B.M.S. COLLEGE OF ENGINEERING BENGALURU
Autonomous Institute, Affiliated to VTU

Lab Record

Object Oriented Analysis and Design

Submitted in partial fulfillment for the 6th Semester Laboratory

Bachelor of Technology
in
Computer Science and Engineering

Submitted by:

P Sai Deekshith

1BM18CS148

Department of Computer Science and Engineering
B.M.S. College of Engineering
Bull Temple Road, Basavanagudi, Bangalore 560 019
Mar-June 2021

B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Object-Oriented Analysis and Design(16CS6DCOOM) laboratory has been carried out by P Sai Deekshith(1BM18CS148) during the 6th Semester Mar-June-2021.

Signature of the Faculty Incharge:

Latha N R
Department of Computer Science and Engineering
B.M.S. College of Engineering, Bangalore

COLLEGE INFORMATION SYSTEM

1.1 Problem statement

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.

1.2 Software Requirement Specification

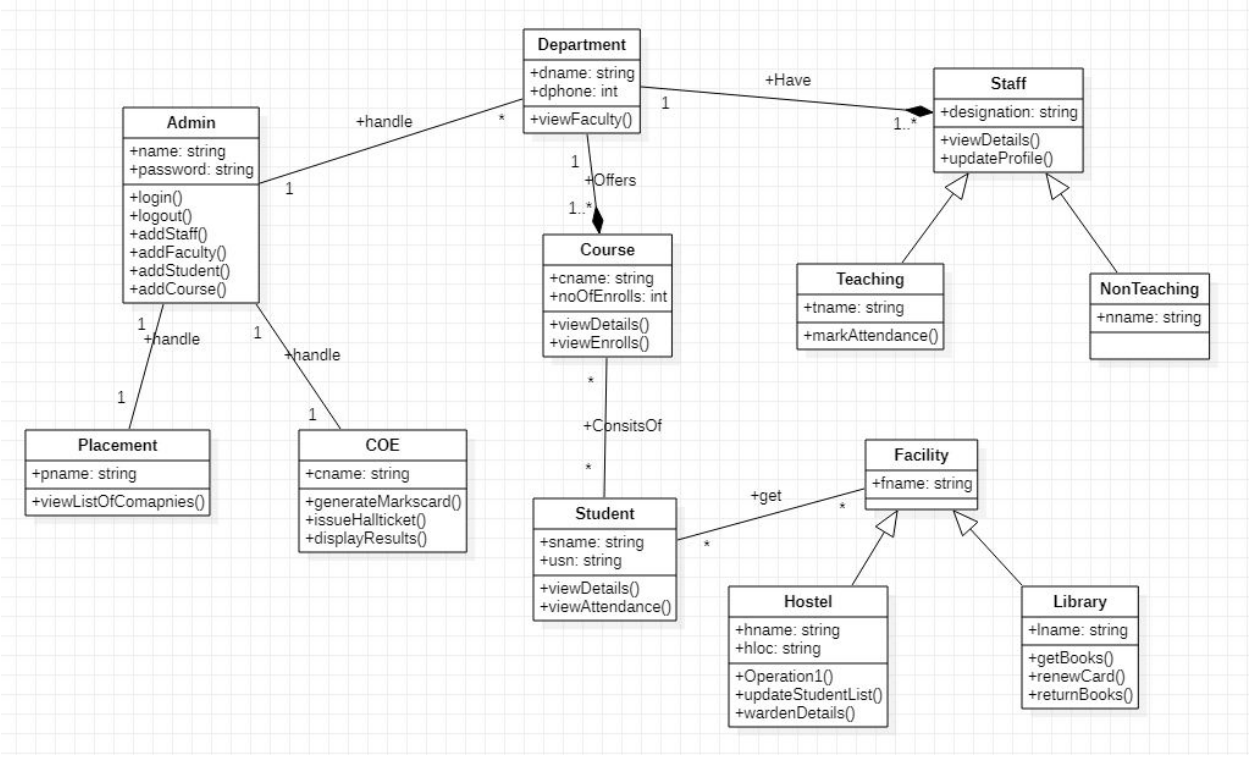
Functional Requirements:

- 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.

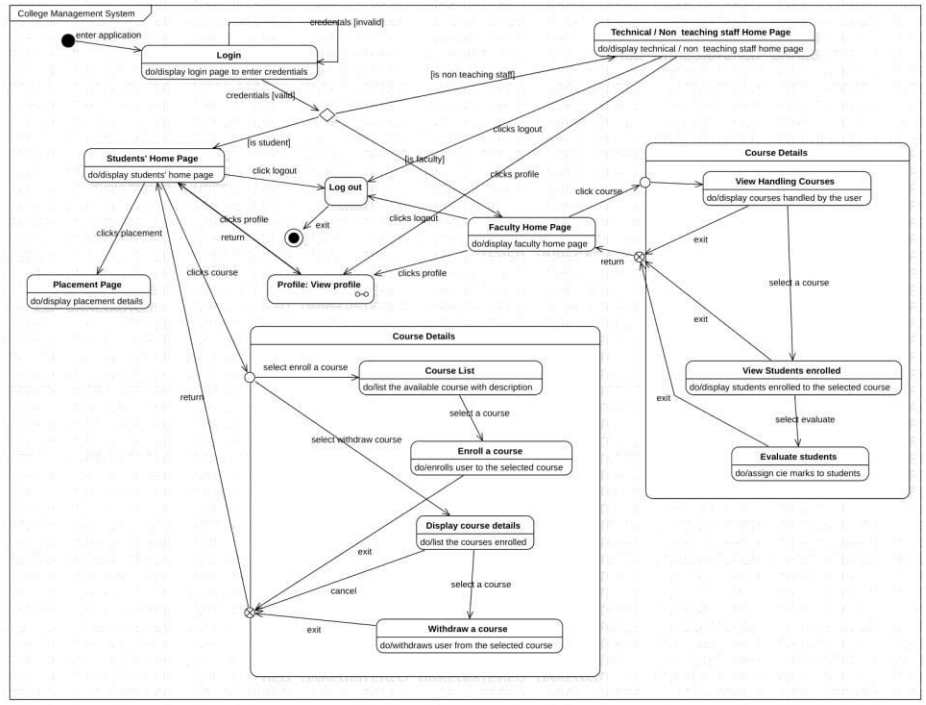
Non-Functional Requirements:

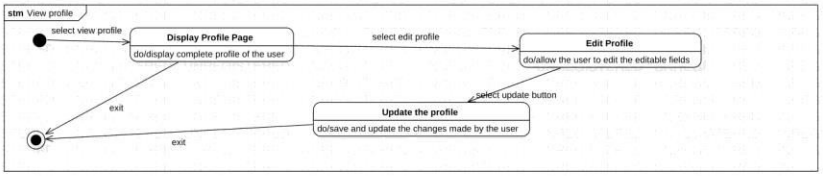
- Students should not be allowed to edit0 their personal or academic details.
- The system should be a reliable source of information viewing (most importantly, academic grades) for students, COE and faculty.
- The system should be convenient and easy to use by students, management and faculty.

1.3 Class Diagram



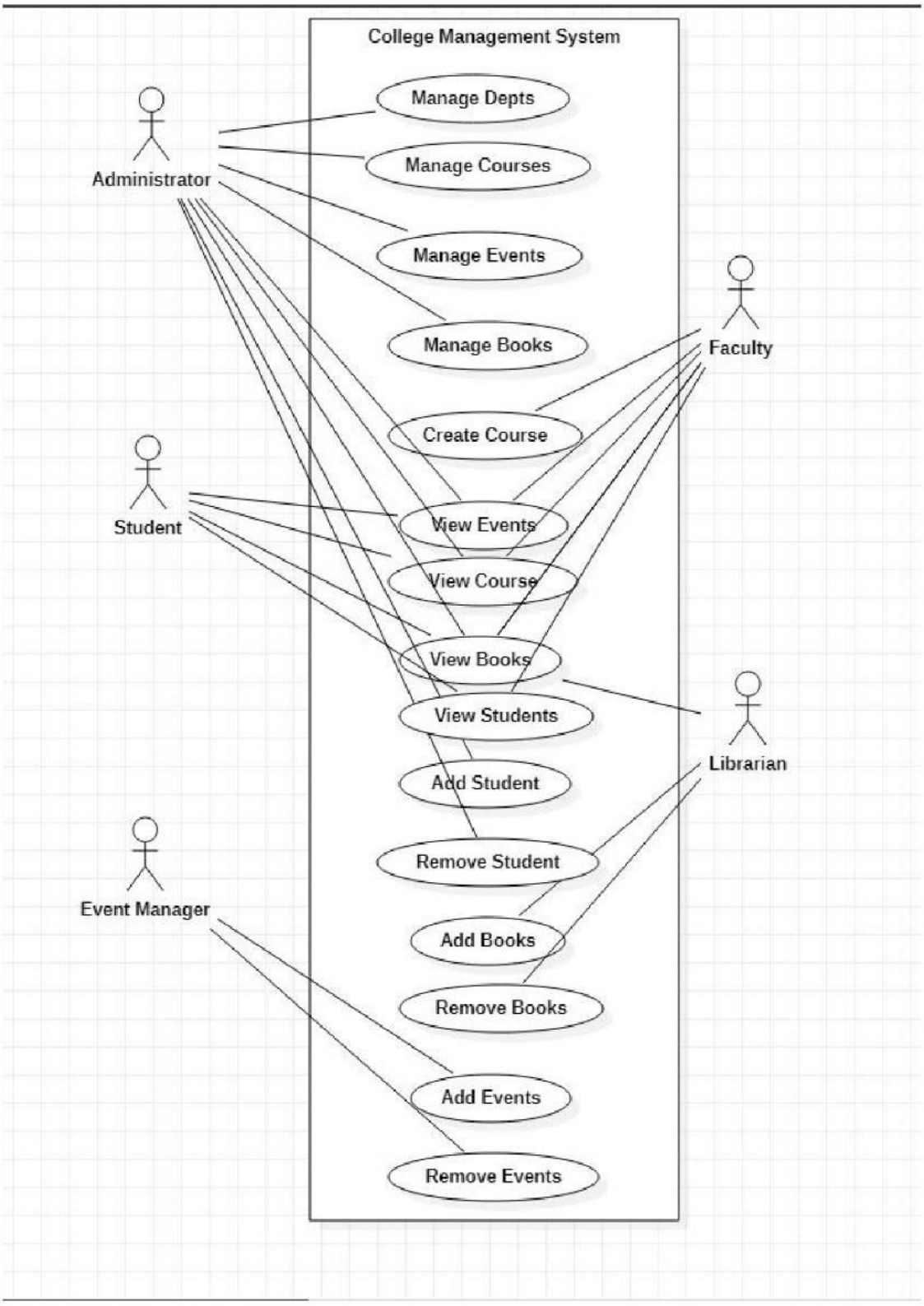
1.4 State Diagram



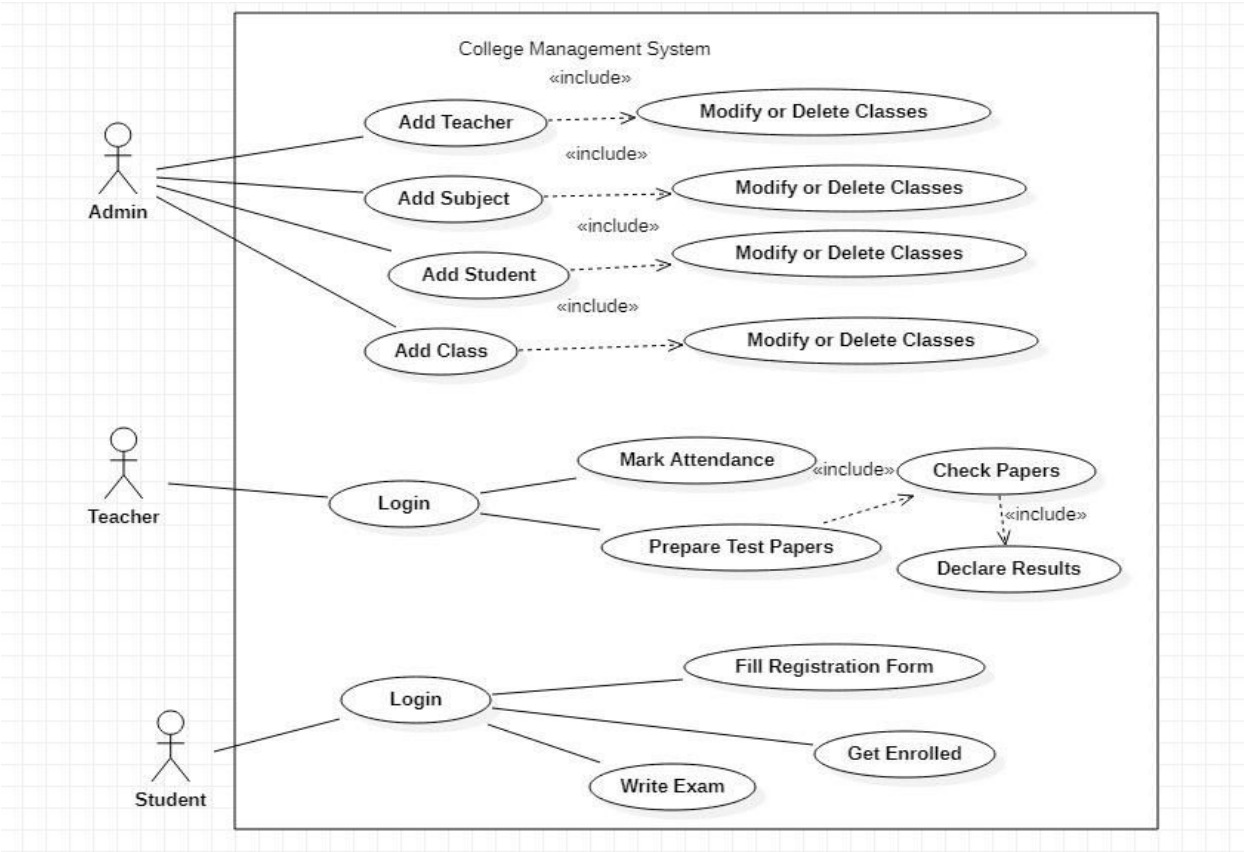


1.5 Use Case Diagram

1.5.1 Simple Use Case Diagram

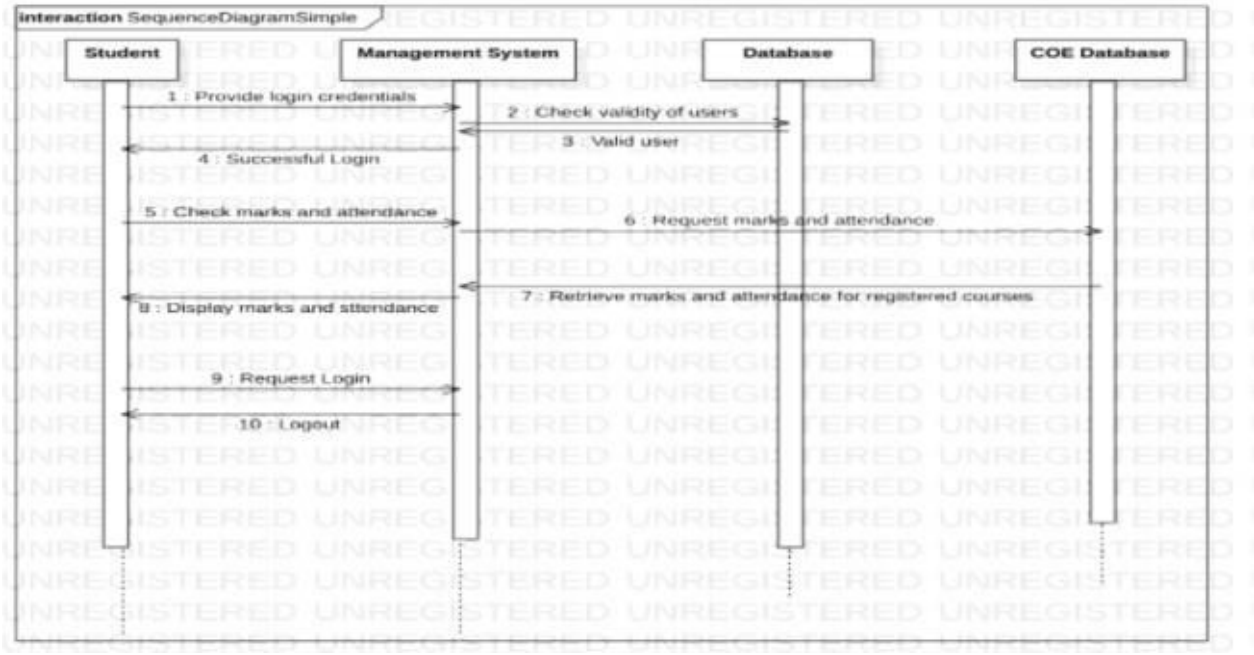


1.5.2 Advanced Use Case Diagram

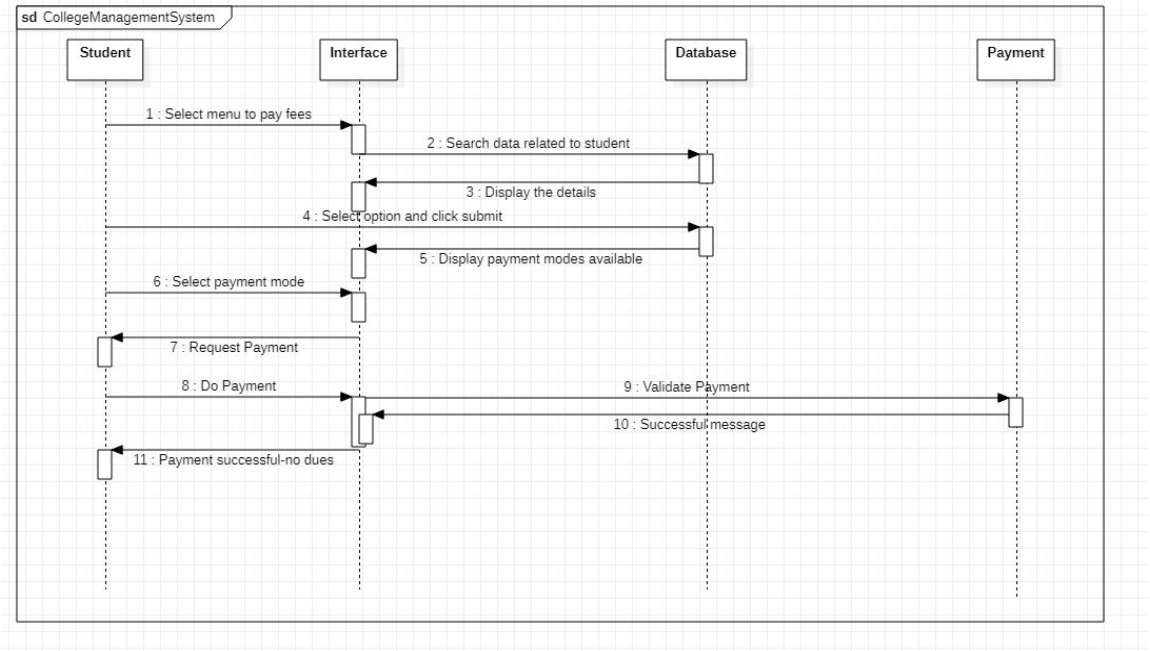


1.6 Sequence Diagram

1.6.1 Simple Sequence Diagram

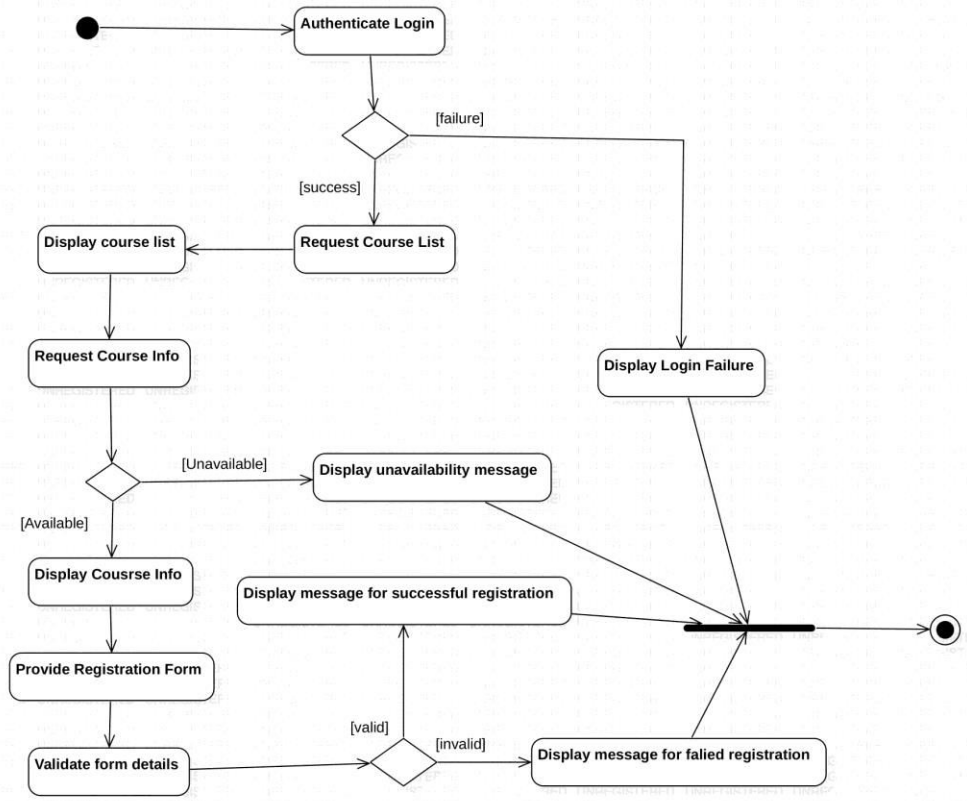


1.6.2 Advanced Sequence Diagram

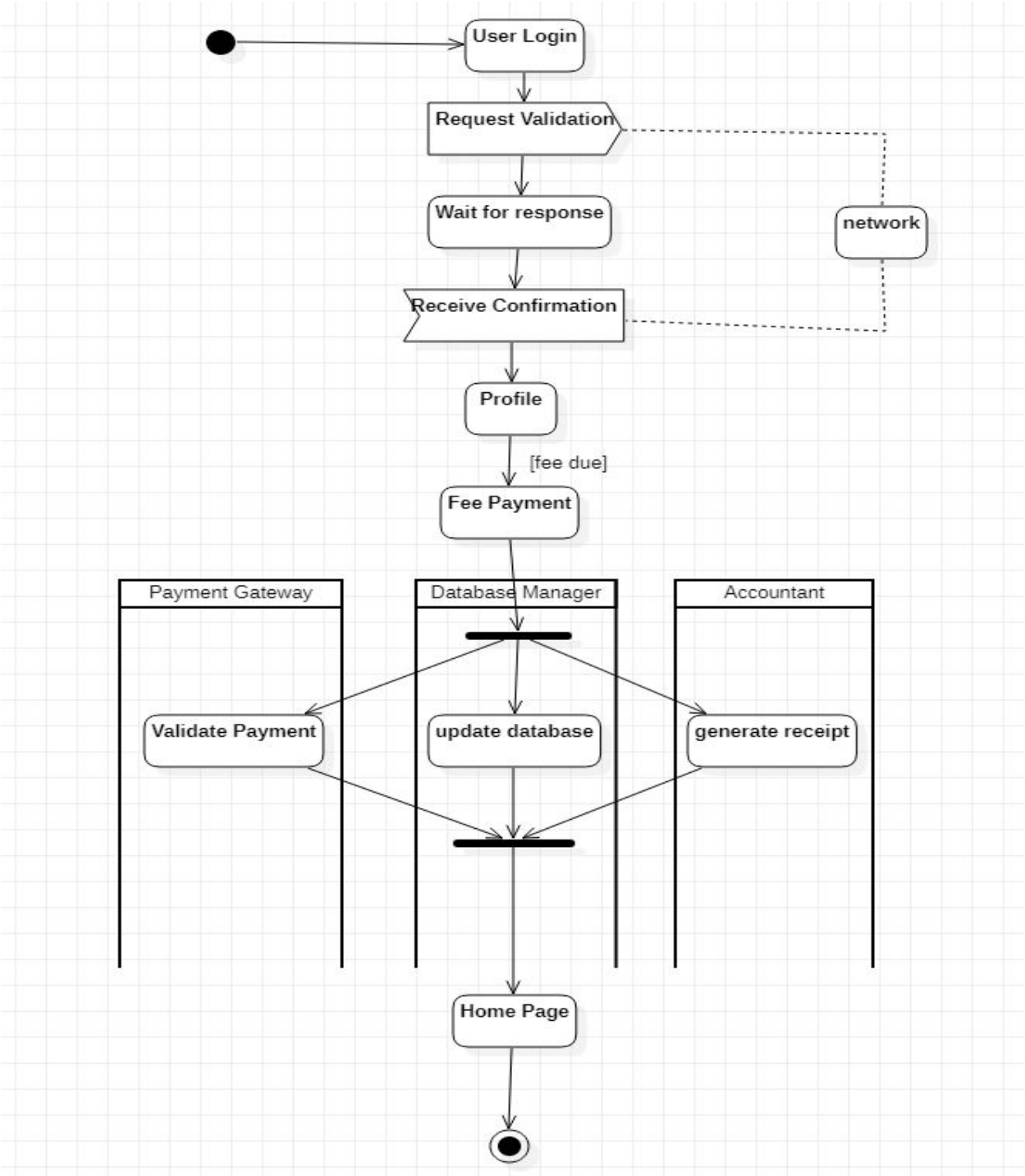


1.7 Activity Diagram

1.7.1 Simple Activity Diagram



1.7.2 Advanced Activity Diagram



HOSTEL MANAGEMENT SYSTEM

2.1 Problem statement

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.

2.2 Software Requirement Specification

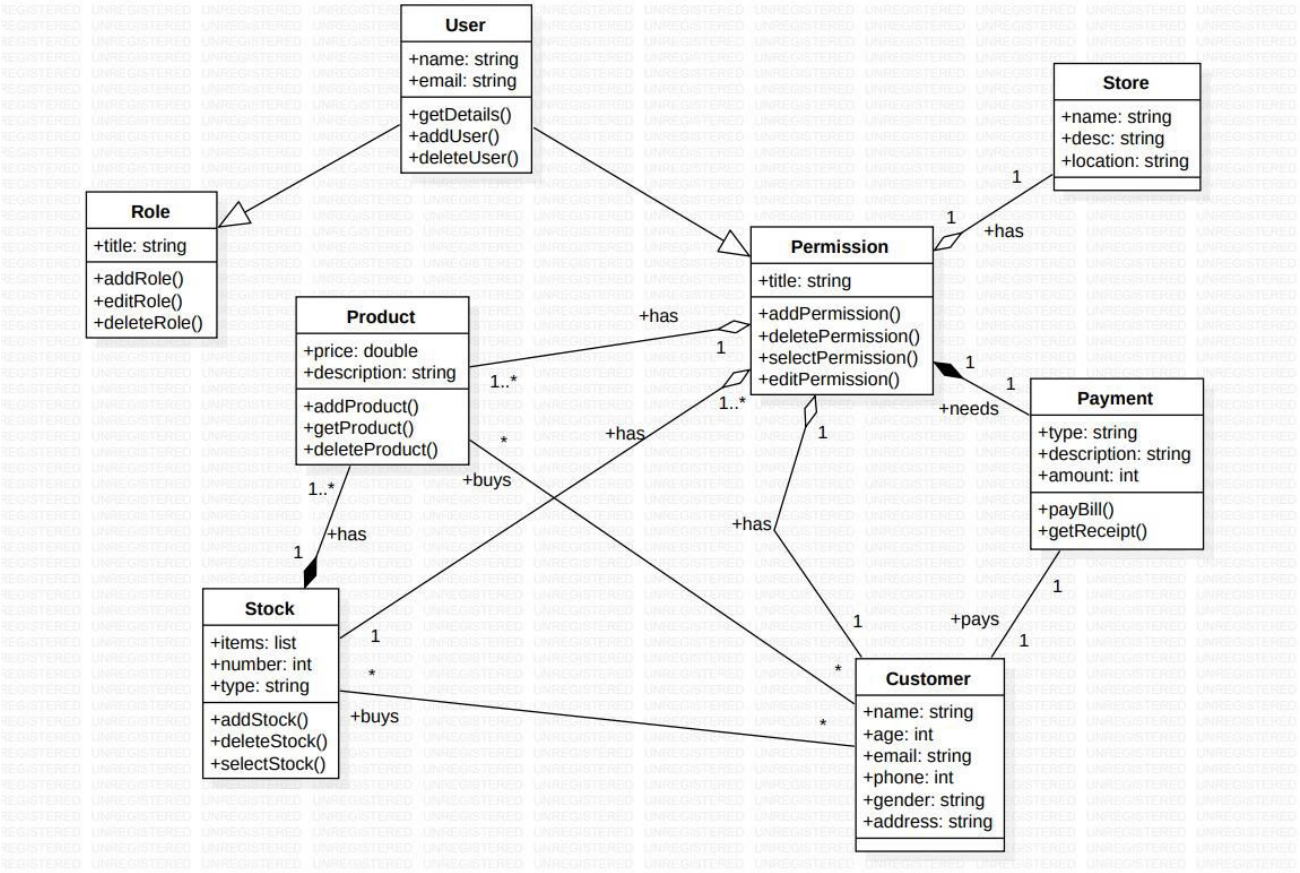
Functional Requirement -

- 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 mess feedback.
- Mess managers can review the mess feedback.
- Mess manager can update the menu list.
- Admin can assign work to staff members.

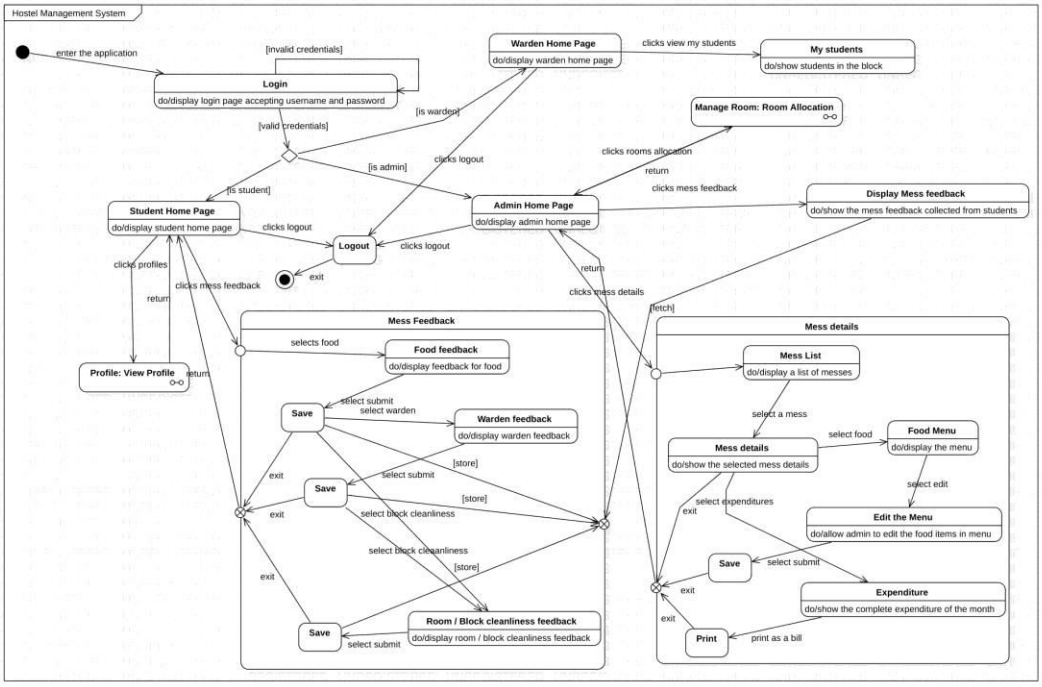
Non Functional Requirements -

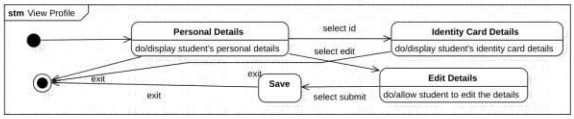
- The system should be easy to handle.
- System should give expected performance results.
- The response time should be small.

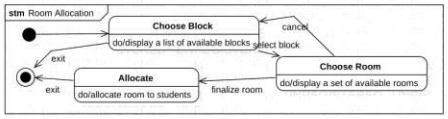
2.3 Class diagram



2.4 State Diagram

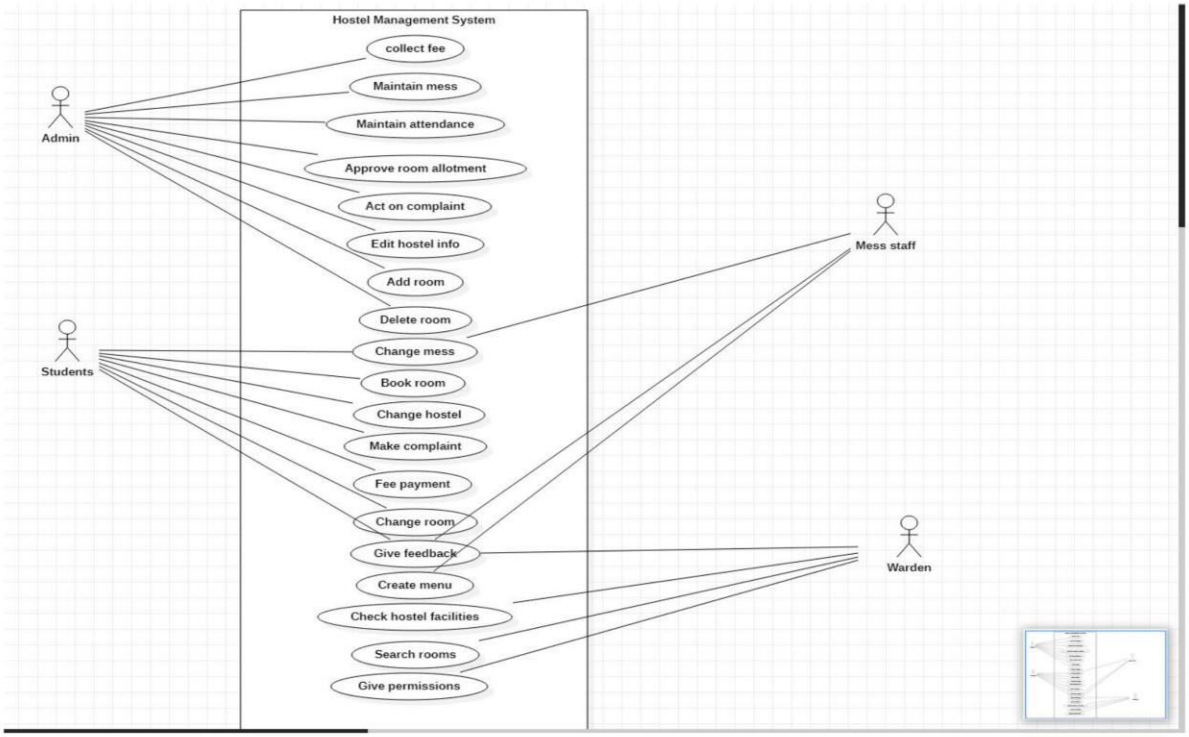

Hostel Management System
enter the application
[invalid credentials]
Login
do/display login page accepting username and password
[valid credentials]
[is warden]
[is admin]
[is student]
Warden Home Page
do/display warden home page
clicks view my students
My students
do/show students in the block
Manage Room: Room Allocation
clicks rooms allocation
return
clicks logout
Admin Home Page
do/display admin home page
clicks mess feedback
Display Mess feedback
do/show the mess feedback collected from students
Student Home Page
do/display student home page
clicks logout
Logout
clicks logout
exit
clicks profiles
return
clicks mess feedback
Profile: View Profile
return
return
clicks mess details
[fetch]
Mess Feedback
selects food
Food feedback
do/display feedback for food
select submit
Save
select warden
Warden feedback
do/display warden feedback
[store]
exit
select submit
Save
[store]
exit
select block cleanliness
select block cleanliness
[store]
exit
Save
select submit
Room / Block cleanliness feedback
do/display room / block cleanliness feedback
Mess details
Mess List
do/display a list of messes
select a mess
Mess details
do/show the selected mess details
select food
Food Menu
do/display the menu
select edit
select expenditures
exit
Edit the Menu
do/allow admin to edit the food items in menu
Save
select submit
exit
Expenditure
do/show the complete expenditure of the month
exit
Print
print as a bill


stm View Profile
Personal Details
do/display student's personal details
select id
Identity Card Details
do/display student's identity card details
select edit
exit
exit
Save
Edit Details
do/allow student to edit the details
exit
select submit

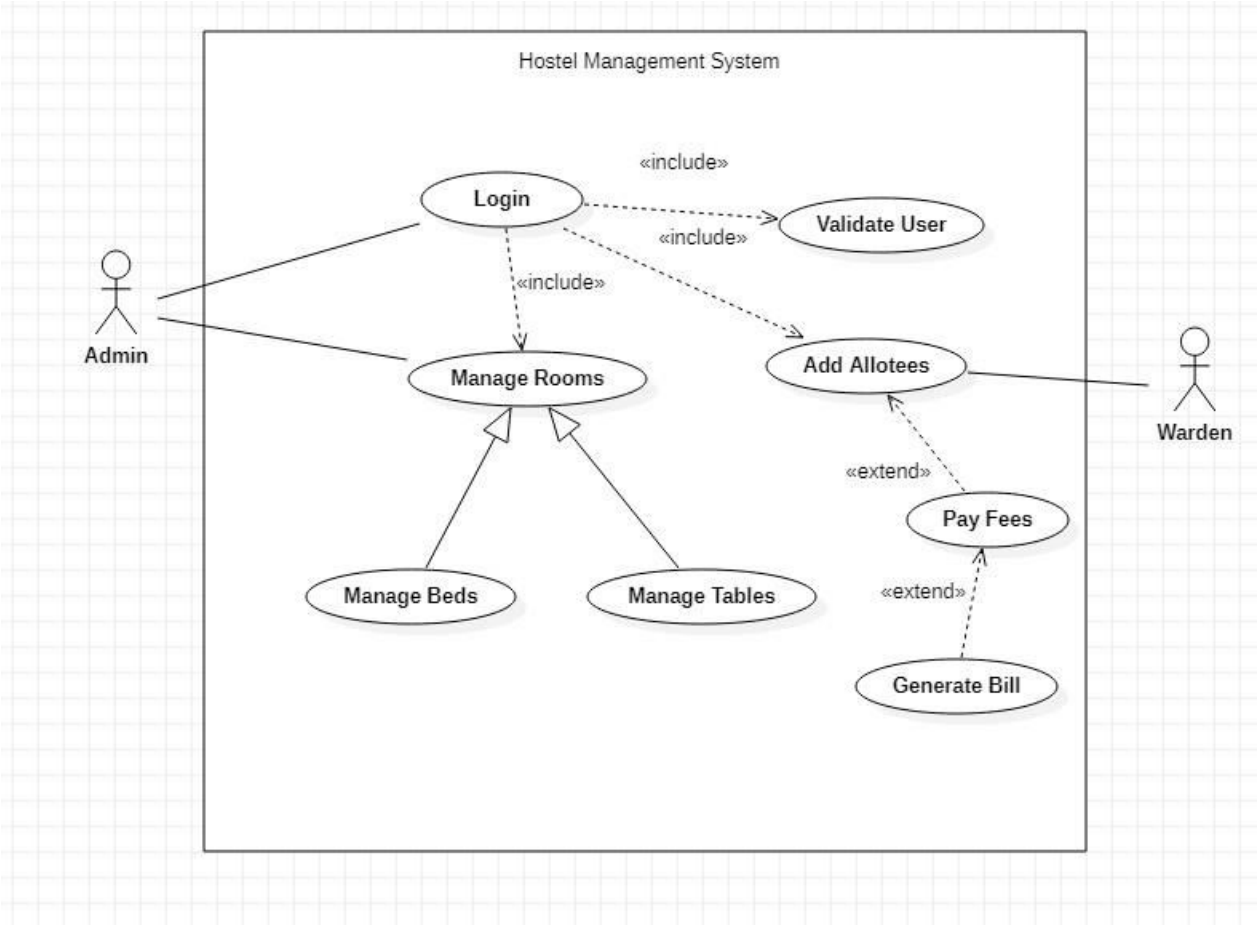

stm Room Allocation
Choose Block
do/display a list of available blocks
cancel
select block
exit
Choose Room
do/display a set of available rooms
exit
Allocate
do/allocate room to students
finalize room

2.5 Use Case Diagram

2.5.1 Simple Use Case Diagram

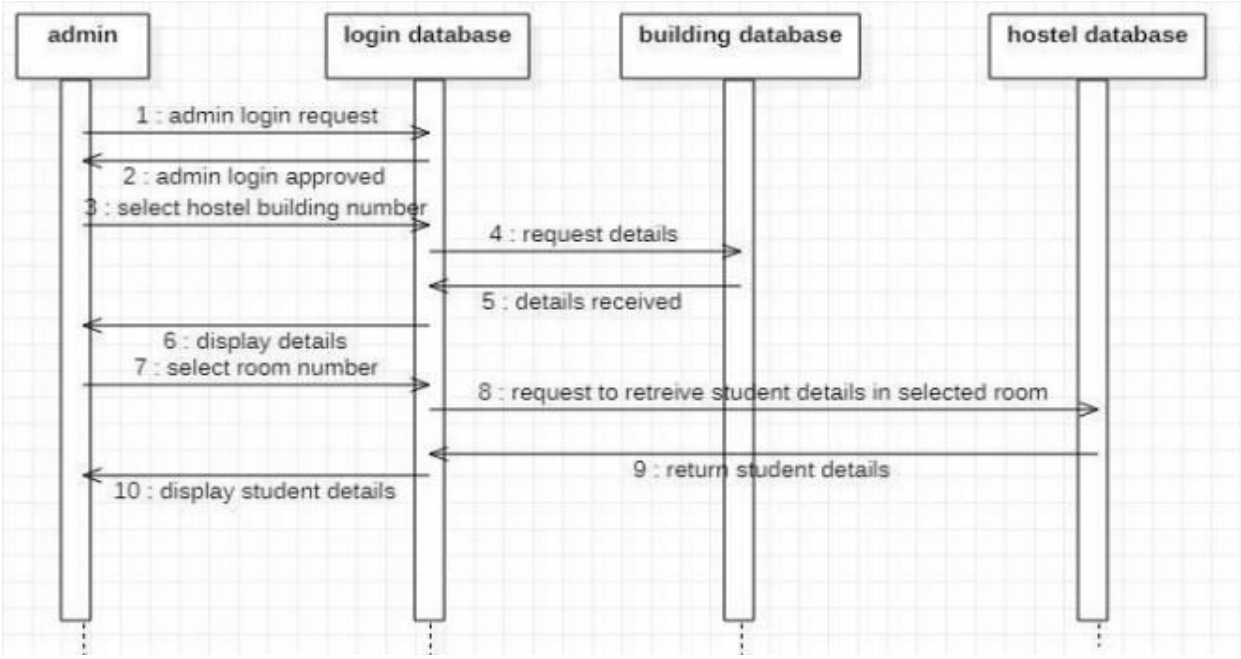


2.5.2 Advanced Use Case Diagram

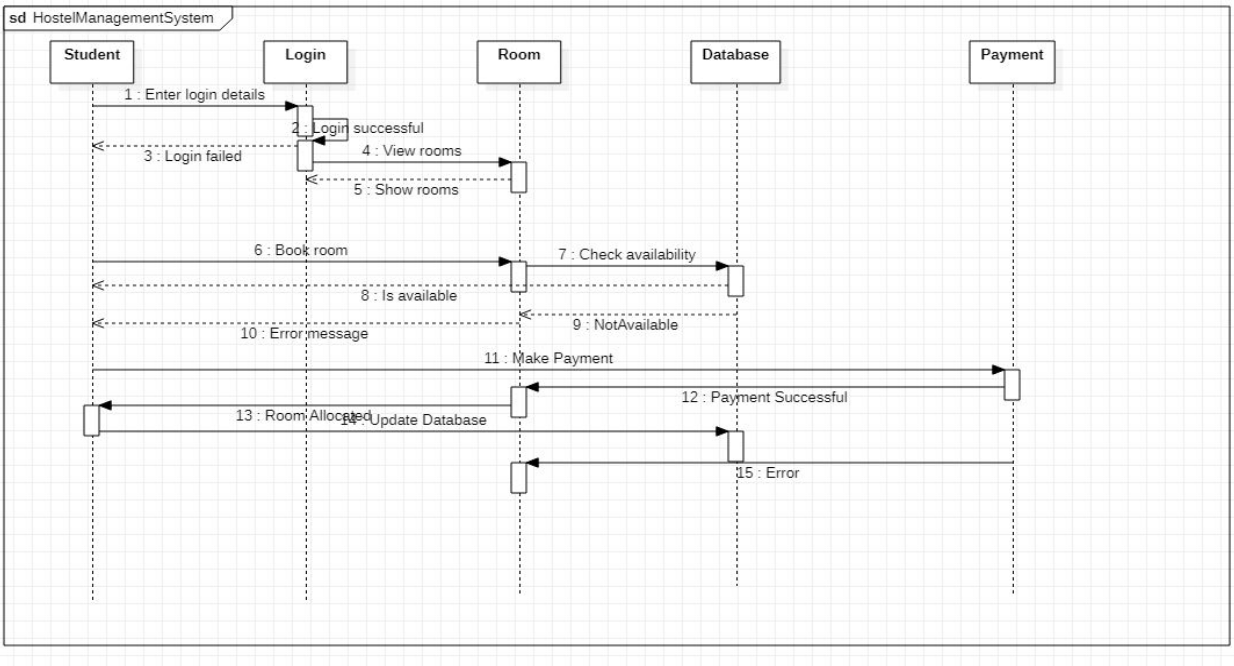


2.6 Sequence Diagram

2.6.1 Simple Sequence Diagram

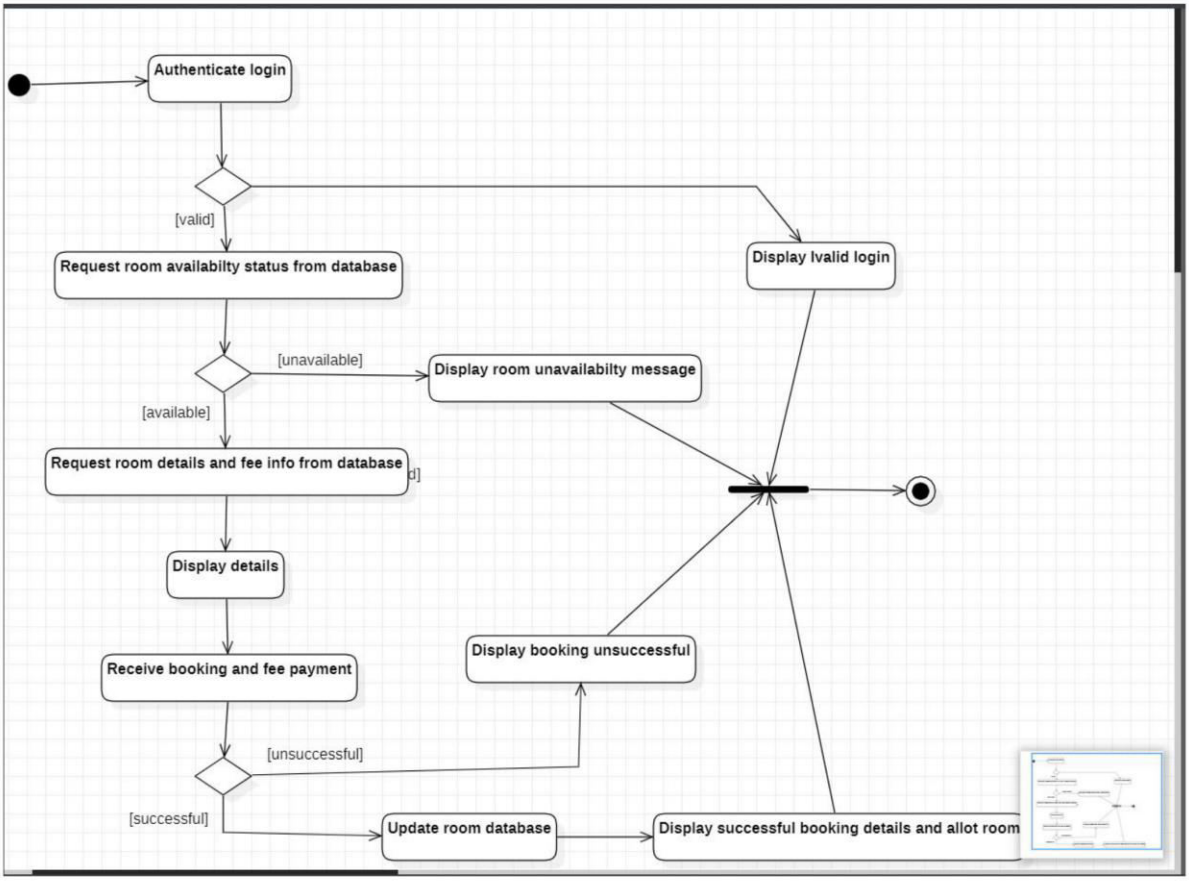


2.6.2 Advanced Sequence Diagram

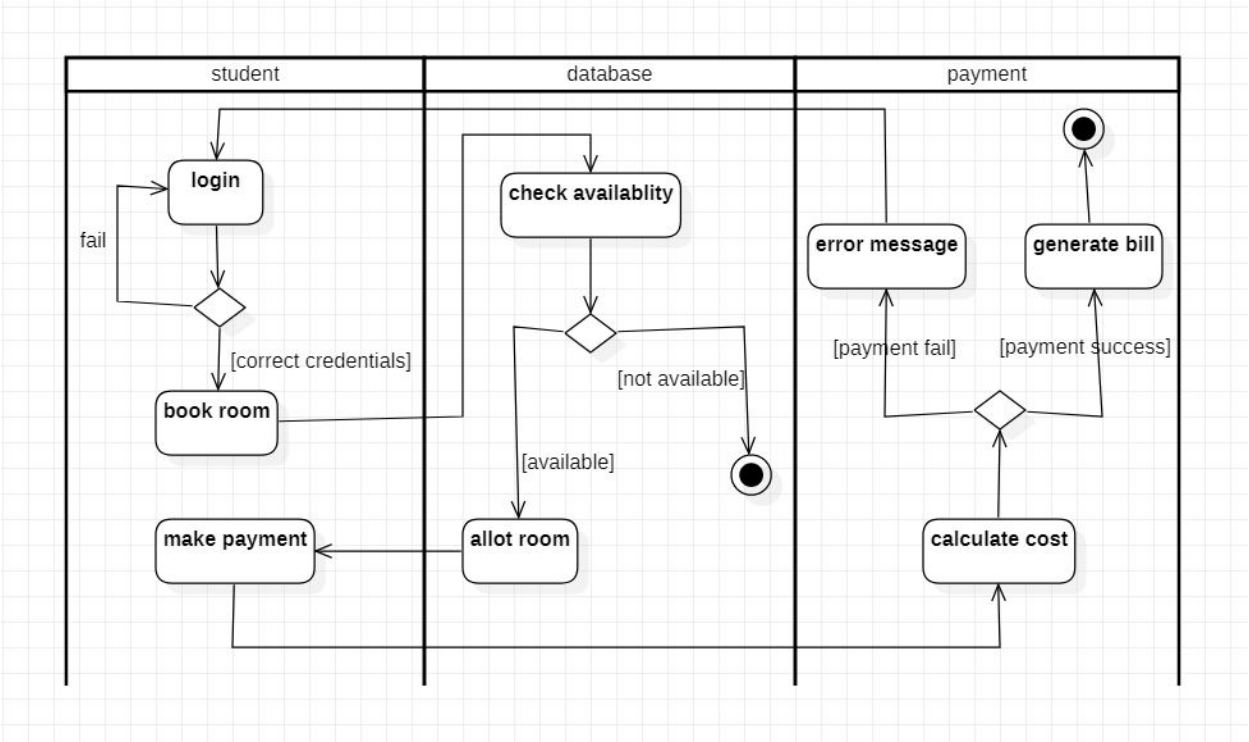


2.7 Activity Diagram

2.7.1 Simple Activity Diagram



2.7.2 Advanced Activity Diagram



Stock Management System

3.1 Problem Statement -

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 items. He can add the items at the right time and update the database.

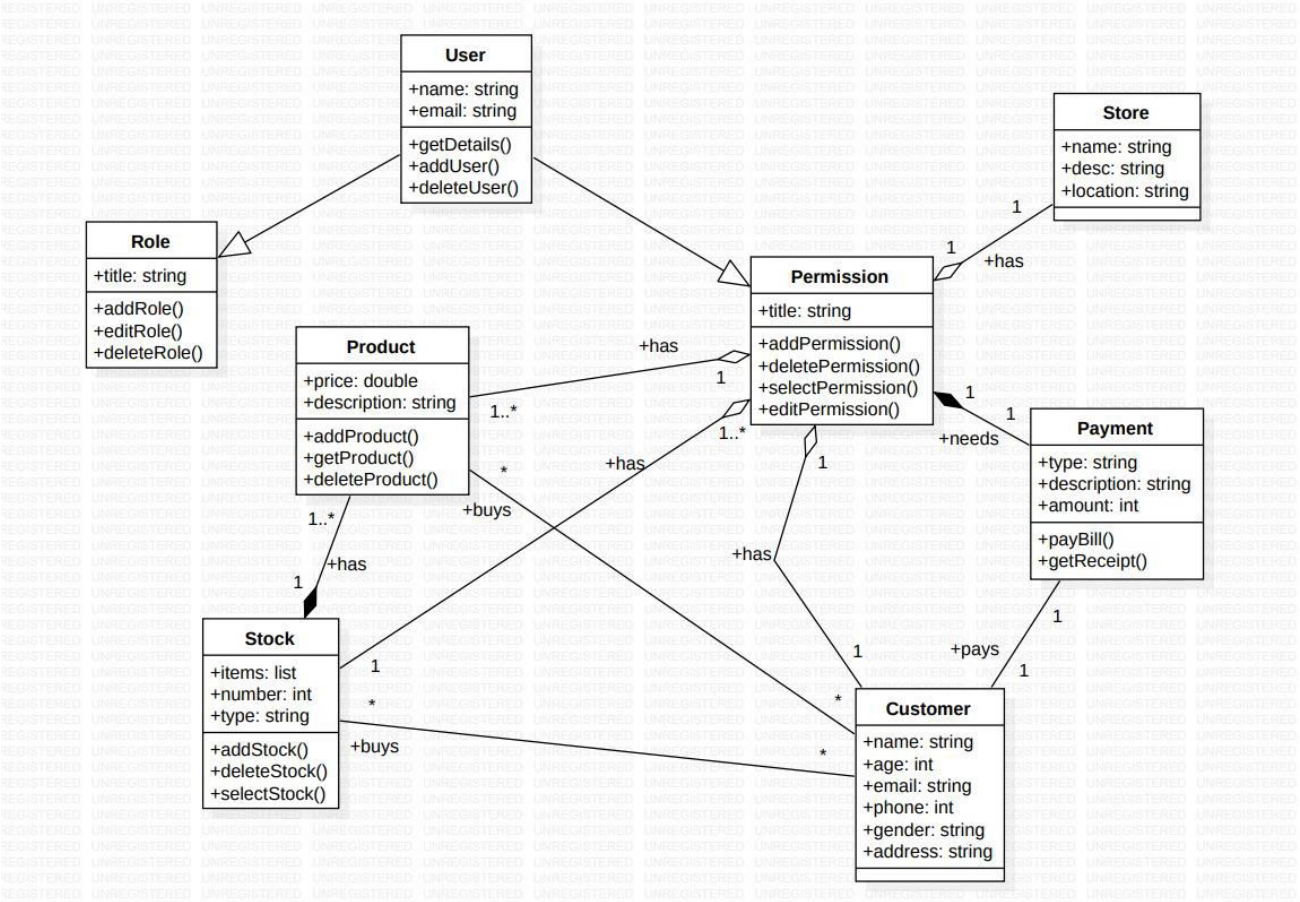
The customer can view the availability of the required items and the price of the items. The customer can just view them but cannot make any changes.

3.2 Software Requirement Specification

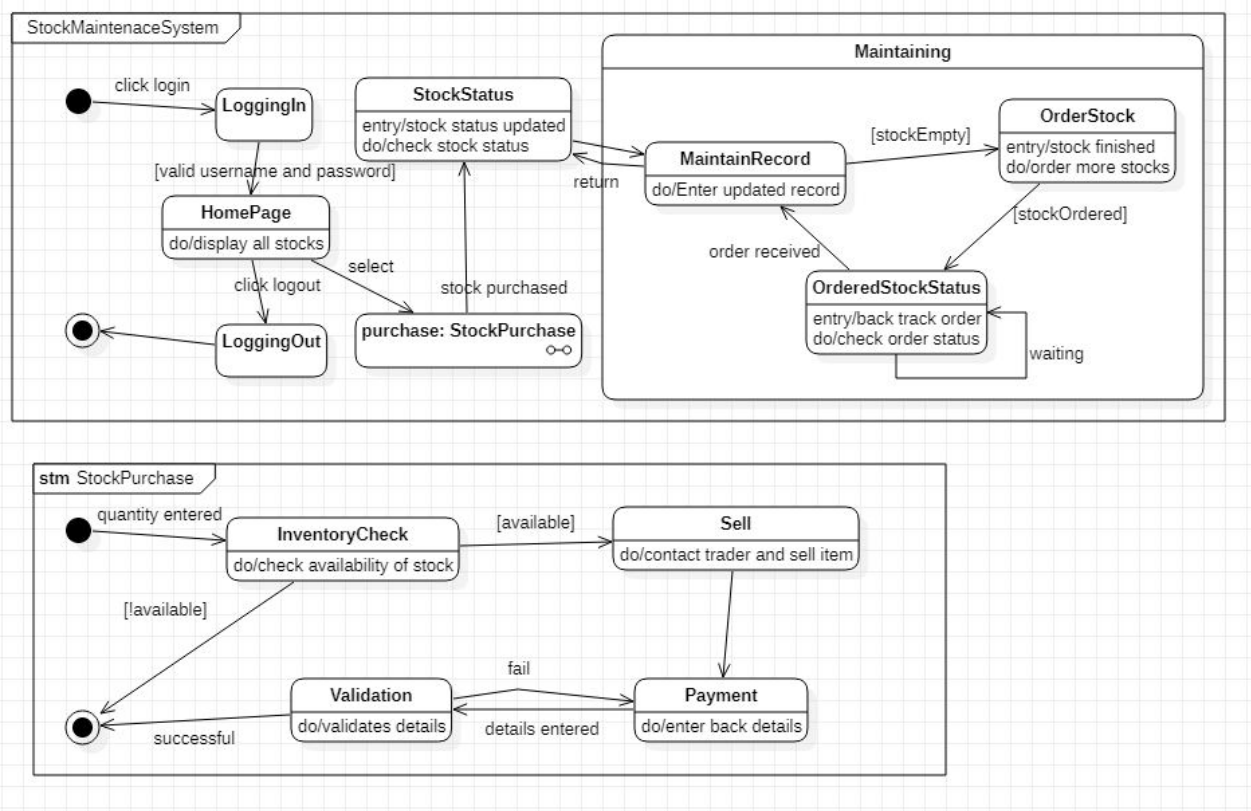
The process of the stock maintenance system is that the customer logs in to the particular site to place the order for the customer product. The stock maintenance system is described sequentially through steps

- 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.

3.3 Class Diagram

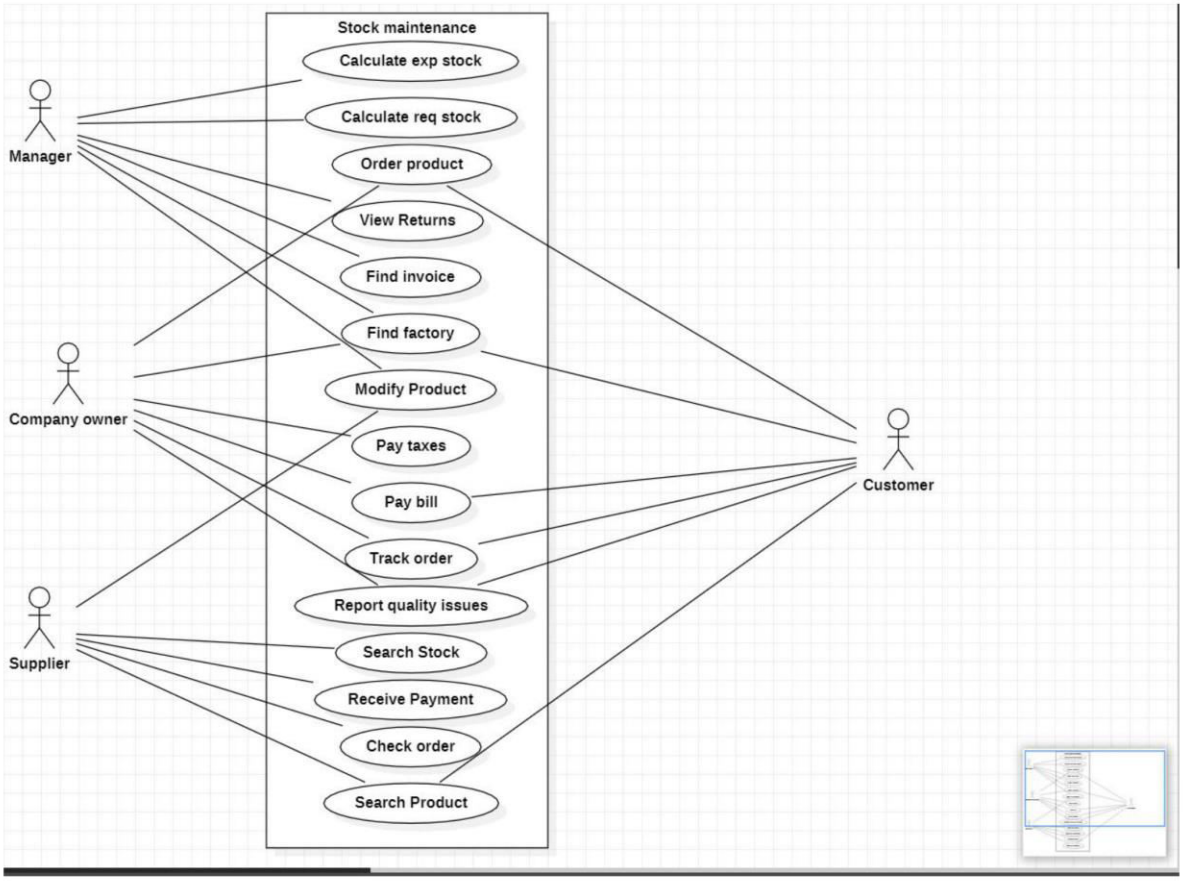


3.4 State Diagram

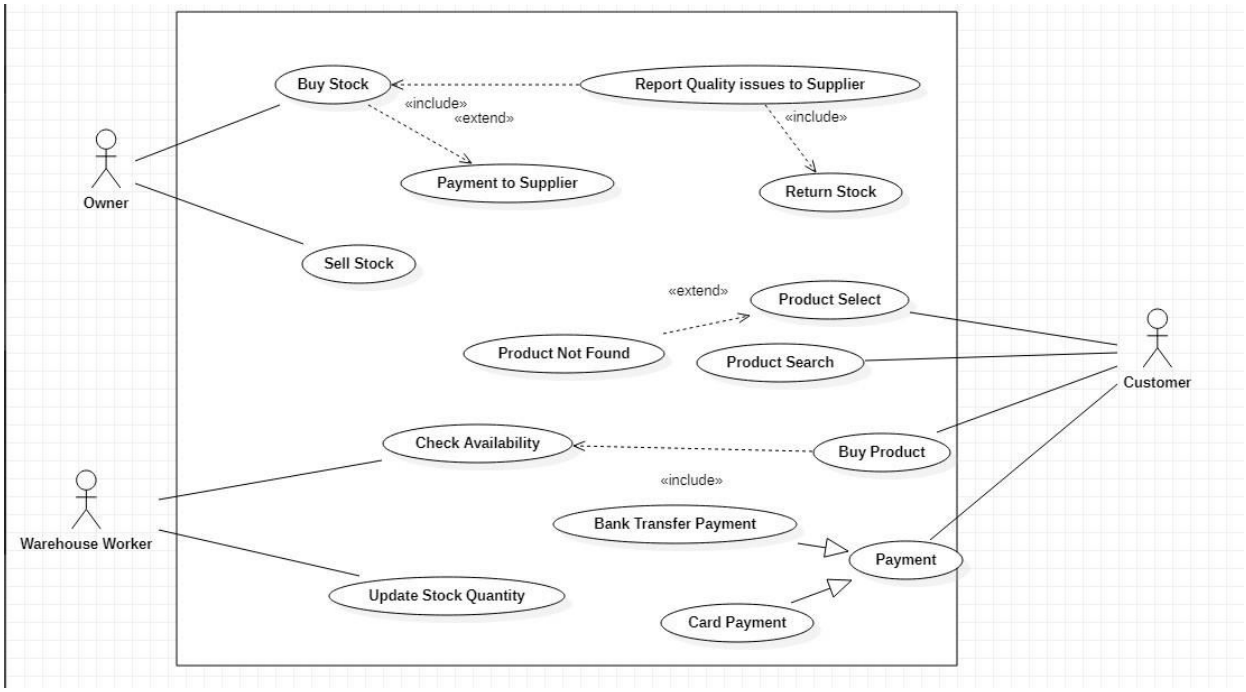


3.5 Use Case Diagram

3.5.1 Simple Use Case Diagram

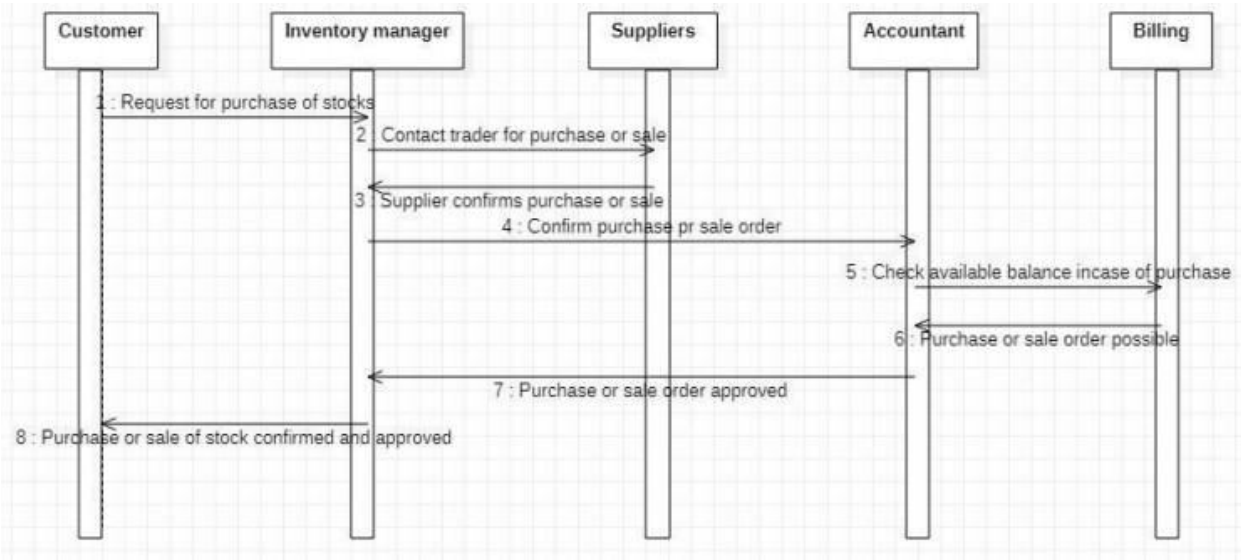


3.5.2 Advanced Use Case Diagram

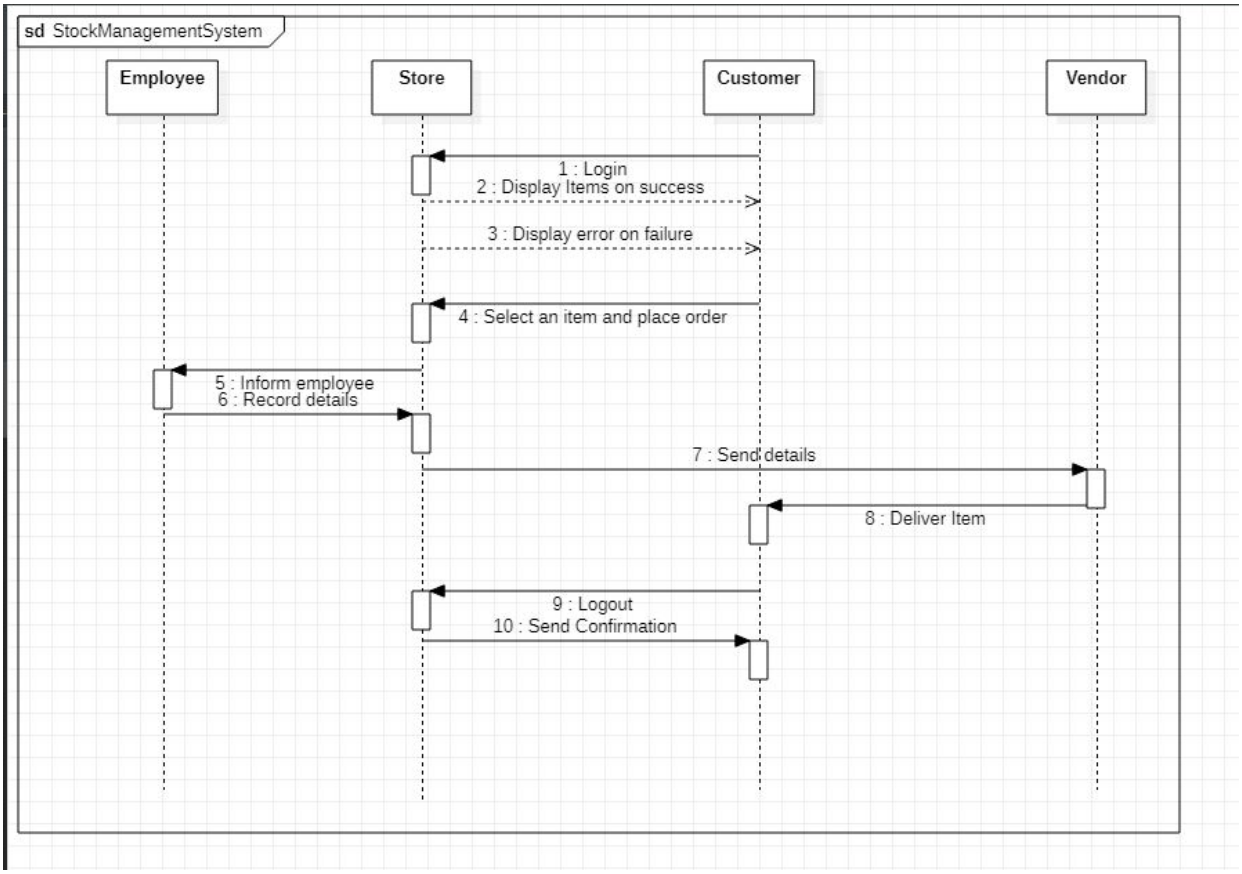


3.6 Sequence Diagram

3.6.1 Simple Sequence Diagram

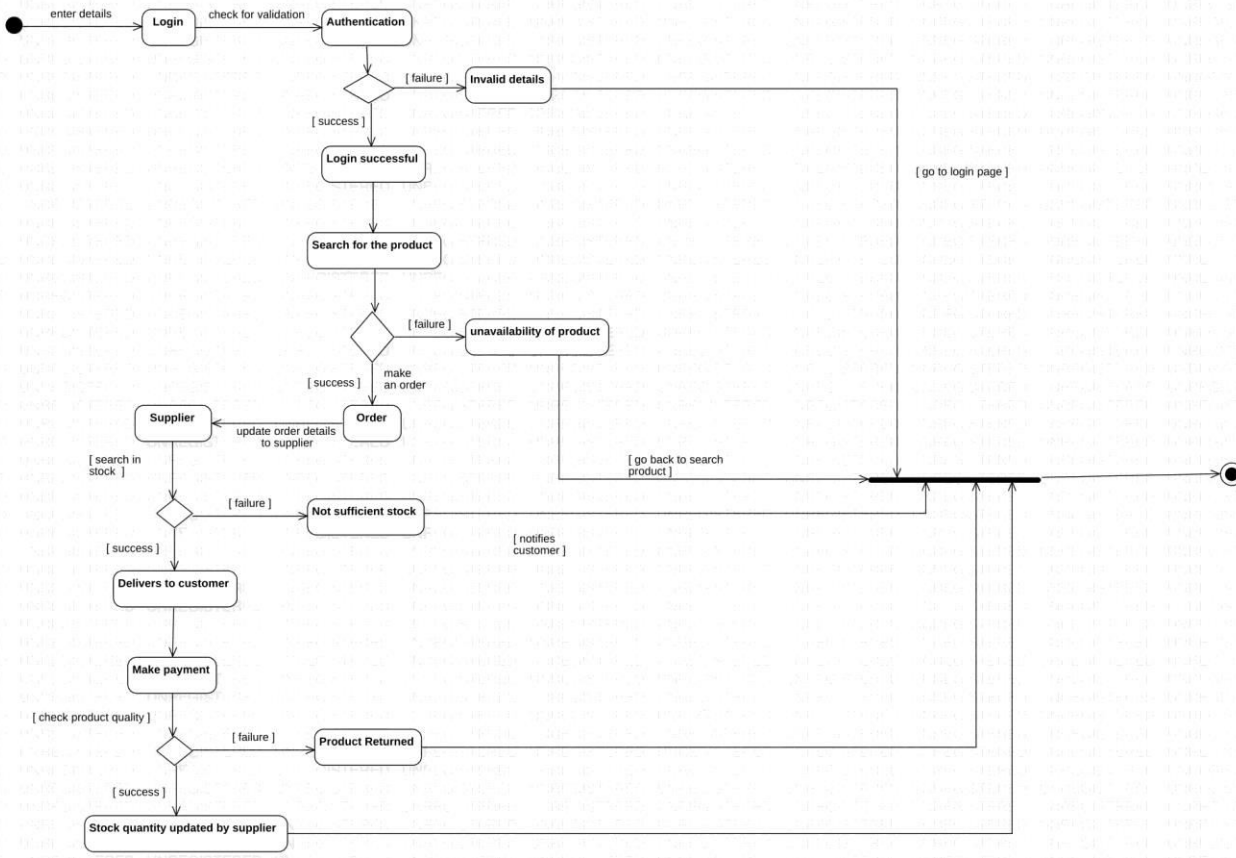


3.6.2 Advanced Sequence Diagram

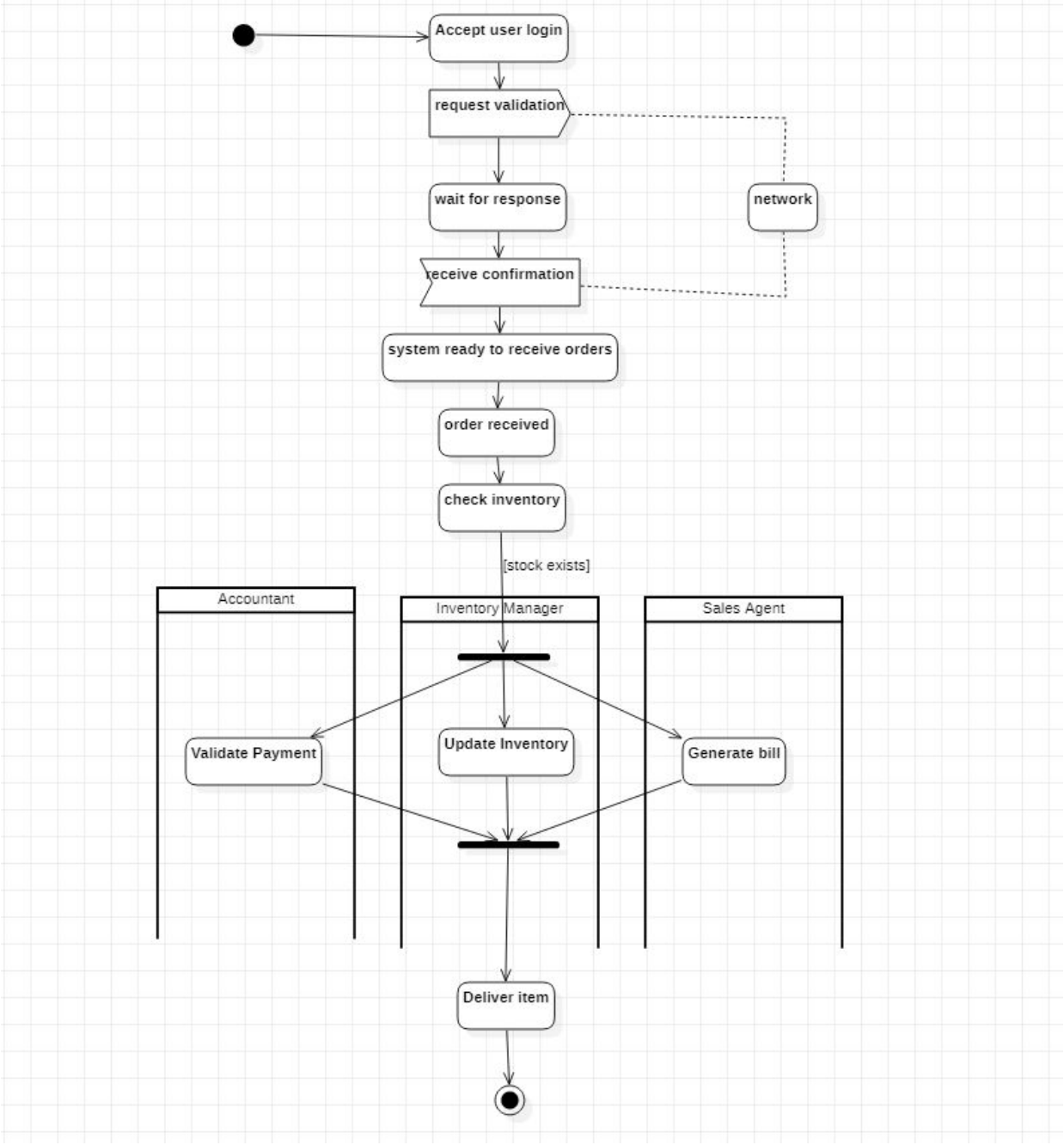


3.7 Activity Diagram

3.7.1 Simple Activity Diagram



3.7.2 Advanced Activity Diagram



Coffee Vending Machine

4.1 Problem statement

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. User will be provided with sophisticated and easy to use user interface

4.2 Software Requirement Specification

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 :

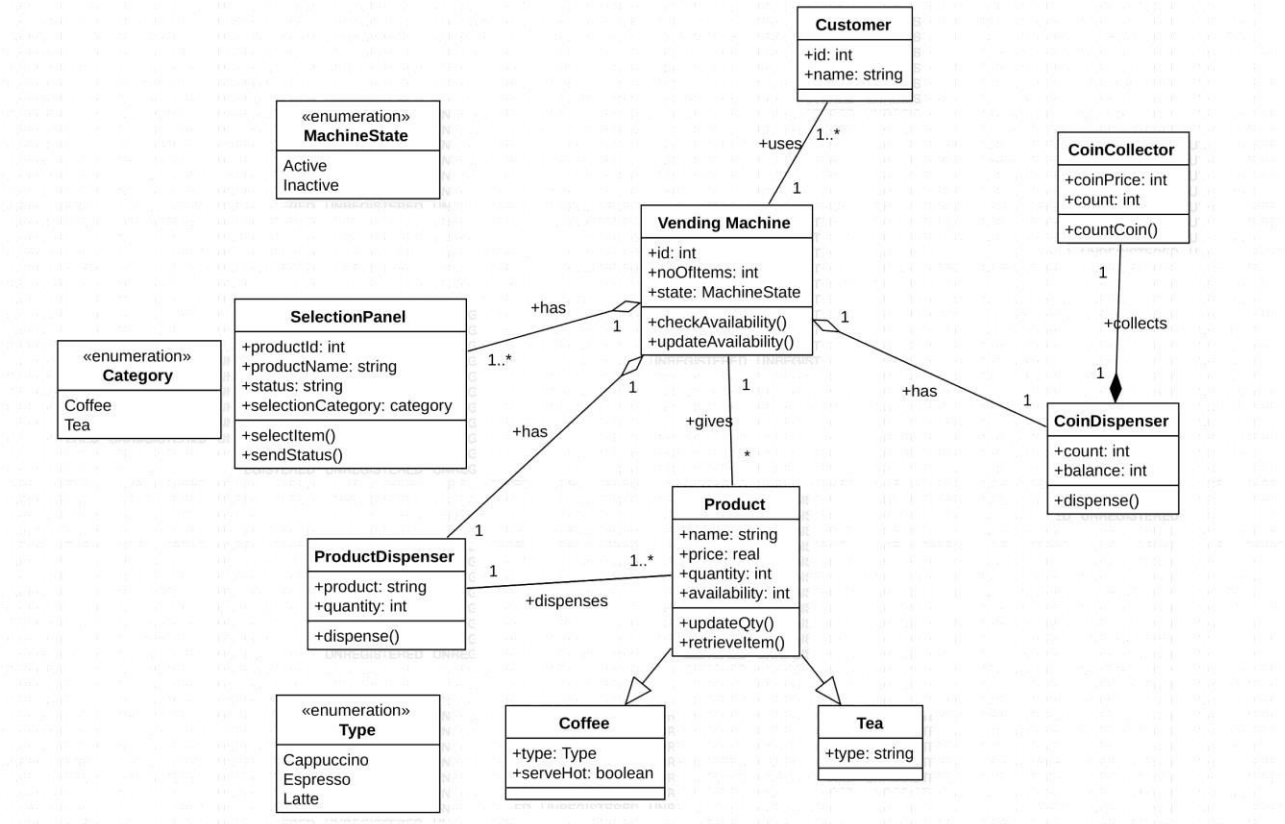
- Add heat:to heat the coffee we have 3 options. We could use a heating element where the water is gravity fed into a tubular heating element, external to the water reservoir, and boiled out. Secondly, we could use a submersible heating element placed inside of the water reservoir to heat all of the 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.

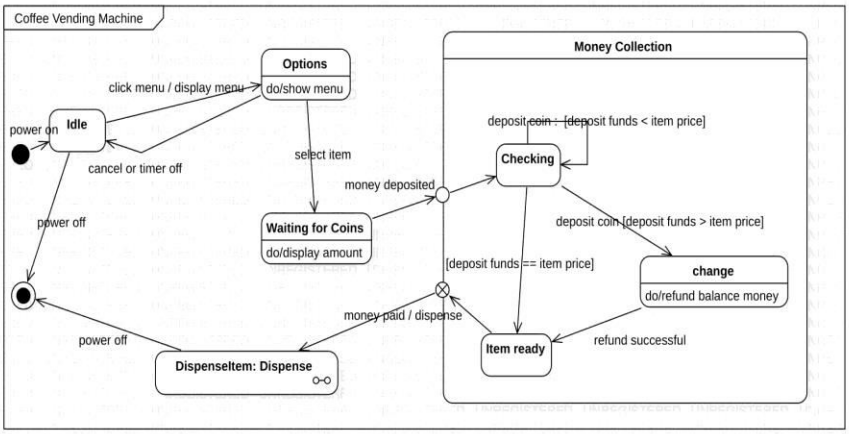
- Direct Water:The fluids could be directed from the water reservoir to their final destination via tubing, gravity reed, and pump.
- Contain Water/Coffee:To contain the water and coffee we could use one reservoir, two reservoirs or a funnel. If one reservoir was used for both the water and coffee container, 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 drops out.

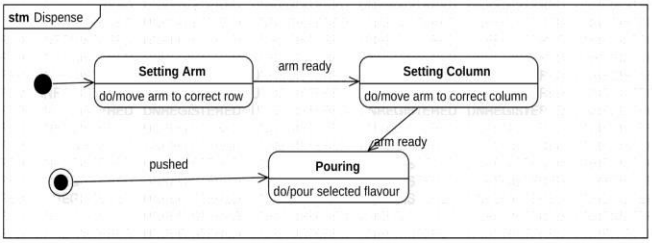
Maintenance: When it comes to the ways in which coffee vending machines work, it's not all about the coffee, it's also about the upkeep and maintenance of the machine. With regular visits, suppliers should empty the cash drawer, reconcile the proceeds against sales, empty the waste grounds, refill ingredients 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.

4.3 Class Diagram



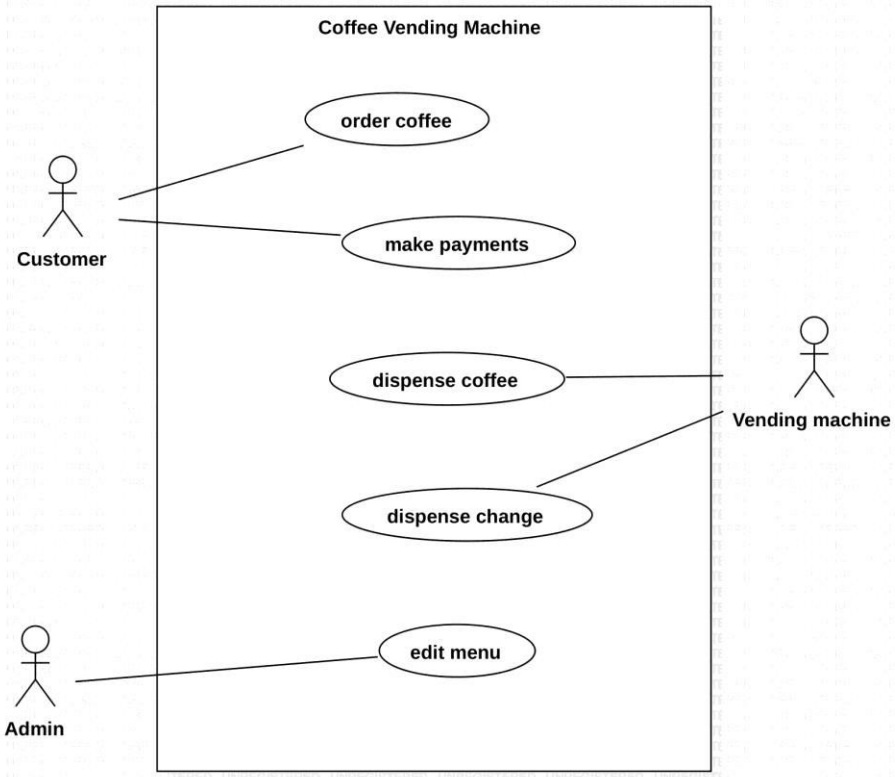
4.4 State Diagram



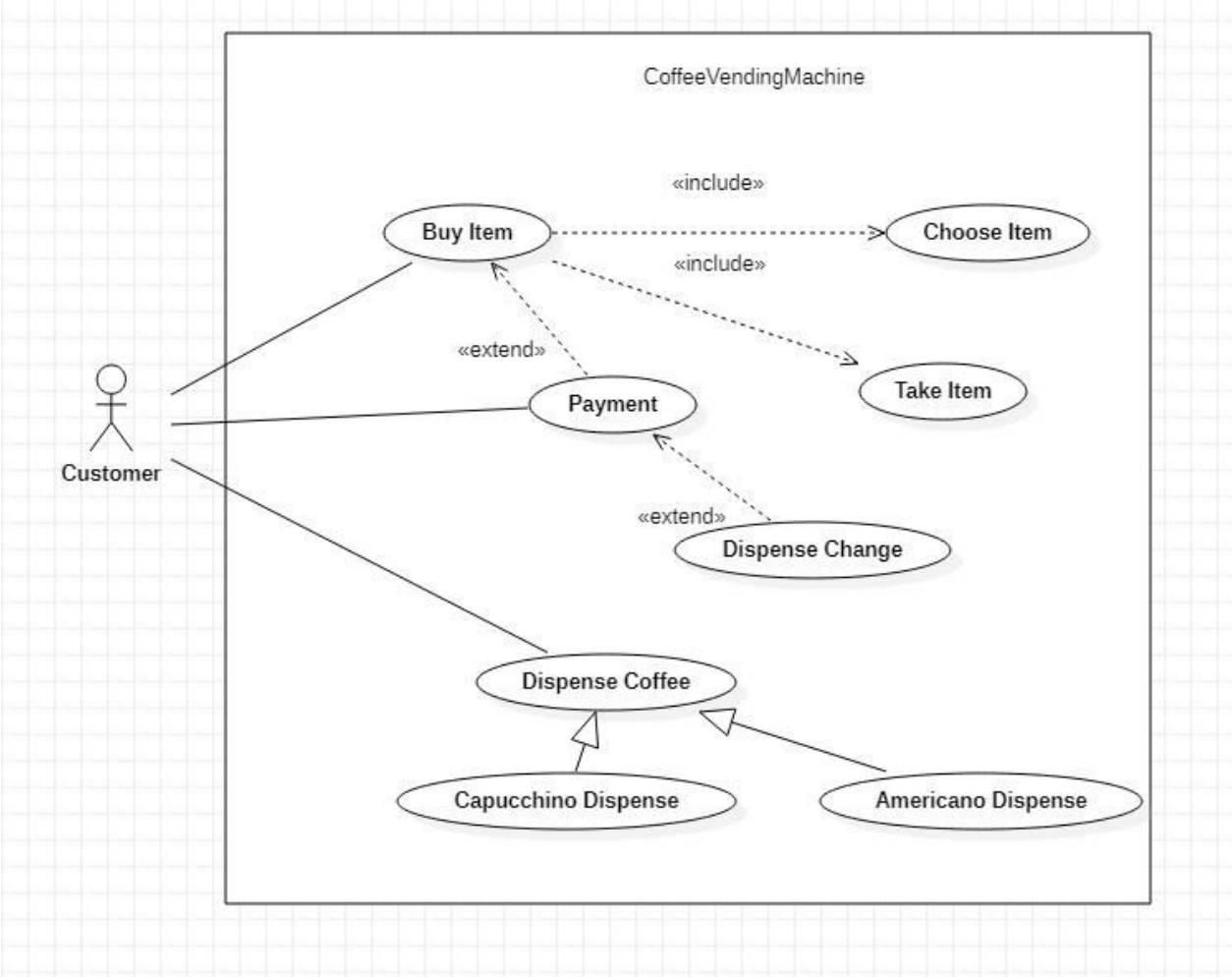


4.5 Use Case Diagram

4.5.1 Simple Use Case Diagram



4.5.2 Advanced Use Case Diagram



4.6 Sequence Diagram

4.6.1 Simple Sequence Diagram

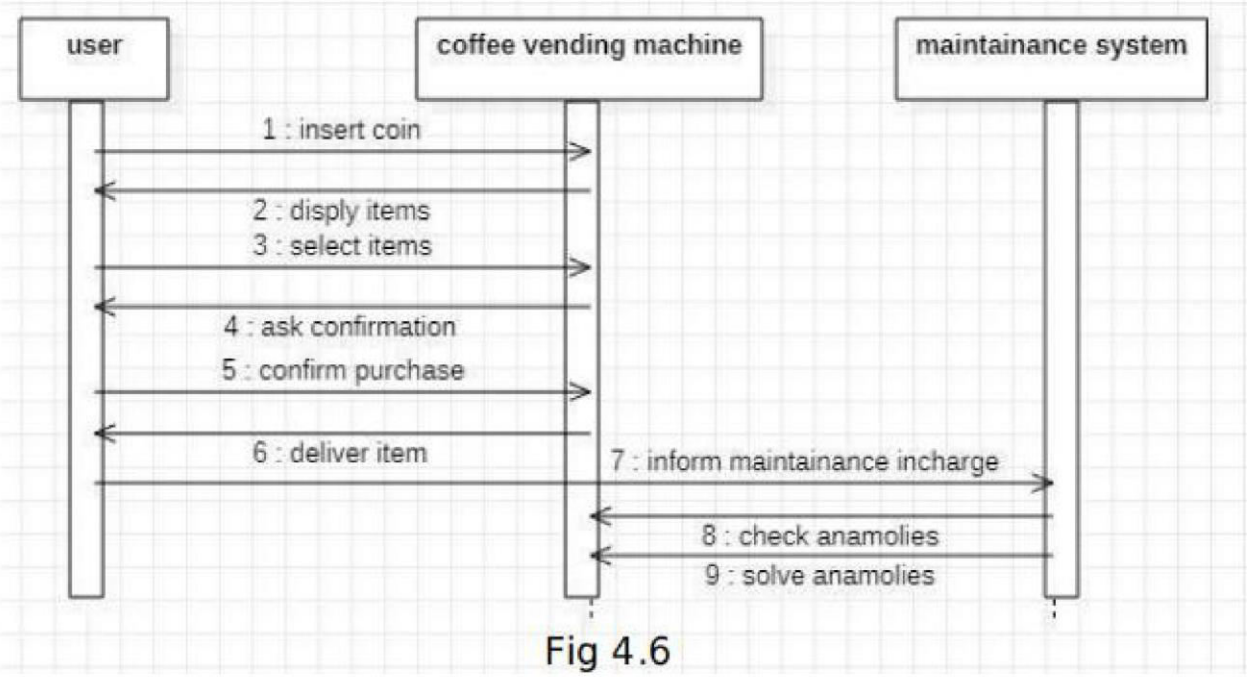
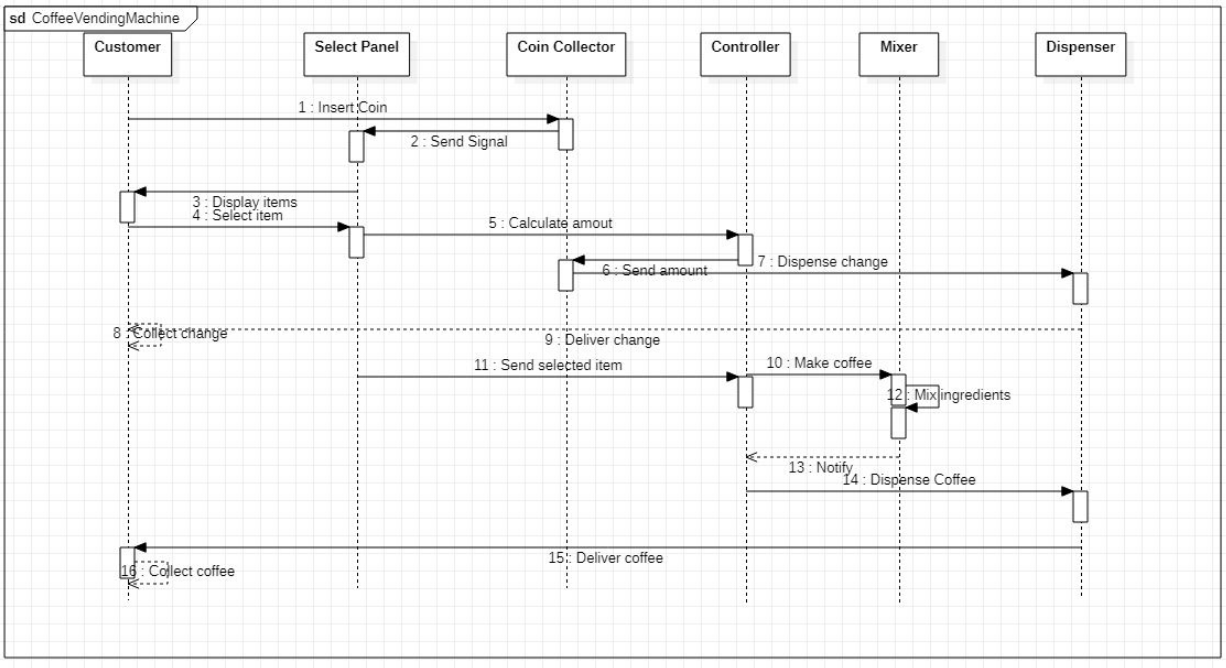


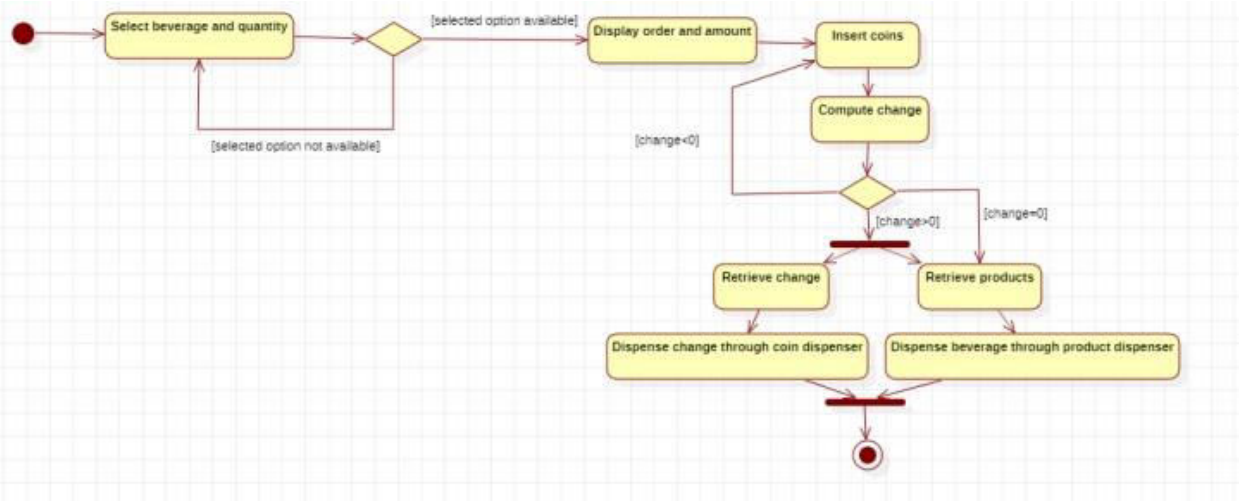
Fig 4.6

4.6.2 Advanced Sequence Diagram

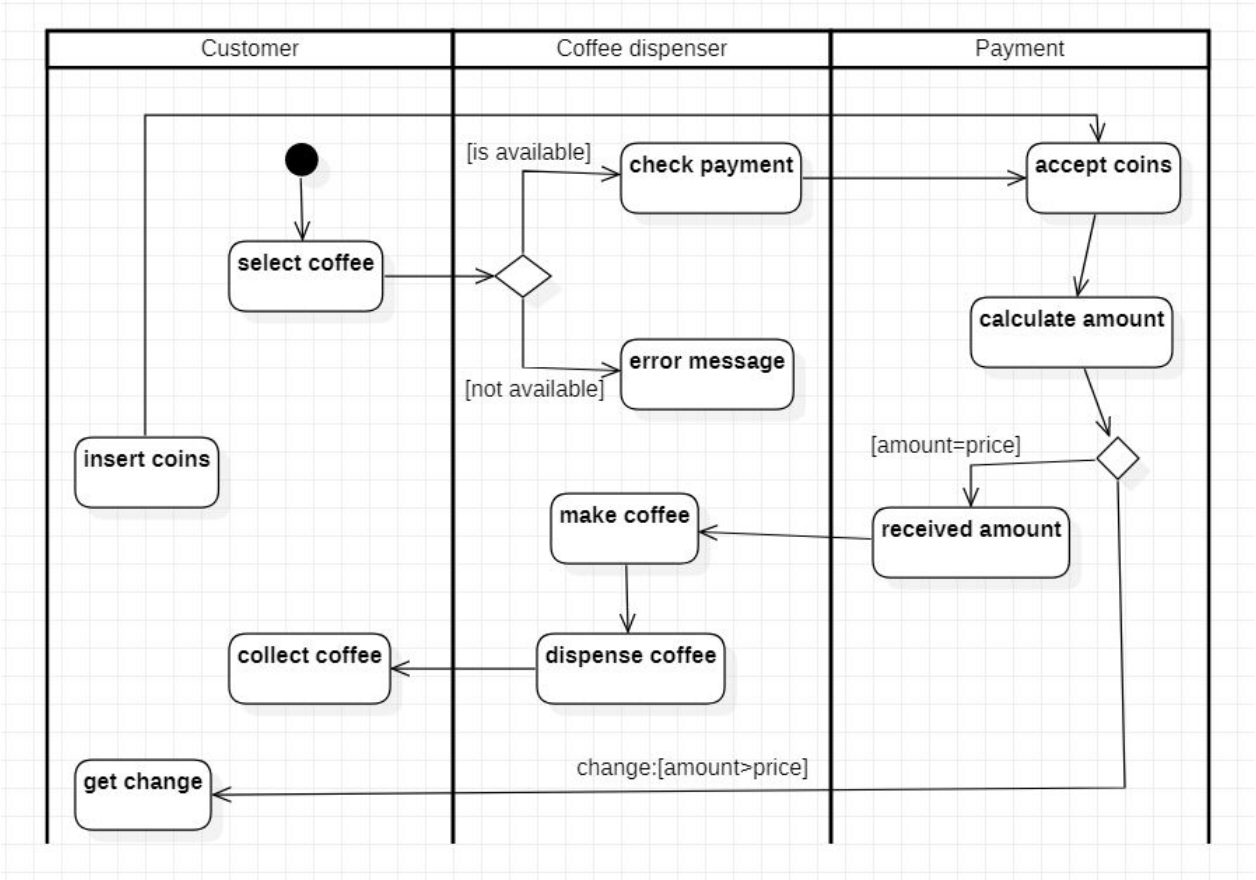


4.7 Activity Diagram

4.7.1 Simple Activity Diagram



4.7.2 Advanced Activity Diagram



Online Shopping System

5.1 Problem statement

The online shopping system allows the users and vendors to exchange products remotely and reduces the amount of cost and time substantially.

5.2 Software Requirement Specification

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

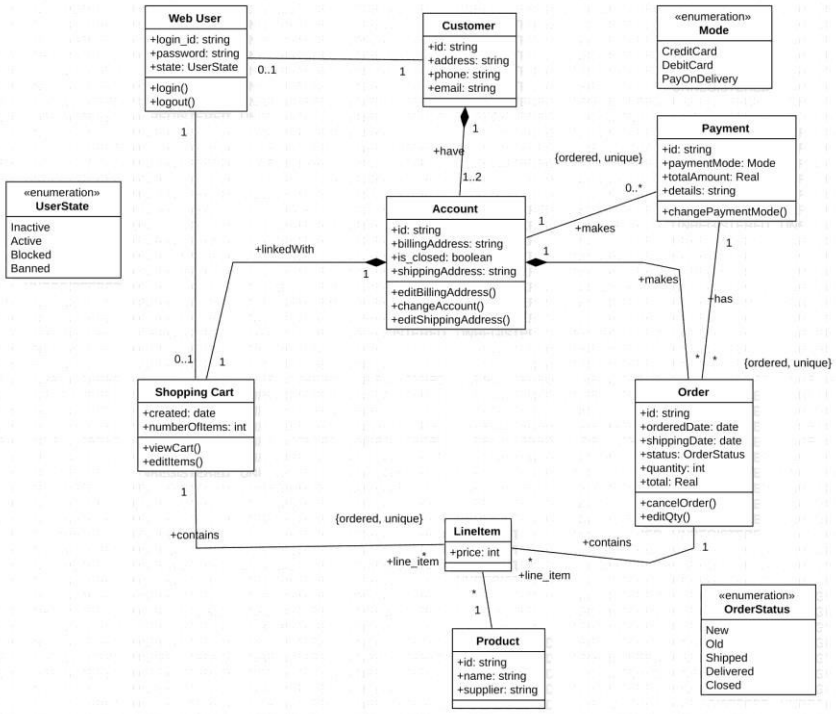
The software will not provide the following facilities to the customers:

- 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

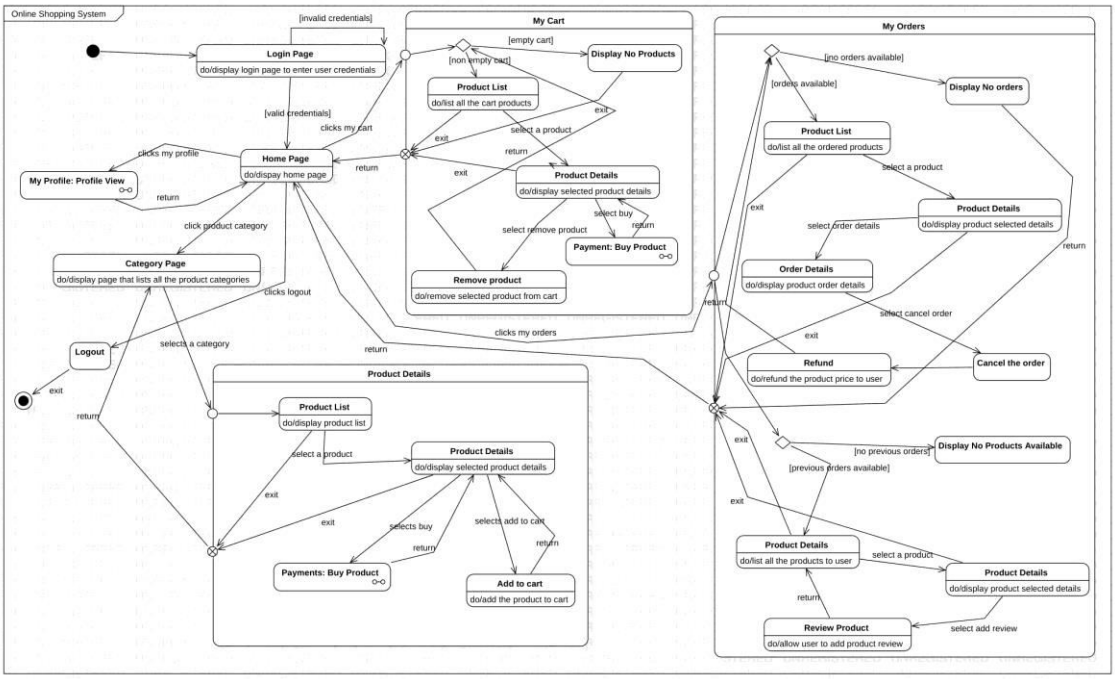
The software provides the following facilities to the merchants:

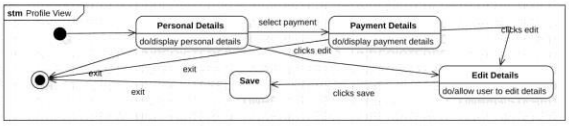
- Facilitates easy bidding facility
- Provides complete information about the customers
- Provides complete information about their products
- Can avail the facility of email correspondence
- Can avail the brand catalog facility

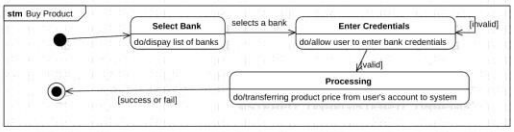
5.3 Class Diagram



5.4 State Diagram

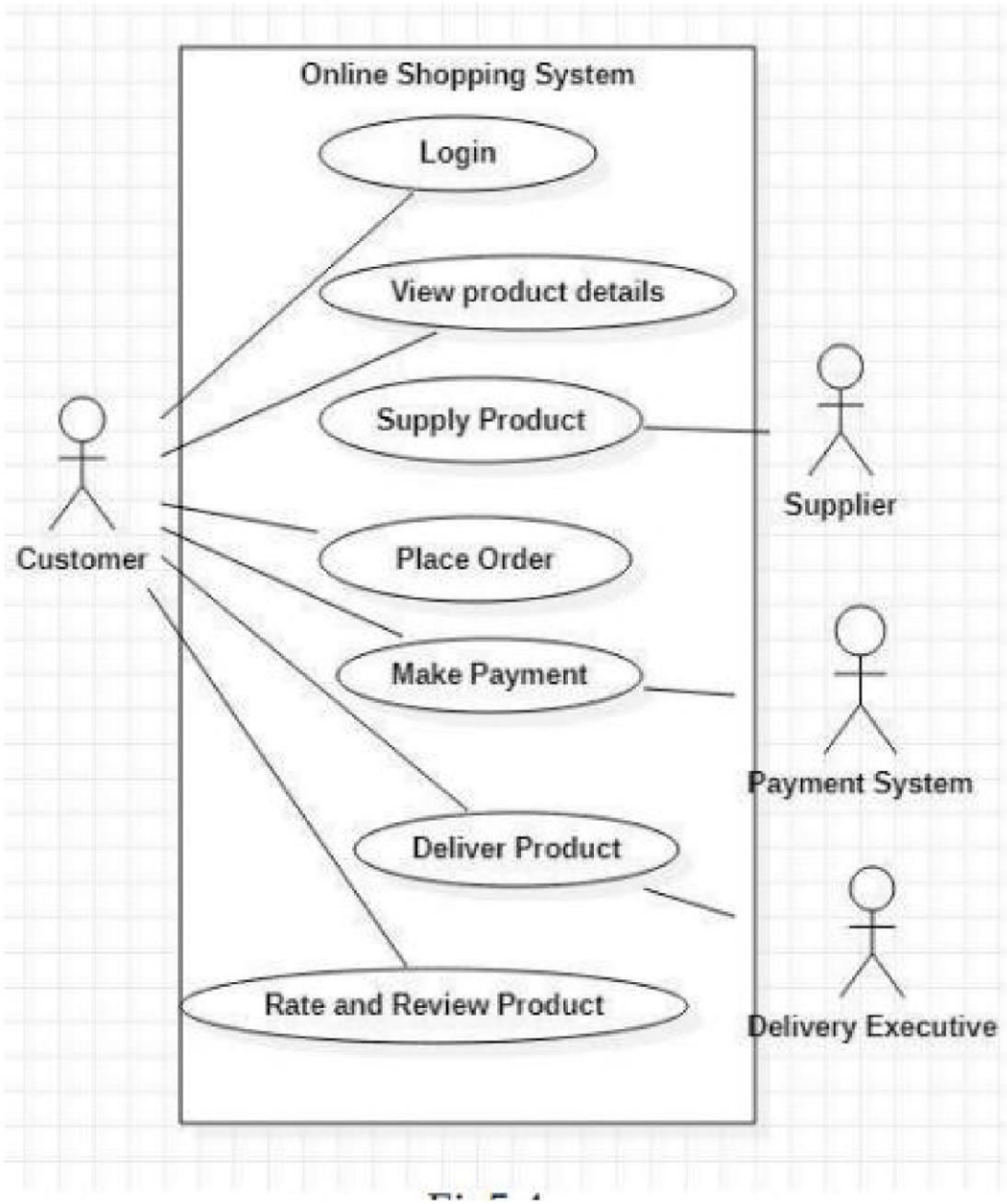




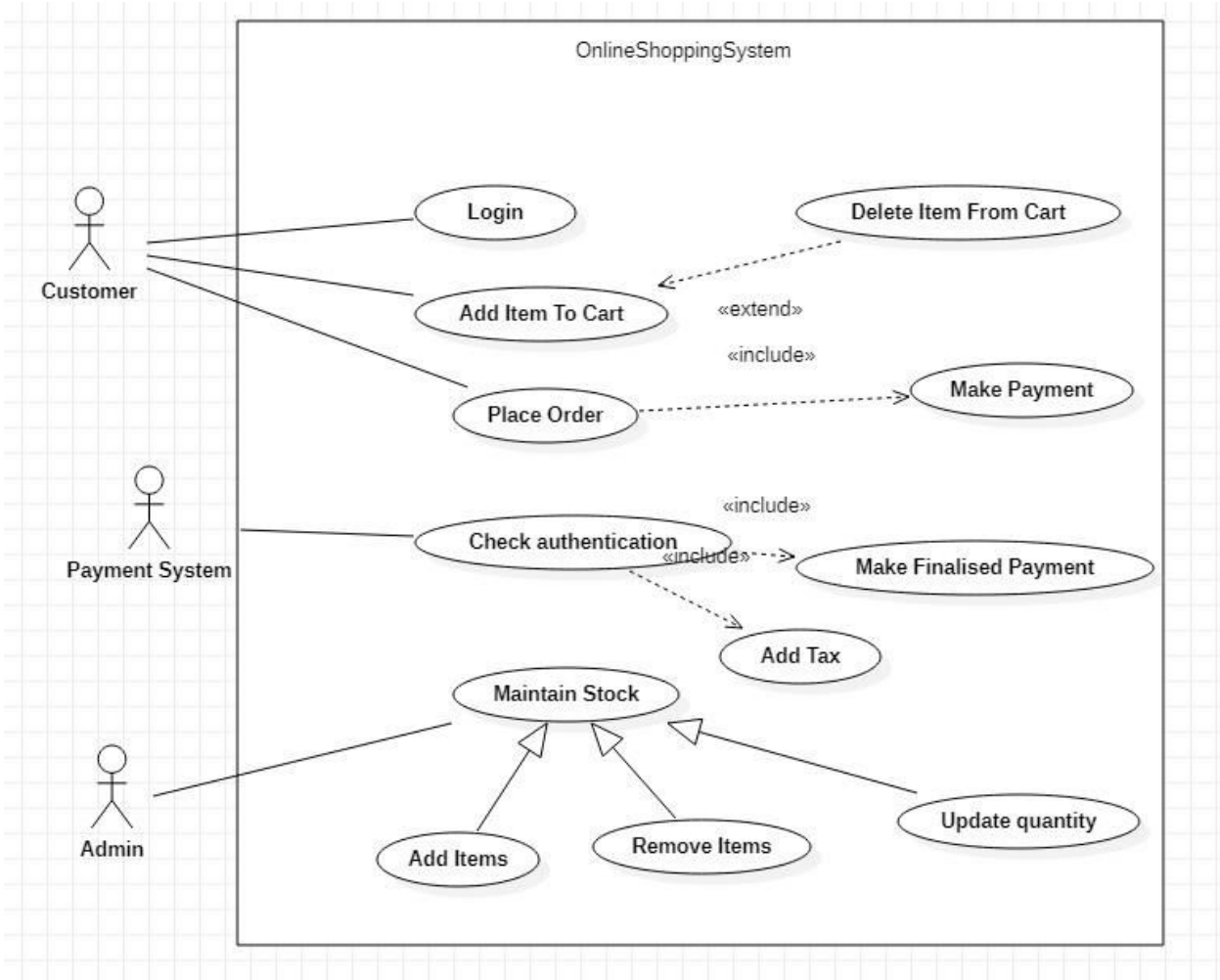


5.5 Use Case Diagram

5.5.1 Simple Use Case Diagram

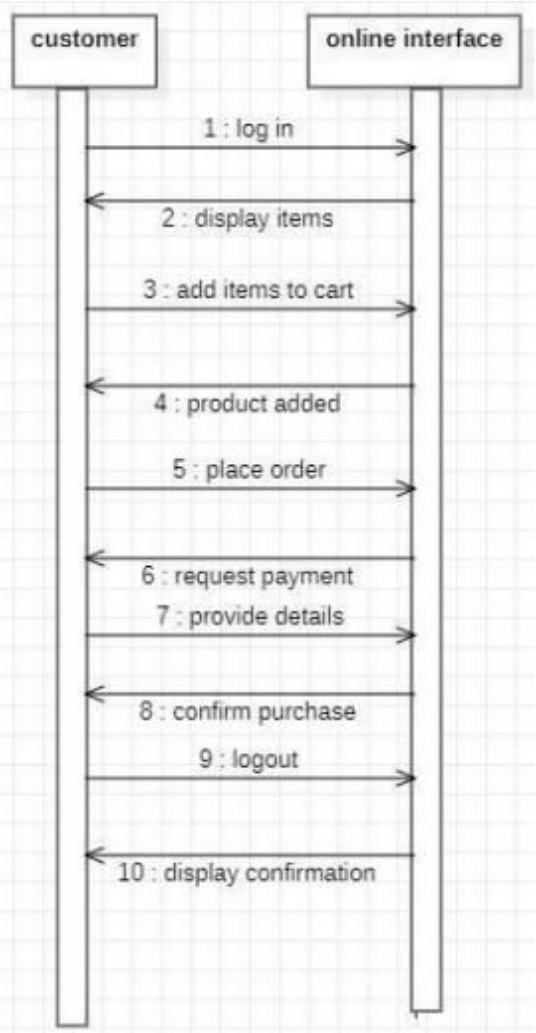


5.5.2 Advanced Use Case Diagram

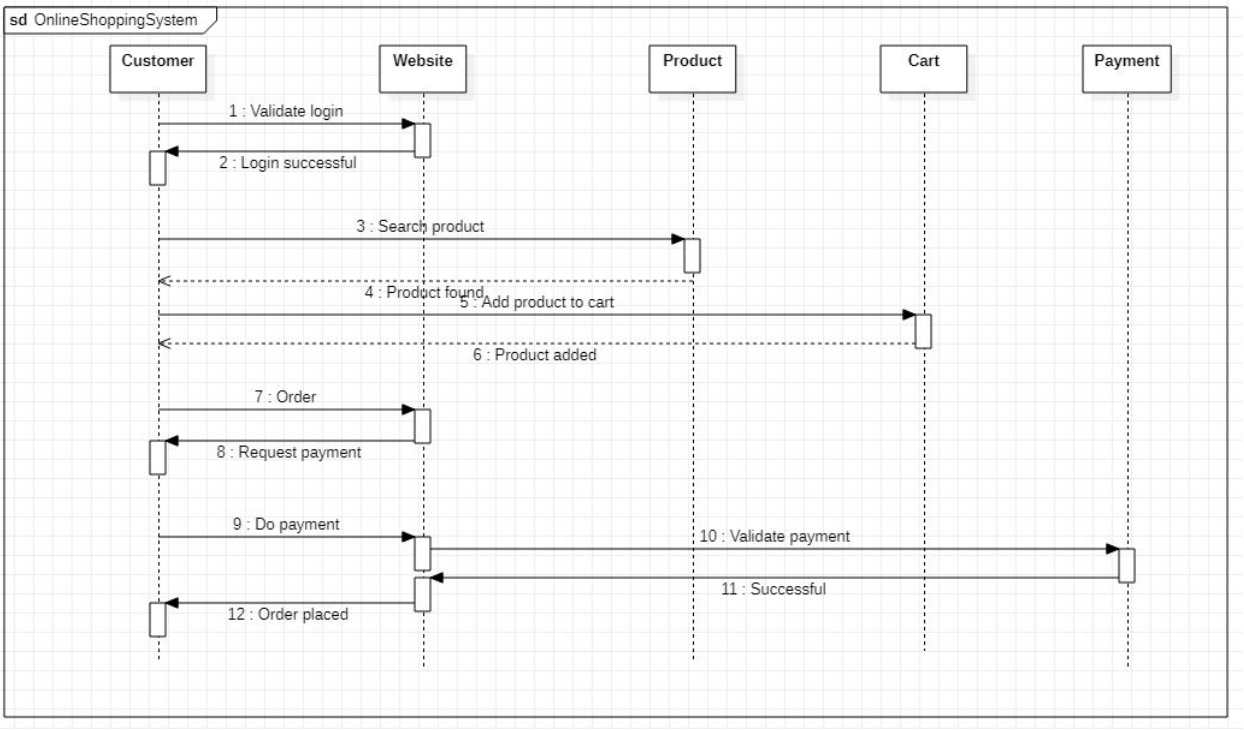


5.6 Sequence Diagram

5.6.1 Simple Sequence Diagram

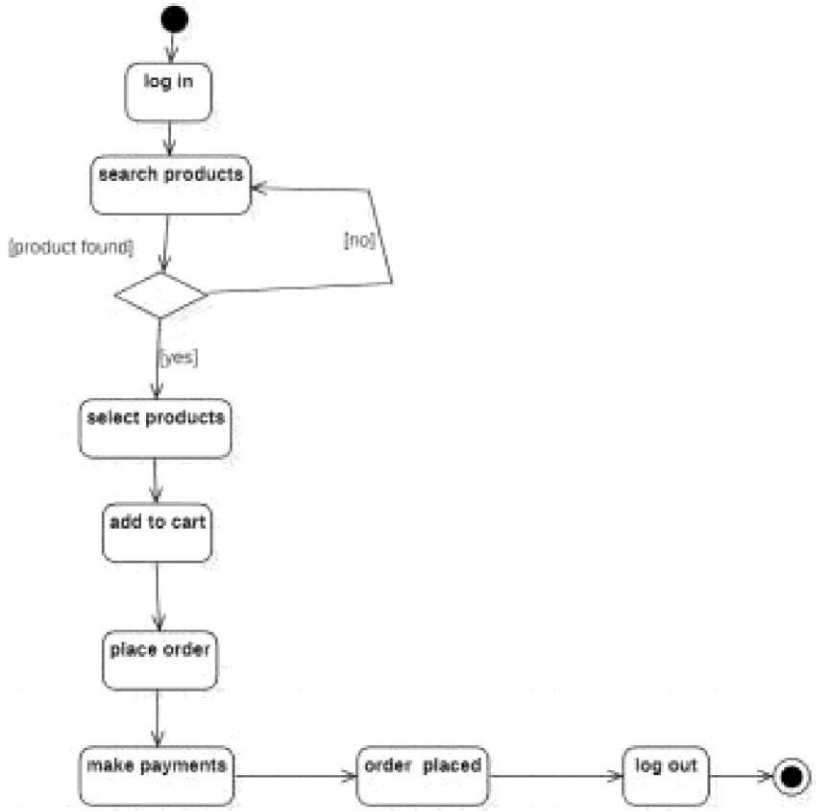


5.6.2 Advanced Sequence Diagram

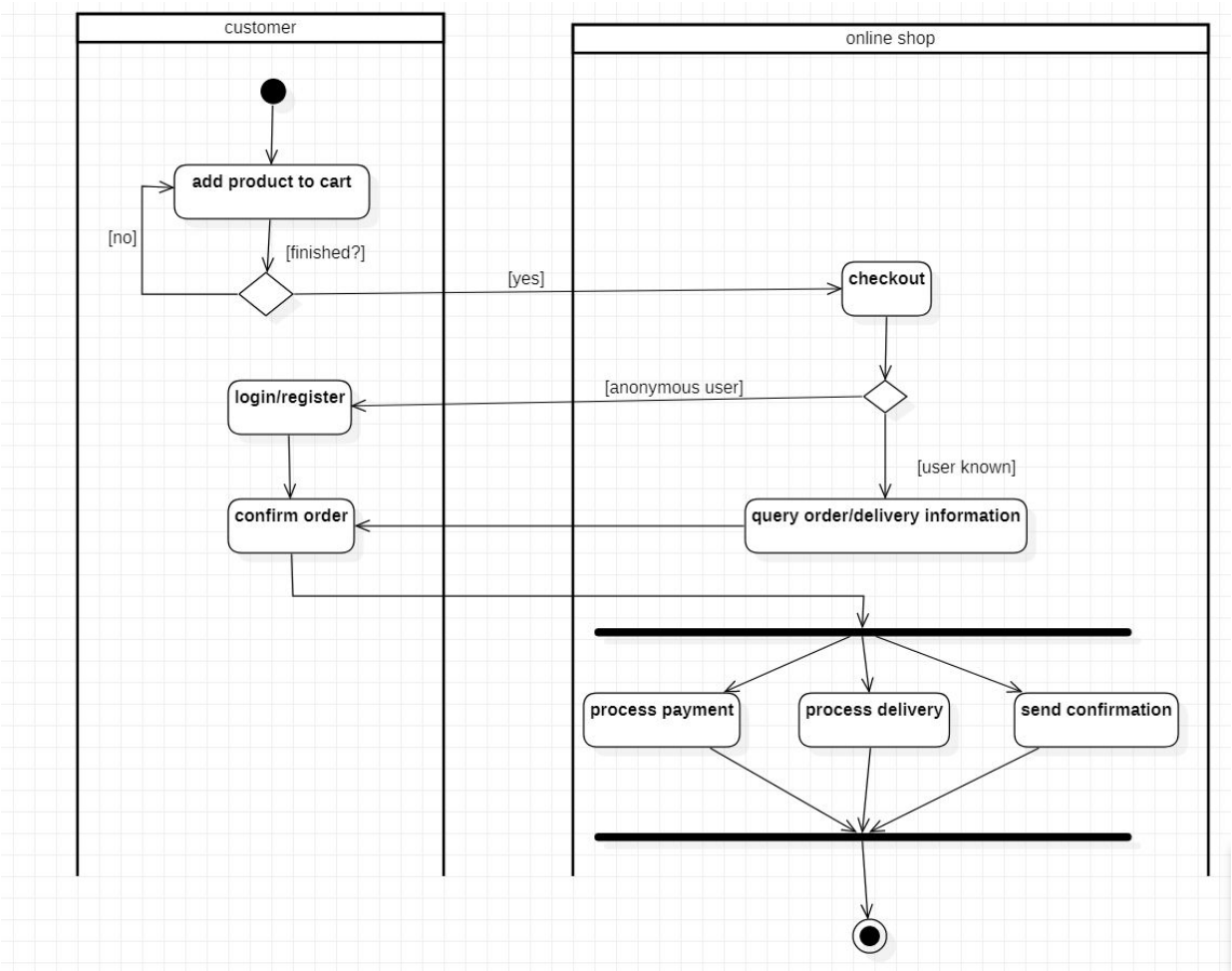


5.7 Activity Diagram

5.7.1 Simple Activity Diagram



5.7.2 Advanced Activity Diagram



Railway Management System

6.1 Problem statement

To develop a user-friendly Railway Reservation System to enable passengers to book tickets online and make payment online as well.

6.2 Software Requirement Specification

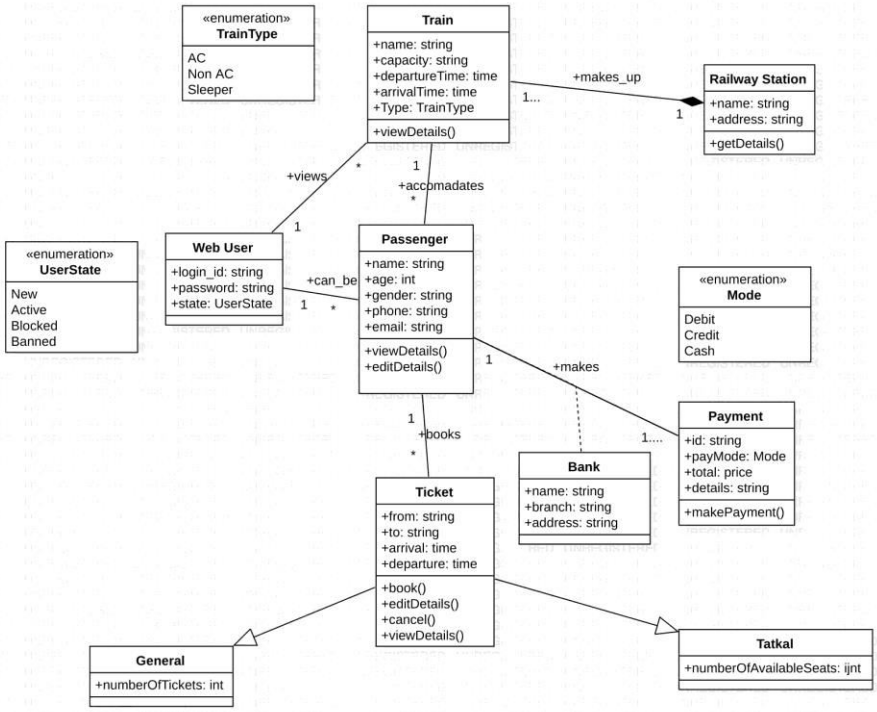
Railway reservation system project which provides the train timing details, reservation, billing and cancellation on various types of reservation namely,

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

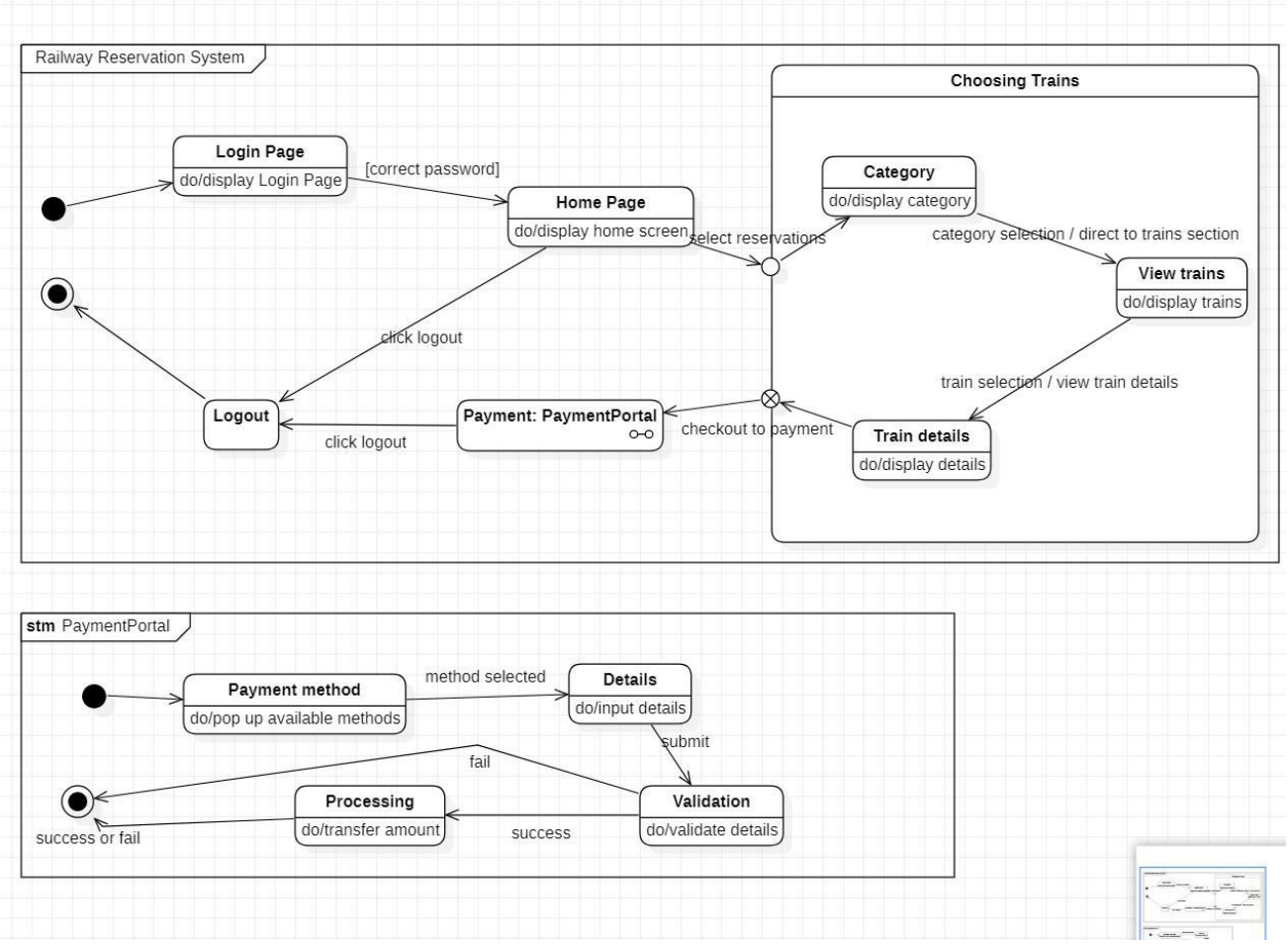
This system enables the Advance booking in any class, against general and ladies quota, on payment of fare in full for adults and children, a maximum of six berths/seats at a time, for journey between any two stations served by a train. It also provides details about

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: I-ticket, E-ticket and Tatkaal

6.3 Class Diagram

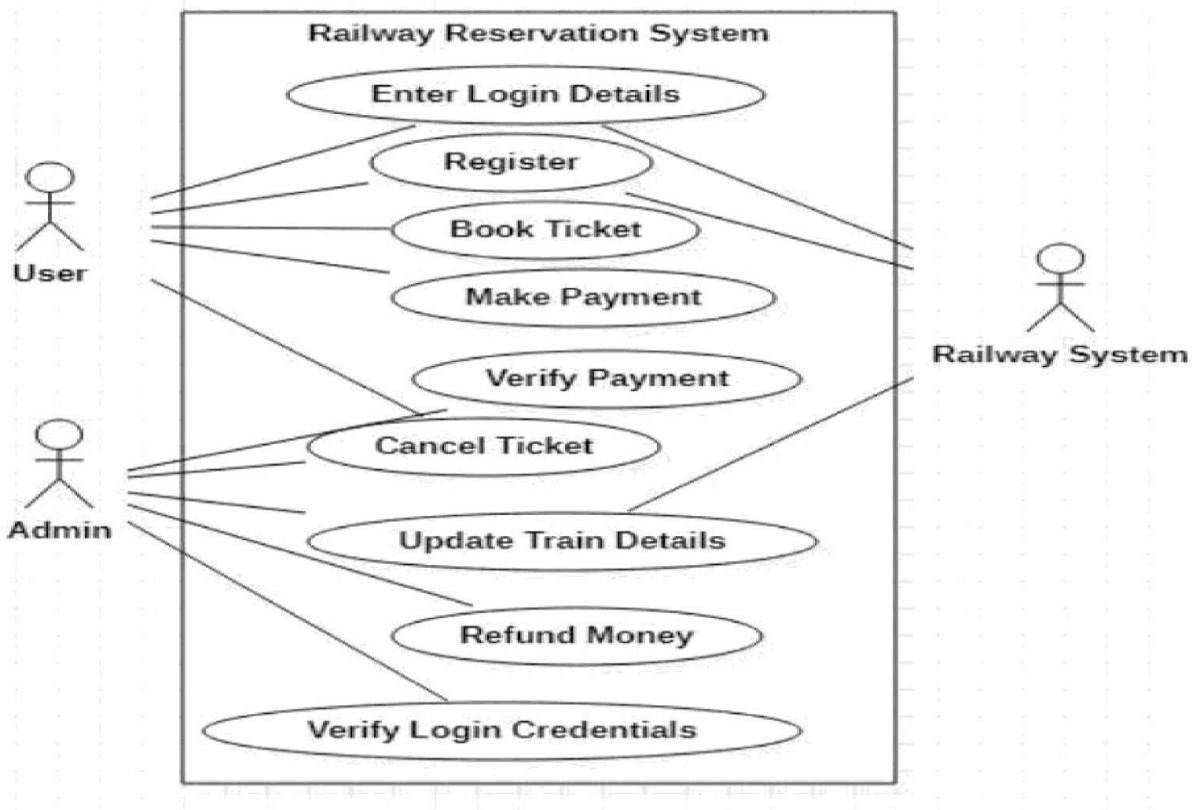


6.4 State Diagram

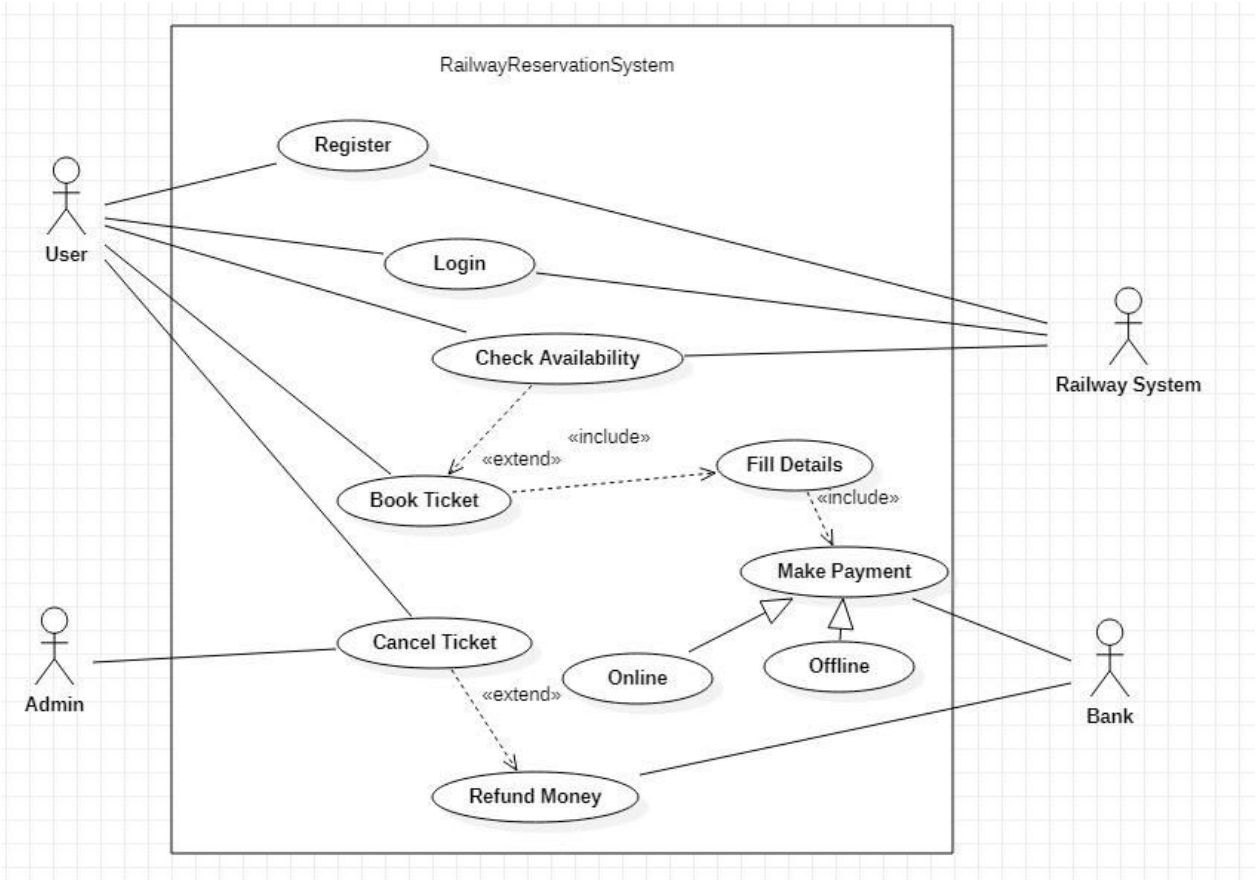


6.5 Use Case Diagram

6.5.1 Simple Use Case Diagram

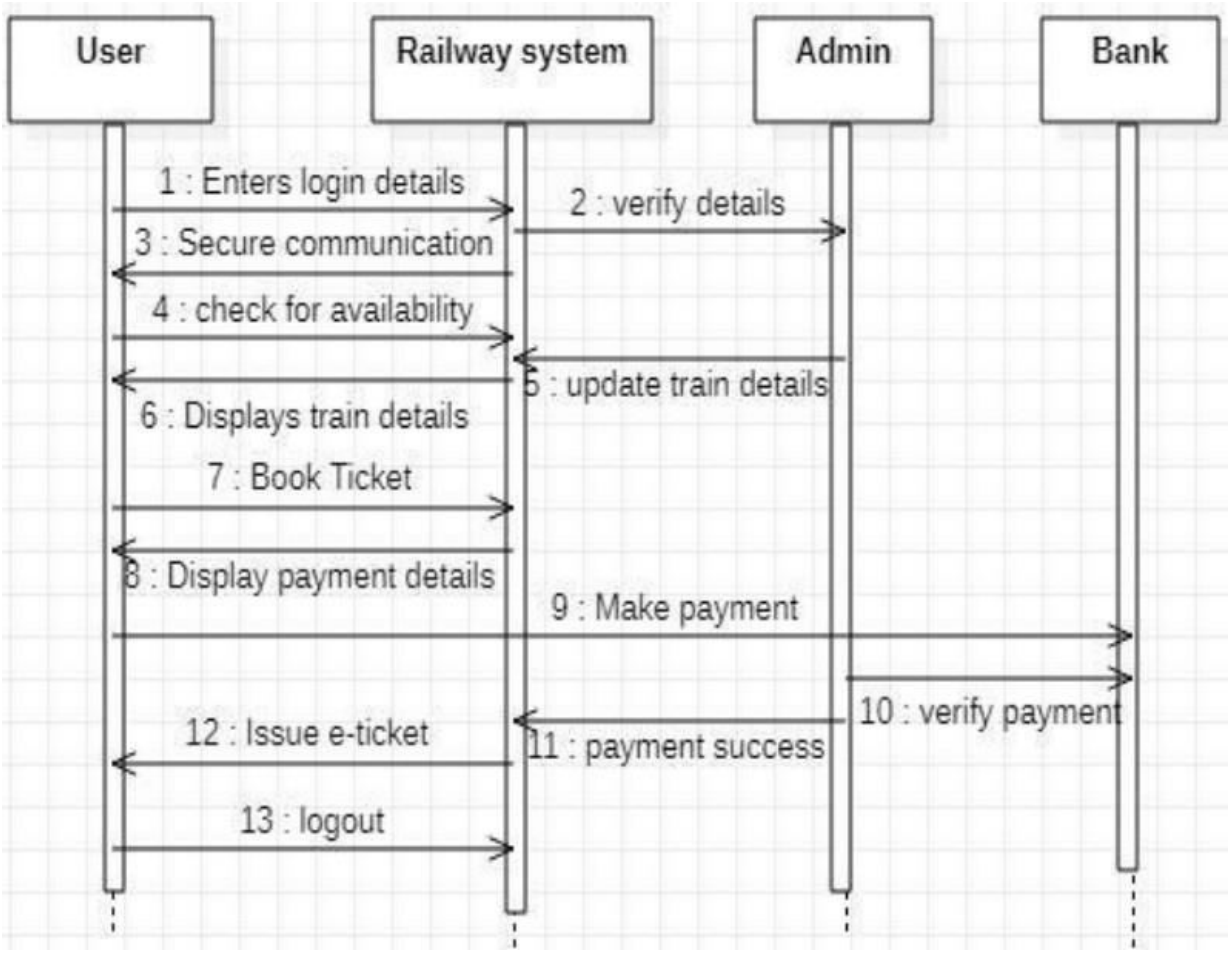


6.5.2 Advanced Use Case Diagram

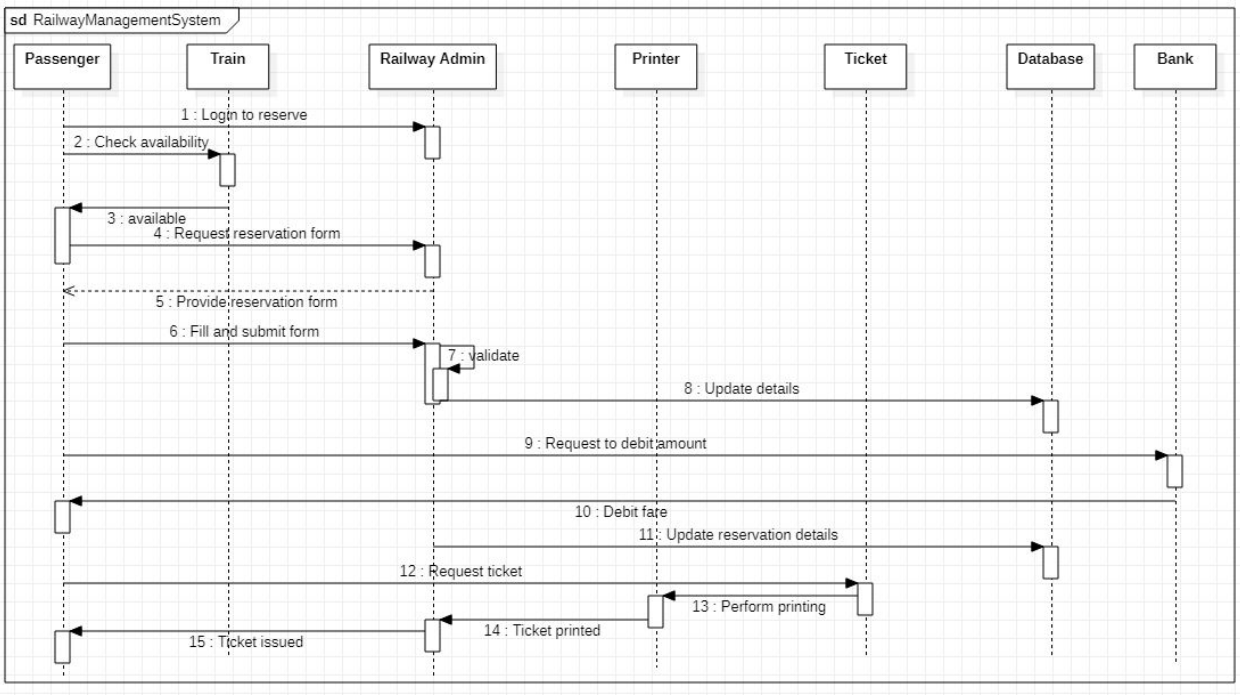


6.6 Sequence Diagram

6.6.1 Simple Sequence Diagram

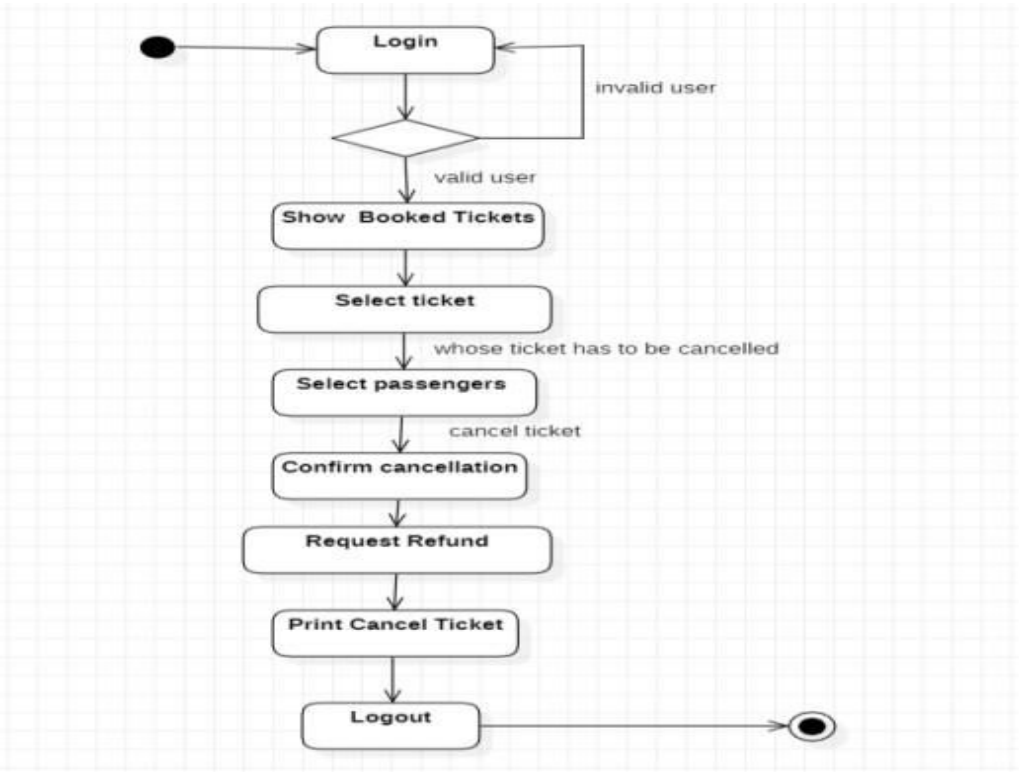


6.6.2 Advanced Sequence Diagram

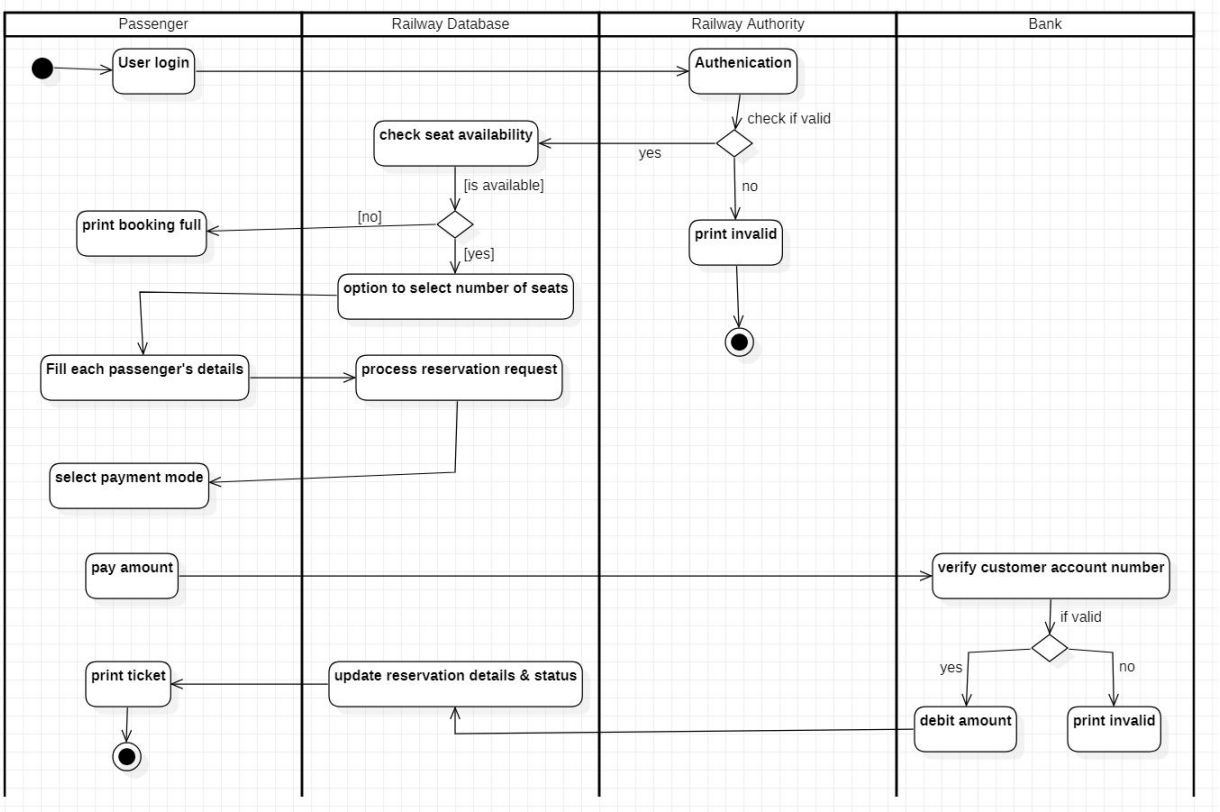


6.7 Activity Diagram

6.7.1 Simple Activity Diagram



6.7.2 Advanced Activity Diagram



Graphics Editor System

7.1 Problem statement

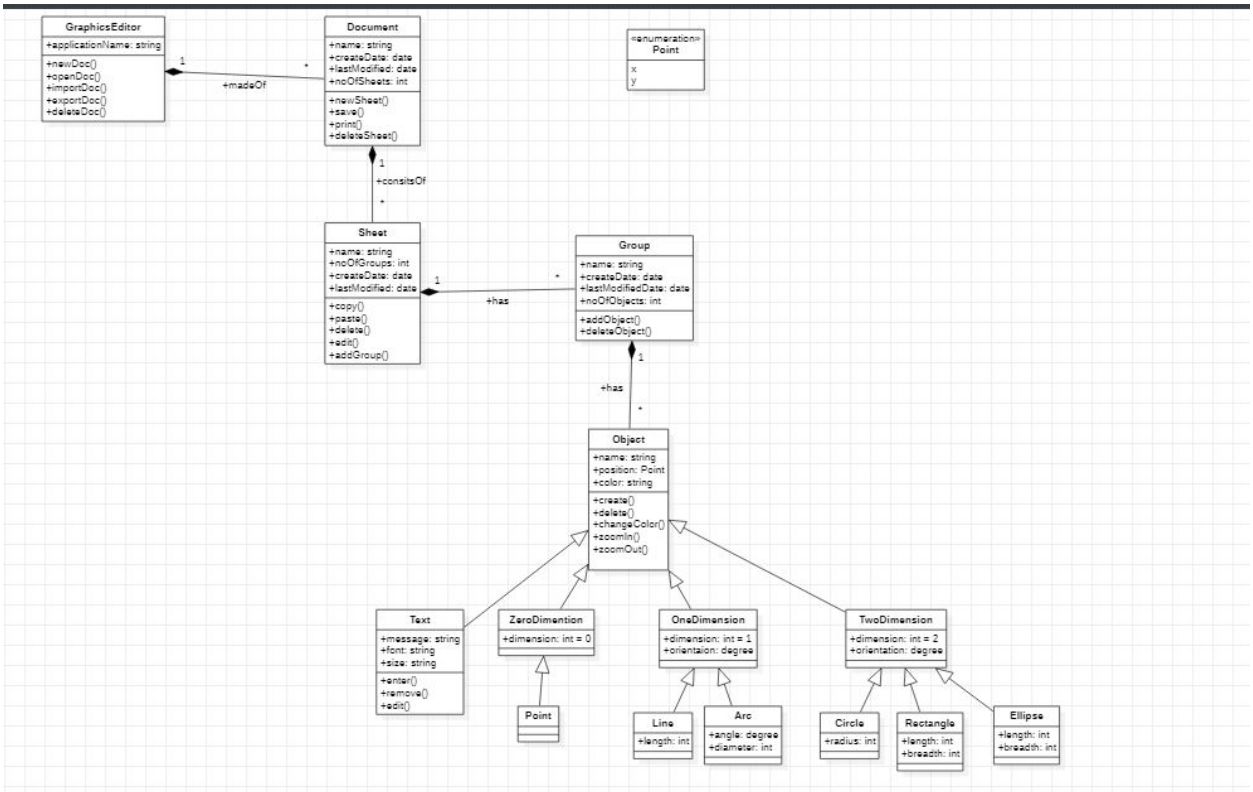
The graphics editor provides an Application Programmer's Interface that enables a programmer to develop their own graphical model editor for a specific type of model. This API in turn, relies on extending the Eclipse Graphical Editing Framework to provide an environment in which the editor functions, 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.

7.2 Software Requirement Specification

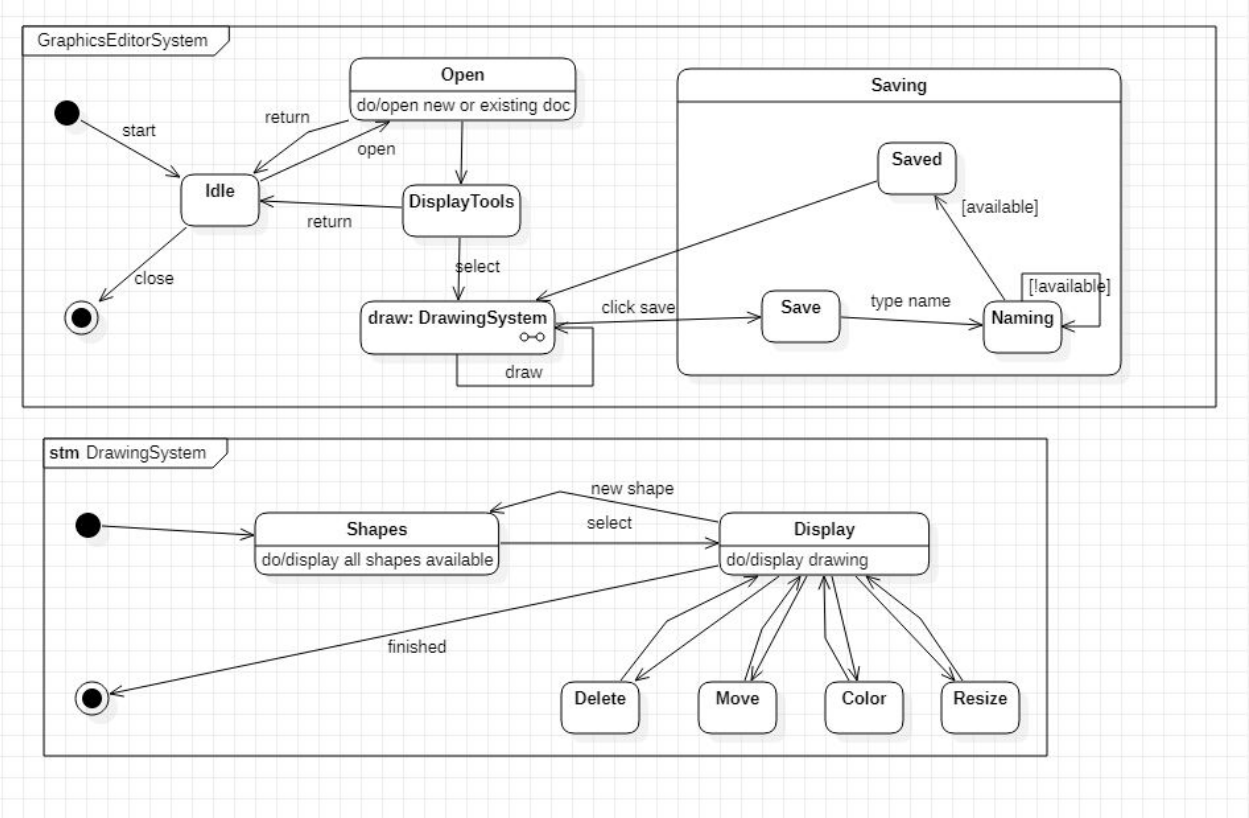
It should support following functionalities:

- It includes toolbox with tools such as: Line, Circle, Rectangle, Polygon, Parallelogram, 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 tools are provided.

7.3 Class Diagram

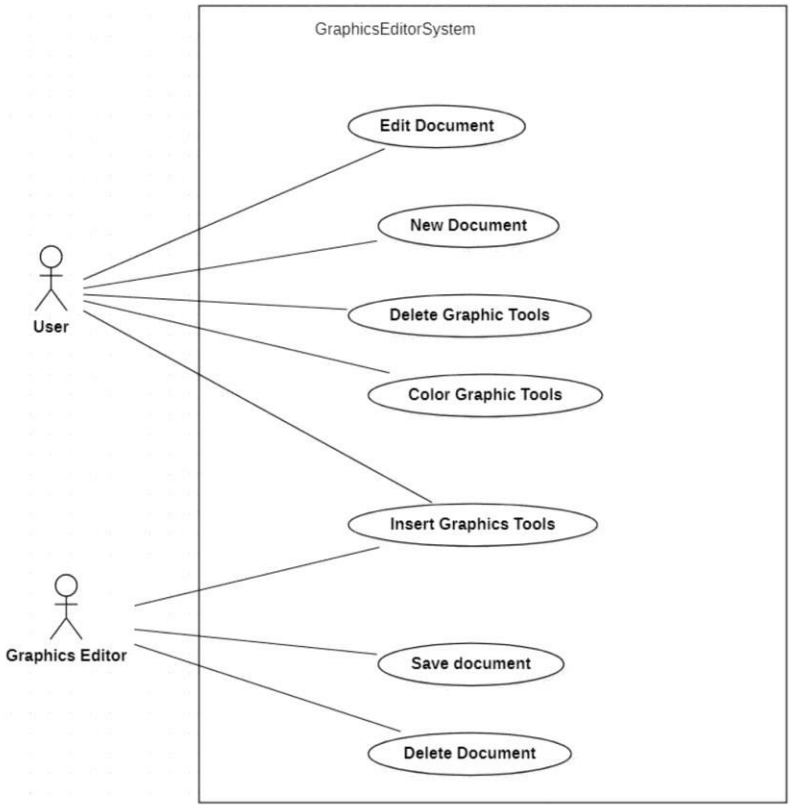


7.4 State Diagram

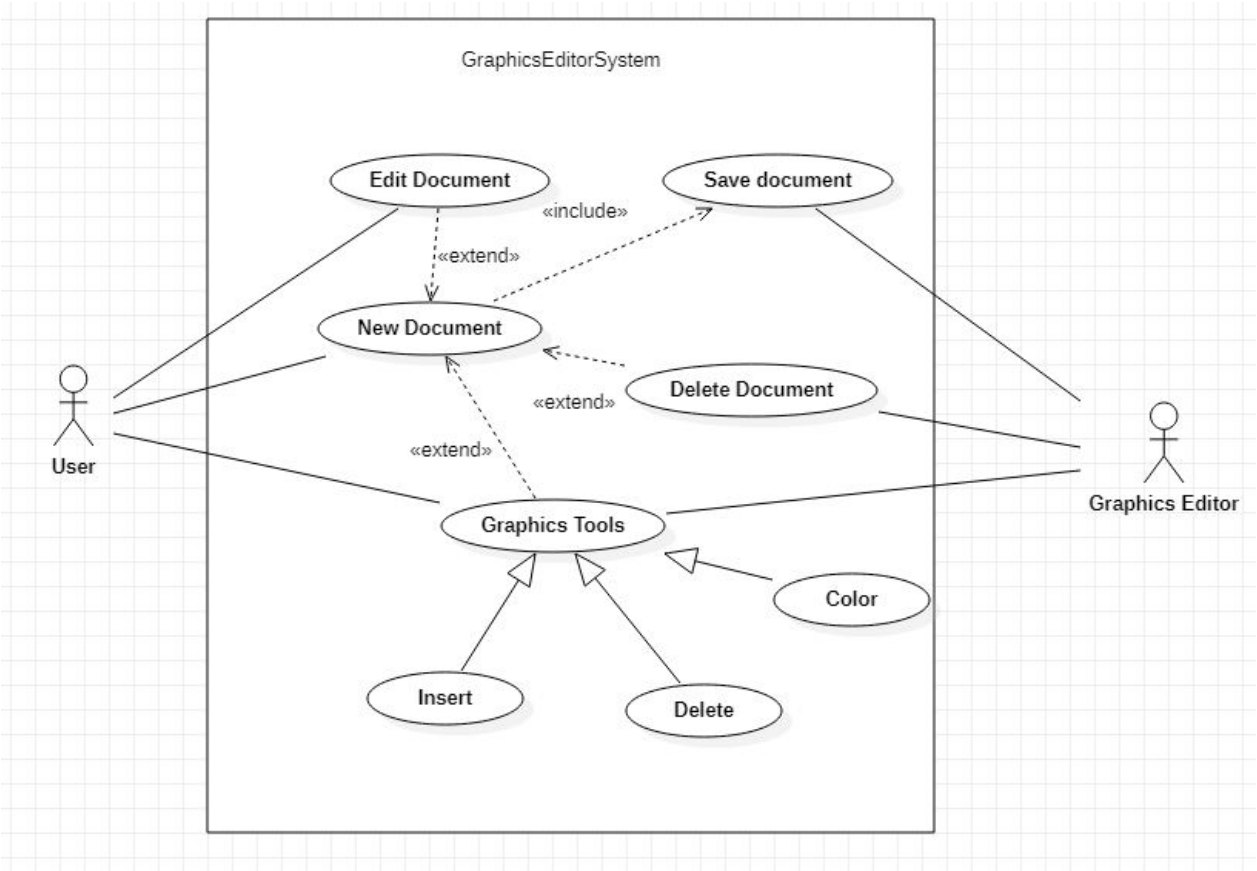


7.5 Use Case Diagram

7.5.1 Simple Use Case Diagram

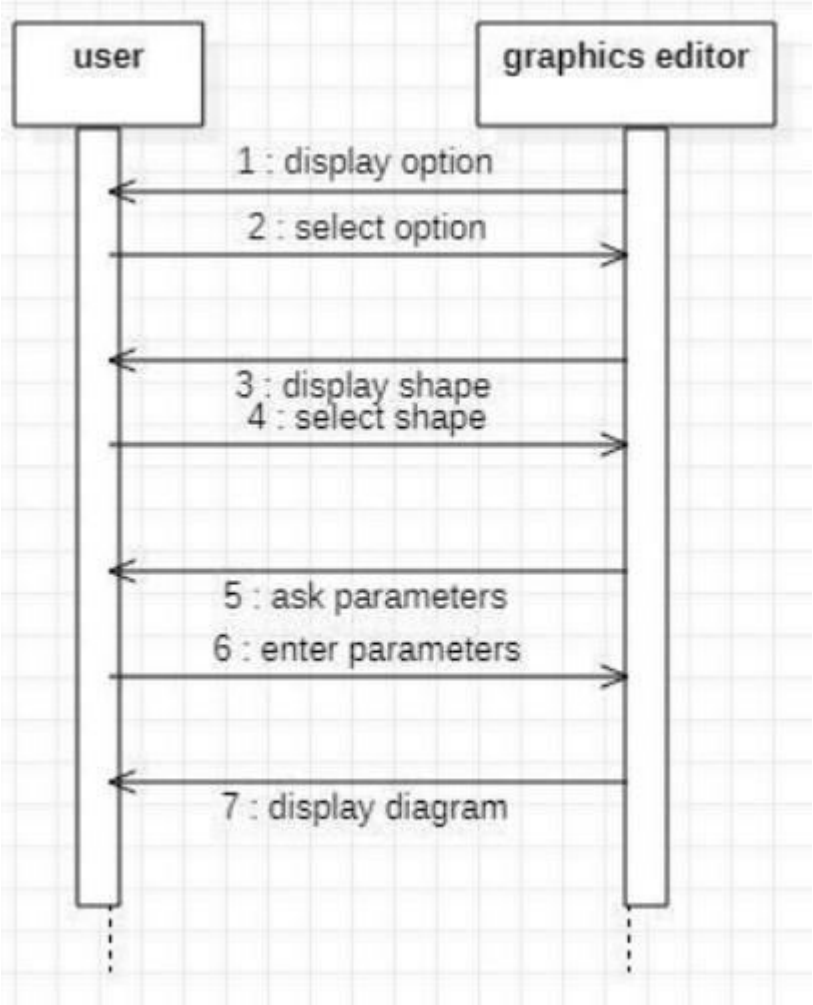

GraphicsEditorSystem
Edit Document
New Document
Delete Graphic Tools
Color Graphic Tools
Insert Graphics Tools
Save document
Delete Document
User
Graphics Editor

7.5.2 Advanced Use Case Diagram

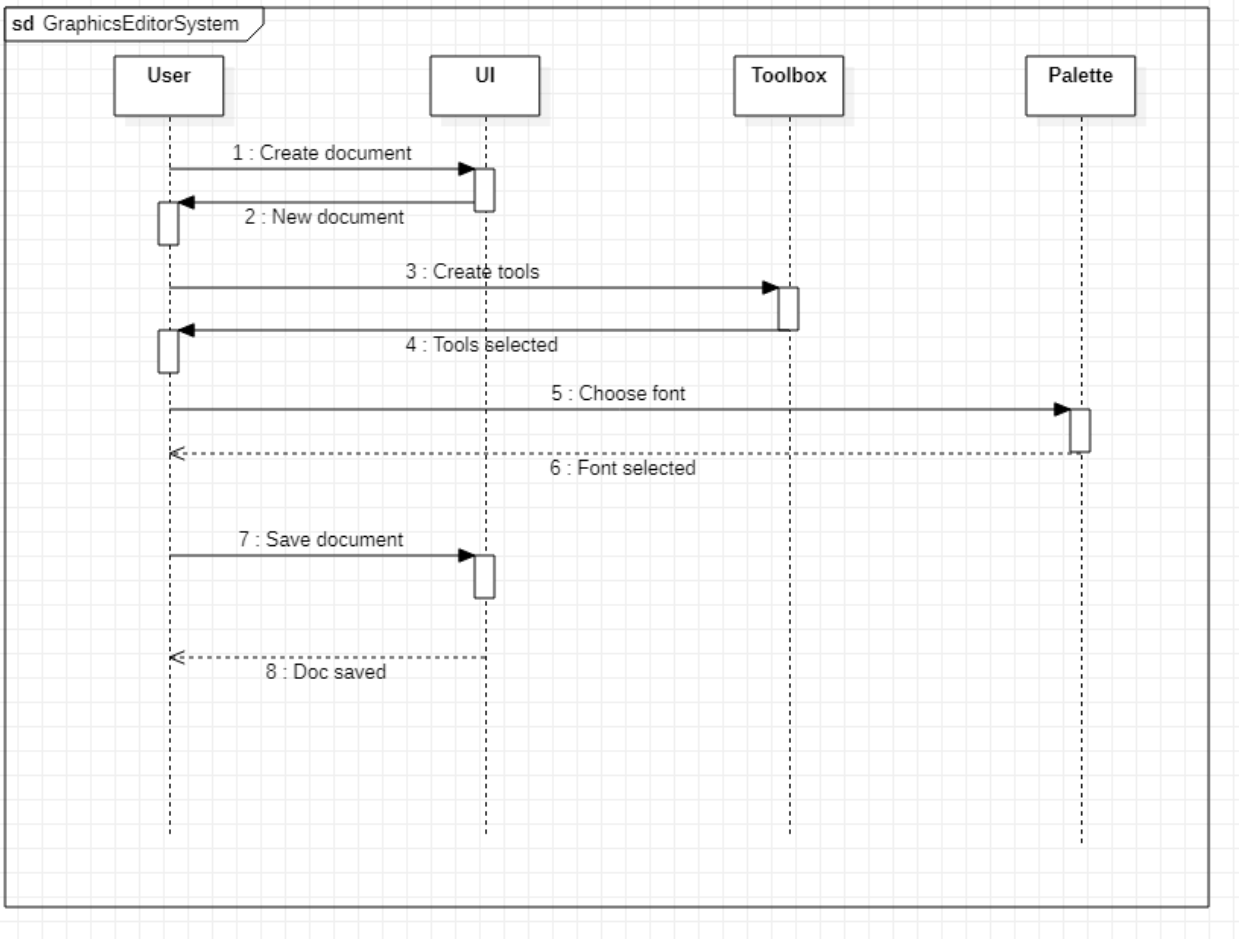


7.6 Sequence Diagram

7.6.1 Simple Sequence Diagram

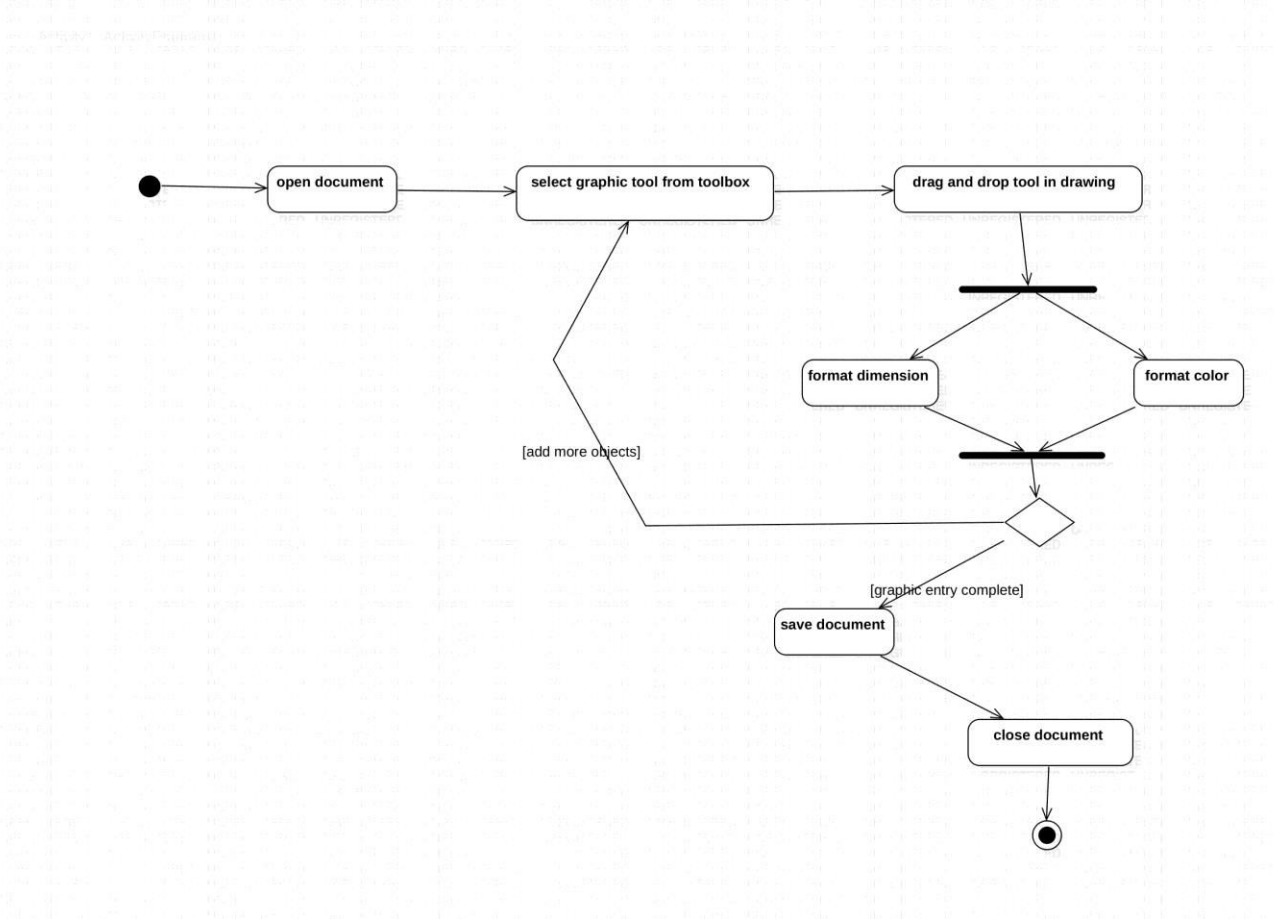


7.6.2 Advanced Sequence Diagram

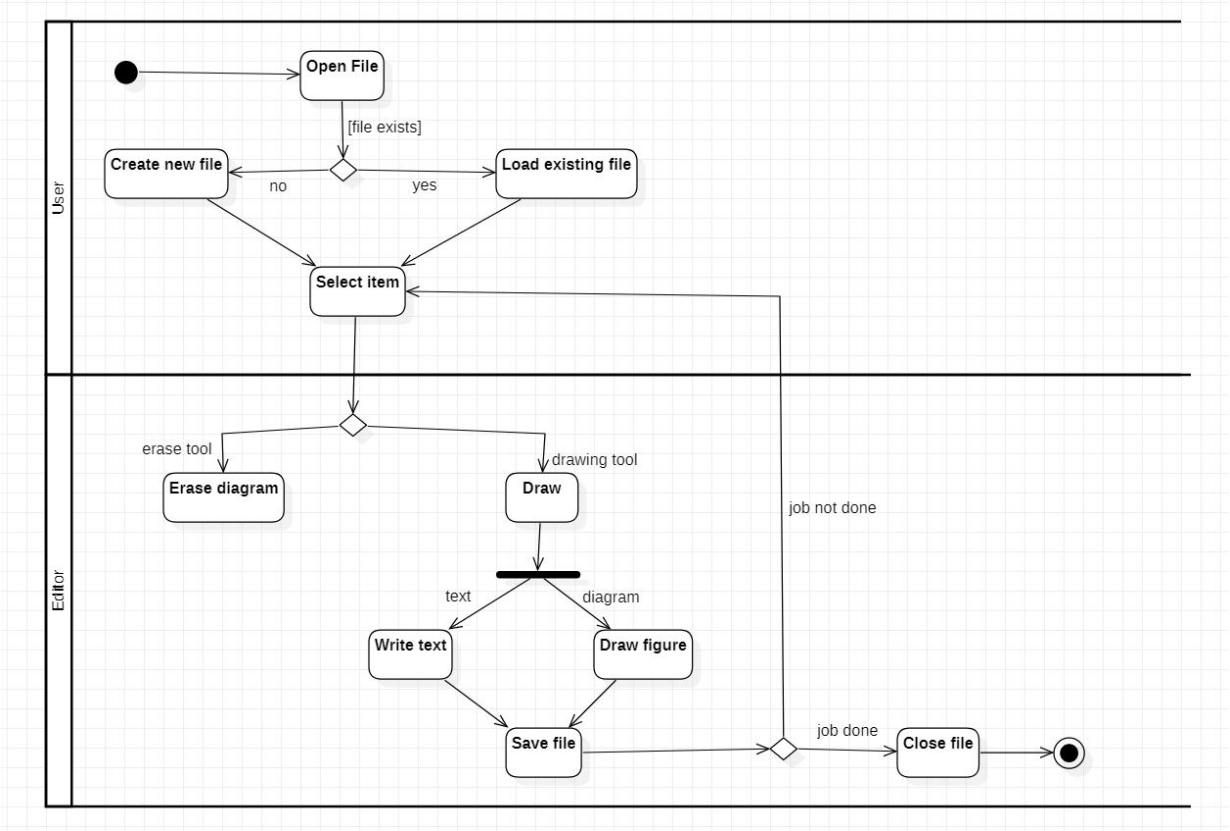


7.7 Activity Diagram

7.7.1 Simple Activity Diagram



7.7.2 Advanced Activity Diagram


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