase and payment. It has one sub machines. After the trip details and seat is selected the ticket is then processed to the payment stage. Once the payment is complete it gets added to the customer's bookings



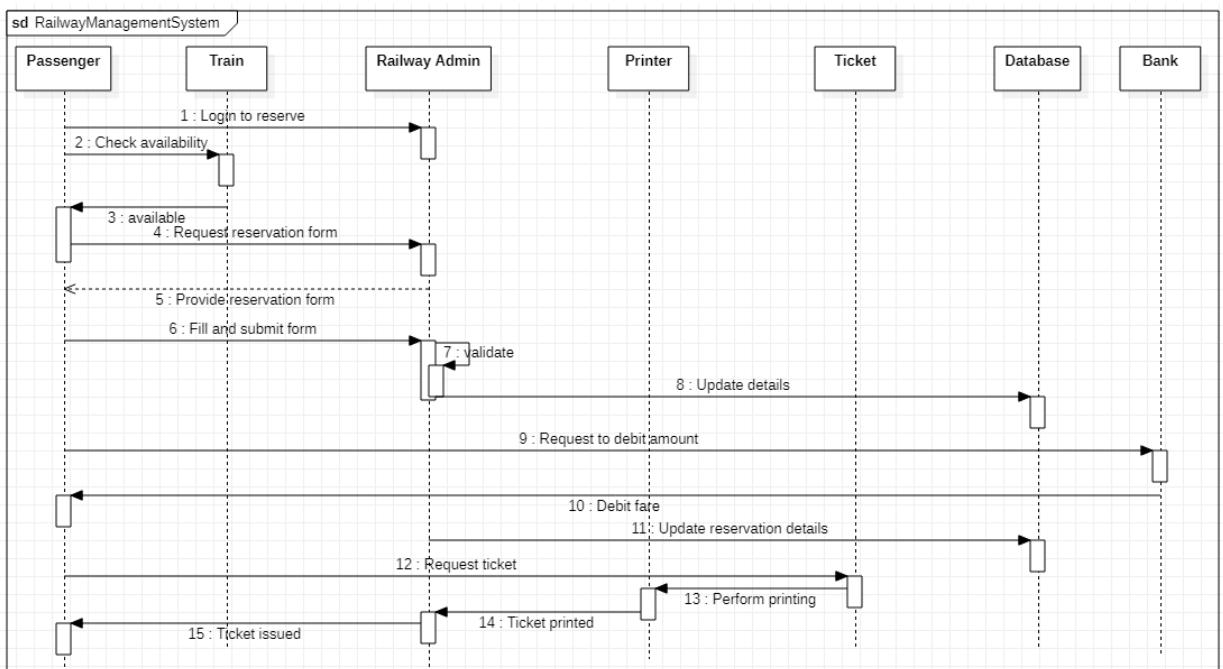
## 4. Advanced Usecase Diagram





## 5. Advanced Sequence Diagram

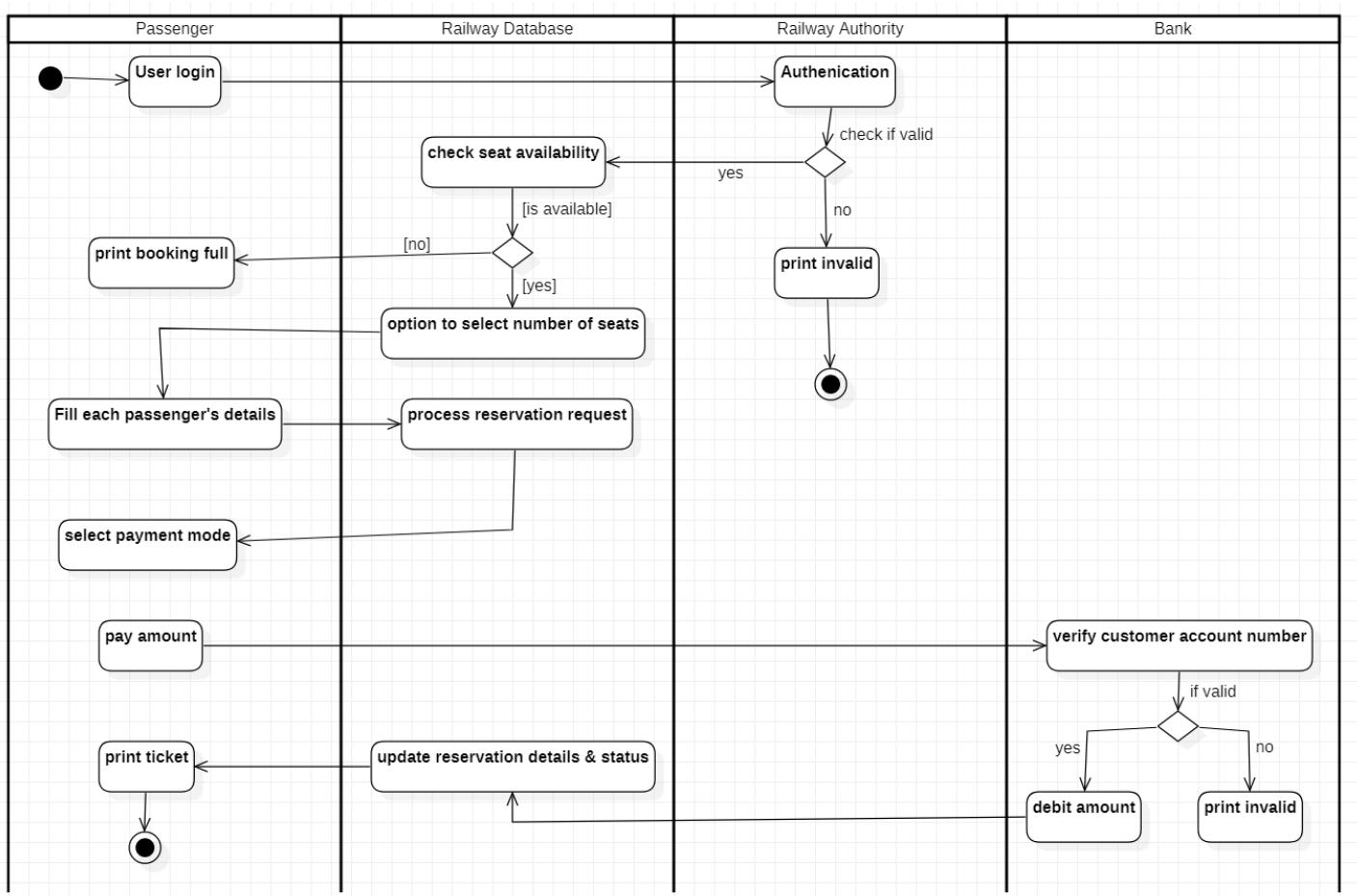
The sequence diagram gives us the steps involved in the customer logging in and reserving ticket. First a reservation request for the ticket is made and the form is filled. The validated form is then updated in the database. Payment process then takes place and finally the ticket is printed.

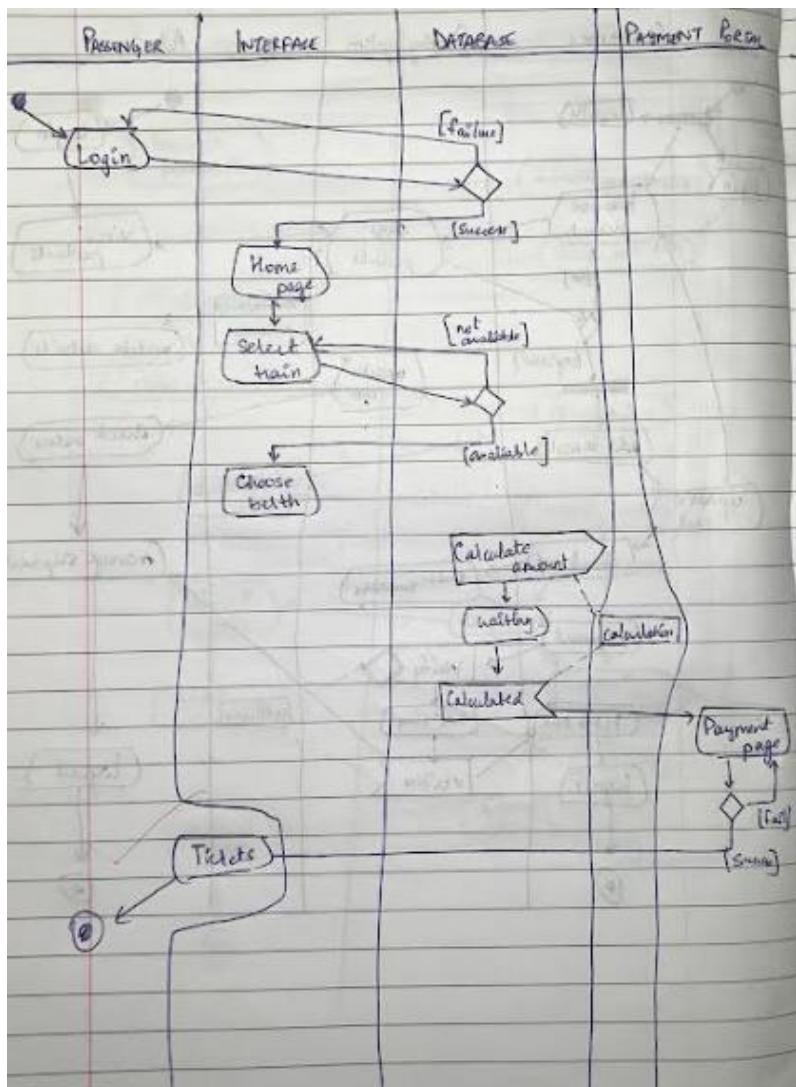




## 6. Advanced Activity Diagram

The activity diagram tells involved in ordering about the reservation process. The activity diagram give the steps involved in a passenger selects the train and the berth of the ticket,, system verifying the reservation details, calculating the amount to be paid, verifying payment and issuing the ticket.



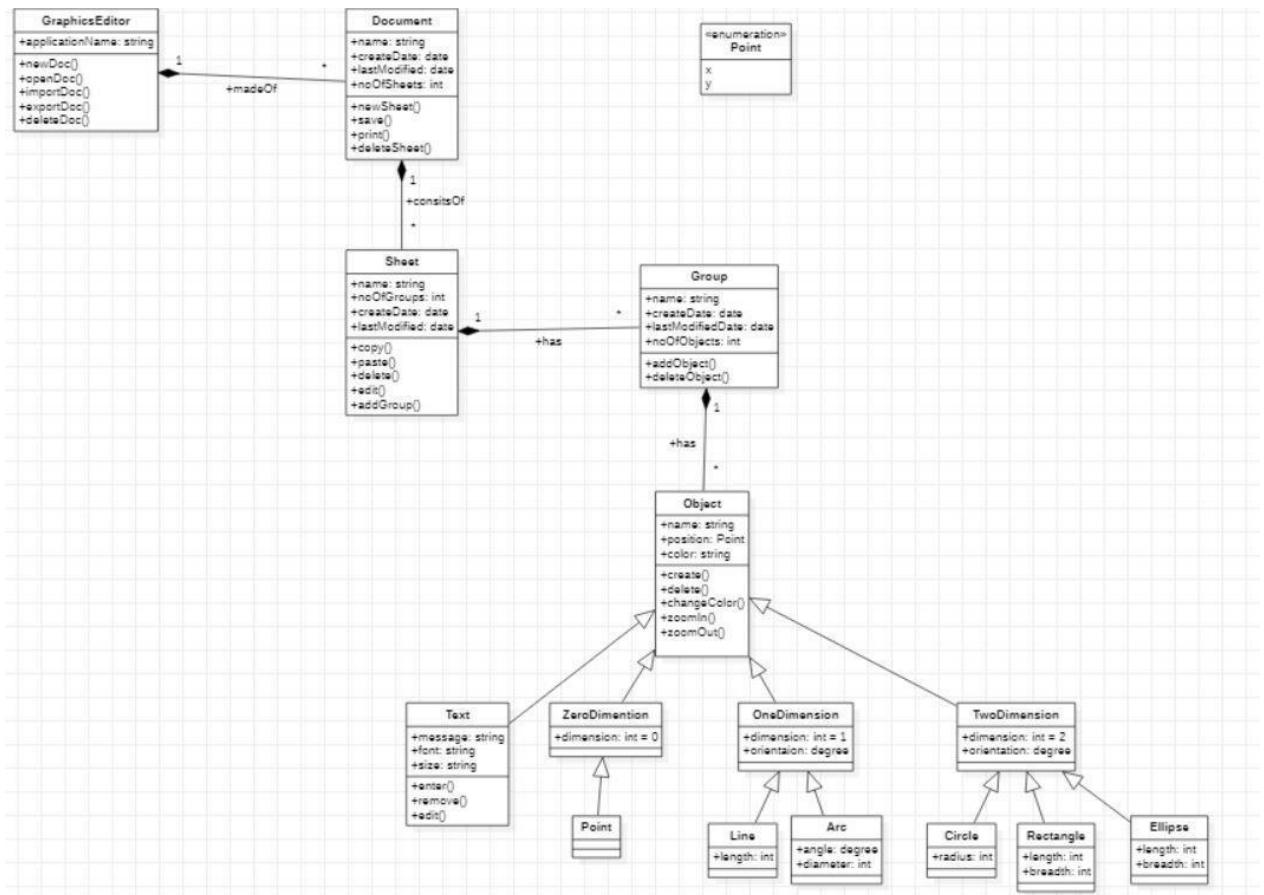


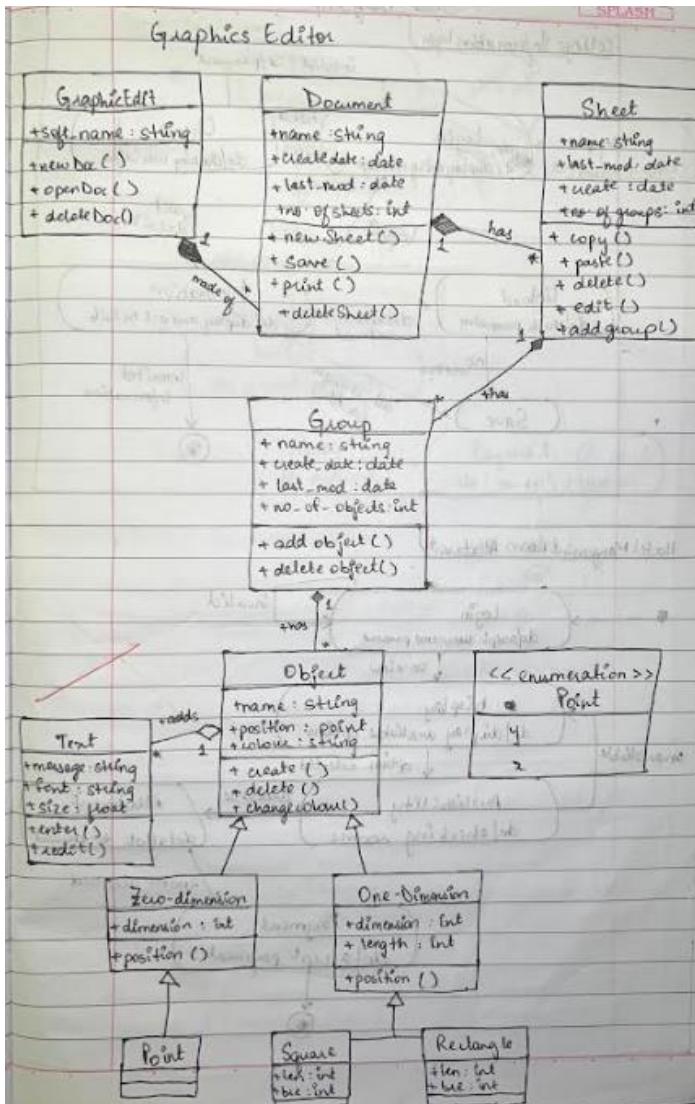
# Graphics Editor

## 1. Software Requirement Specification

- Graphics Editor
- Sheet
    - Should add a new sheet and give it a name which can be edited and display details such as last modification etc.
    - Should perform operations such as copy sheets, paste, add group, etc and delete the sheet
  - Document
    - Create new document which consists of sheets
    - Perform operations such as delete document, save and print
    - display details such as last modification and no. of sheets.
  - Graphics Editor
    - It should contain all documents which have been created and saved previously / Display
    - New documents can be created or any of the displayed documents can be opened
  - Groups
    - allows data to be added into the sheet as a collection in the form of a group
    - many objects can be added in one group
  - Object
    - contains one, two and three dimensional objects
    - Perform functions such as zoom-in and zoom-out
    - Should add color to objects
    - Create objects and add them to the sheet and modify / edit it.

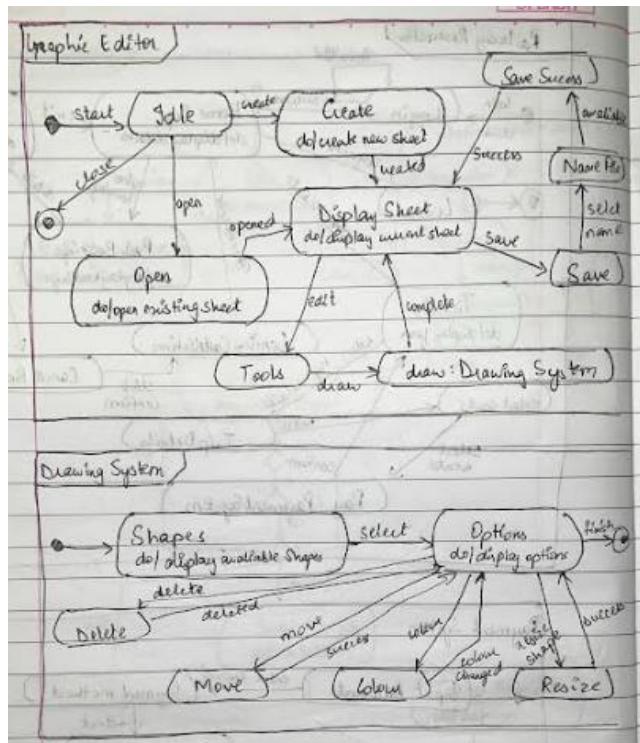
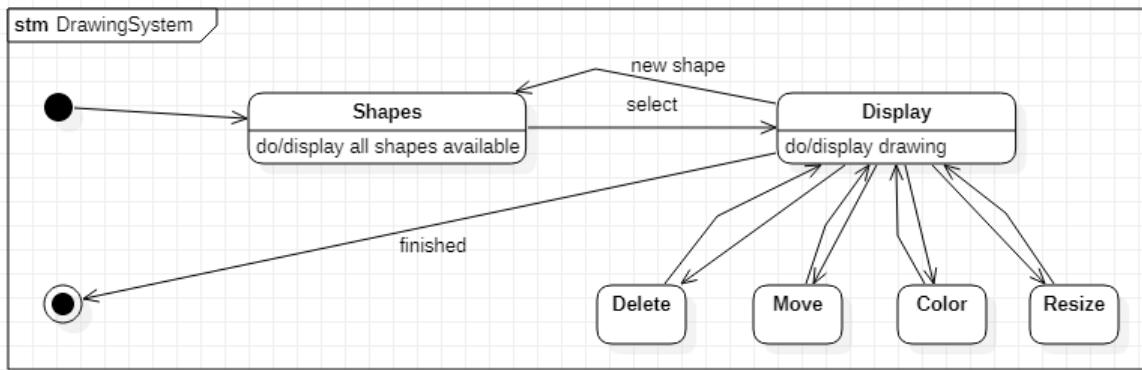
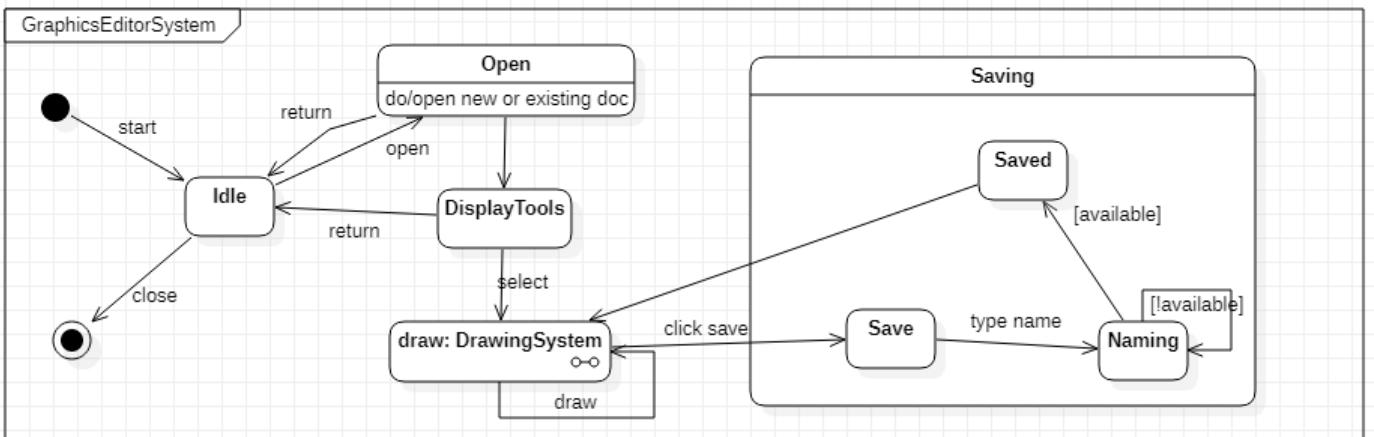
## 2. Advanced Class Diagram



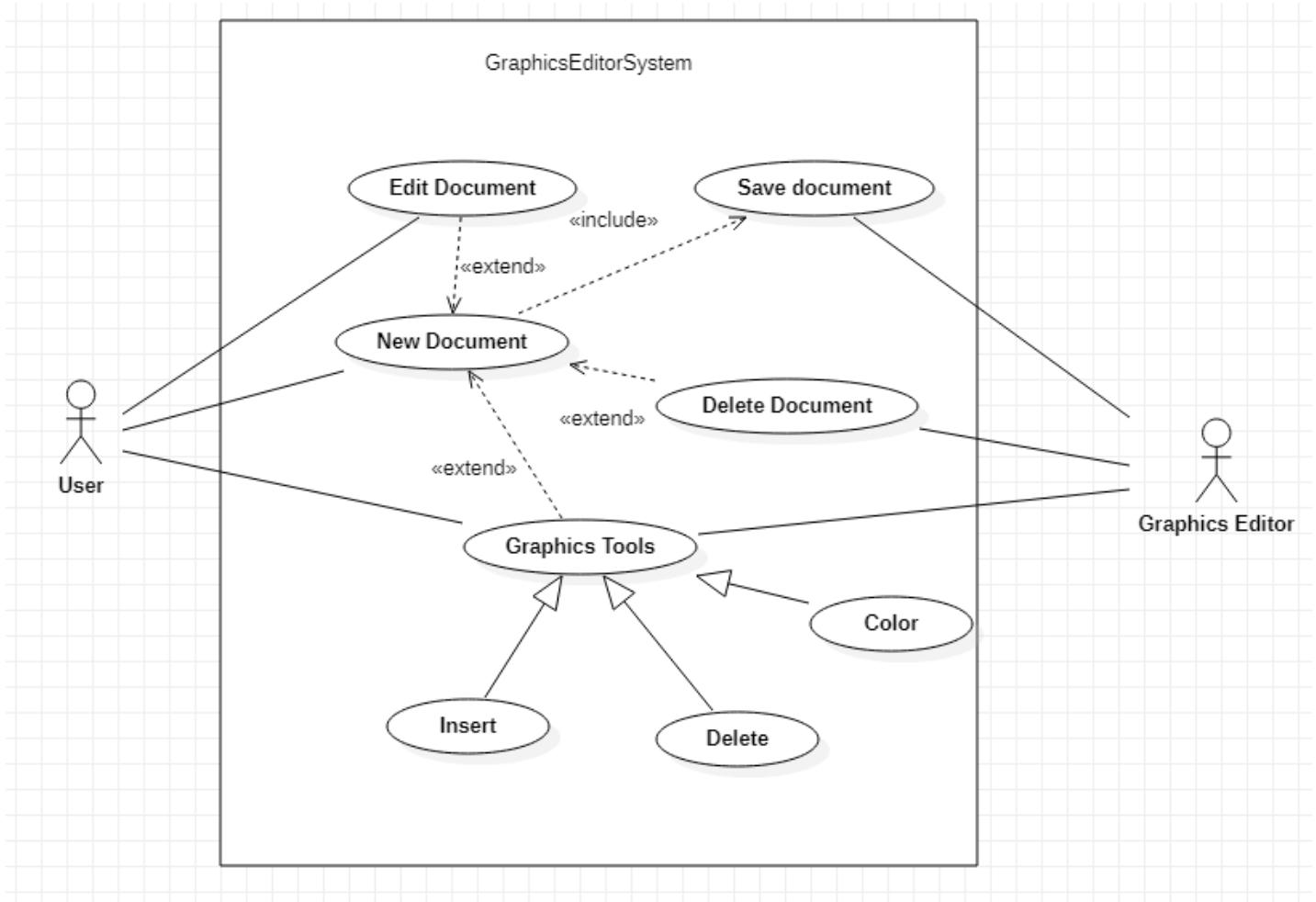


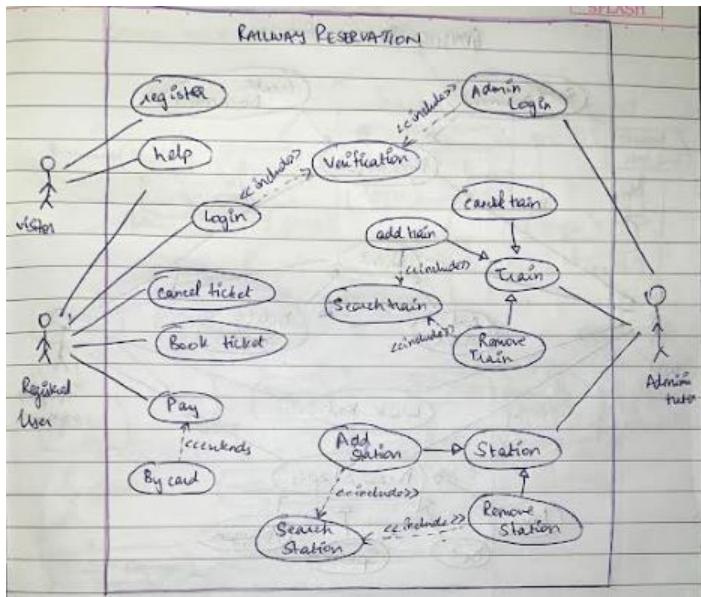
### 3. Advanced State Diagram

The advanced state chart diagram has states starting with the idle state. The state diagram describes the states how to create, display sheet, drawing on the sheet and saving the sheet. The sub state drawing system tells us how the shapes and objects are added in a sheet and also shows all the options available.



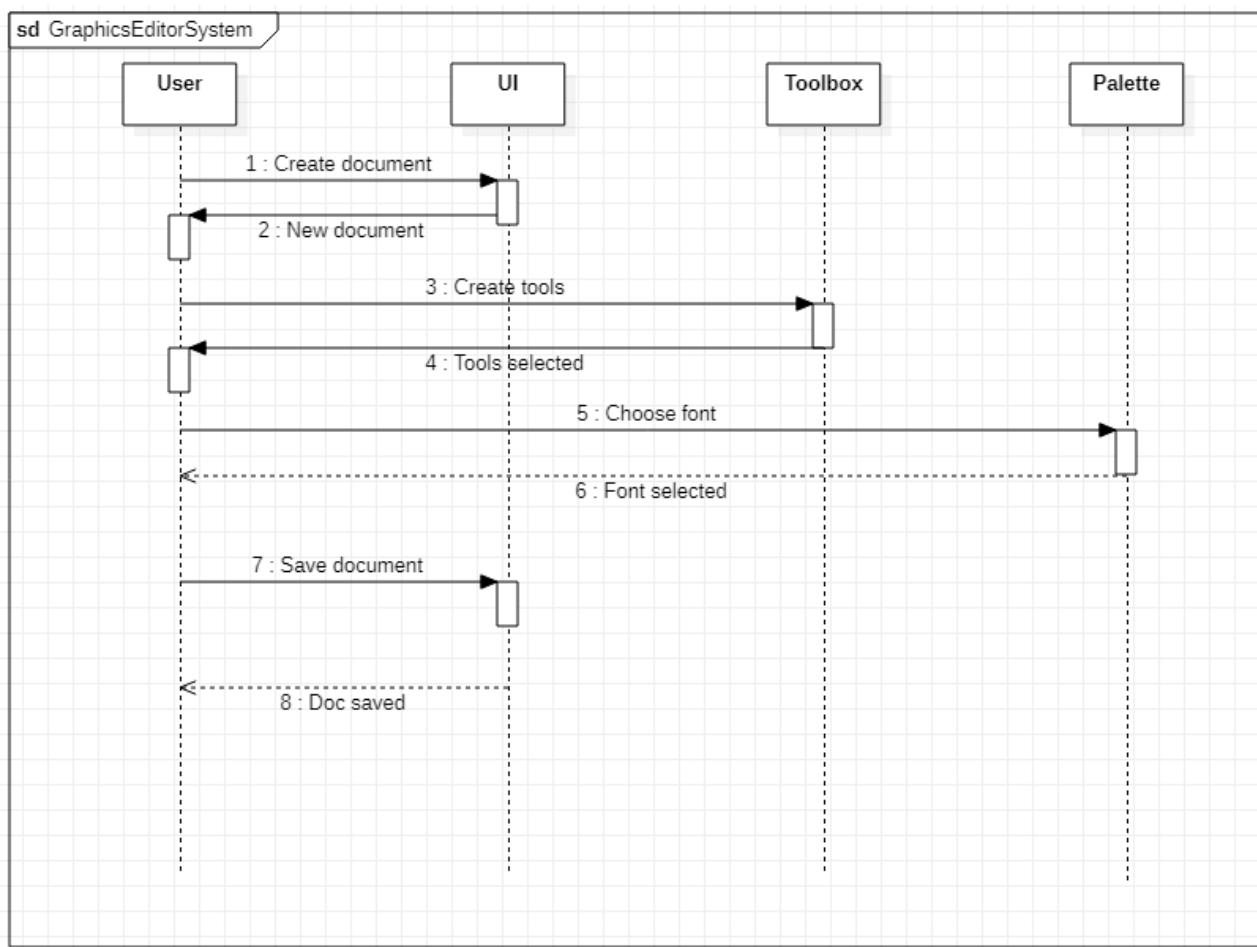
## 4. Advanced Usecase Diagram

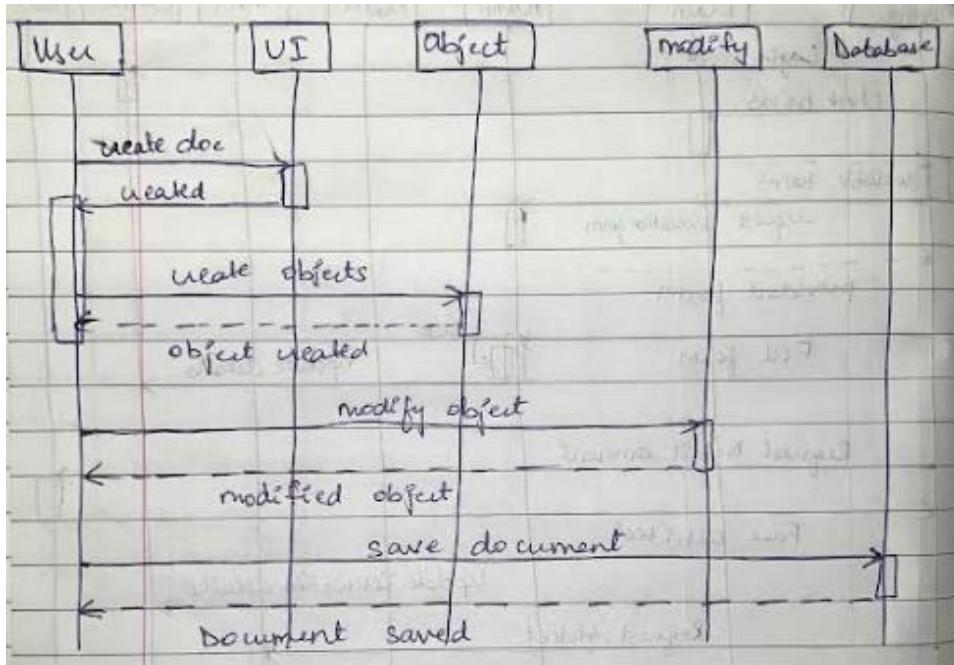




## 5. Advanced Sequence Diagram

The sequence diagram gives us the steps involved in the user creating a document. First an object is created which can be modified. Texts can be added along with the objects. Once all the changes are made the user then the document is saved.





## 6. Advanced Activity Diagram

The activity diagram tells involved in creation of document and sheets. The activity diagram give the steps involved in opening a file or creating a new file. If the file exists then the user has access to edit the file and modify the details. New objects can be created and also customized according to the user. Finally the file is saved by the user.

