VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belgaum -590014, Karnataka.

LAB REPORT on

Object-Oriented Modelling and Design

Submitted by

SAMARTH C SHETTY (1BM19CS141)

in partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

B.M.S. COLLEGE OF ENGINEERING BENGALURU-560019 May-2022 to July-2022

(Autonomous Institution under VTU)

B. M. S. College of Engineering,

Bull Temple Road, Bangalore 560019

(Affiliated To Visvesvaraya Technological University, Belgaum)

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that the Lab work entitled “LAB COURSE **Object-Oriented Modelling and Design**” carried out by **Samarth C Shetty (1BM19CS141),** who is bonafide student of **B. M. S. College of Engineering.** It is in partial fulfilment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2022. The Lab report has been approved as it satisfies the academic requirements in respect of Object**-Oriented Modeling and Design - (20CS6PCOMD)** work prescribed for the said degree.

Sheetal V A	**Dr. Jyothi S Nayak**
Assistant Professor	Professor and Head
Department of CSE	Department of CSE
BMSCE, Bengaluru	BMSCE, Bengaluru

Index Sheet

Course Outcome

CO4	**Ability to conduct practical experiment to solve a given problem using Unified Modelling language.**

1. College Information System

1.1 Problem Statement and SRS

The College Information System is a system that maintains student, staff and department information. It maintains the courses taught by teachers and students enrolled in them. Admission records of student and Examination details and other important information related to college management is maintained.

Software Requirement Specification

The entitles that combe usually found in a college are:- Admission, Departments /Branches, COE, faculty ,students, Courses and Administration (Admin)

- Admission: - It is responsible for admission of students, performing background checks, collect fees. It is also responsible for handling Scholarships and issue ID cards.

- Department: - Each department is assigned with A HOD and set of faculties. Department offers various courses

- COE: COE is responsible for the conduction of exams (both internals & externals). It issues hall tickets, releases timetables for exams and announce the exam results.

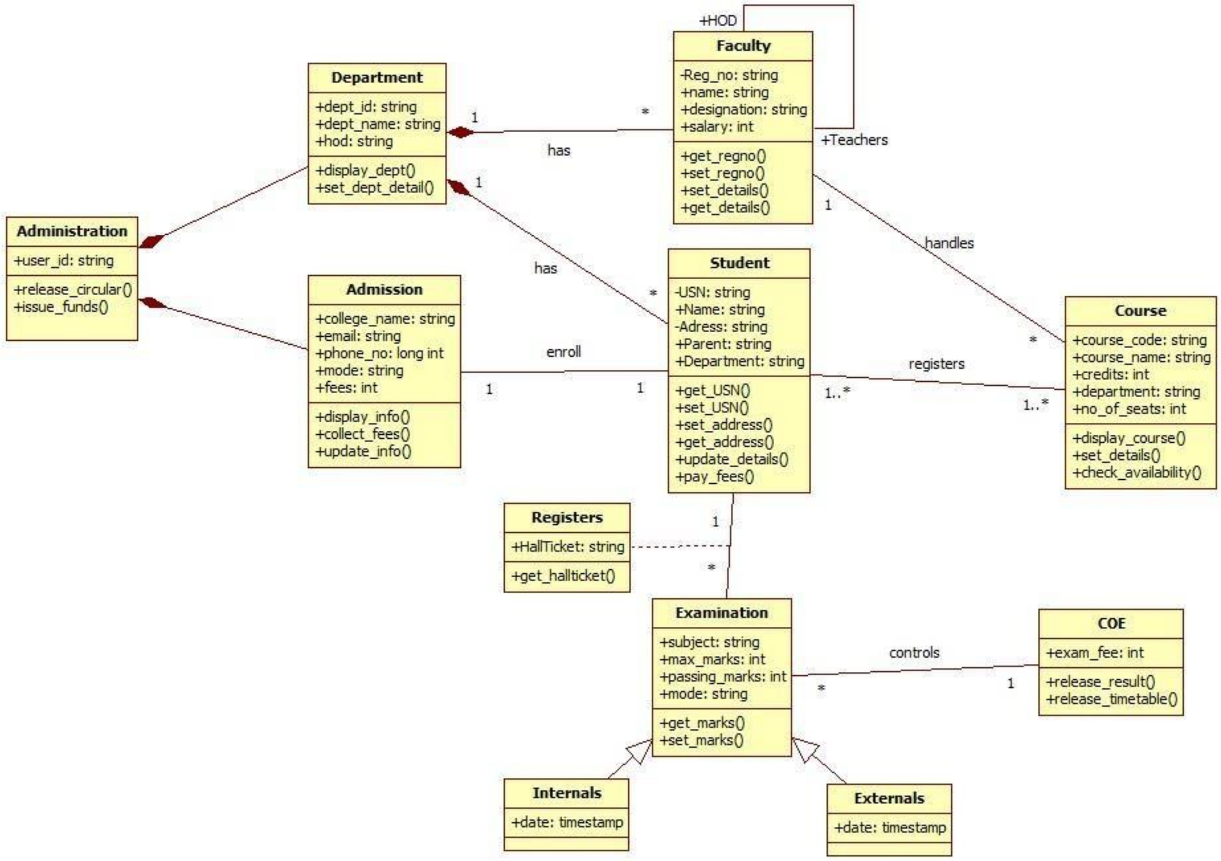
- Faculty: Faculty handles the courses assigned to them by the respective department. They are also involved in designing the syllabus and guiding the students in various projects

- Course: - Every Subject has a unique code and is offered by some department. Students are allowed to register to the course. Faculty to the course is assigned by offering department.

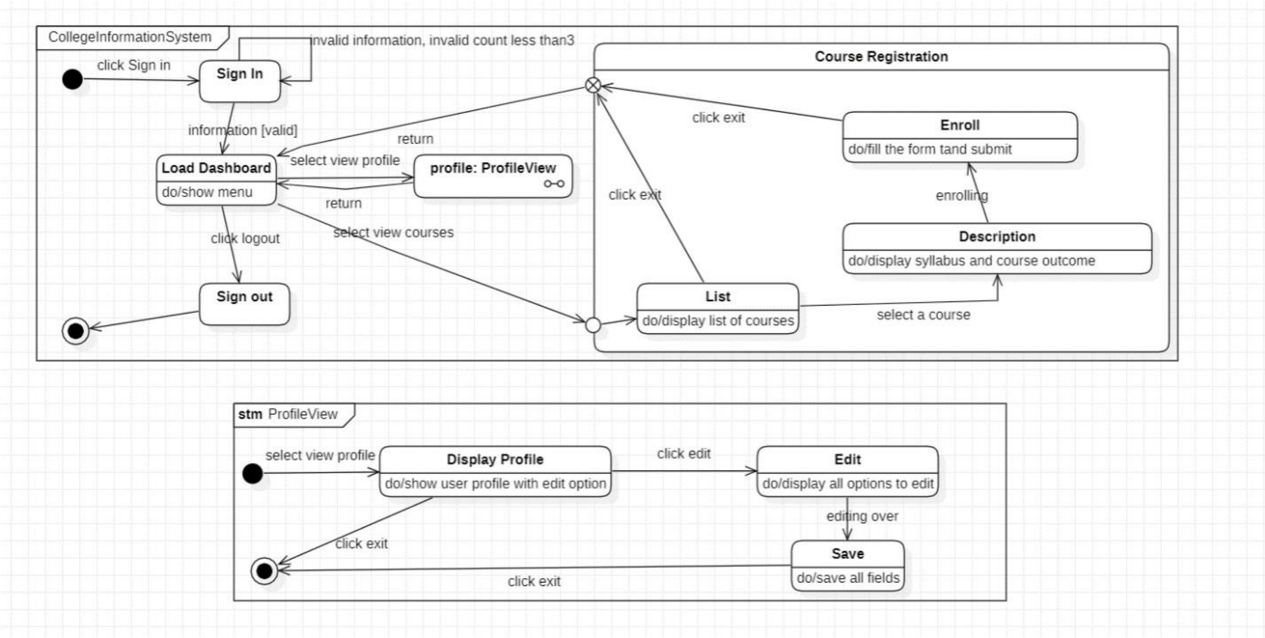
- Student: - Student has a unique id in the college known as USN after getting admitted into the college. Students are allowed to register to the courses offered by their department. Student is eligible to take exam if he/she passes in internals and maintains good attendance

Administration. It is responsible adding, modifying or deleting data on the system. It is also responsible for issuing salary, issue circular about various events and buy new materials required for the college.

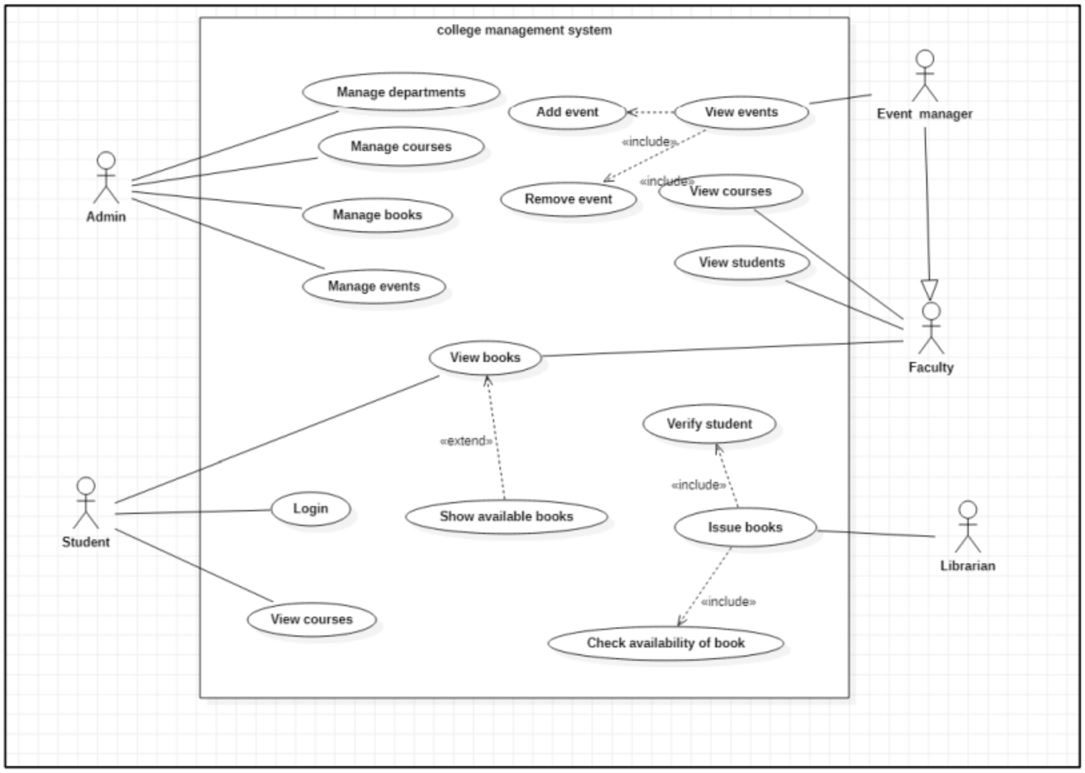
1.2 Class Diagram



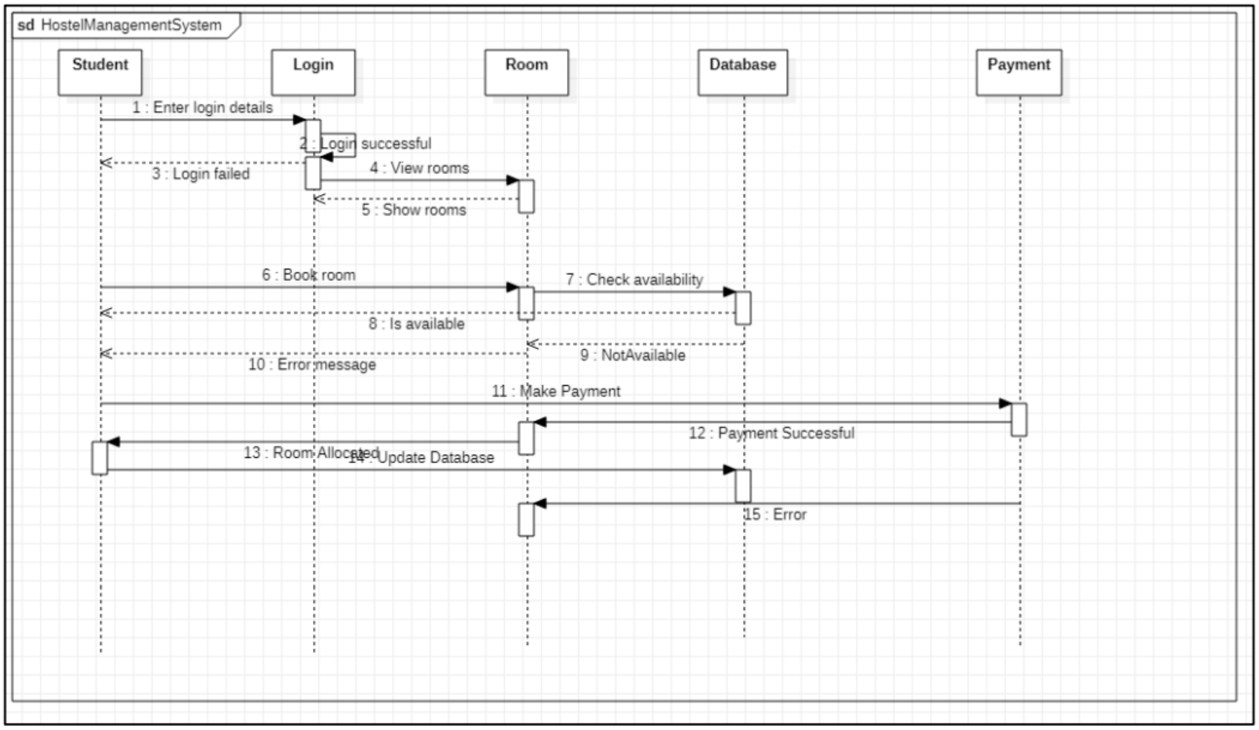
1.3 State Diagram



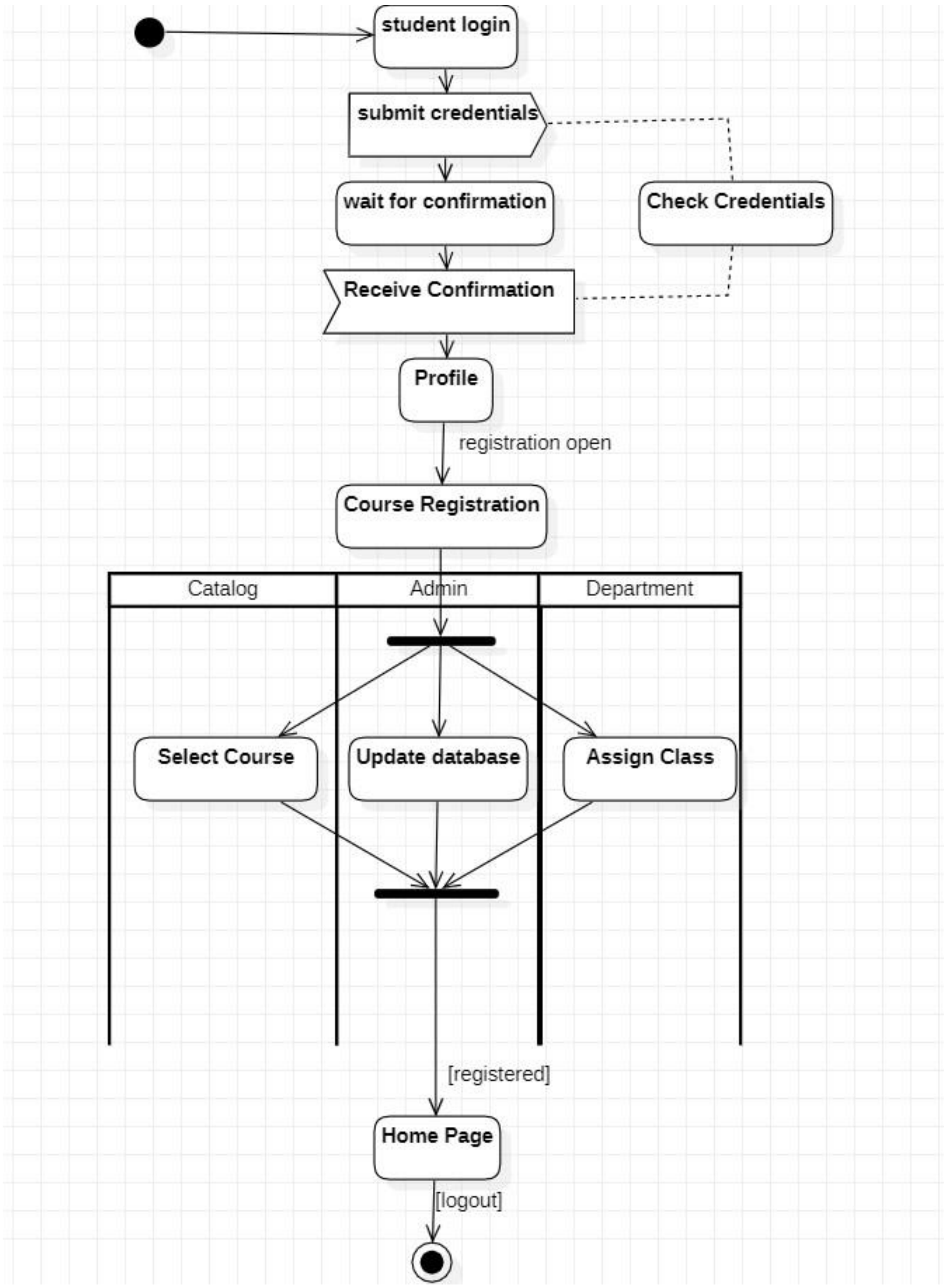
1.4 Use Case Diagram



1.5 Sequence Diagram



1.6 Activity Diagram



2. Hostel Management System

2.1 Problem Statement

The hostel management system is to provide college students accommodation to the university hostel more efficiently. This project also keeps details of the hostelers and applied students. It is headed by Warden. He will be the administrator. This document is intended to minimize human works and make hostel allocation an easier job for students and hostel authorities by providing online application for hostel.

Software Requirement Specification

The entities that can be usually found in a Hostel are: - Admission, Mess, Rooms, Warden, Student and Administration (Admin)

Hostel can be of two types Girls Hostel & Boys Hostel.

Admission: - It is responsible for admission of student who has applied after collecting, relevant details and fees from the student.

Mess: Mess is responsible for fulfilling the food needs of the students, it has a definite menu which is developed based on student feedback. The mess keeps account of food consumed by the student and charges them monthly accordingly.

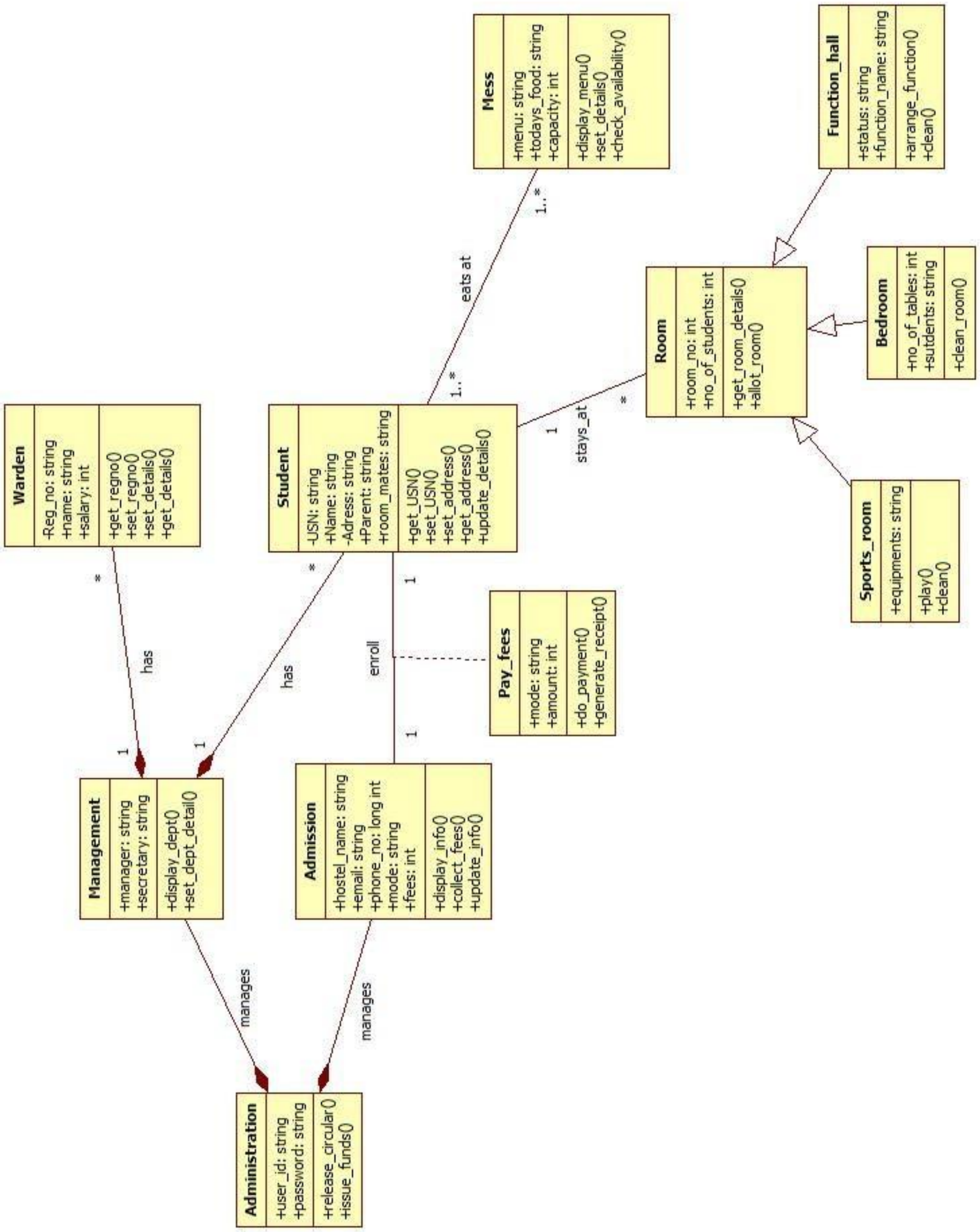
Rooms: It is the place where students live. It has cots and tables, the number of students living in a room varies according to cost. Every year students who finish the course empty the room and re-allocation is done

Student: Each student is assigned with an ID, the contact details of student (phone, email) are collected and then a room is allotted to a student. Then student is required to pay. Lodging Cond Mess food.

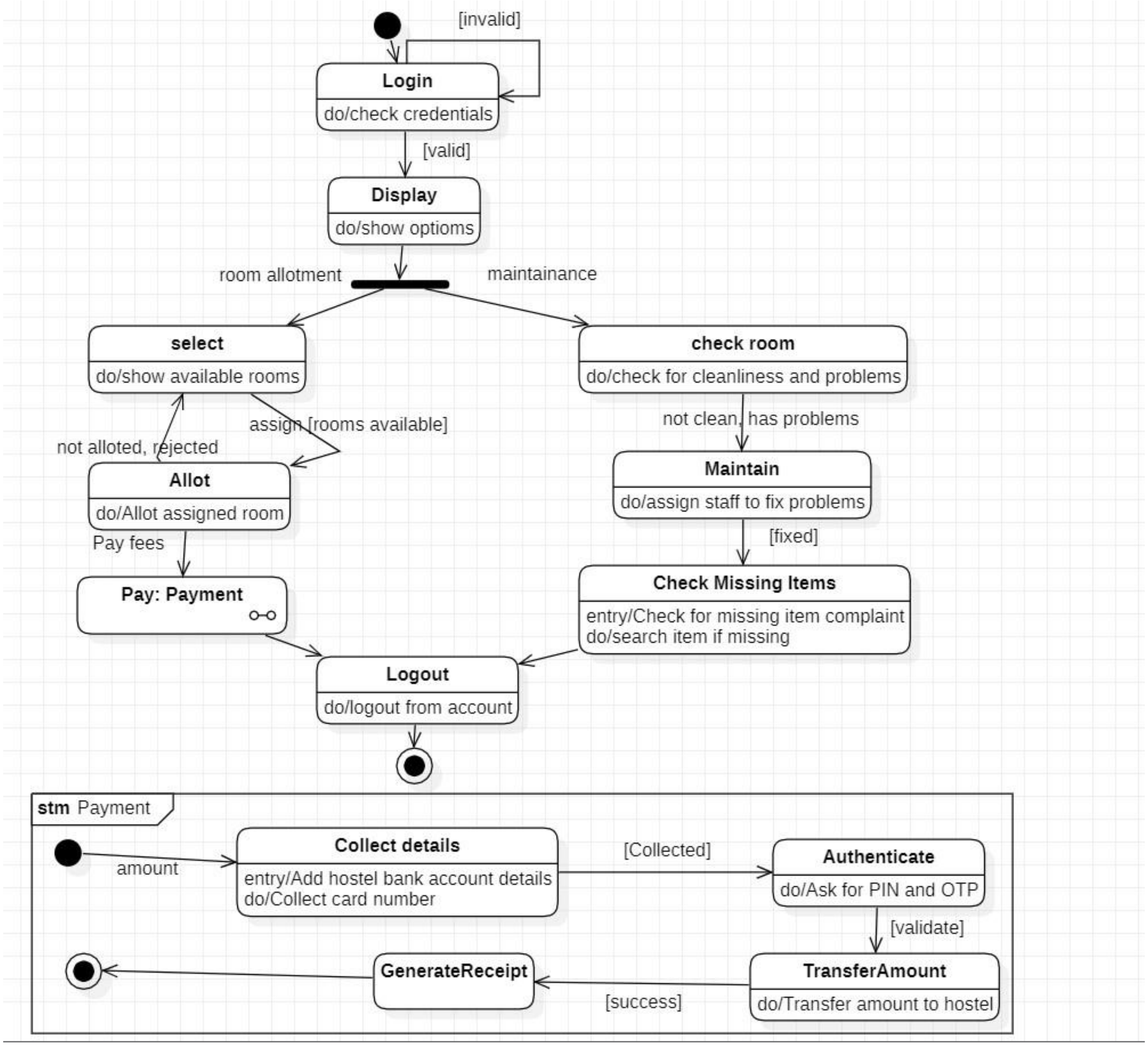
Warden: Warden is allotted to look after a certain group of students. He is also given an ID and his contact details are collected. He gives feedback about students.

Administration: - It is responsible for the maintenance of rooms and mess, room allotment and warden allotment It also releases circulars in Hostel. And is responsible for maintenance of data.

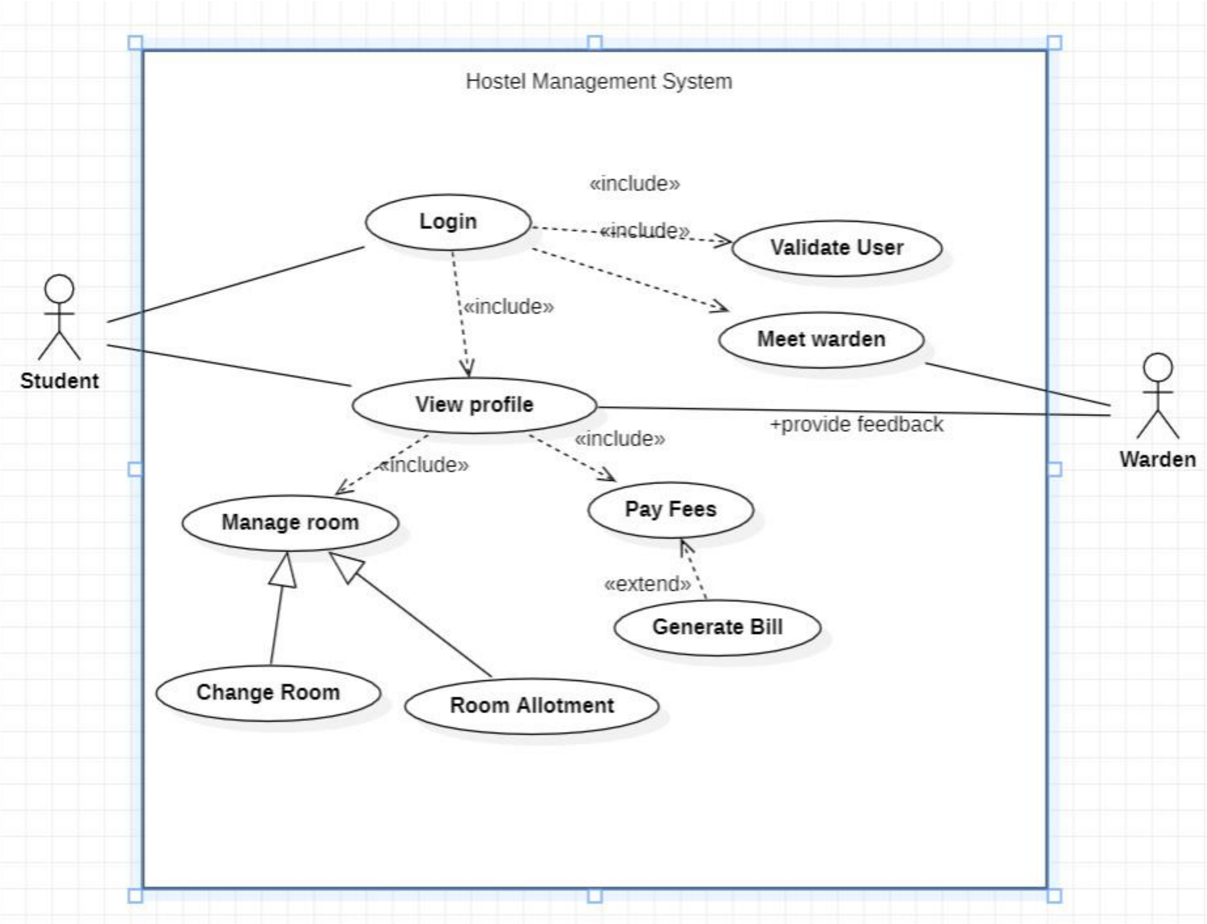
2.2 Class Diagram



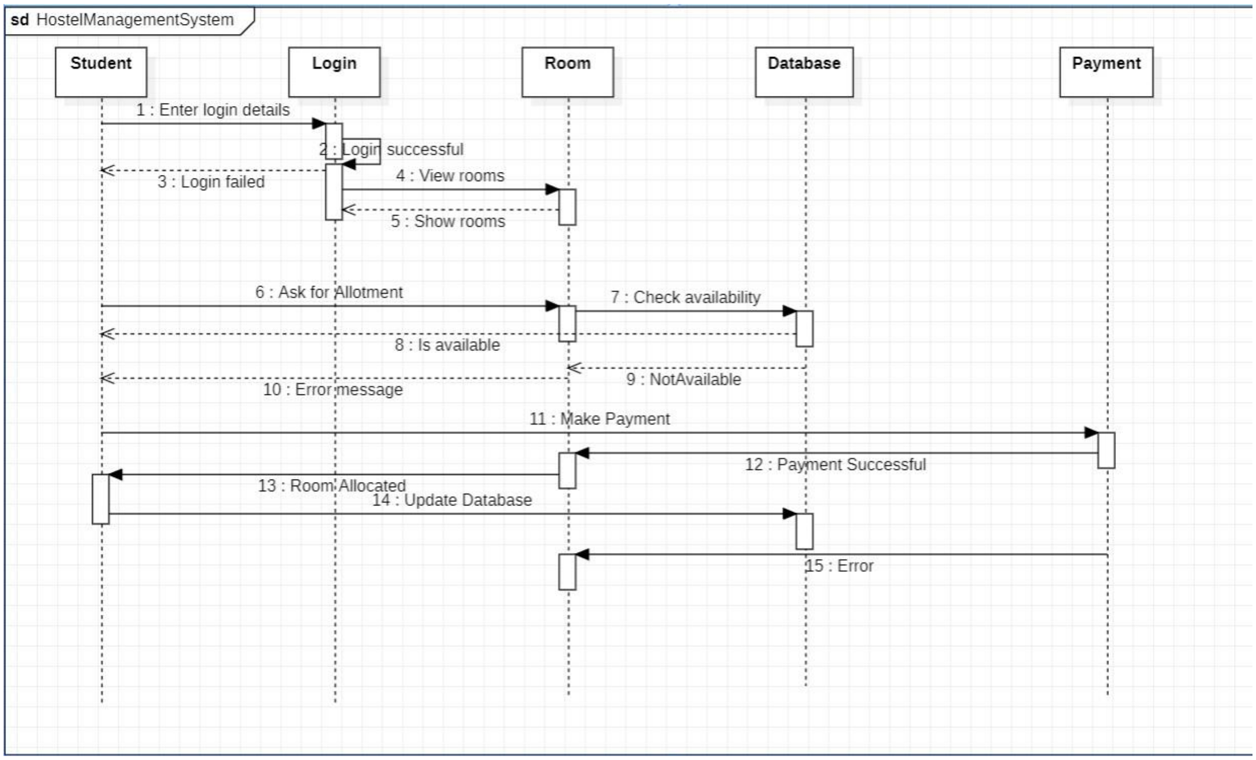
2.3 State Diagram



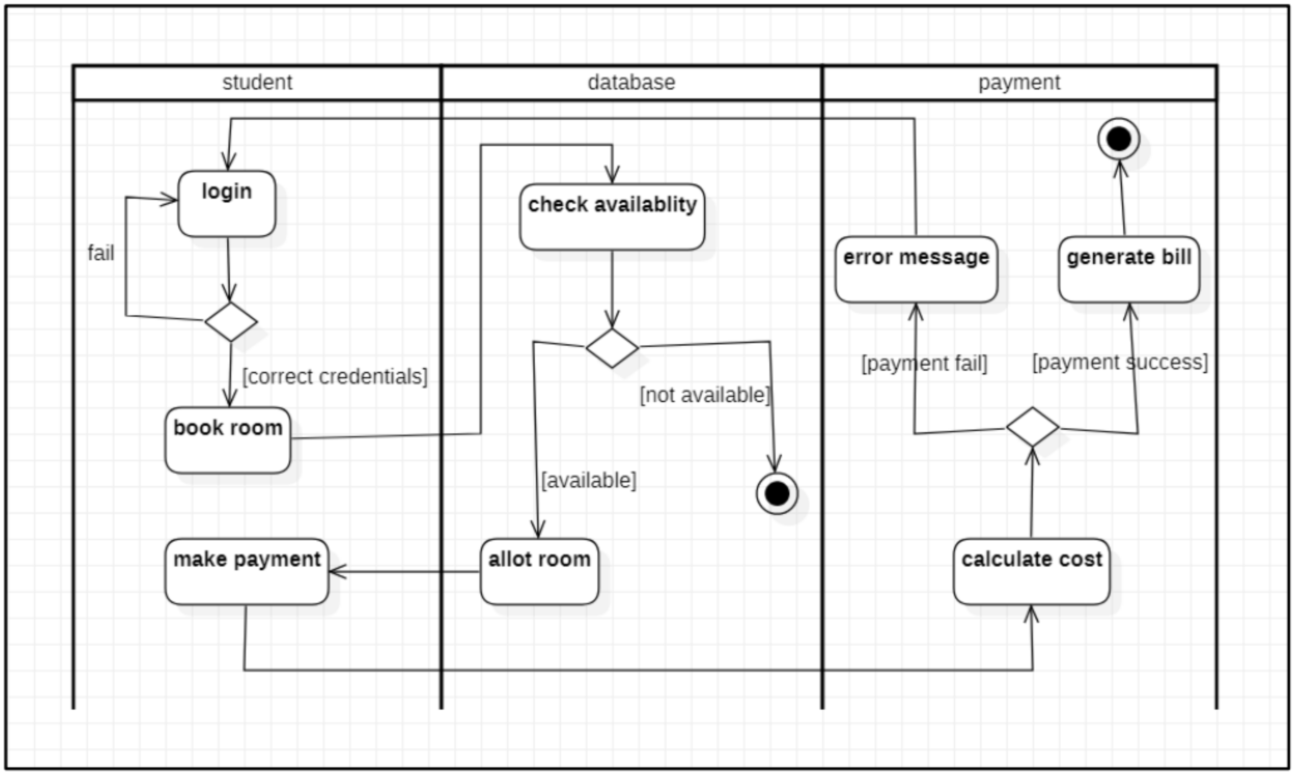
2.4 Use Case Diagram



2.5 Sequence Diagram



2.6 Activity Diagram



3. Stock Maintenance System

3.1 Problem Statement and SRS

The stock maintenance system is basically for the customers who access the information about the stock and retrieves the information. The stock maintenance system is to replace the existing maintenance system which is in efficient. The new stock maintenance system will allow the employee to record information of the products available in the store. The vendor deals with the information about the details of the suppliers giving product to the organization.

Software Requirement Specification

The entities that can be found in stock maintaining system are: - Customer, Vendor, Product, Stock

Customer: - Customer retrieves information about the stock present with the vendor and places older according to his requirements, and availability. Customer is identified with Name and contact

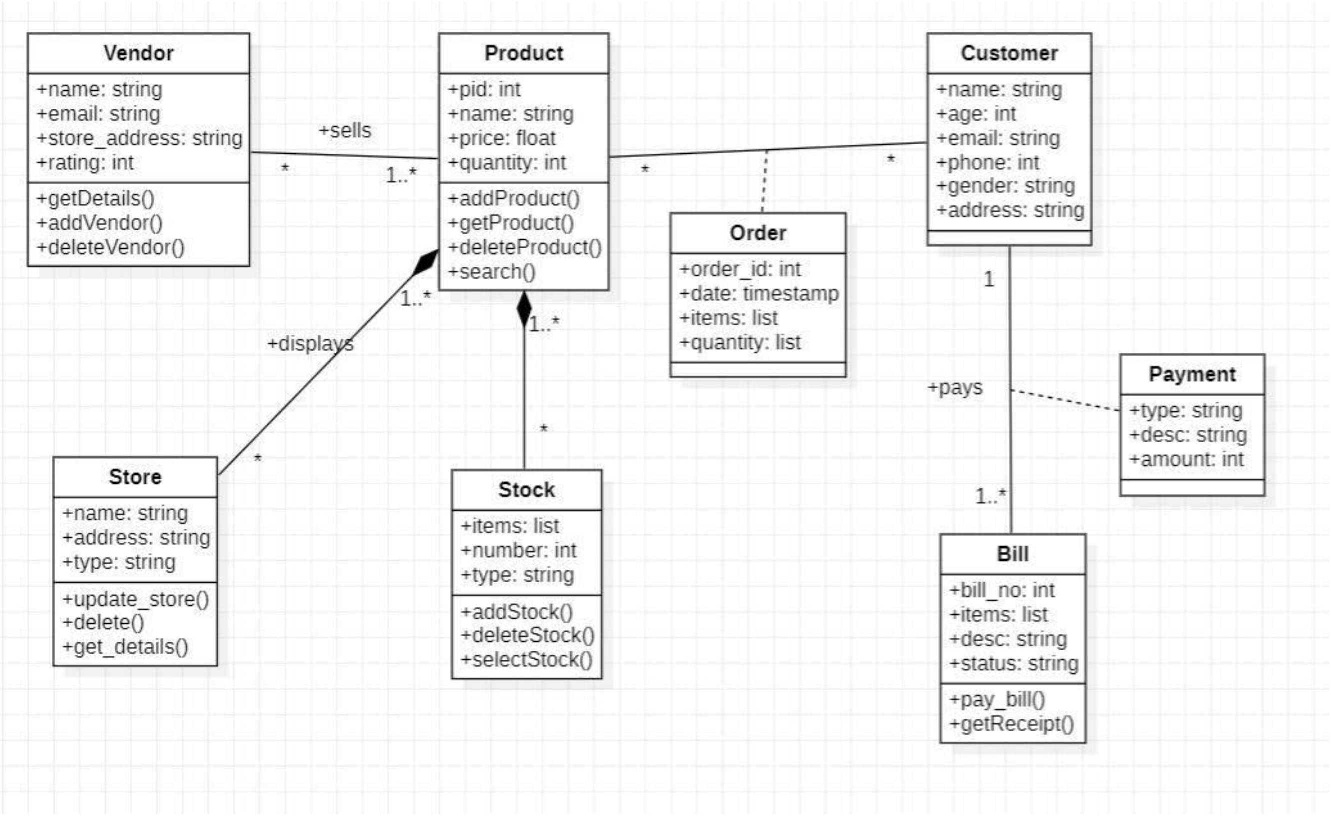
Vendor: - Vendor is identified by a registration ID and contact details Vendor can add modify or remove stock details. Vendor sells the product to customer.

Here at when products are sold a purchase order is created containing the list of products and its estimated price. It is uniquely identified by Order ID. After order is completed, a bill is generated containing price of product, tax details etc. It is uniquely identified by bill no.

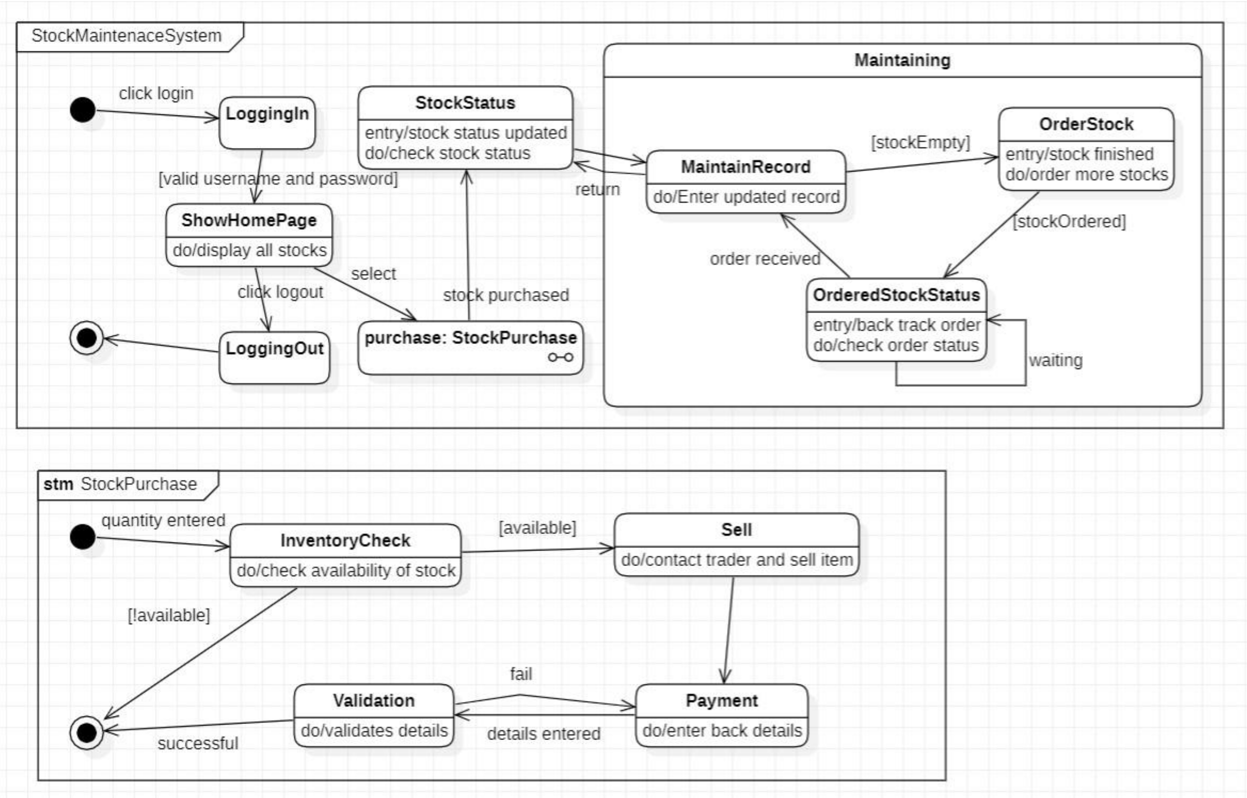
Product: It consists of ProductID, Price, Rate, Date of manufacture and Expiry Date. Also, essential details about the product.

Stock: Stock contains details about availability of products with the vendor. Here we can add, update, delete stock details

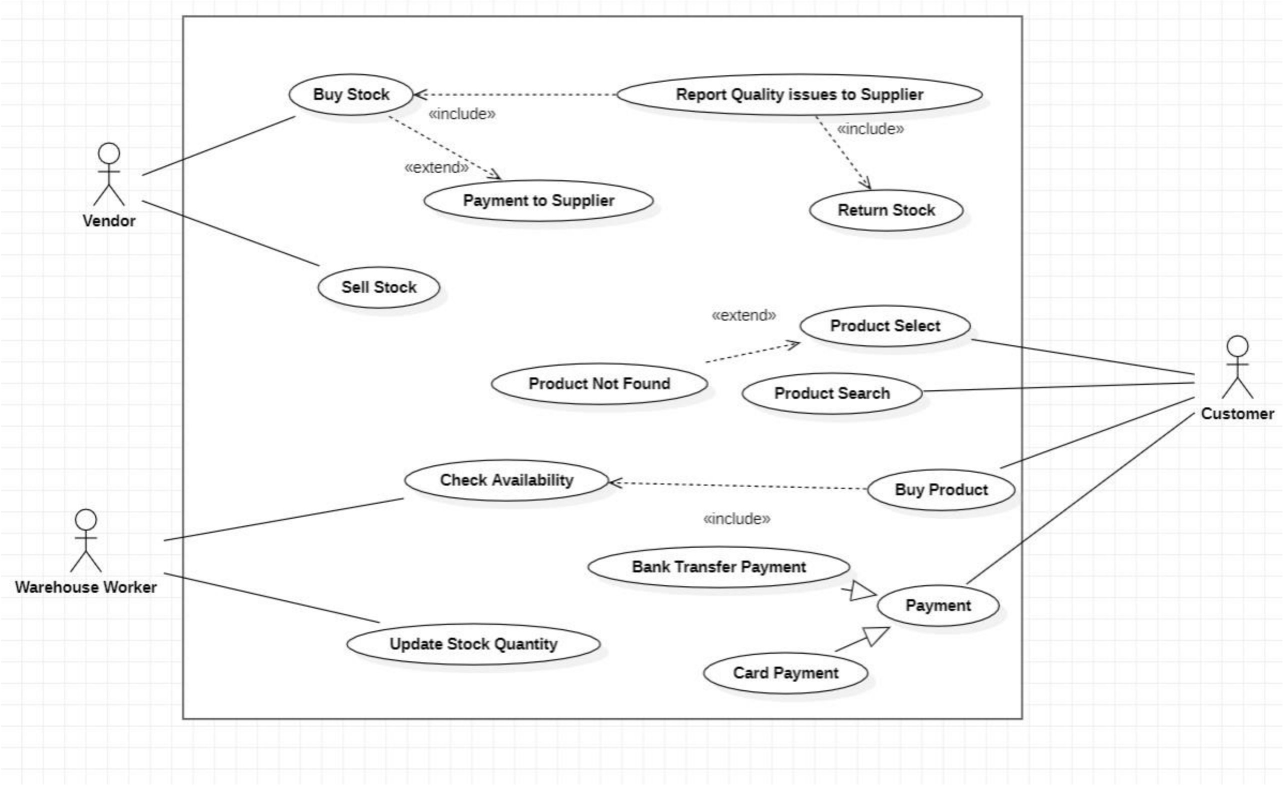
3.2 Class Diagram



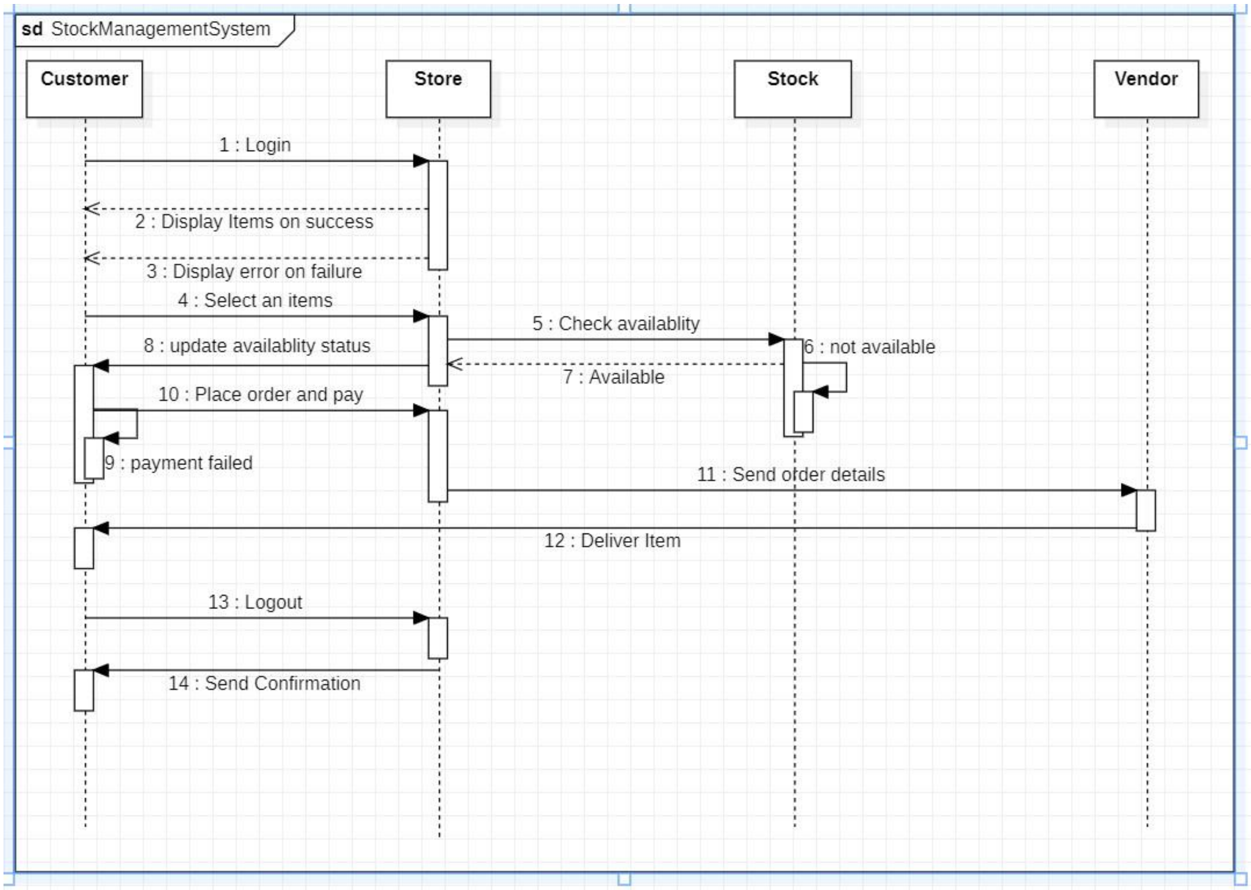
3.4 State Diagram



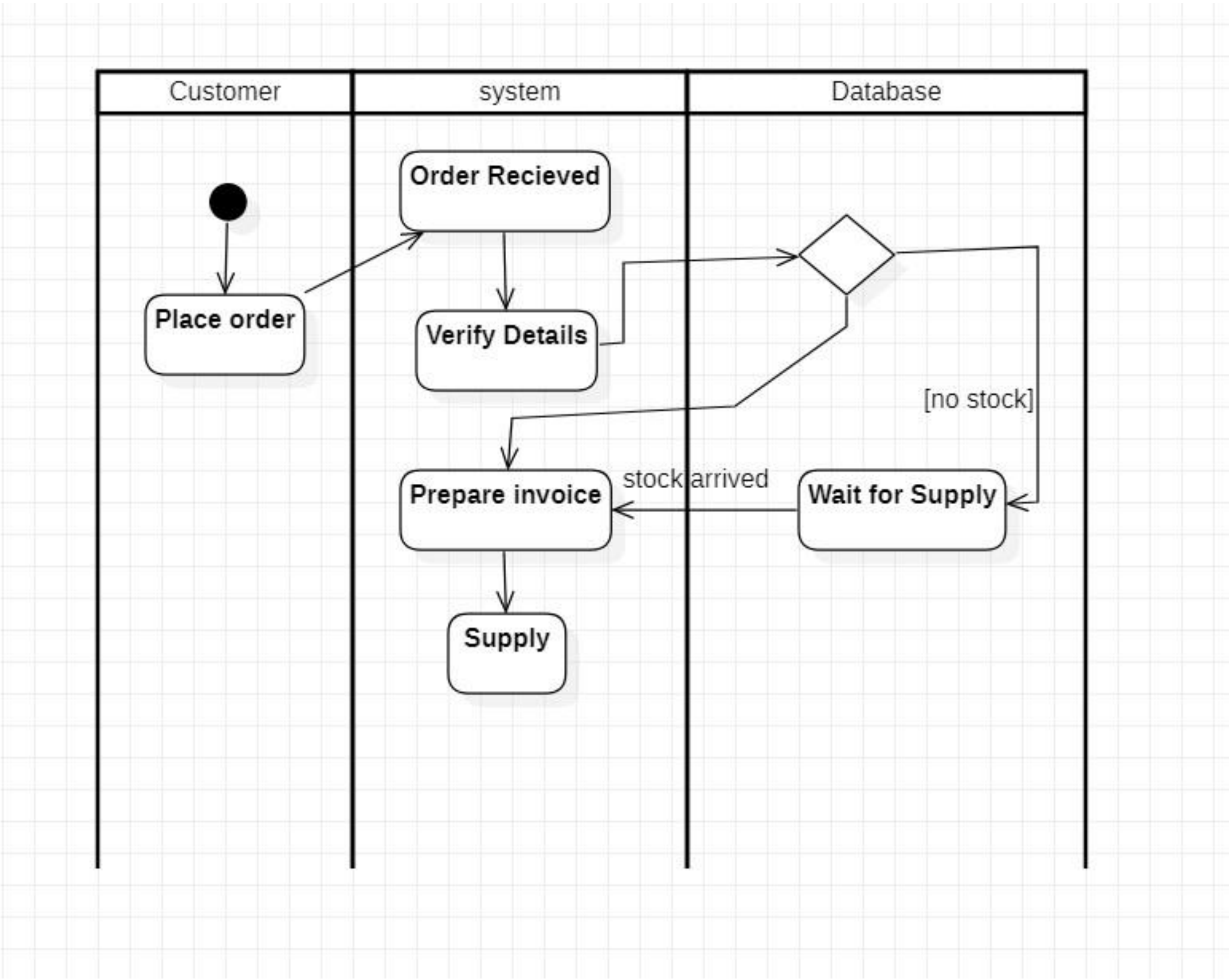
3.5 Use Case Diagram



3.6 Sequence Diagram



3.7 Activity Diagram



4. Coffee Vending Machine

4.1 Problem Statement and SRS

The coffee vending machine is basically for the customers to buy coffee by themselves without any third person being involved. A coffee vending machine sells different types of coffee such. Each type of coffee has a price and a name. A customer can buy their choice of coffee by selecting the button of their coffee and paying for the same through the coin box.

Software Requirement Specification

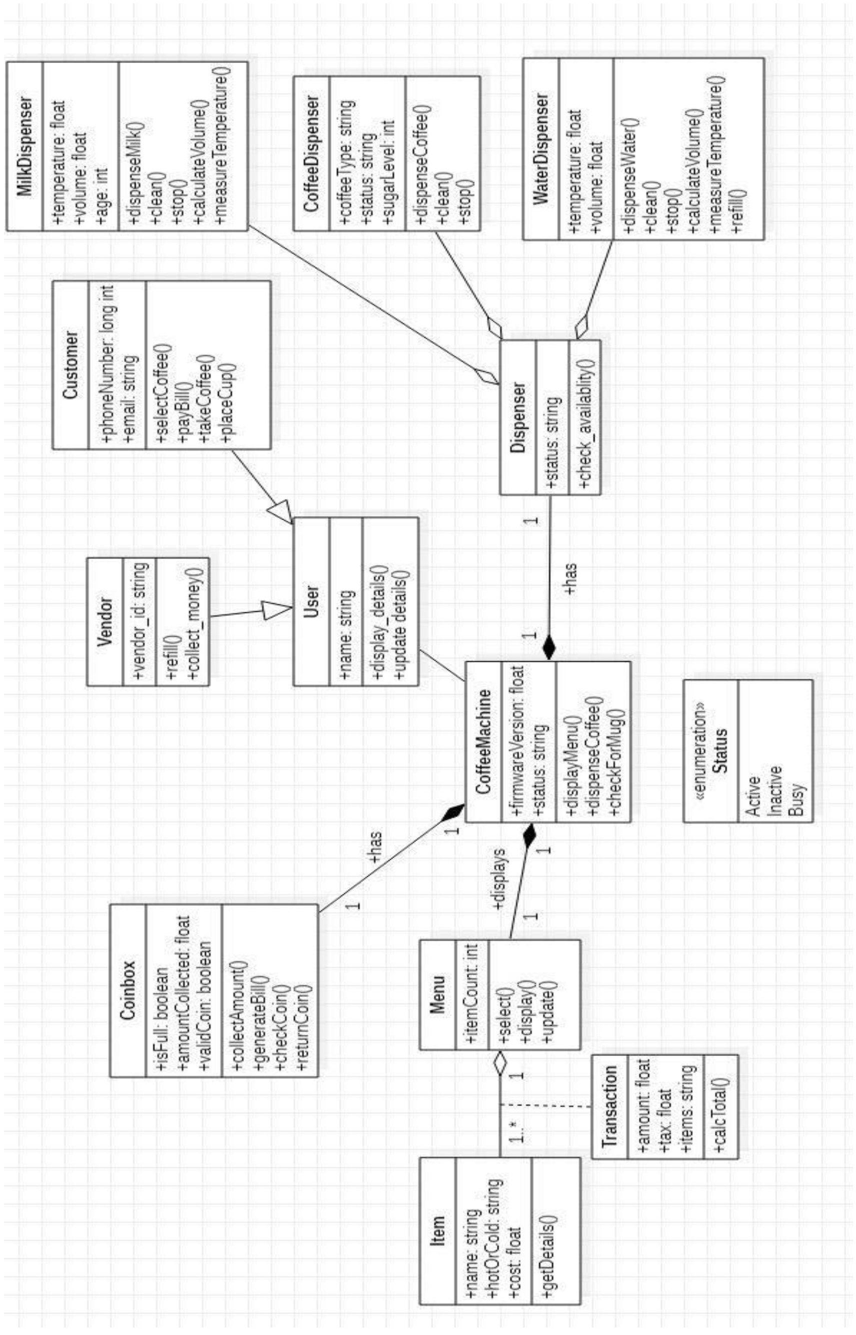
The vending machine must have money box, coin slot, display screen, ingredients, and products

The user must be presented with a menu of products based on the availability of ingredients to make the requested product.

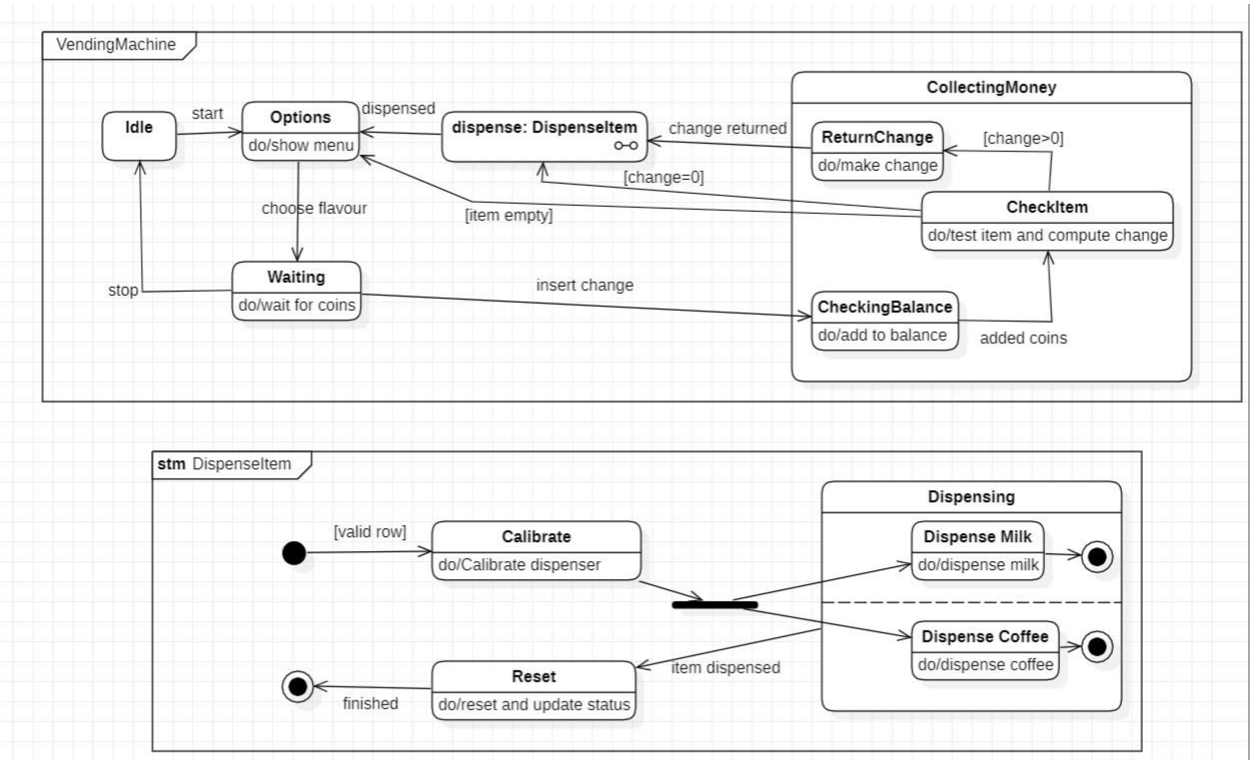
•After selecting the product, user must be asked for payment. The user inserts money into coin slot which checks for validity and correctress of payment. If pay is not proper, the coins are returned or else we move to next step.

- The dispenser must check for the presence of mug before dispensing the product. If mug is not present, the user must be alerted to be place the mug under dispenser • If the ingredients are low or empty the machine should alert the owner to refill the empty ingredients.
- The user must be allowed to do modification by adding extra buttons for sugar, milk etc.

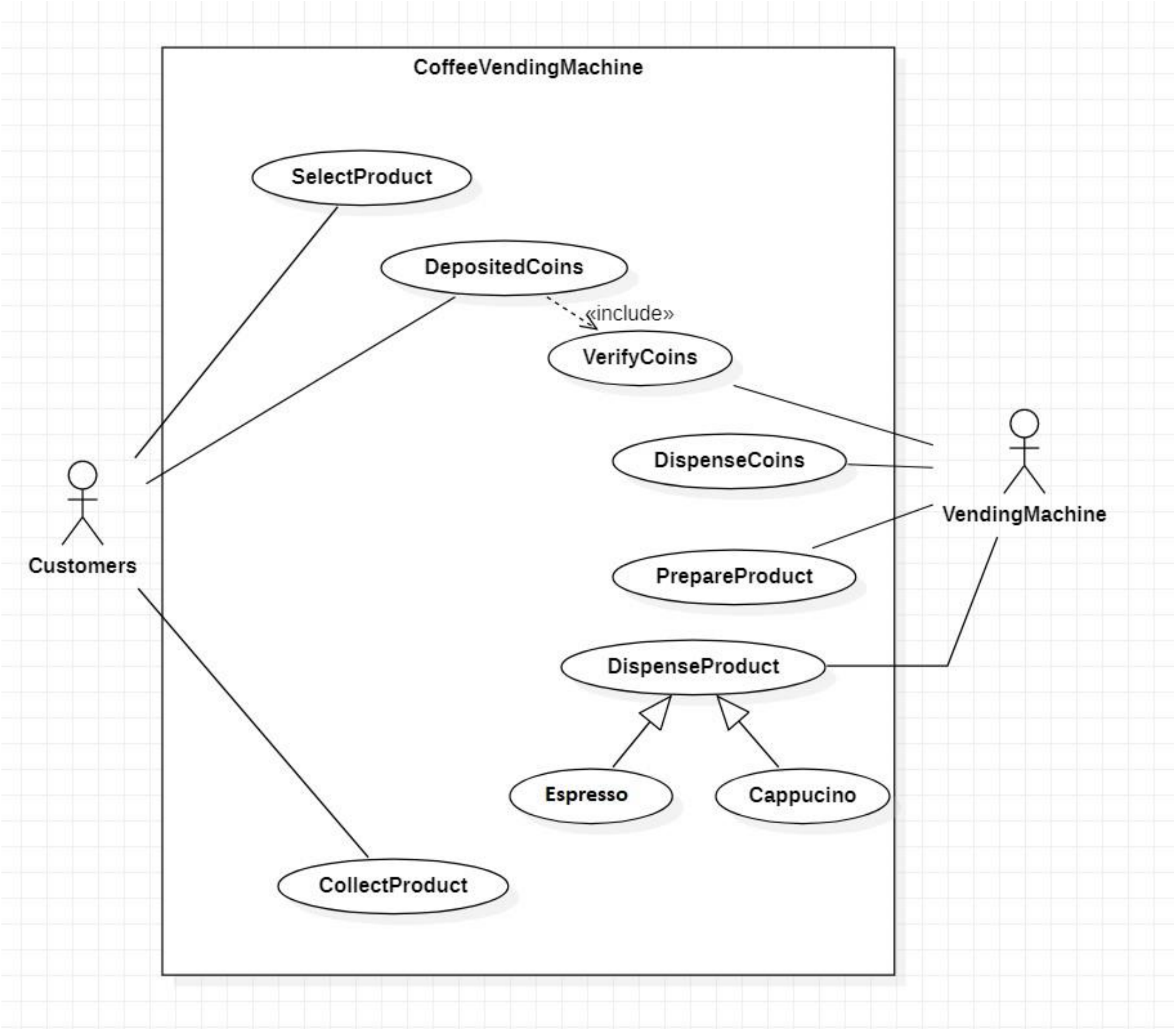
4.2 Class Diagram



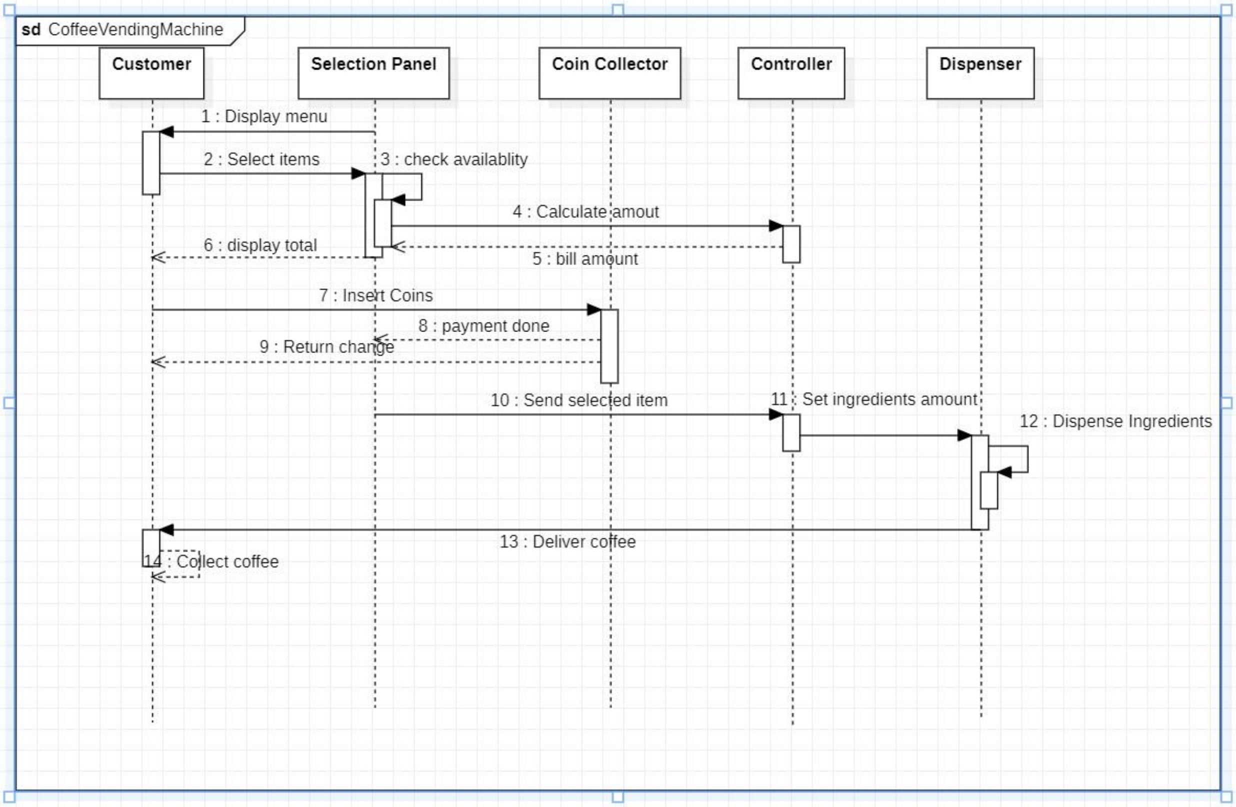
4.3 State Diagram



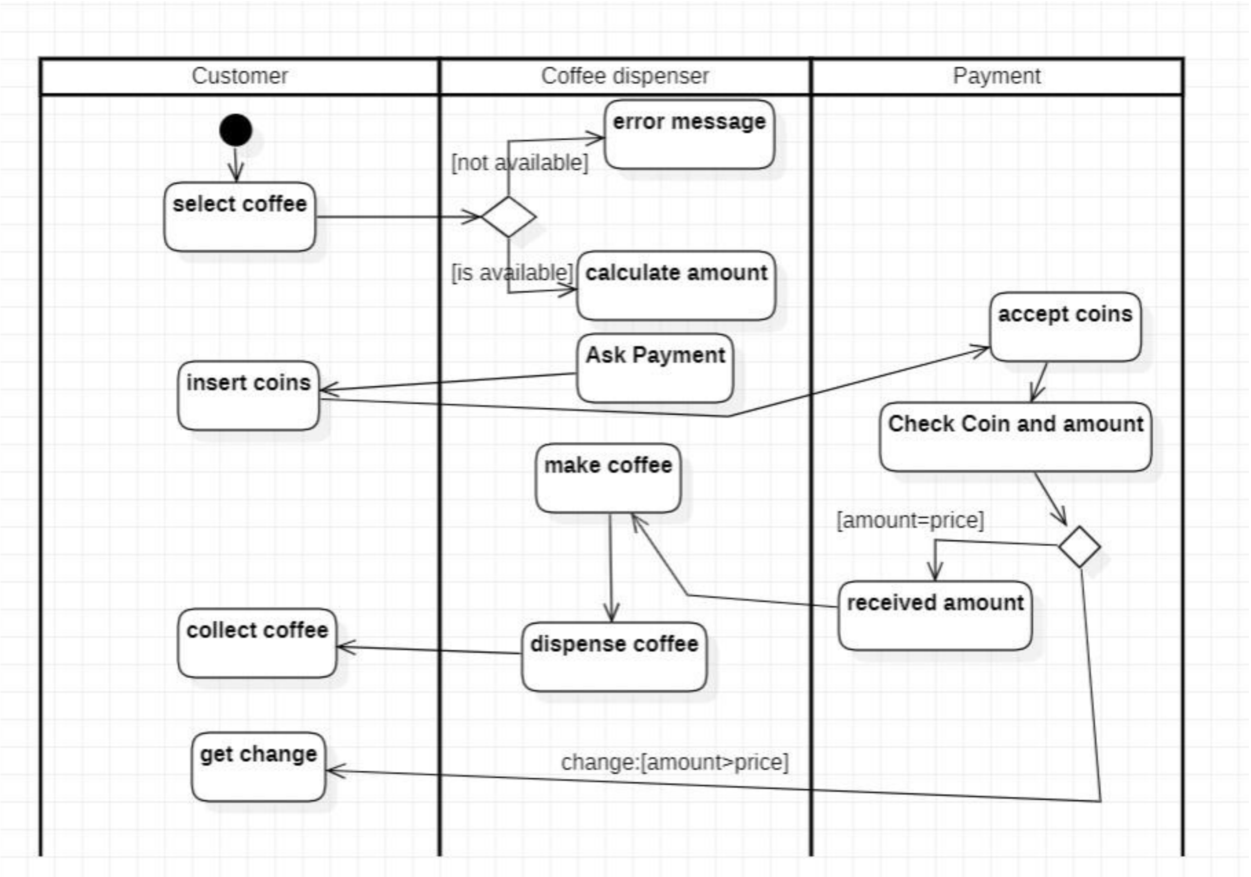
4.4 Use Case Diagram



4.5 Sequence Diagram



4.6 Activity Diagram



5. Online Shopping System

5.1 Problem Statement

The Online Shopping System for all kind of products web application is intended to provide complete solutions for vendors as well as customers through a single get way using the internet. It will enable vendors to setup online shops, customer to browse through the shop and purchase them online without having to visit the shop physically. The administration module will enable a system administrator to approve and reject requests for new shops and maintain various lists of shop category. This system allows the customers to maintain their cart for add or remove the product over the internet.

Software Requirement Specification

The customer must have an account in the online website where he/she can purchase products.

•If the customer is not registered, he/she must be prompted to register by giving essential details such as email ID, address and contact no. And then user is provided with a unique User ID

• Once logged in user can browse through various categories of products, search for product and filter the results

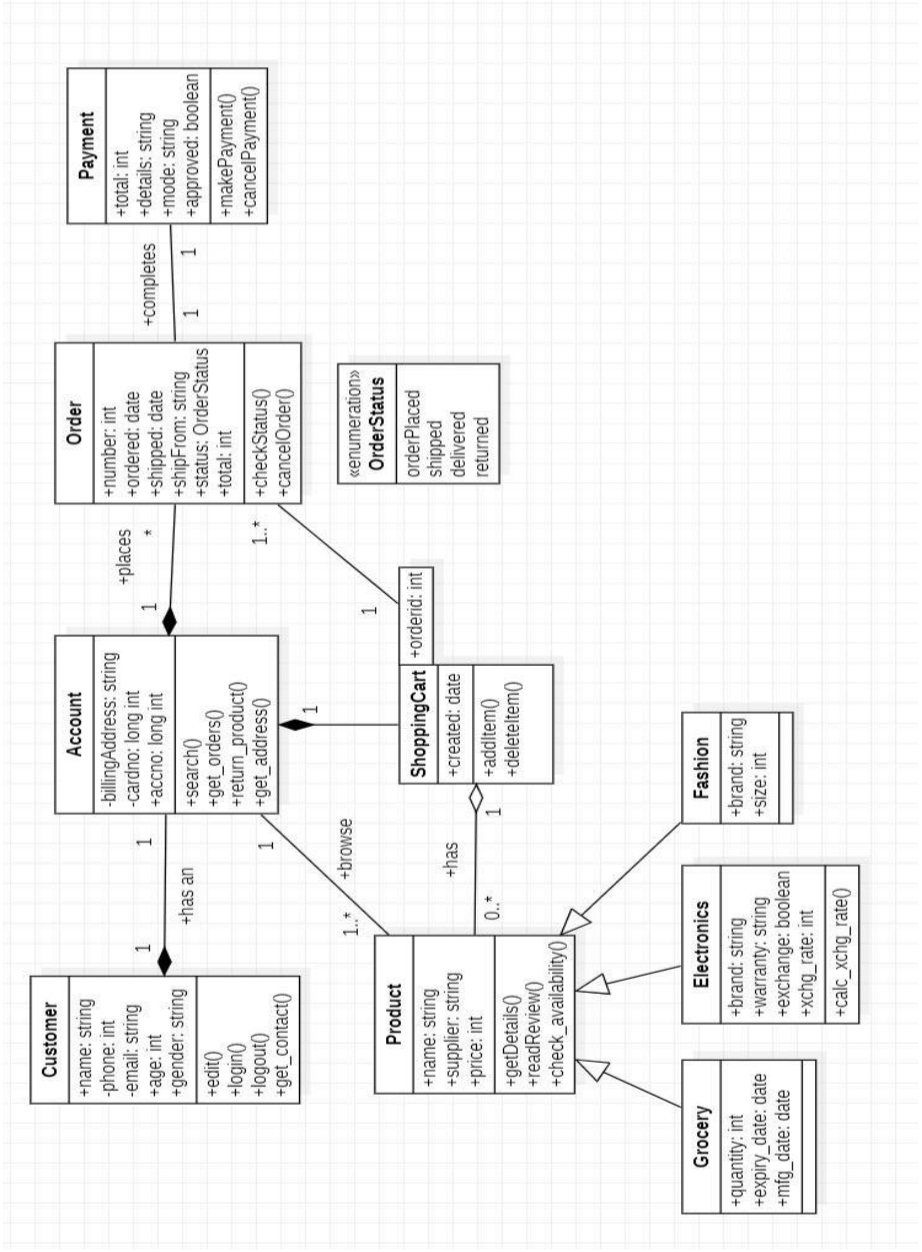
After customer chooses the product, he/she wants to buy, it must be added to the cart.

•Finally, when customer is done with shopping, they can check out the product in the cart, do payment through UPI, debit/credit card or opt for COD and place the order by giving shipping address.

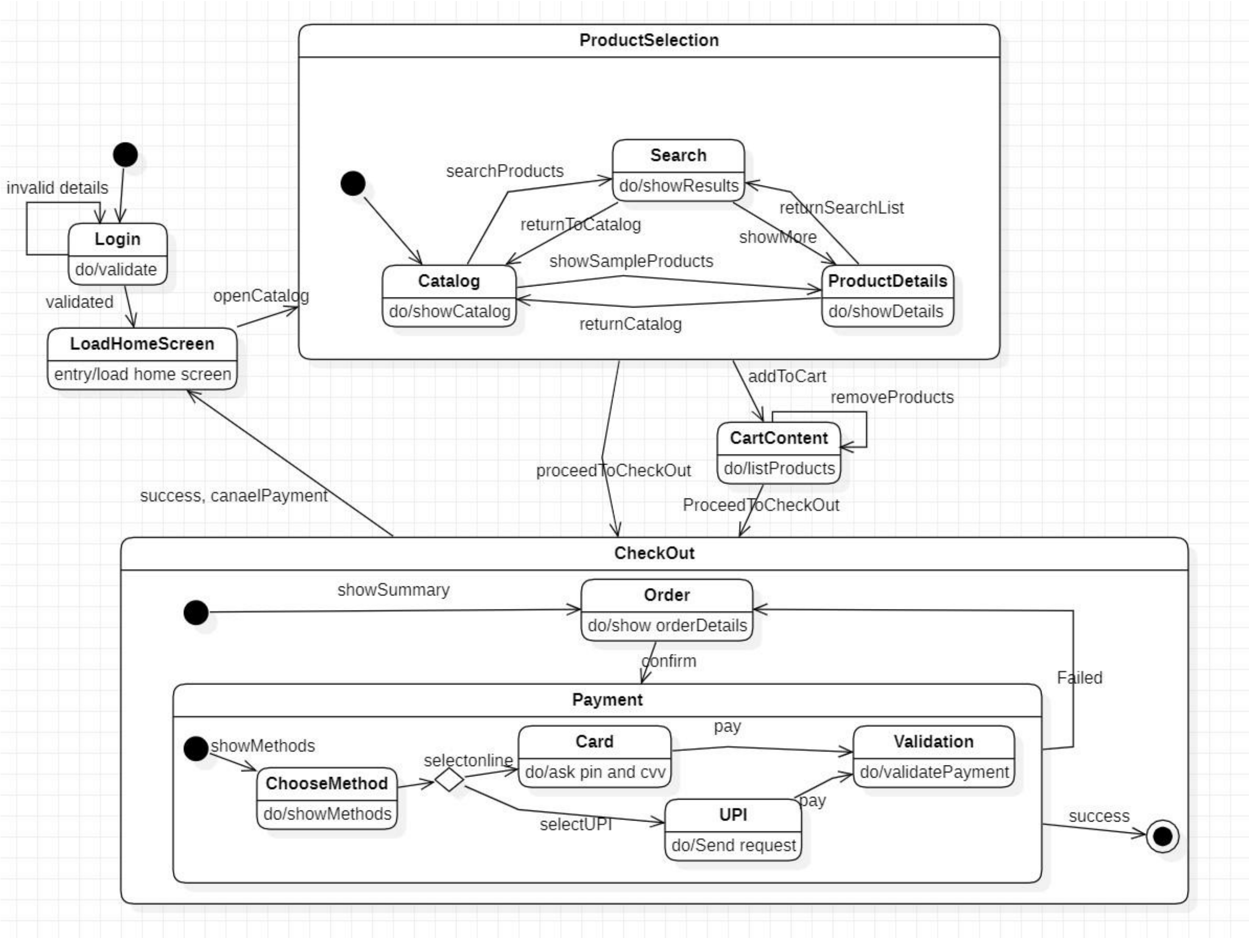
•Once order is confirmed user is sent a copy. of the bill through their email

The vendor is allowed to change the availability and prices of the products listed on the site

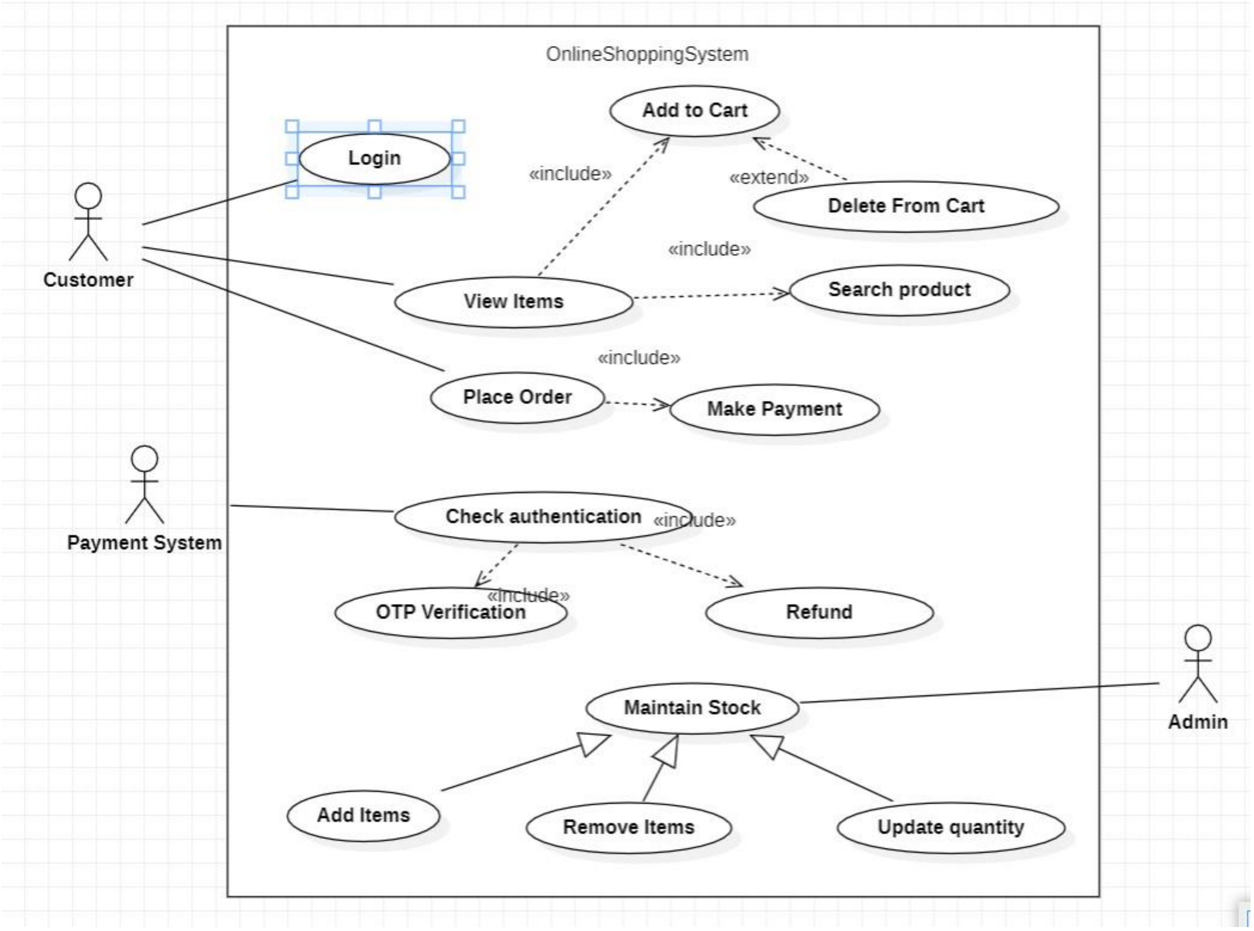
5.2 Class Diagram



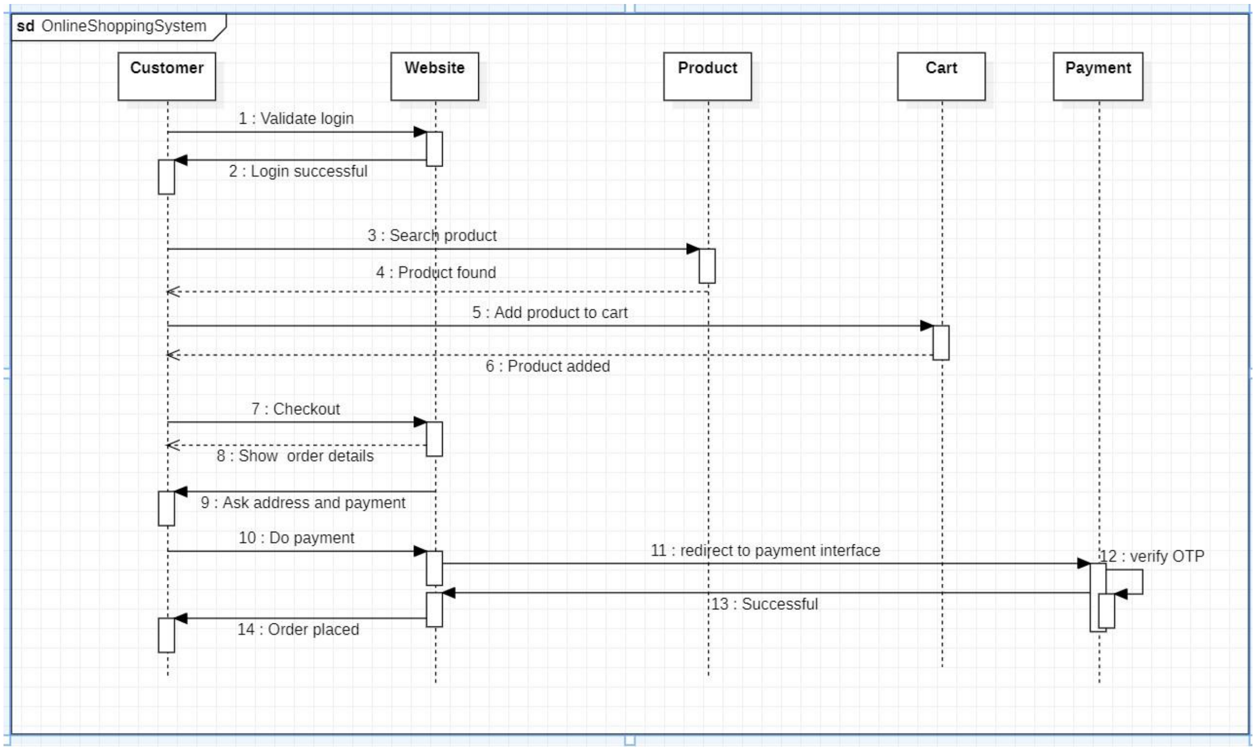
5.4 State Diagram



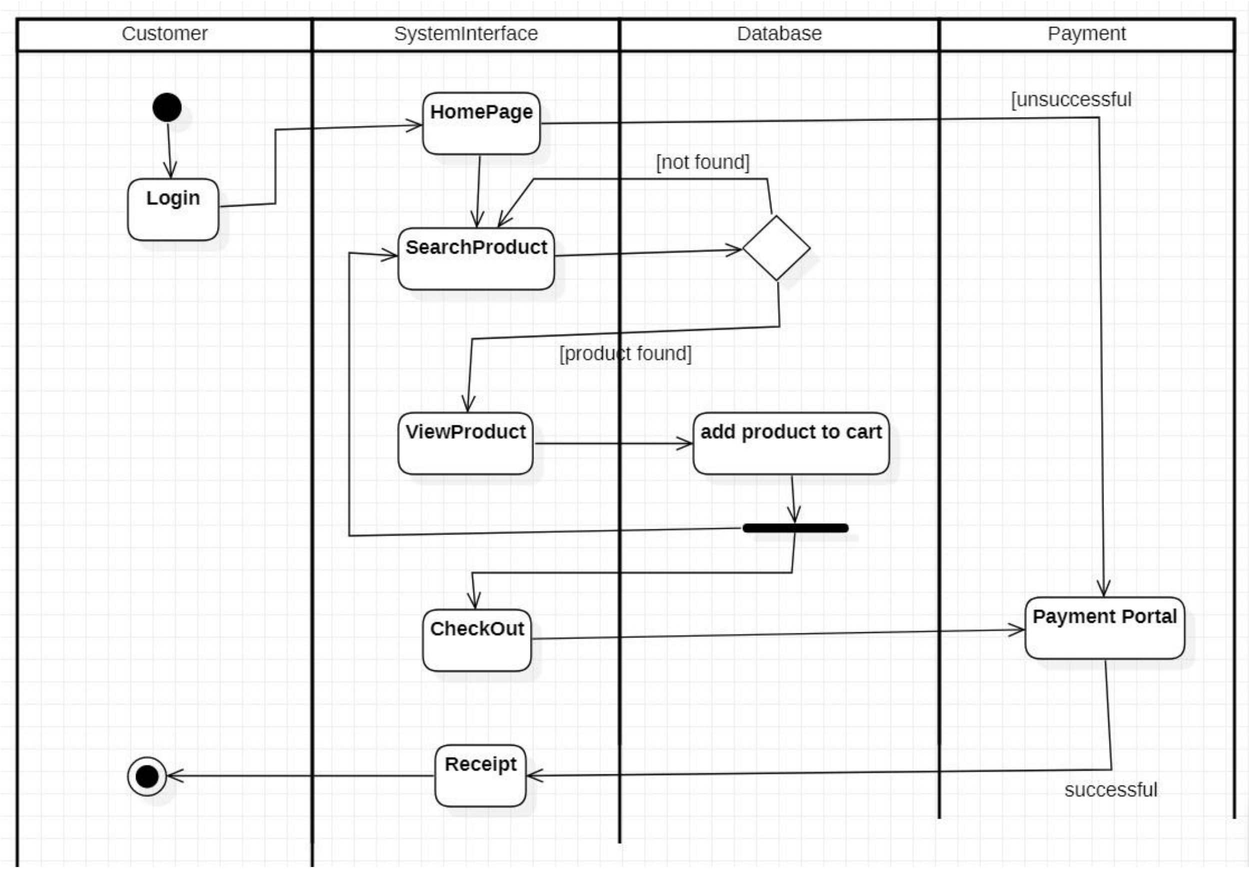
5.5 Use Case Diagram



5.6 Sequence Diagram



5.7 Activity Diagram



6. Railway Reservation System

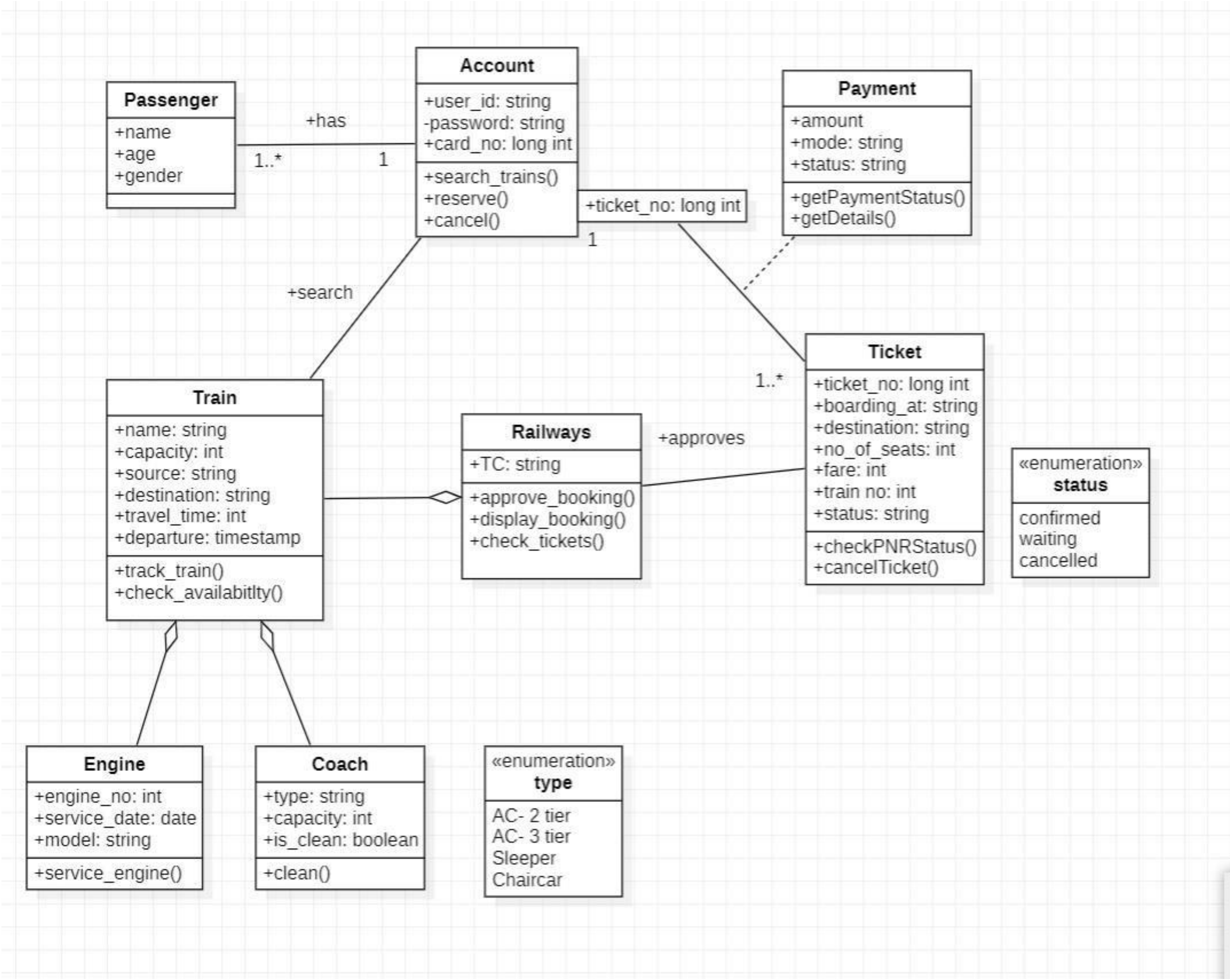
6.1 Problem Statement

Railway Reservation System is a system used for booking tickets over internet. Any Customer Can book tickets for different trains. Software has to be developed for automating the manual reservation system of railway. The system should be standalone in nature. It should be designed to provide functionalists like booking of tickets in which a user should be able to applied for tickets of any train and of any class. The software takes the current system date and time as the date of issue and calculates the amount to be paid by the user. It also provides the functionality of cancellation of tickets.

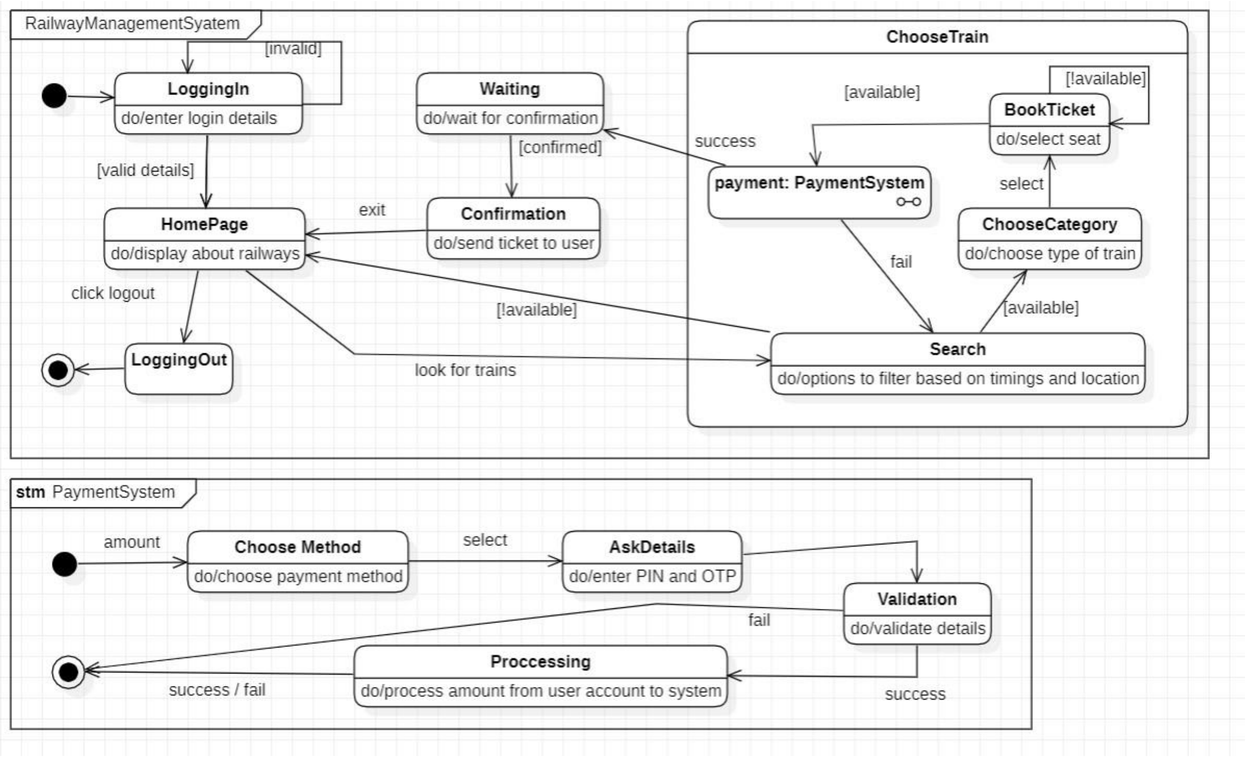
Software Requirement Specification

- Each user must be registered using email ID, contact no, identity proof to use the platform. Upon registration user is provided unique ID.
- Upon successful log in user is, presented with a form to enter day of travel, and no of passengers. After giving above input a list of trains with their seat availability is presented to the user.
- If the seats available in the train chosen by the user the booking is confirmed and user is redirected to payment.
- Upon successful payment user receives e-tickets.
- If seats are not available user is put in waiting list and is notified when seats are available
- The user is allowed to cancel the booked seats within 24 hrs of departure time by charging a nominal fee. Rest of the paid amount is refunded.

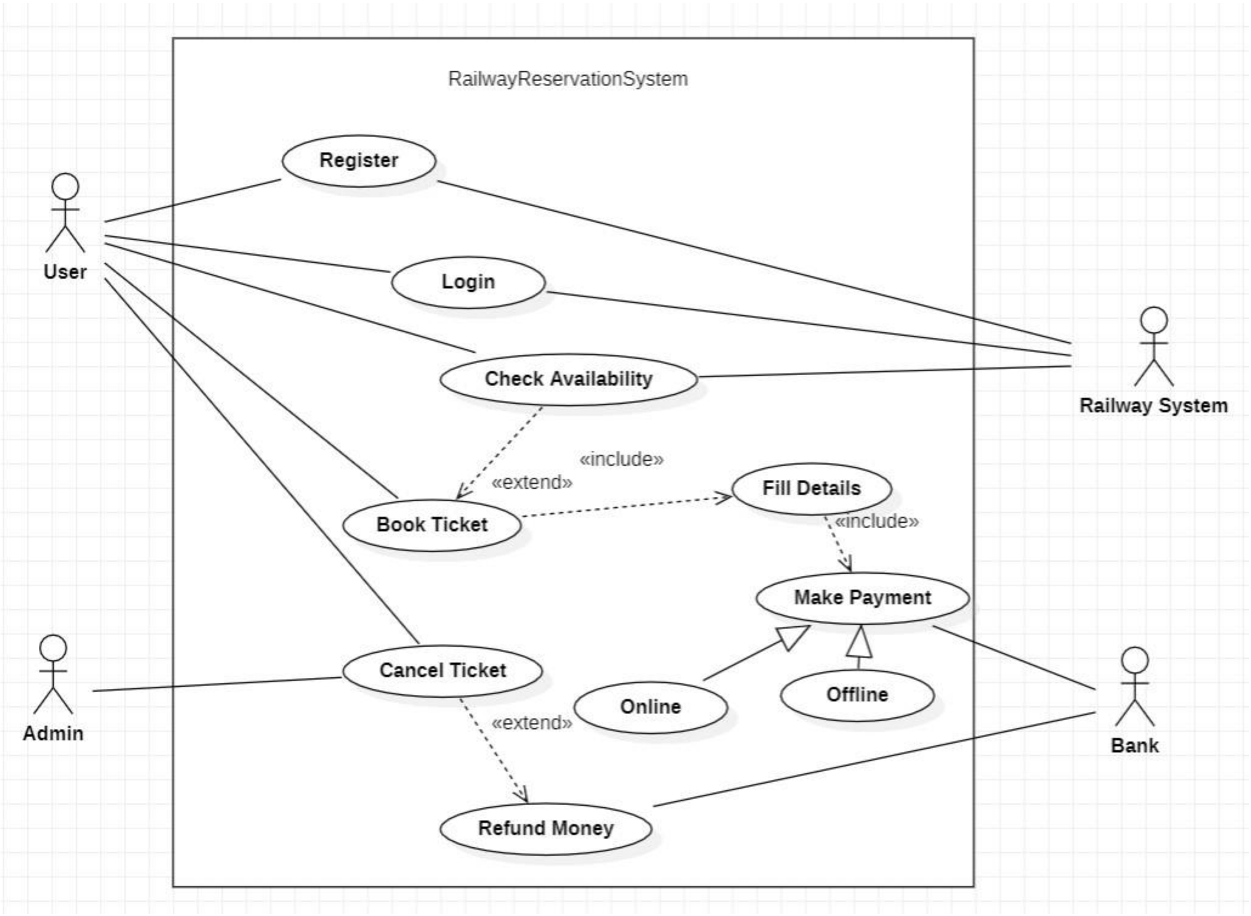
6.2 Class Diagram



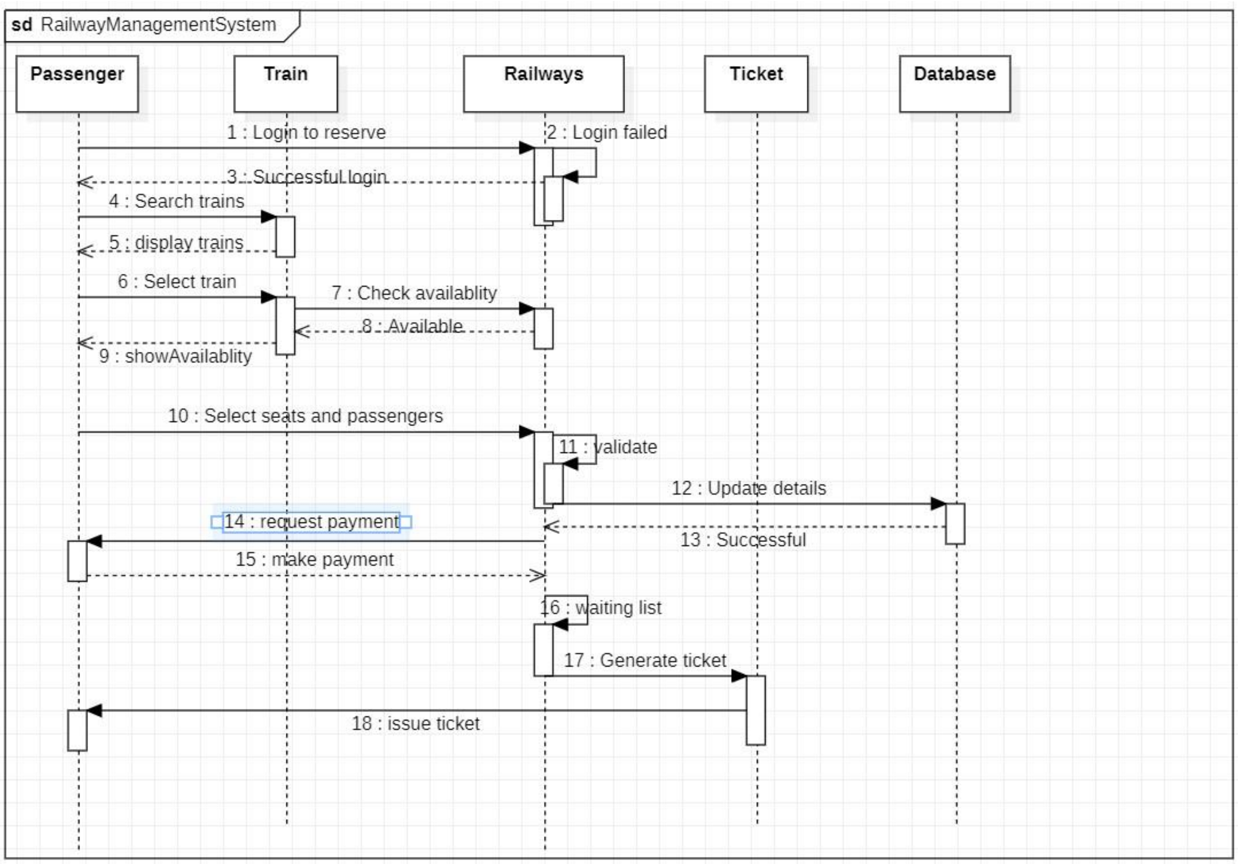
6.4 State Diagram



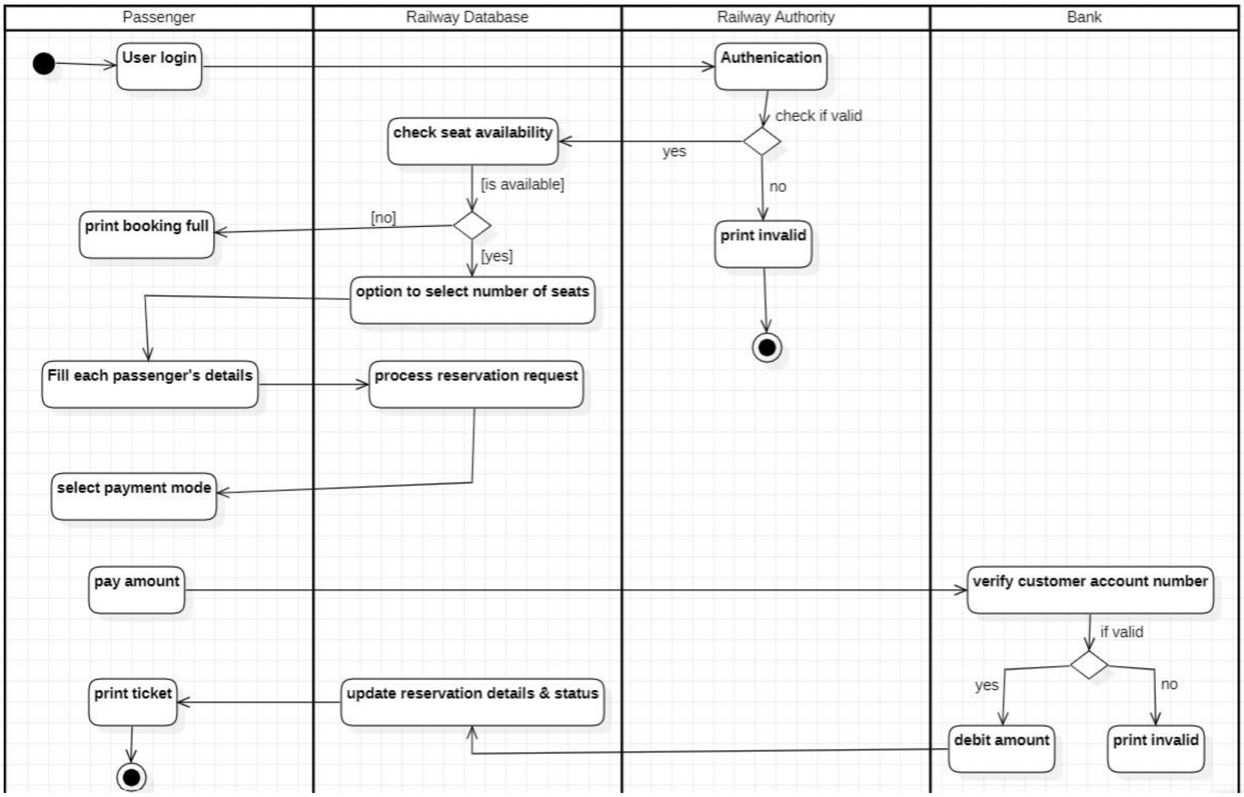
6.5 Use Case Diagram



6.6 Sequence Diagram



6.7 Activity Diagram



7. Graphics Editor

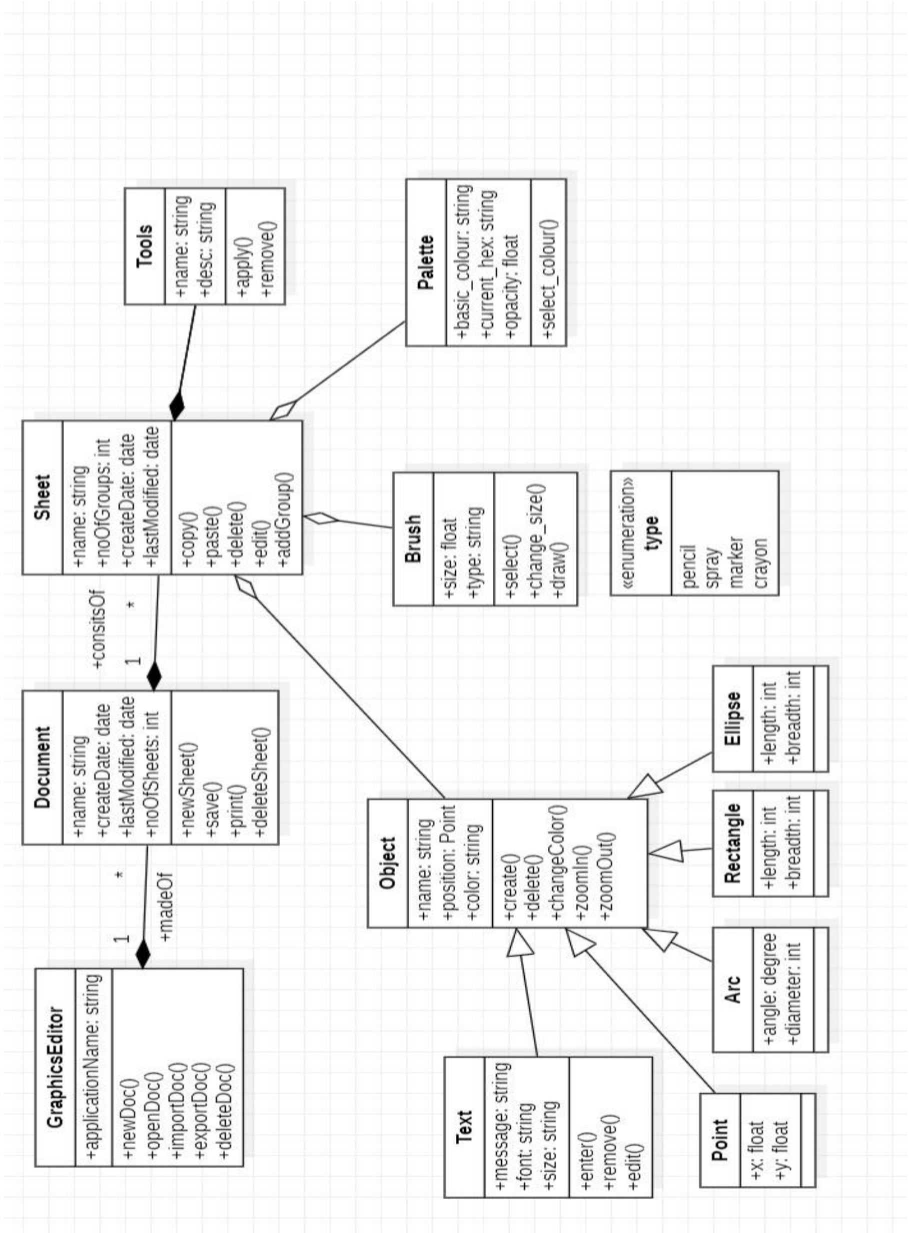
7.1 Problem Statement

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, provides 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 instance of the graphical editor allows a user to drag objects from a specified model into a working graphical diagram.

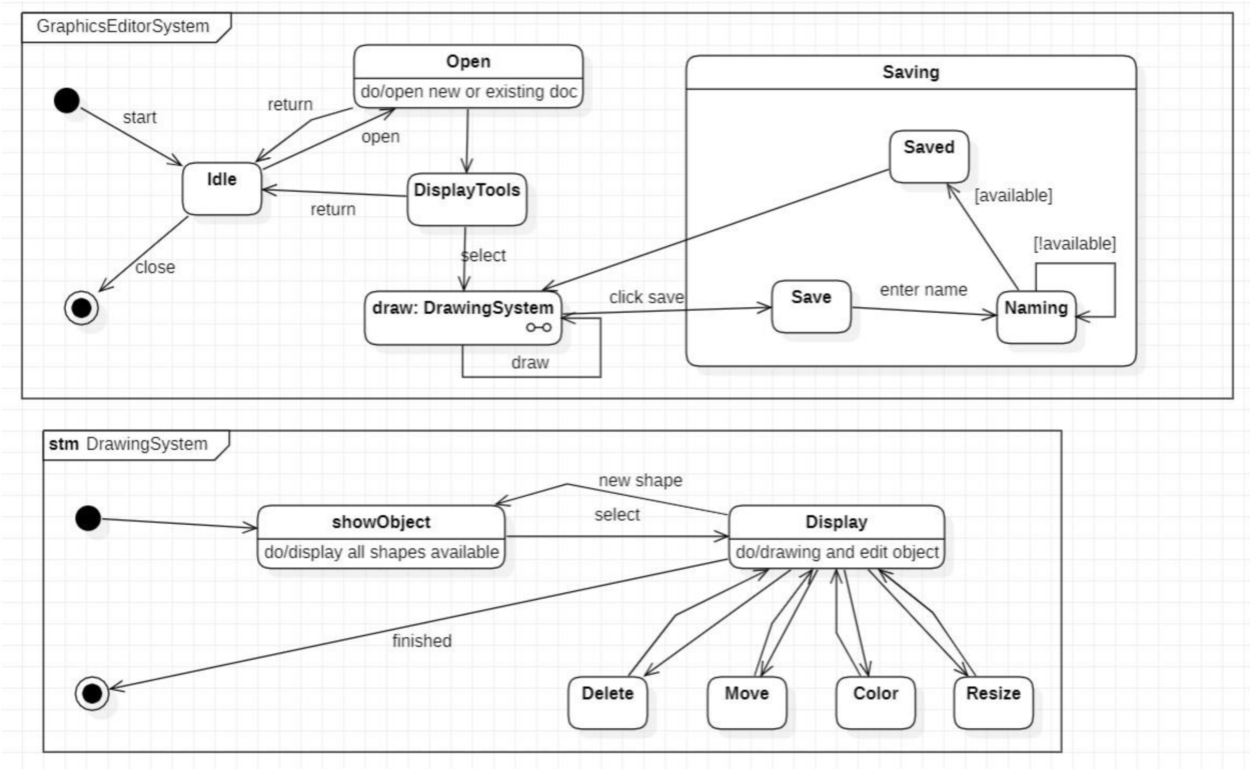
Software Requirement Specification

- The graphical editor consists of a graphical document editor which can be used to create new document, delete document, update or view the document.
- The graphical document editor consists of many documents, where each document can be saved, opened, printed or create a new one
- A document is made up of many sheets which can have graphics included in them.
- Sheets have multiple number of drawing objects, which can be created, grouped or formatted.
- The programmer must provide implementations of functions that draw objects and their connections, as well as functions that add and remove connections. The latter function will be handled by a specific event listener. Any changes made in real-time to the underlying model will also be updated in the diagram through a separate event listener
- The user can also add and remove connections between these objects as needed using the palette supplied, thus modifying the underlying model.
- Each sheet contains drawing objects, including text, geometrical objects and groups. A group is simply a set of drawing objects.
- A geometrical object includes circle, ellipse, rectangles, lines and squares, trapeziums which are identified by their respective constraints.

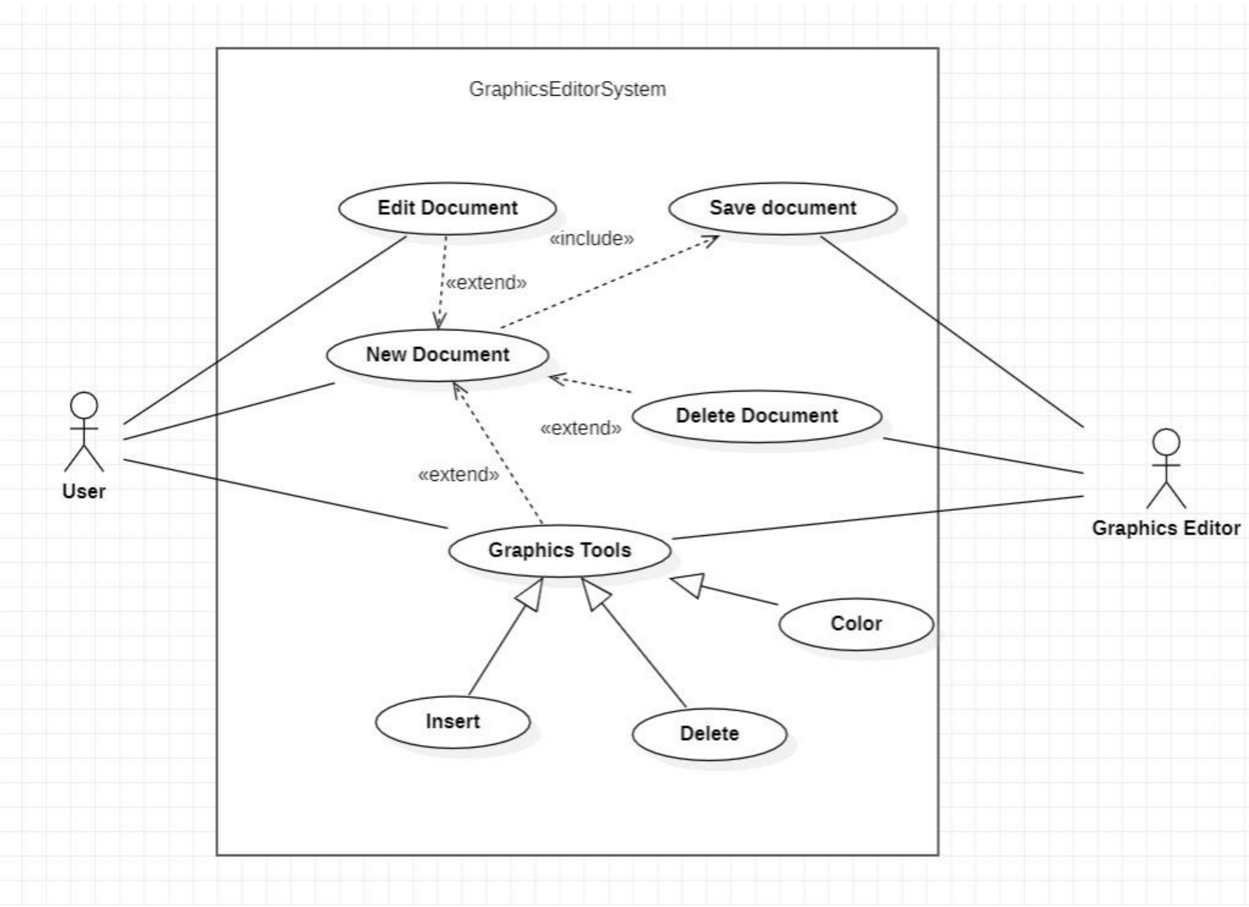
7.2 Class Diagram



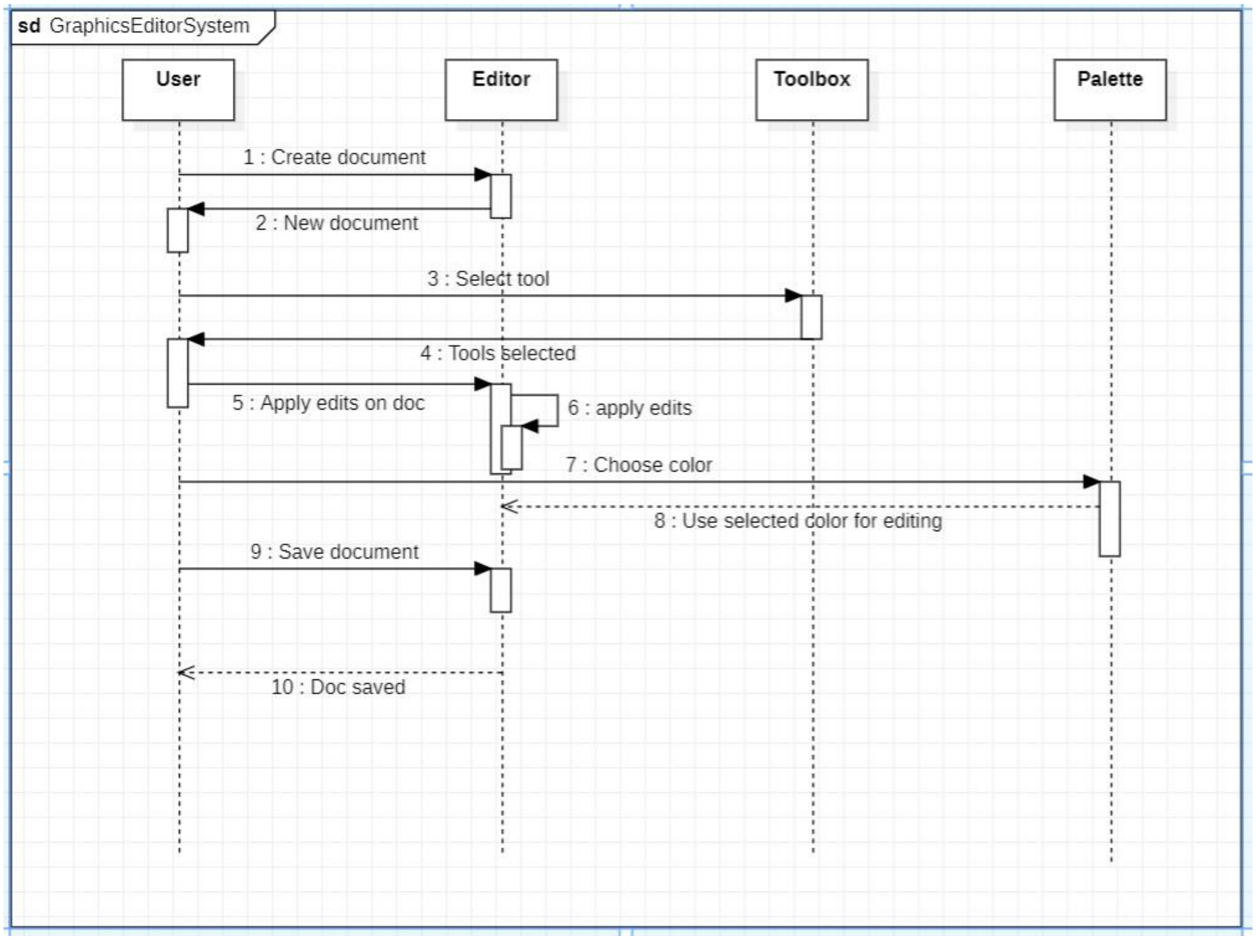
7.4 State Diagram



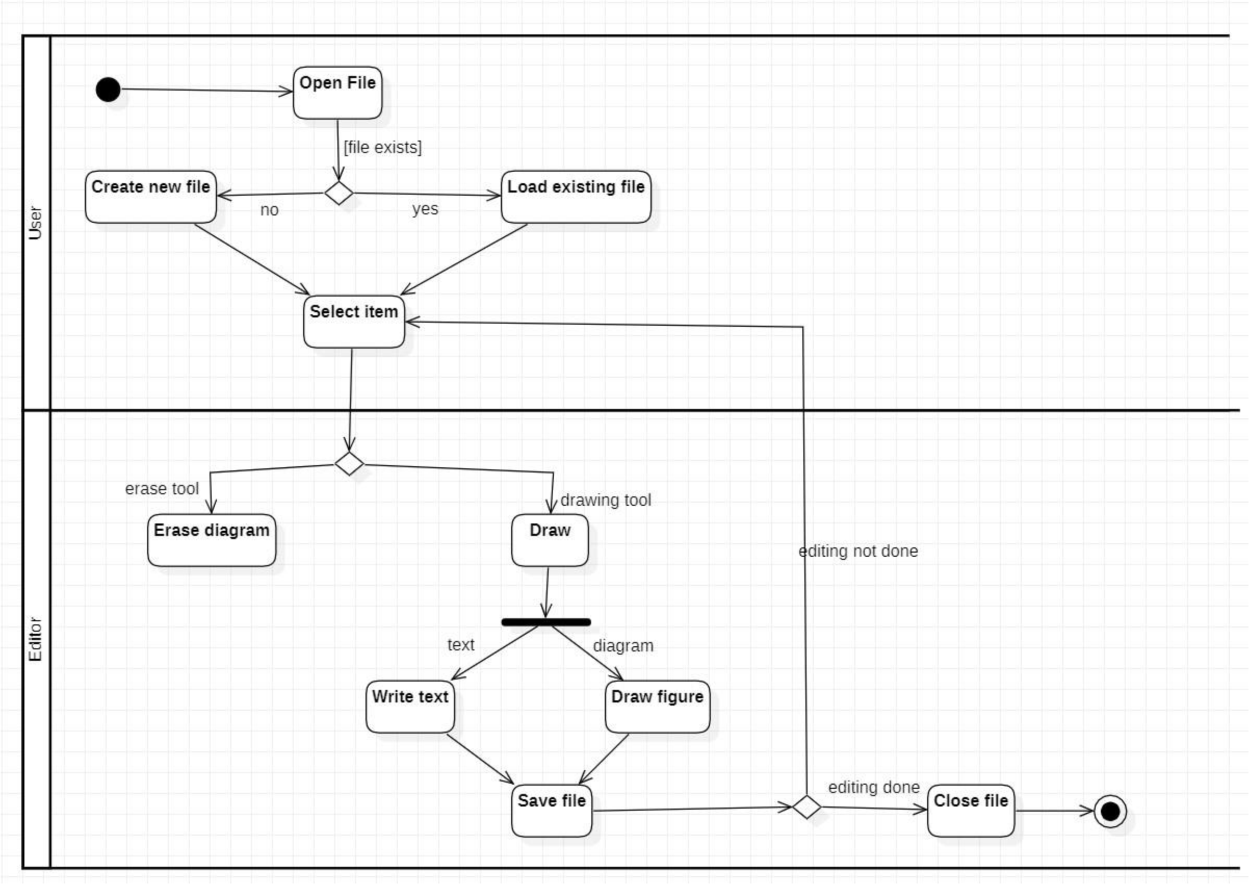
7.5 Use Case Diagram



7.6 Sequence Diagram



7.7 Activity Diagram


User
Open File
[file exists]
Create new file
no
yes
Load existing file
Select item
Editor
erase tool
drawing tool
Erase diagram
Draw
editing not done
text
diagram
Write text
Draw figure
Save file
editing done
Close file