

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
“JnanaSangama”, Belgaum -590014, Karnataka.



LAB REPORT
on
OBJECT ORIENTED MODELING

Submitted by

**SHREYAS K
[1BM22CS271]**

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.
September — 2024 to January — 2025

B. M. S. College of Engineering,
Bull Temple Road, Bengaluru - 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 MODELING**" was carried out by **SHREYAS K (1BM22CS271)**, who is a bonafide student at **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 year 2024-2025. The Lab report has been approved as it satisfies the academic requirements in respect of **Object-Oriented Modeling (23CS5PCOOM)** work prescribed for the said degree.

Signature of the Faculty in Charge

M Lakshmi Neelima.

Assistant Professor,
Department of Computer Science and Engineering,
B.M.S College of Engineering.

Signature of the HOD

Dr. Kavitha Sooda

Professor and Head,
Department of Computer Science and Engineering,
B.M.S College of Engineering.

Index

Serial Number	Experiment Title	Page Number
1	HOTEL MANAGEMENT SYSTEM	1-4
2	LIBRARY MANAGEMENT SYSTEM	5-7
3	CREDIT CARD PROCESSING SYSTEM	8-11
4	STOCK MAINTENANCE SYSTEM	12-15
5	PASSPORT AUTOMATION SYSTEM	14-17

Github link: https://github.com/Shreyesss7/oomd_1BM22CS271

Hotel Management System:

Software Requirement Specifications(SRS):

→ Hotel Management System:-

Purpose - To define the requirements, constraints and budget of hotel management system.

Scope - In this document the overall working of the hotel management system and its main objective such as acc creation, management user experience, security & efficiency.

Overview - The hotel management system will help the user to book, manage or get help regarding the hotels. This system also helps to maintain the track of the history of the hotel booking history.

General description -

- *) user registration & acc credentials.
- *) Room Booking
- *) Managing the history
- *) Managing transaction & paying bills
- *) cancellation of account / Booking.
- *) Notification / customer care (help).

Functional Req

- *) Login / logout
- *) Payment management
- *) Notification
- *) Room Booking

Interface Req

- *) Requirements like webpage, App
- *) API
- *) Backend for data storage
- *) location access

→ Performance Req.

- *) Maintaining the servers for smooth working
- *) Payment response time
- *) Payment security / functionality.
- *) Scalability

→ Design Constraints :-

- *) HTML, CSS, JS, Bootstrap & APP dev for website app
- *) JS, SQL for backend data storage
- *) UI/UX design

Non-functional Req -

- *) Security - Data of the user & transaction must be stored securely.
- *) Reliability - The software quality & feature must be updated at all times.
- *) Unauthorized access / fraud detection
- *) Scalability
- *) Portability

Preliminary schedule & Budget :-

Total Durations - 6 months from initiation to deployment

Milestone - Req specification - 1 week

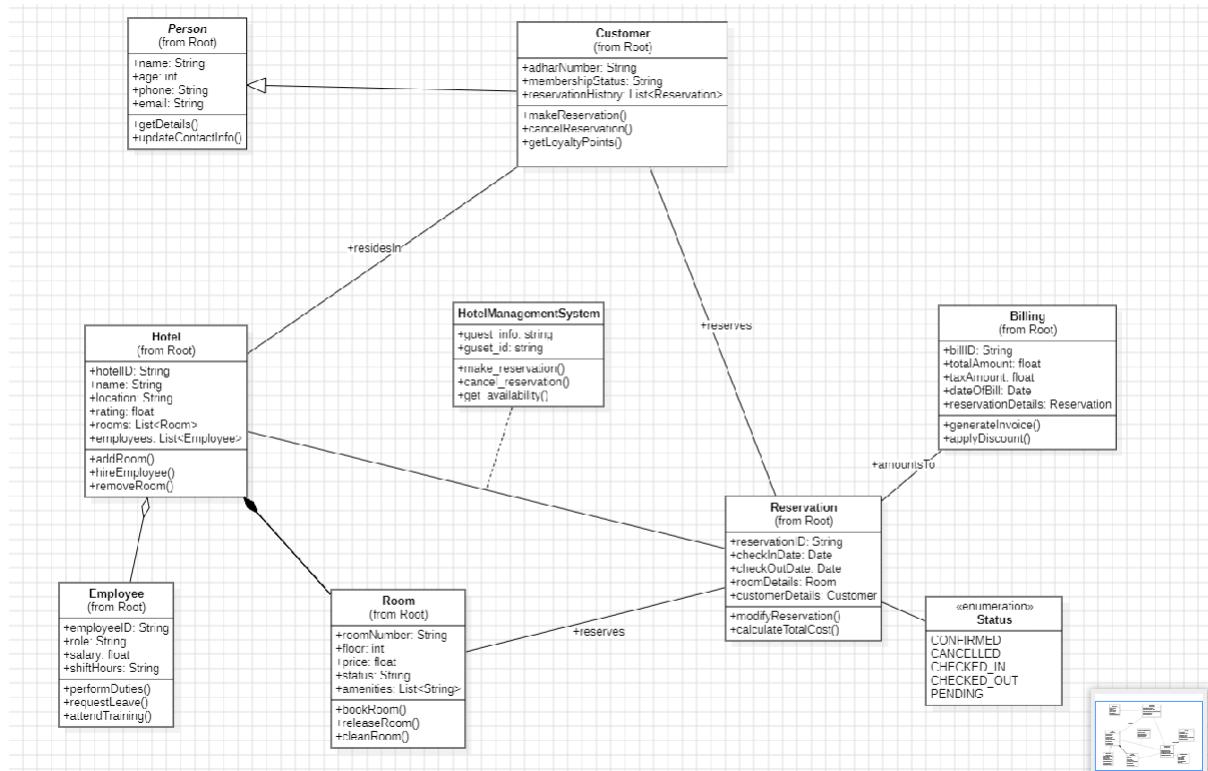
Design phase - 2 weeks

Development phase - 4 months

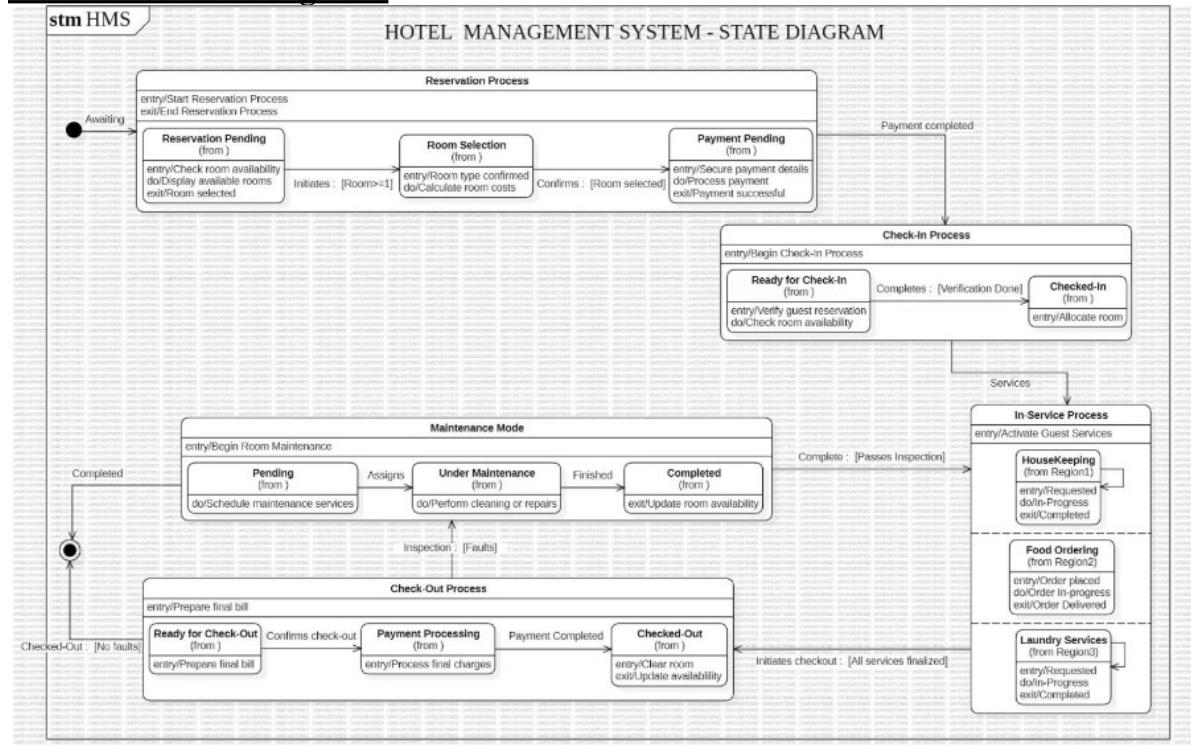
Testing phase - 1 month.

Budget - Development cost - ₹ 15,00,000
Testing cost - ₹ 2,50,000
Maintenance cost - ₹ 3,00,000.

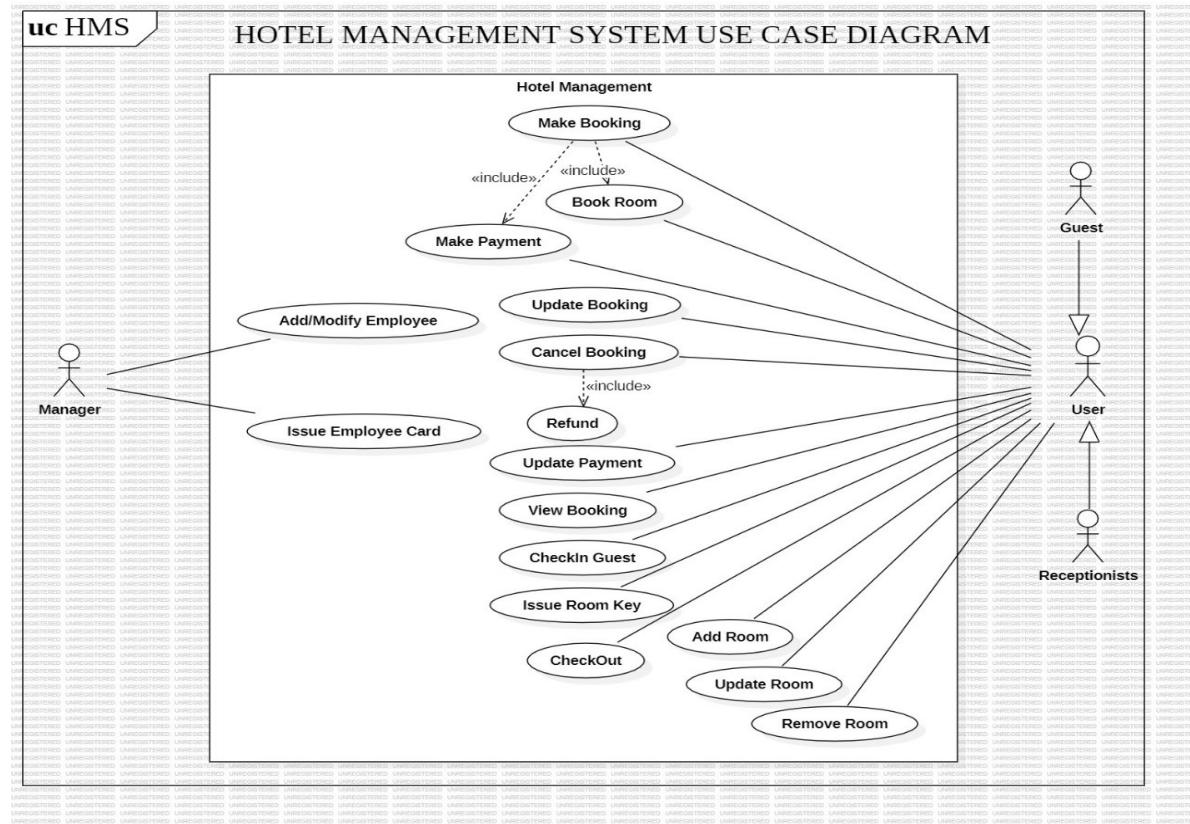
Advanced Class Diagram:



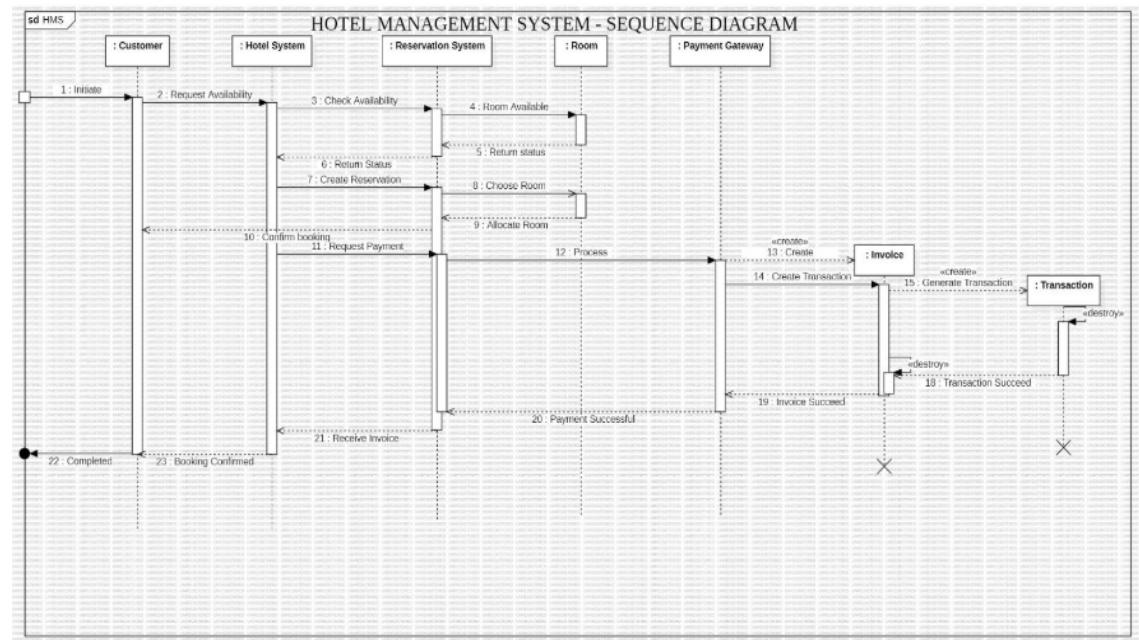
Advanced State Diagram:



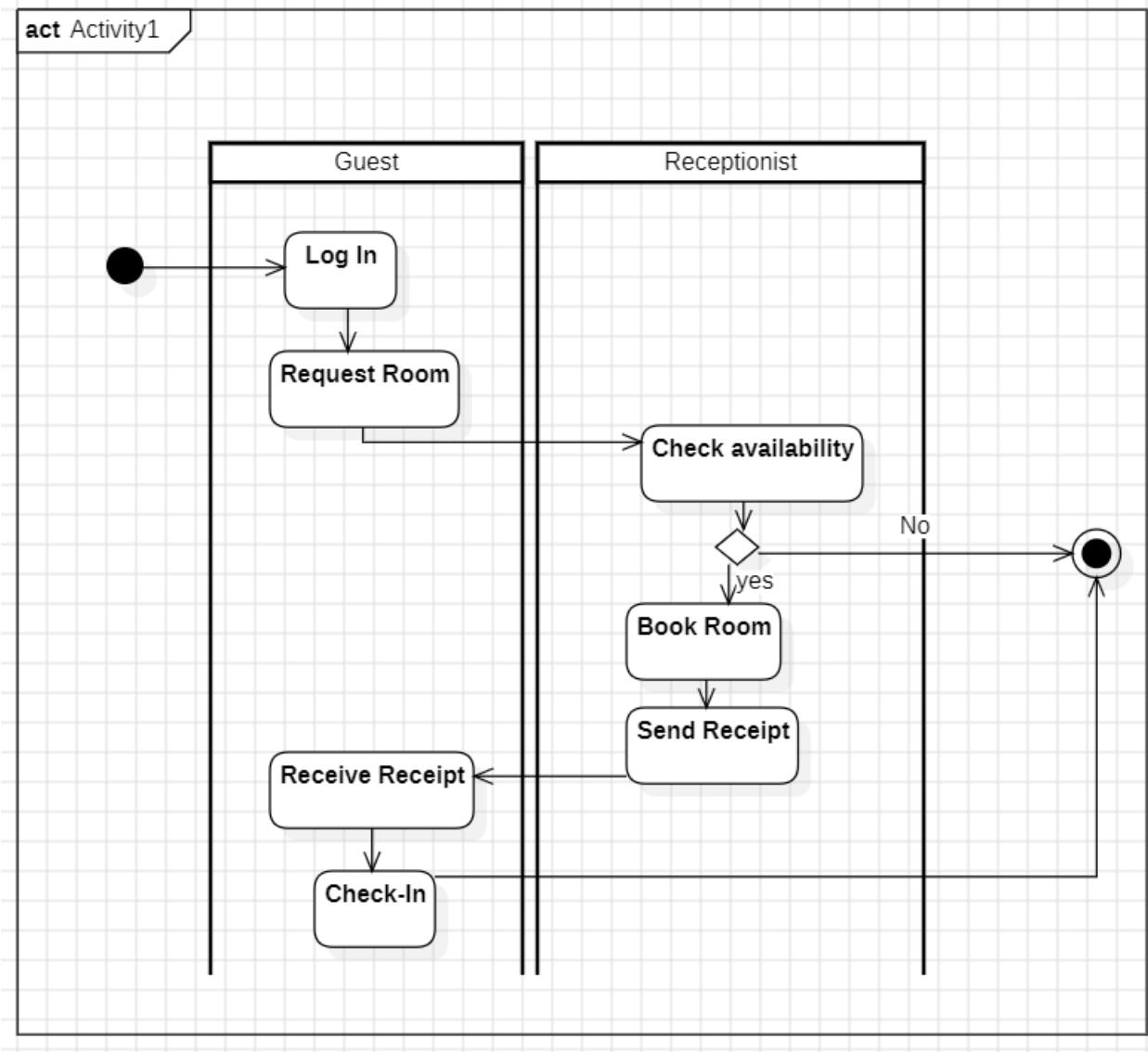
Use Case Diagram:



Sequence Diagram:



Activity Diagram:



Library Management System:

Software Requirement Specifications(SRS):

1) Library Management System

Purpose - To define the requirements, constraints and budget of Library Management system.

Scope - In this document we overall working of the library management system and its main objective such as all creation management user experience, security & efficiency.

Overview - The library management system will help the user to search books, buy, return books and also manage the track of the books taken & returned. And also maintain the track of the books.

General description -

- *) User registration & account credentials.
- *) Book Buying
- *) Managing history
- *) Managing transaction & paying bills.
- *) Cancellation of account / Booking.
- *) Notifications / customer care (help).

Function Req -

- *) Login / Logout
- *) Payment management
- *) Notification
- *) Book return management
- *) Book storage management.

2) Non-functional Req

- *) Security - Multifactor authentication for applicants & officials.
- *) Usability - easy to use interface for both user with minimal training required for new user.

3) Preliminary schedule & budget

Schedule - Requirements specification & analysis - 4 weeks
System Design - 6 weeks
Development - 12 weeks
Testing - 3 weeks
Deployment - 2 weeks
Budget - 50 lakhs

Interface Req -

- *) Requirement like webpage, App
- *) API
- *) Backend for data storage
- *) Book details (in order).

Performance Req -

- *) Maintaining the server for smooth working
- *) Payment response time
- *) Payment security.

Design constraints -

- *) HTML, CSS, JS, Bootstrap or APP for website / app.
- *) JS, SQL for backend data storage
- *) UI / UX design.

Non-functional Req -

- *) Security - Data of the user for transaction must be stored securely.
- *) Reliability - The software quality & feature must be updated at all times.
- *) Scalability.
- *) Portability.

Preliminary schedule & budget -

Total duration - 3 months.

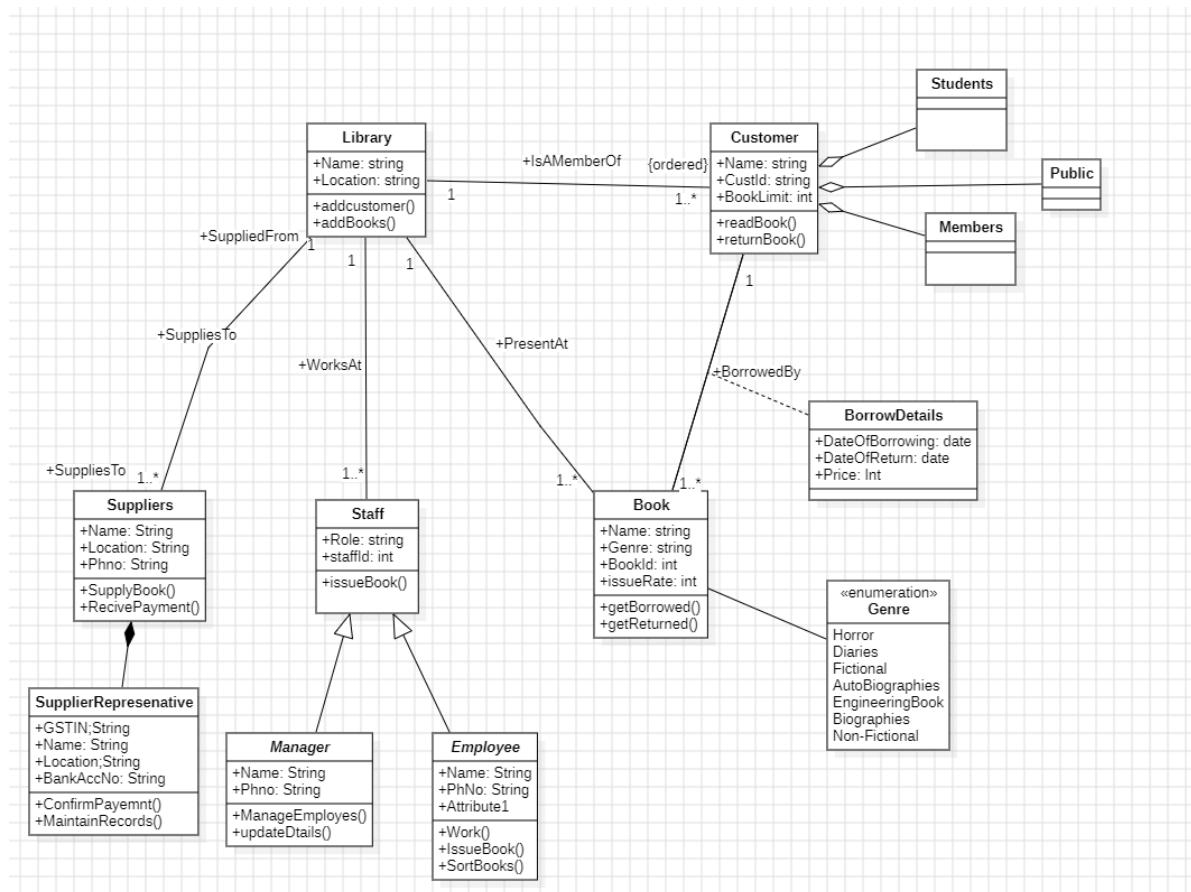
Milestone - Req specification - 1 week

- *) Design phase - 1 week
- *) Development phase - 2 months
- *) Testing - 2 weeks

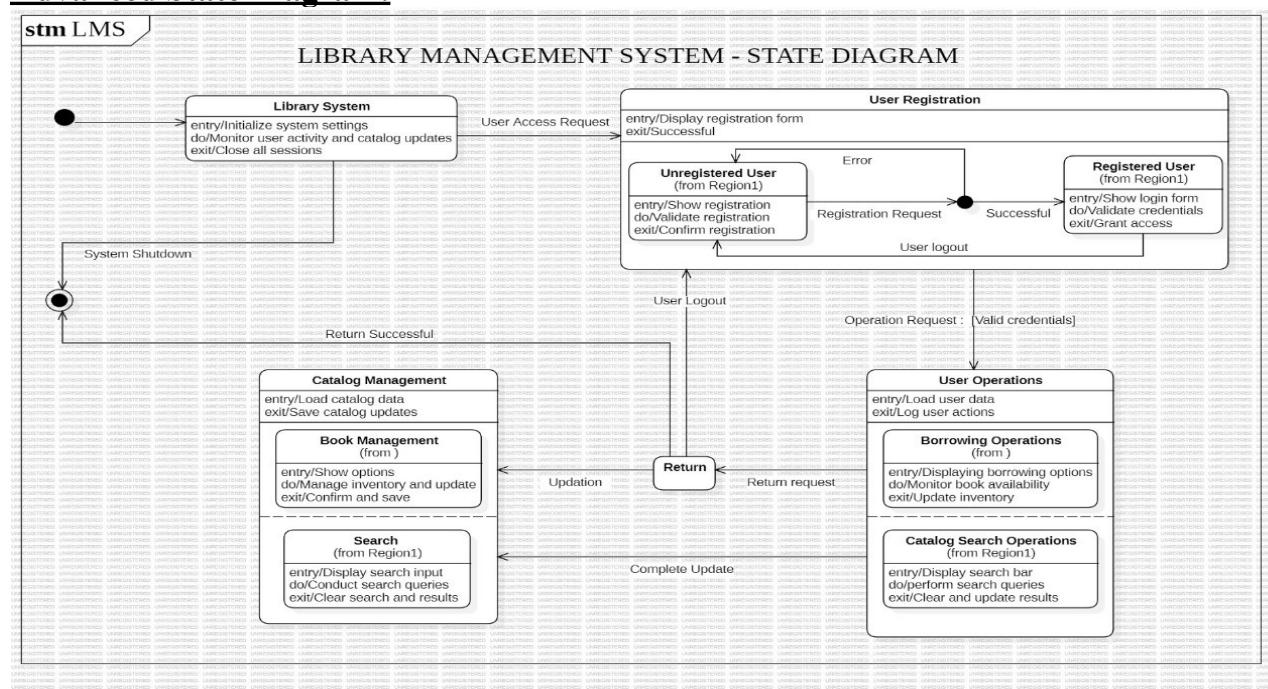
Budget -

- *) Development cost - ₹ 100,000
- *) Testing & cost - ₹ 25,000
- *) Maintenance cost - ₹ 50,000

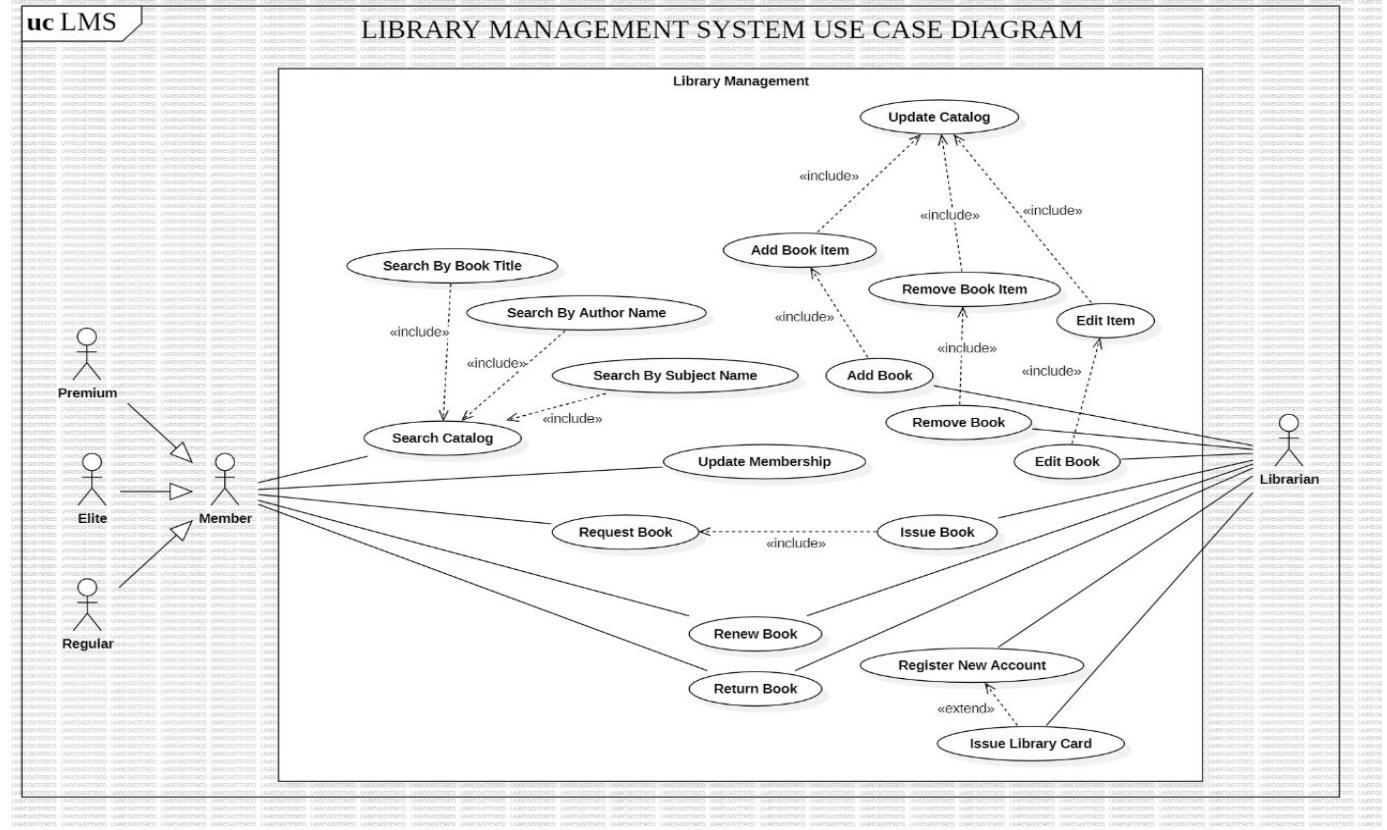
Advanced Class Diagram:



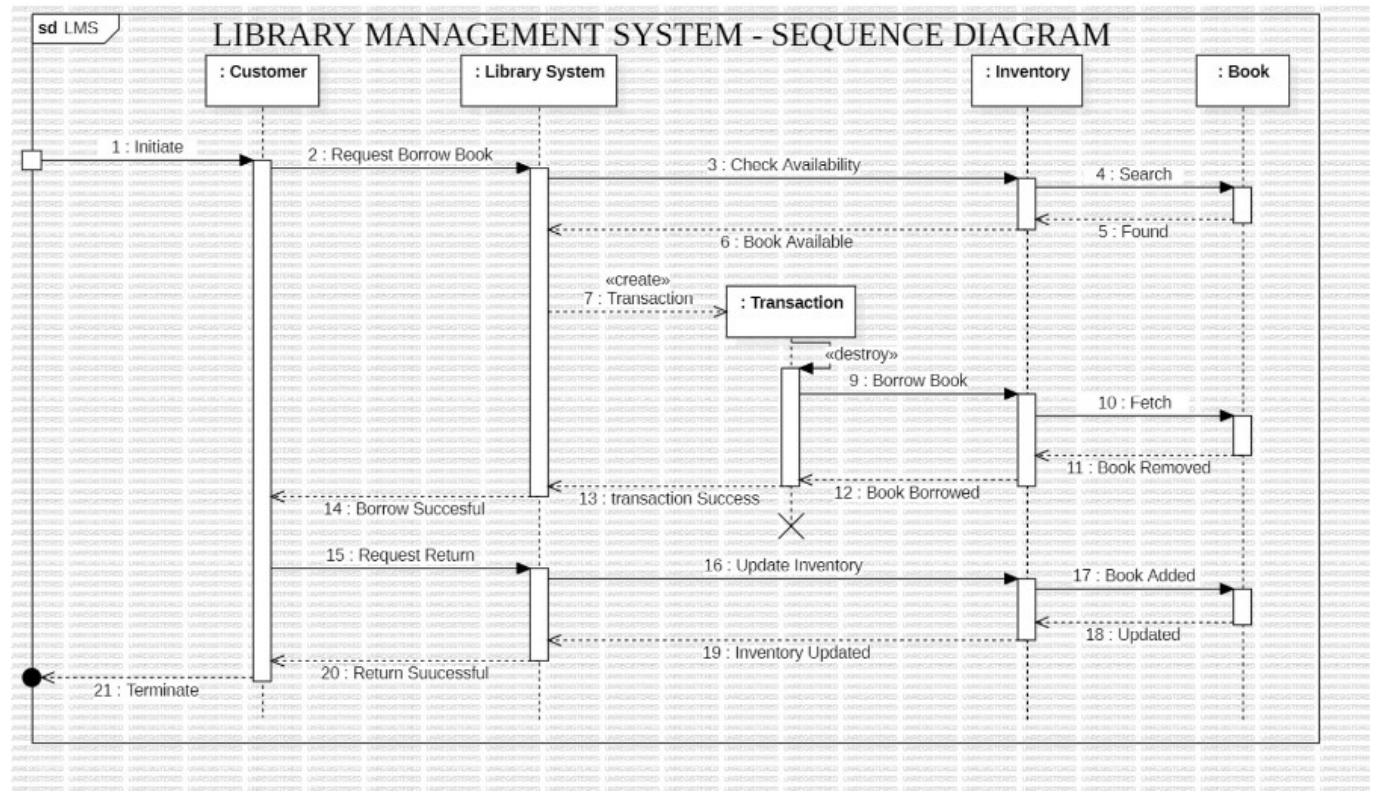
Advanced State Diagram:



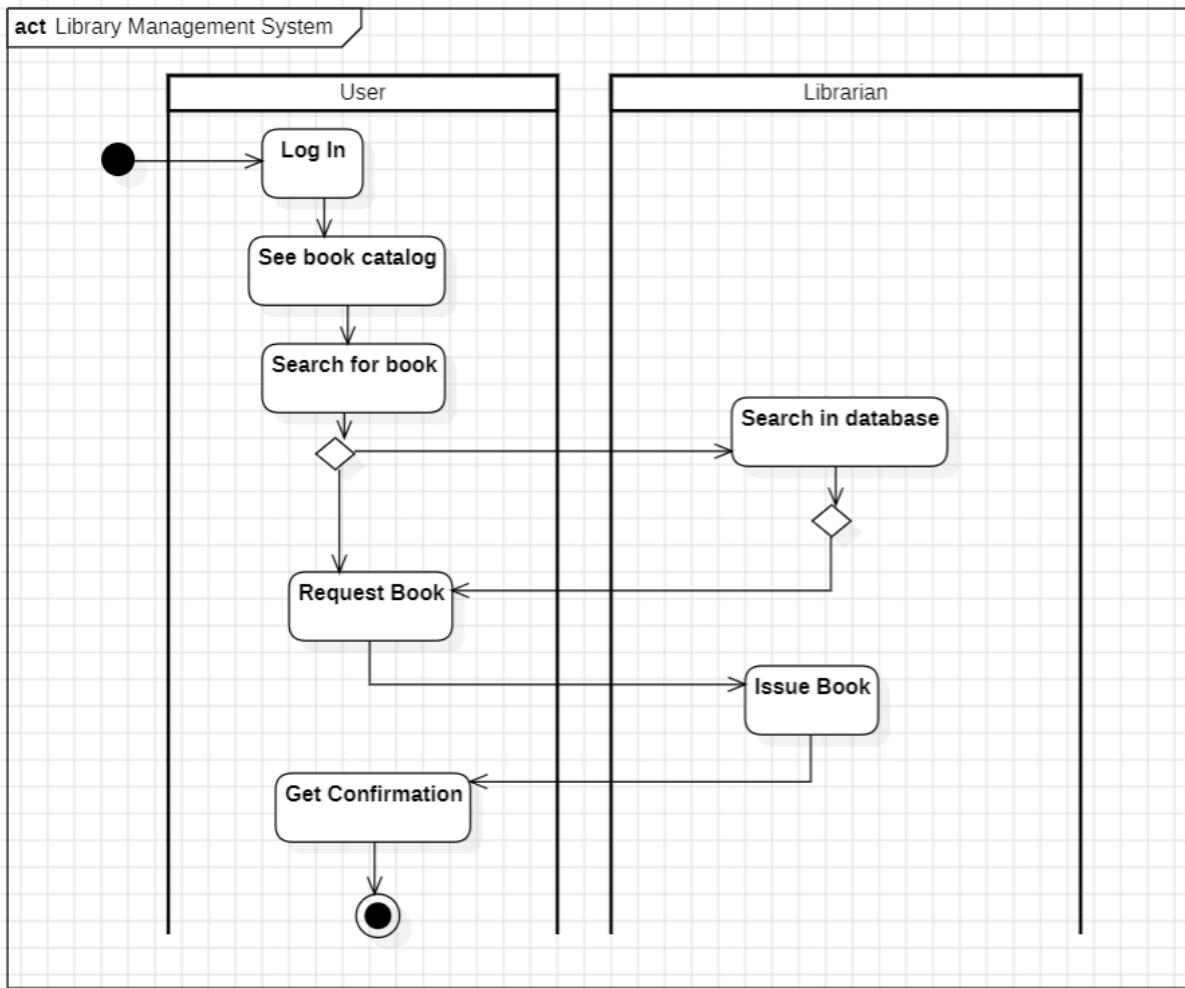
Use Case Diagram:



Sequence Diagram:

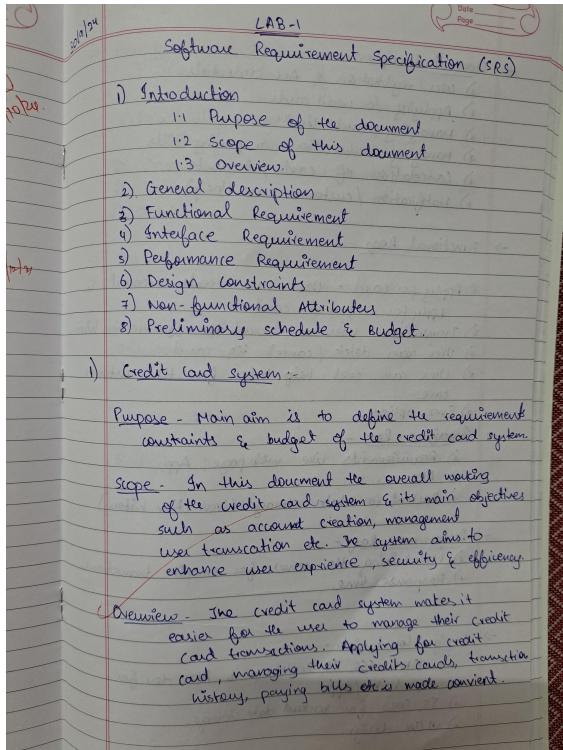


Activity Diagram:



Credit Card Management System:

Software Requirement Specifications(SRS):



→ General description-

- * User registration & Acc credentials.
- * Applying for credit cards.
- * Managing card limits.
- * Managing transactions & paying bills.
- * Cancellation of cards / Accounts.
- * Notification / customer care (help).

→ Functional Req -

- * Apply for card - User can create account & apply for required card.
- * Transaction - User can track the transaction history.
- * User can delete / cancel the card.
- * User can seek help from the customer care.
- * EMI options.

→ Interface Req -

- * Requirements like web page, App.
- * API.
- * Backend for data storage (transaction history).

→ Performance Req -

- * Maintaining the servers for smooth transactions.
- * Response time.

→ Design constraints -

- * HTML, CSS, JS, Bootstrap & APP dev for website/app.
- * SS, SQL for backend data storage.
- * UI/UX design.

→ Non-functional Attributes -

- * Security - Data of the user & transaction must be stored securely.
- * Reliability - The software quality & features must be updated at all time.
- * Unauthorized access / fraud detection.
- * Scalability.
- * Portability.

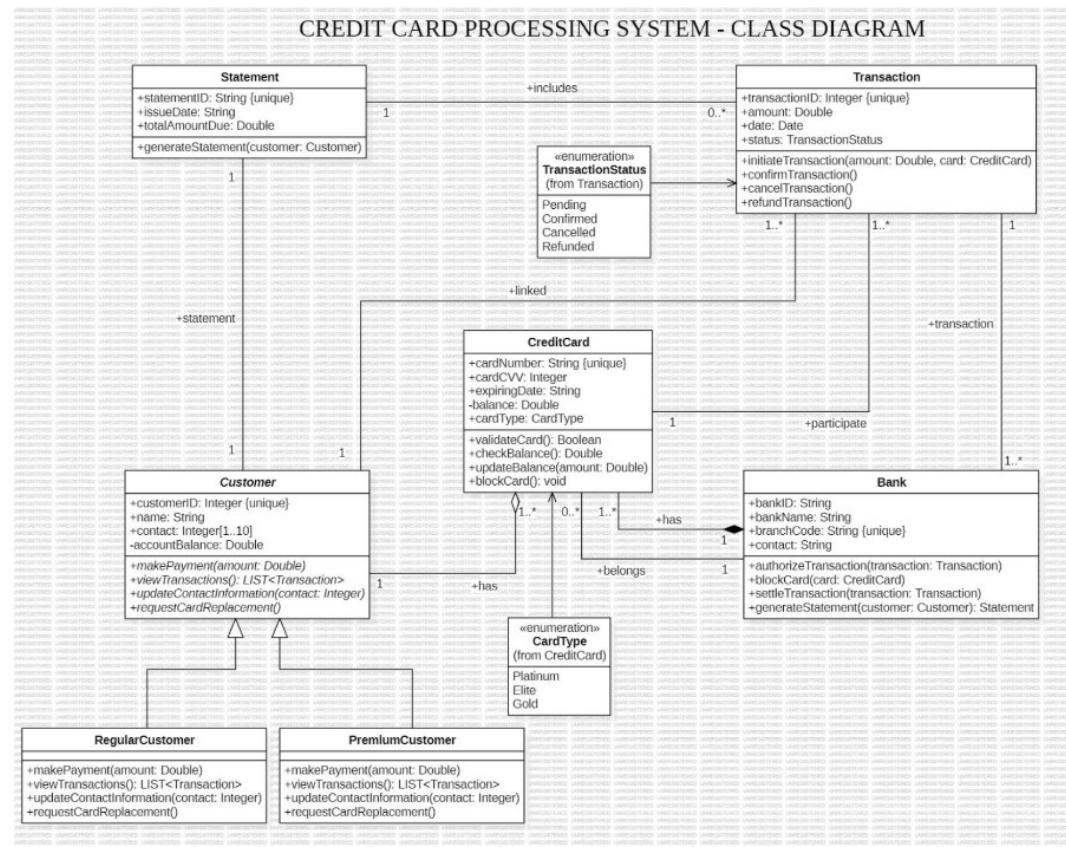
→ Preliminary Schedule & Budget -

Total duration - 6 months from initiation to deployment.

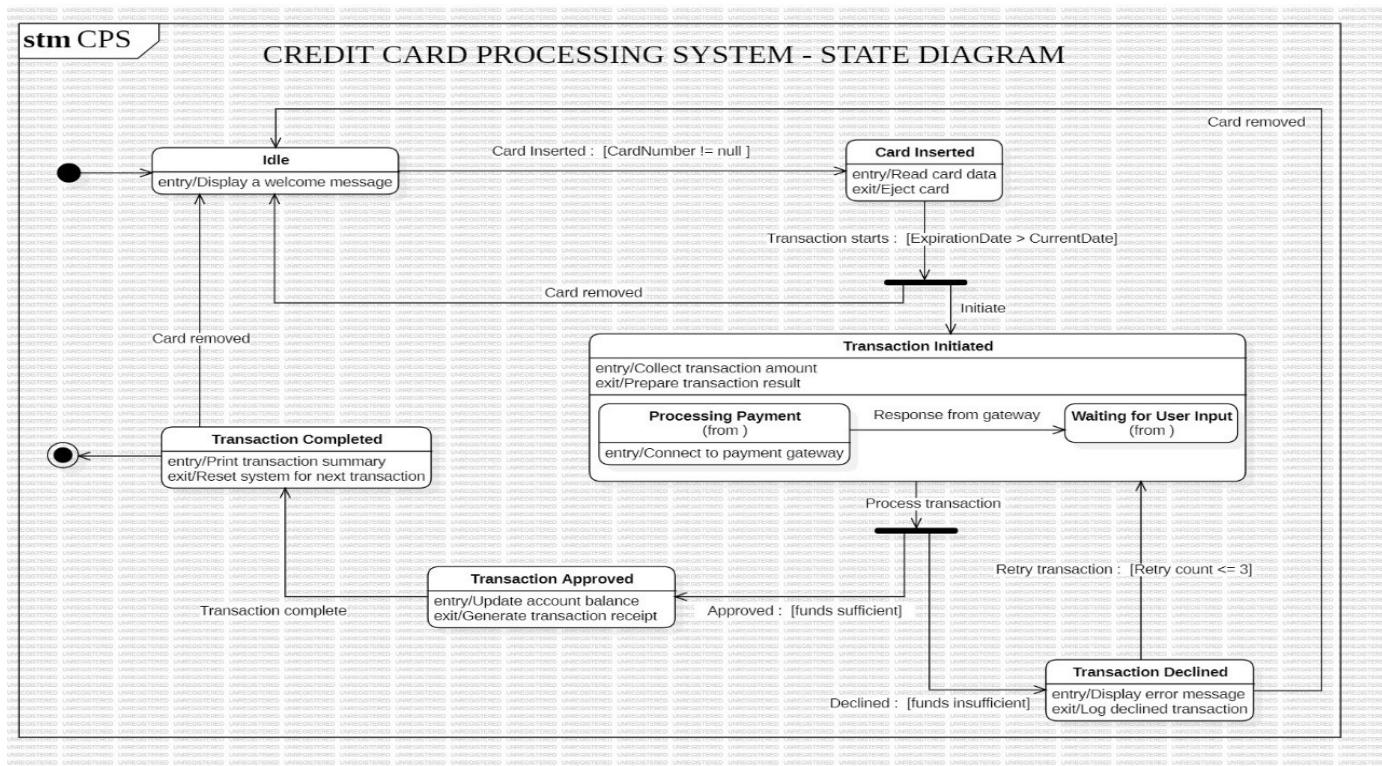
Milestone - Req specification - 1 week
Design Phase - 2 weeks
Development phase - 4 months
Testing phase - 1 month.

Budget - Development cost - ₹ 5,00,000
Testing cost : ₹ 1,00,000
Maintenance cost : ₹ 1,00,00 / year.

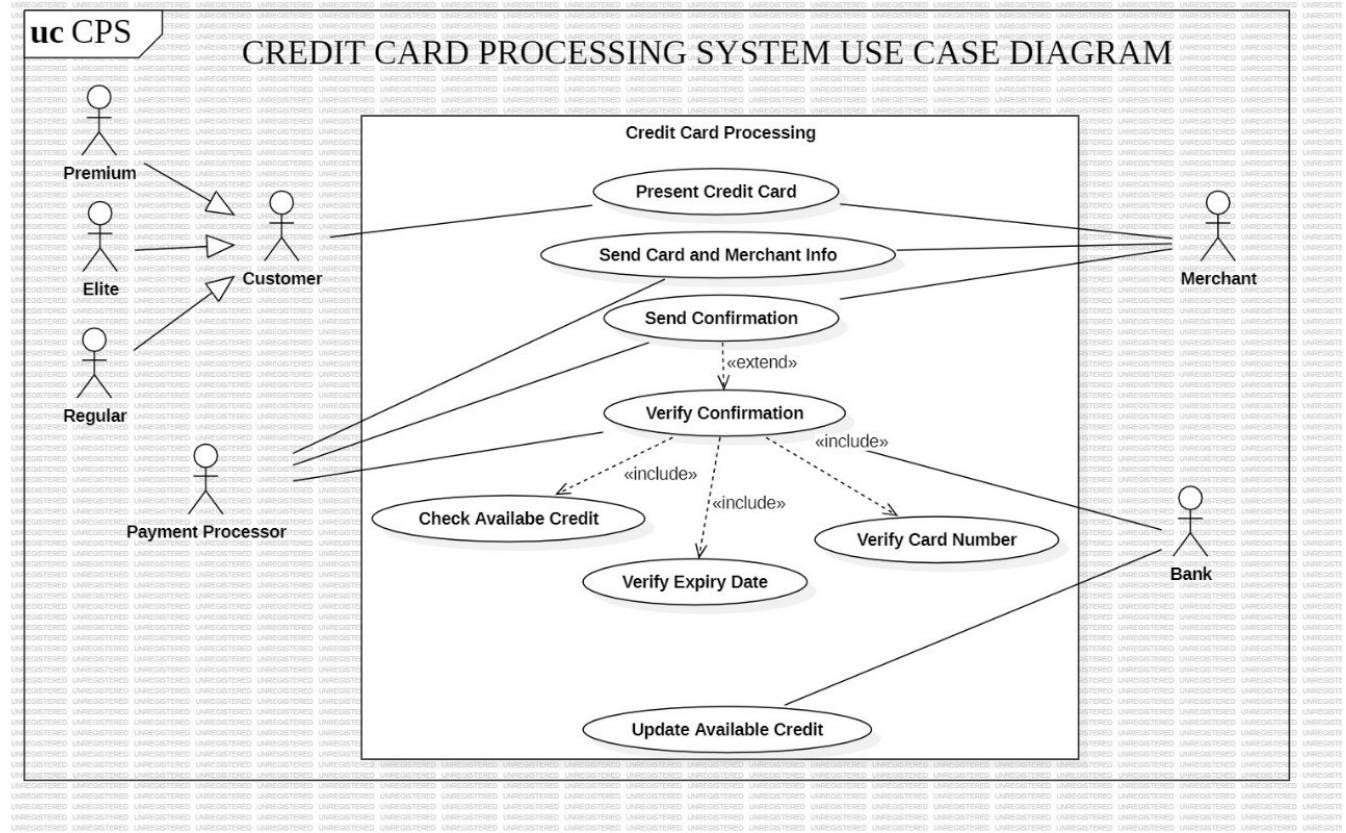
Advanced Class Diagram:



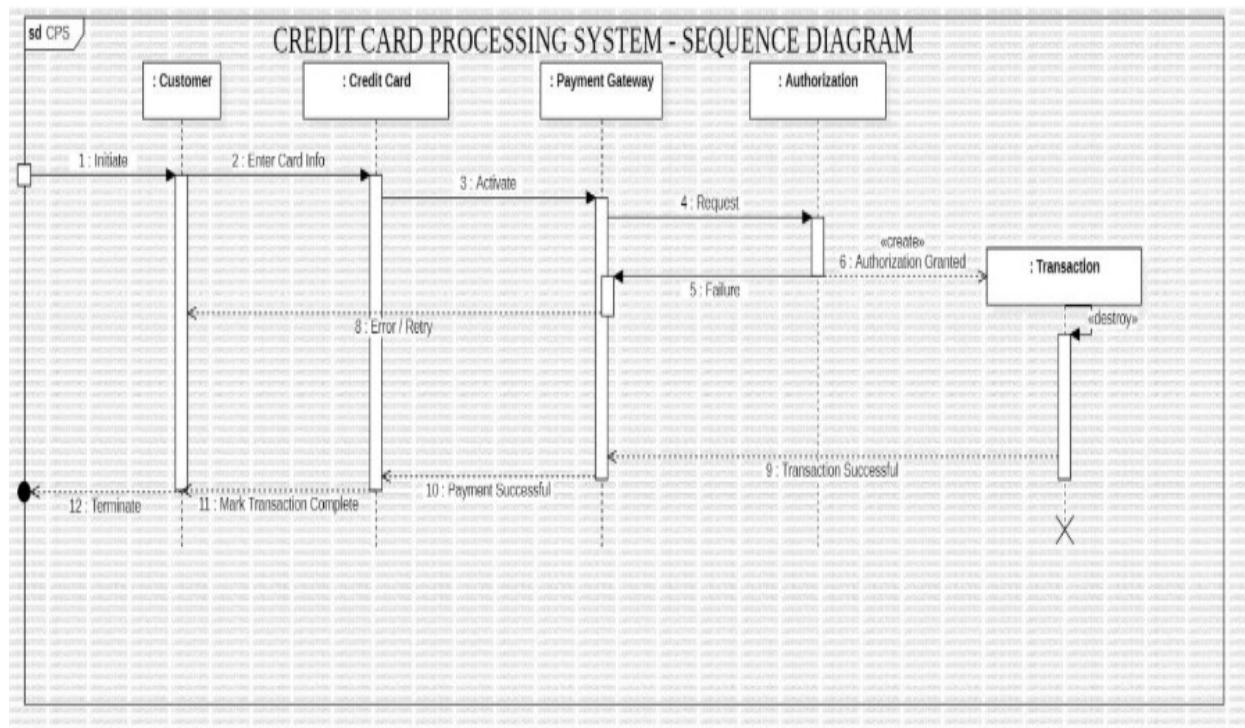
Advanced State Diagram:



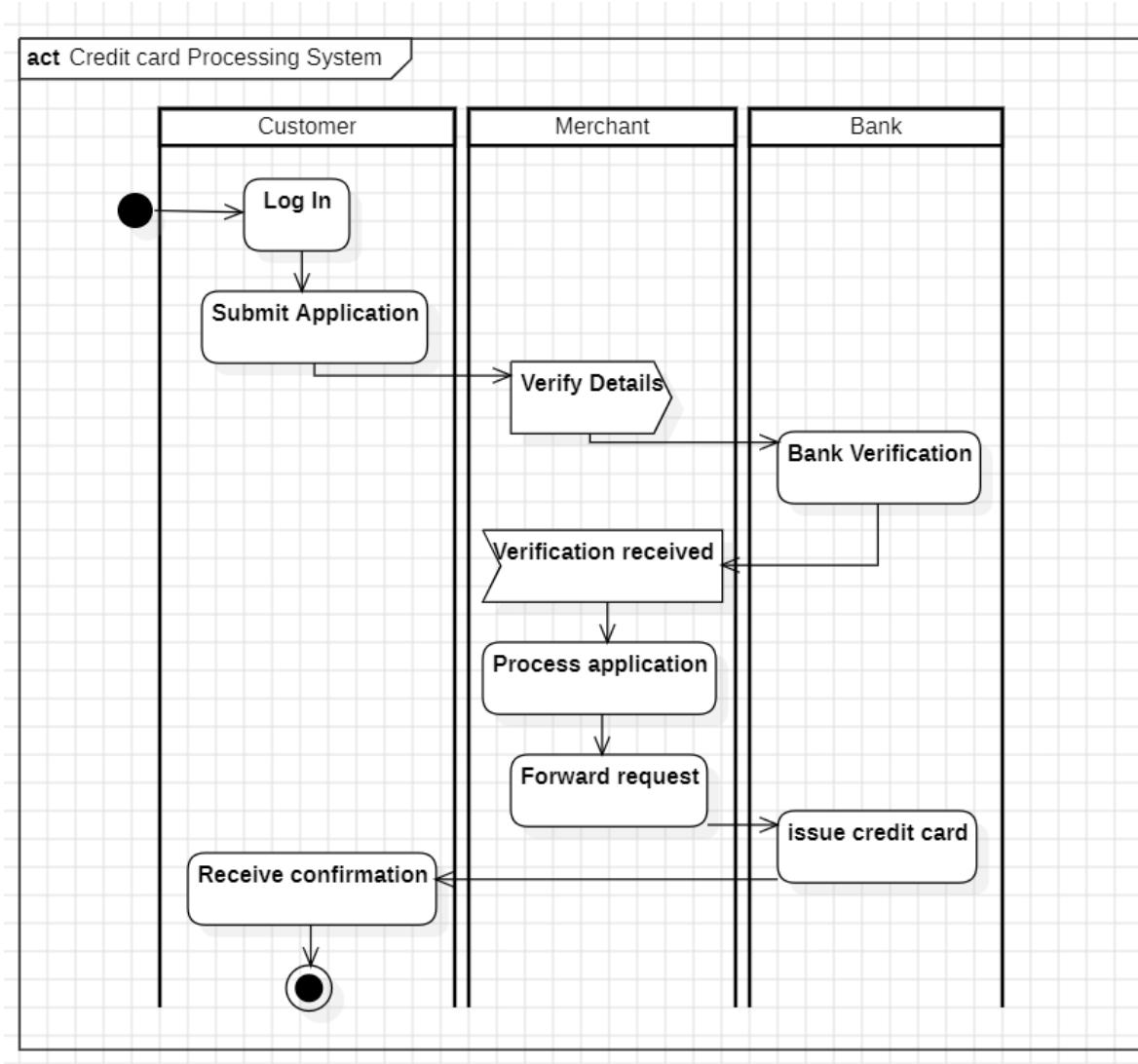
Use Case Diagram:



Sequence Diagram:



Activity Diagram:

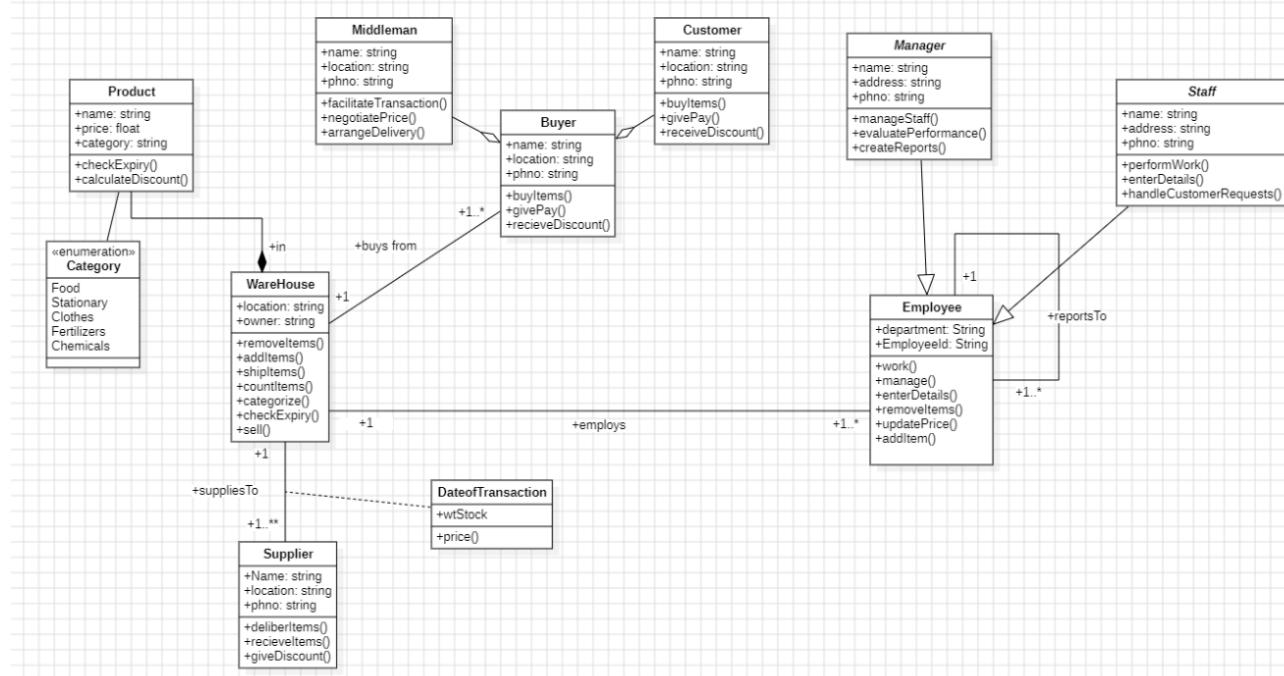


Stock Maintenance System:

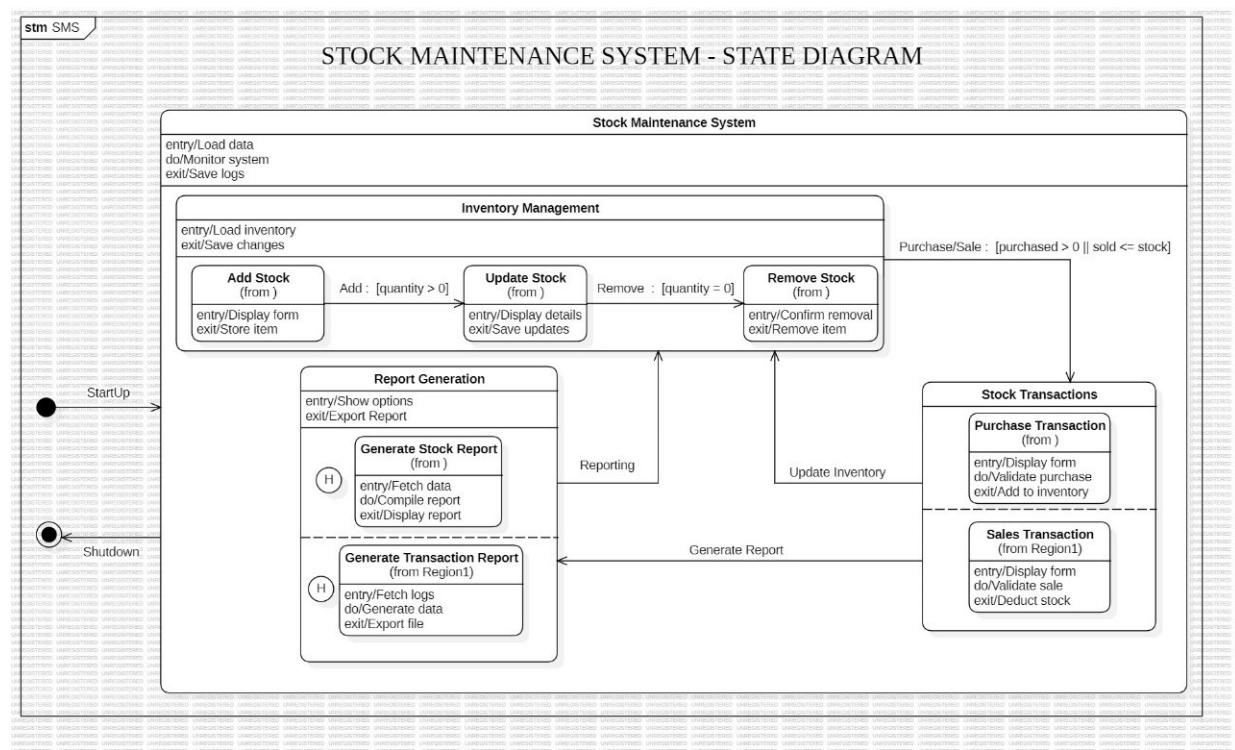
Software Requirement Specifications(SRS):

→ Stock Market management system	Performance Req - 1) Maintaining the server for smooth working 2) Long response time 3) Efficient data management.
Purpose - To define the req, constraints and budget of the the Stock management system.	Design Constraints 1) HTML, CSS, JS → frontend 2) SQL, JS → backend 3) DBMS Data Base management system
Scope - In this document the overall working of the Stock management system and its main objective such as acc creation, management, user experience, security & efficiency.	Non-functional Req - 1) Security 2) Reliability 3) Scalability 4) Large database 5) Portability.
Overview - The stock management system will help the user to buy, sell, see stock, and also look at the graph of the stock market. User can also have a history of their past transaction.	Preliminary schedule & Budget - Total Duration - 3 months Milestone - Req specification - 1 week Design phase - 1 week Development phase - 2 months Testing - 2 weeks.
General description - 1) User registration & acc credential 2) Buy, sell stock (storage stock) 3) Managing history 4) Managing storage 5) Notification / customer care (help) Function Req - 1) Search items 2) Add items 3) Categorize the items 4) Tracking. Interface Req - 1) Required webpage, backend, Data storage 2) location access 3) Data storage	Budget - Dev cost - 2,00,000 ₹ Testing - ₹ 50,000 Maintenance cost - ₹ 1,00,000.

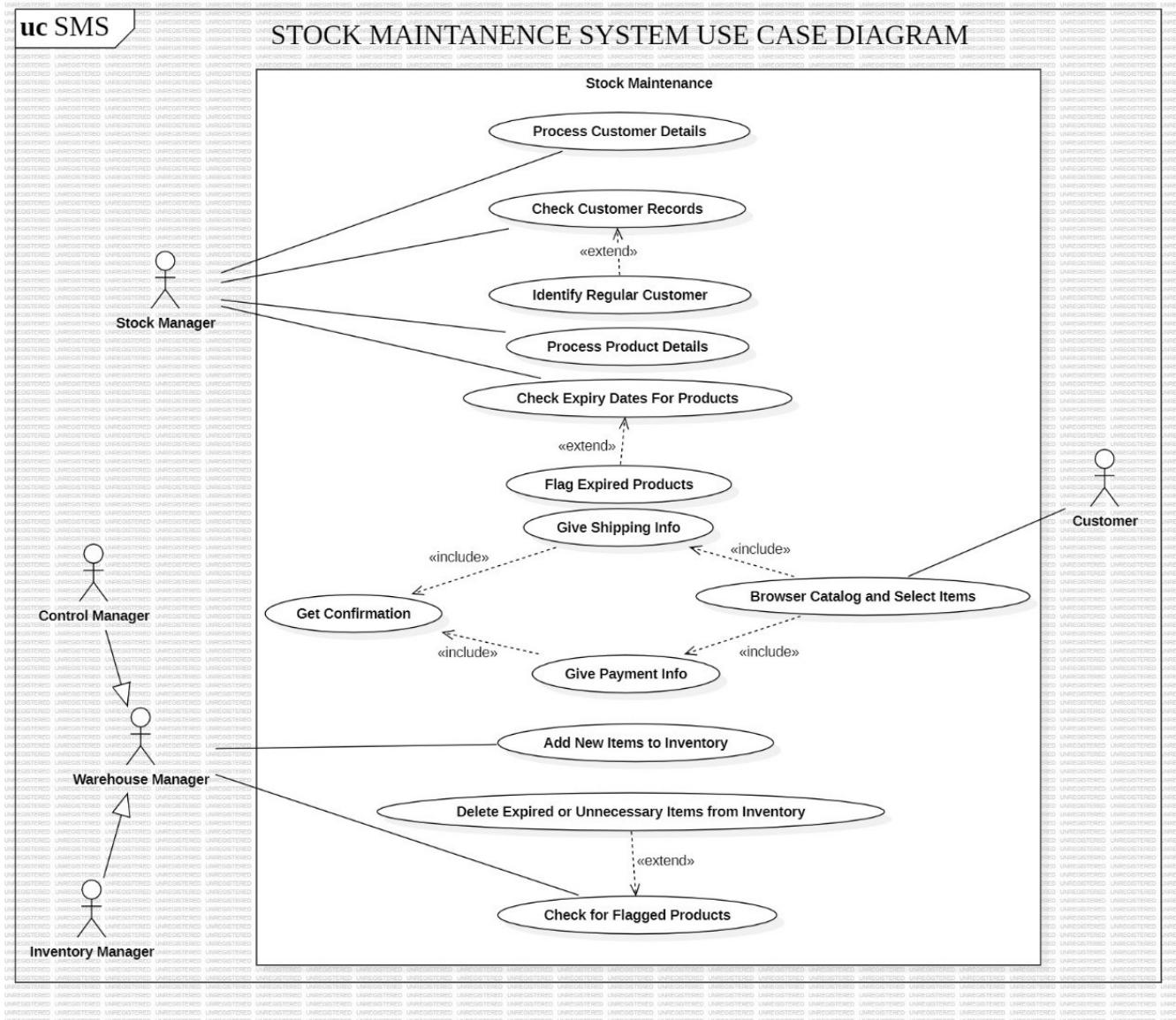
Advanced Class Diagram:



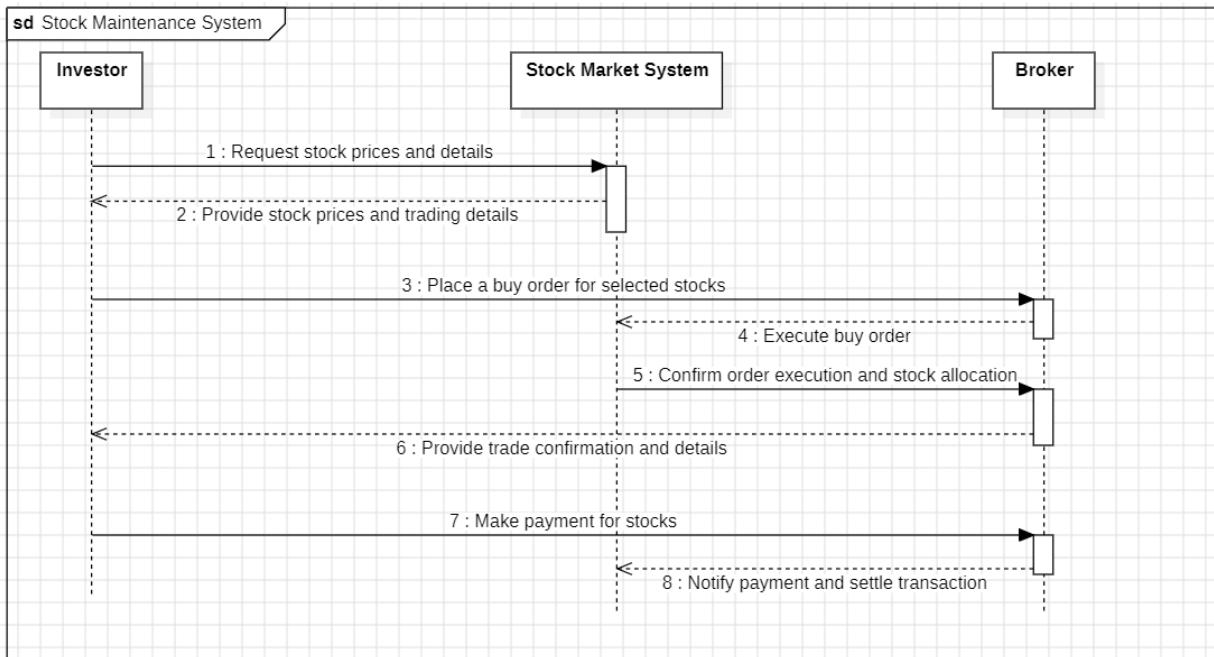
Advanced State Diagram:



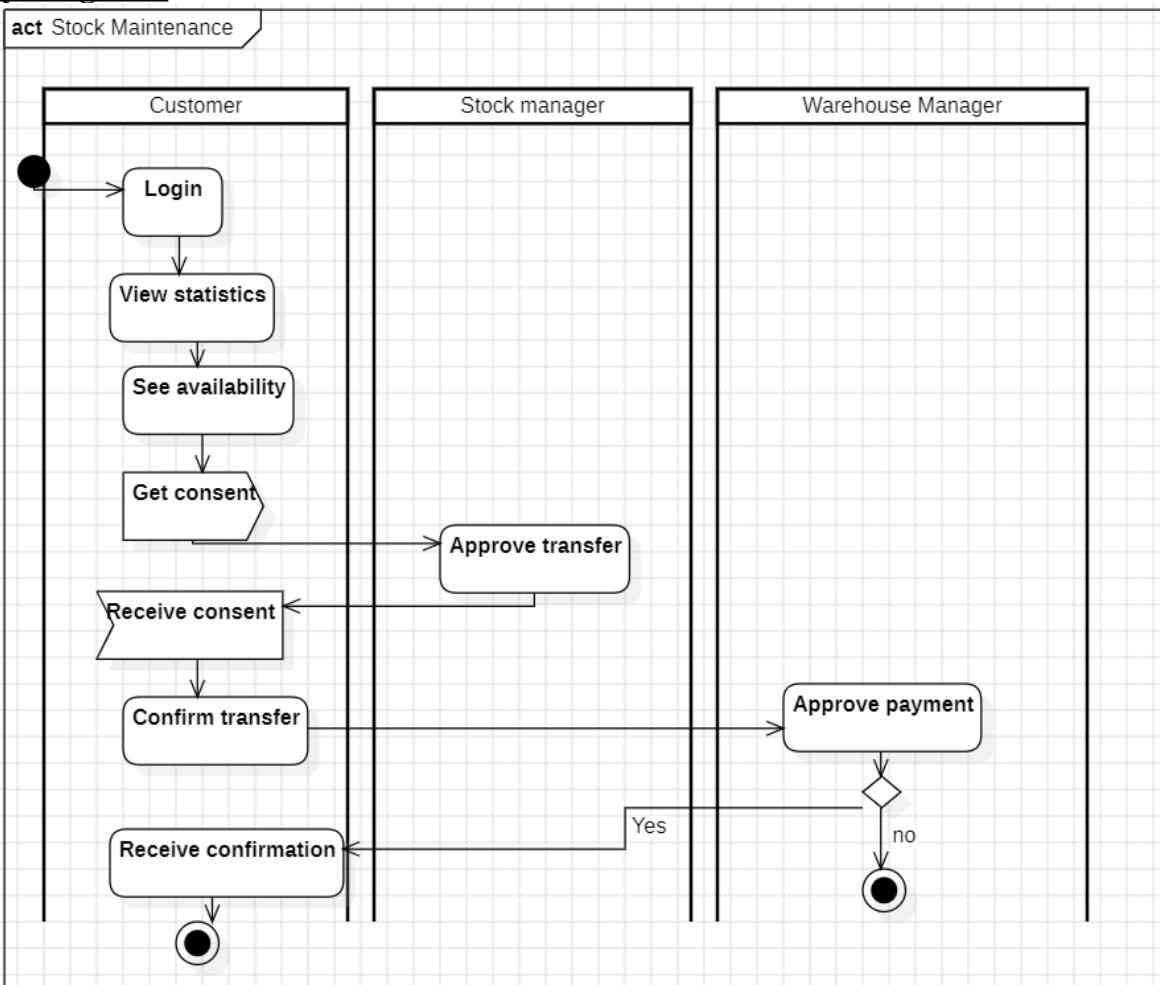
Use Case Diagram:



Sequence Diagram:



Activity Diagram:

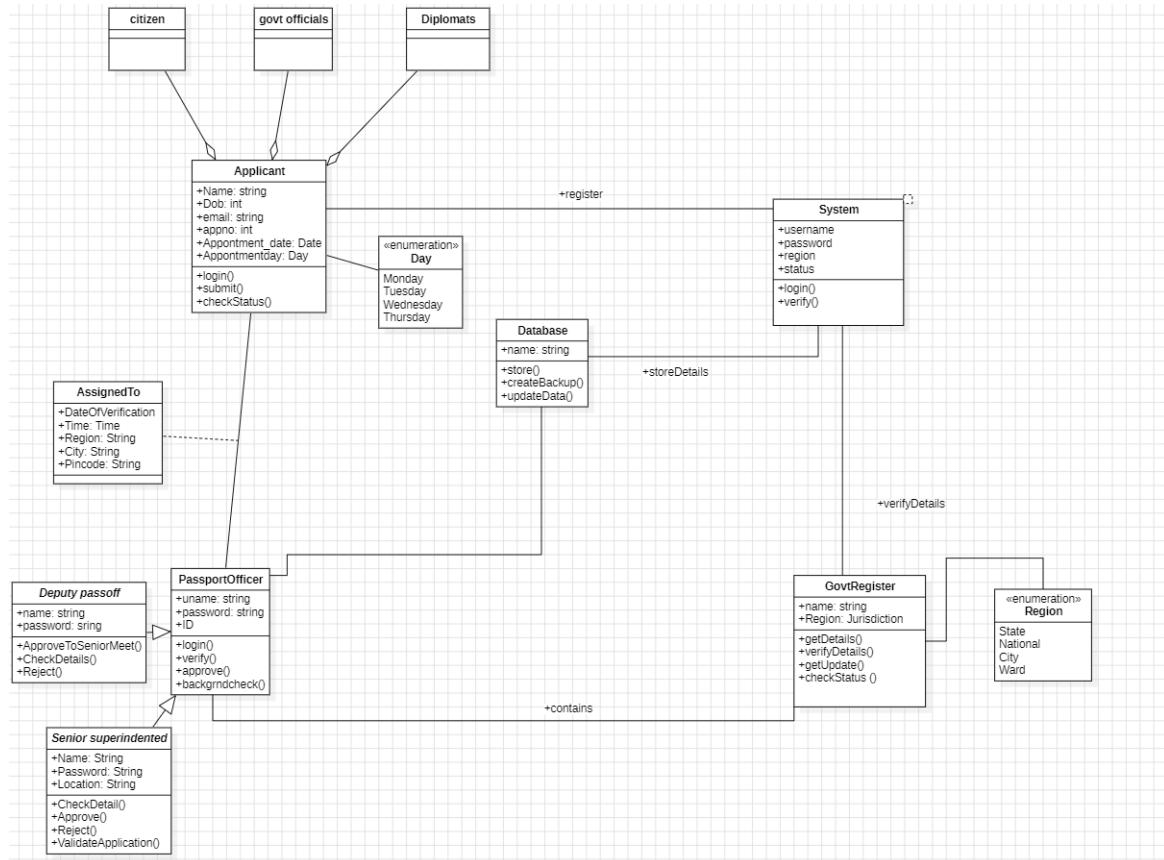


Passport Automation System:

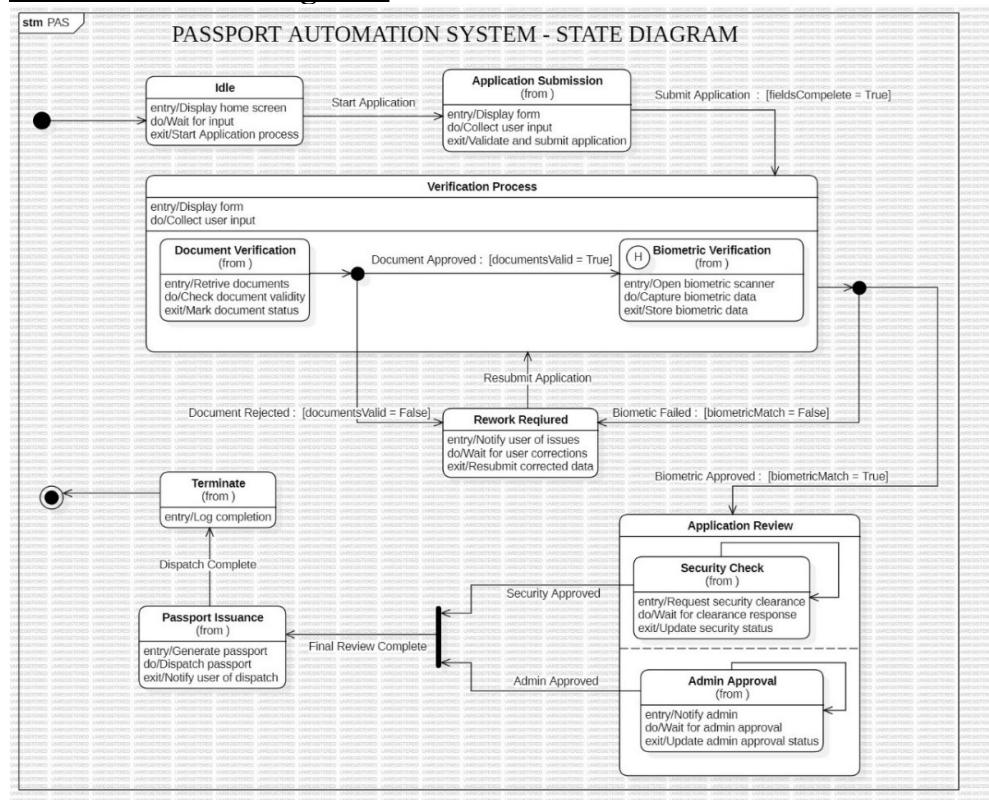
Software Requirement Specifications(SRS):

- 5) Passport Automation system
- Intro -
- Purpose - The passport automation sys streamline the process of passport application, verification, issuance & renewal.
- Scope - This system allows user to apply for new passport, renew existing one, schedule appointment & track the status of their applications.
- Overview - The passport automation sys that user can use all services. It will facilitate the verification & issuance of passport. This doc gives the summary of the functional & non-functional requirements.
- 2) General description - The passport automation sys will be a web based application accessible to both applicants & government officials. It will automate various stages of the passport. It includes application verification, fee payment, document issuance. Integration with external government sys will ensure realtime verification & tracking.
- 3) functional Req -
- * Application must be able to submit personal details, upload req documents & pay application fee online & also to track the application status.
- *) Automating the document verification process & integrate with police & immigration databases for background checks.
- *) The application must be notified when the passport generating process is completed.
- 1) User Interface Req
 - * Must provide user friendly form & for filling out applications, uploading documents, scheduling appointment & tracking status.
 - *) The govt official must be able to manage & verify applications, schedule appointment & issue passport.
- 3) Design constraints-
 - *) The system must be per data protection laws & must ensure secure storage in handling the personal data.
 - *) The sensitive data like biometric info must encrypted & the authorized person can be assured.
- 4) Performance Requirement
 - *) Scalability - It must be capable of handling large number of application
 - *) Application submission must be processed as early as possible
 - *) Must ensure high uptime for uninterrupted access to the system.

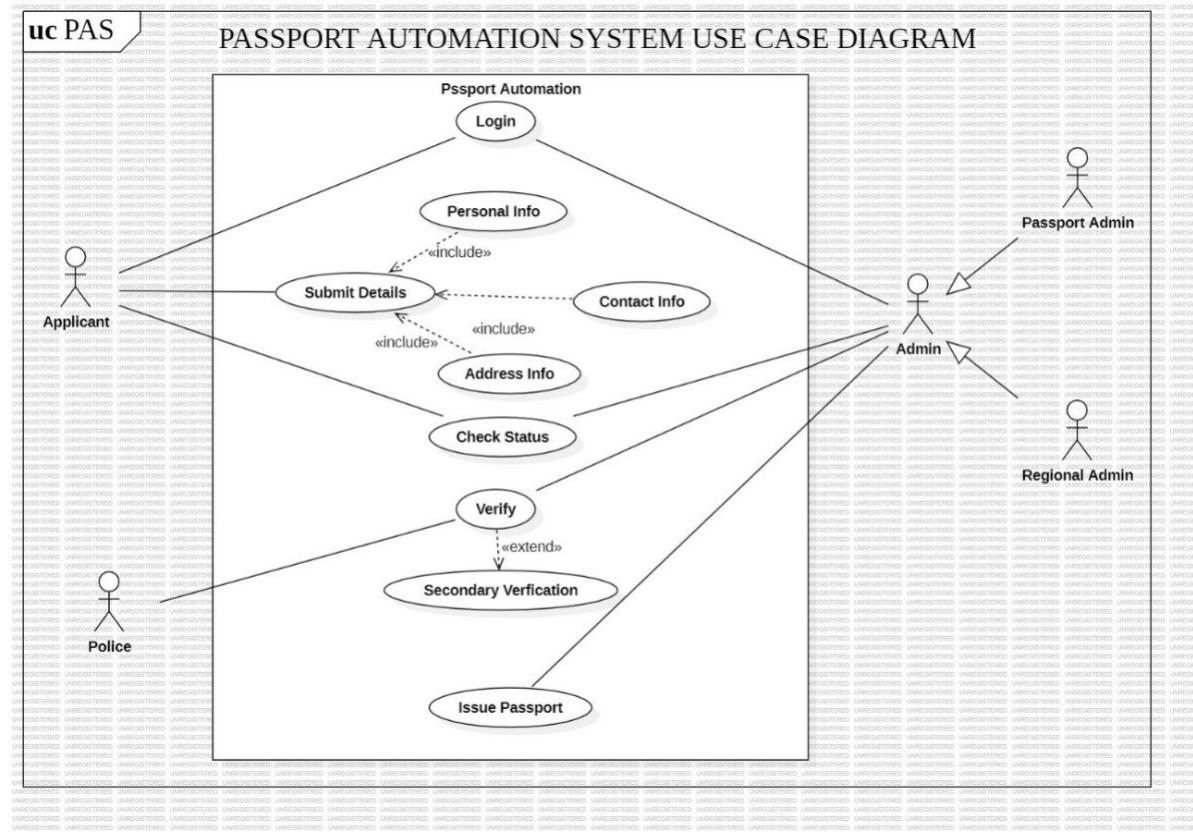
Advanced Class Diagram:



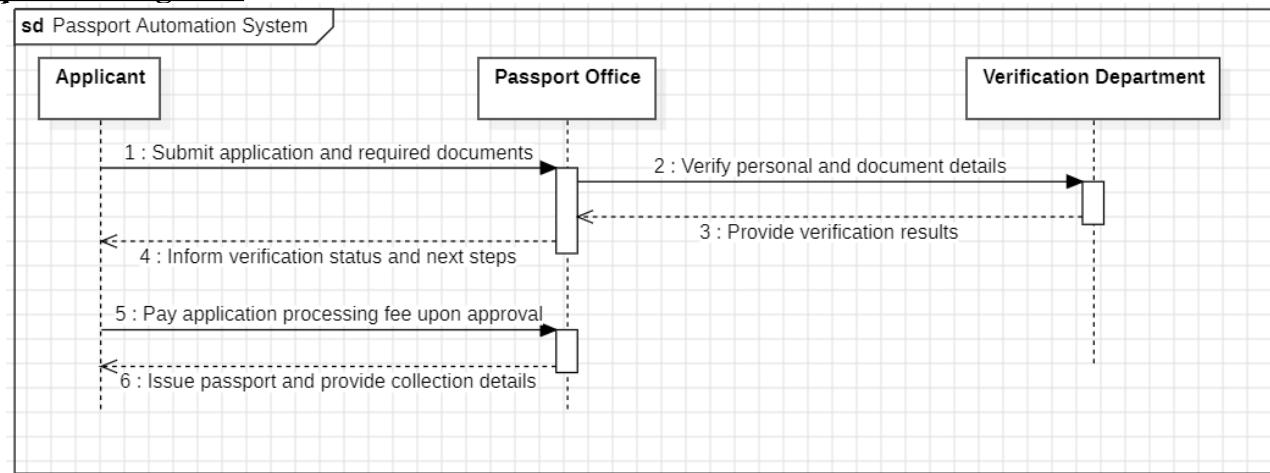
Advanced State Diagram:



Use Case Diagram:



Sequence Diagram:



Activity Diagram:

