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

Lab Record

Software Engineering and Object-Oriented Modeling

Submitted in partial fulfillment for the 6th Semester Laboratory

Bachelor of Engineering
in
Computer Science and Engineering

Submitted by:

HARIKA N

1BM21CS071

Department of Computer Science and Engineering
B.M.S. College of Engineering
Bull Temple Road, Basavanagudi, Bangalore 560 019
Mar-June 2024

B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Object-Oriented Analysis and Design(22CS6PCSEO) laboratory has been carried out by HARIKA N (1BM21CS071) during the 6th Semester Mar-June-2024.

Signature of the Faculty Incharge:

NAME OF THE FACULTY:SHEETAL V

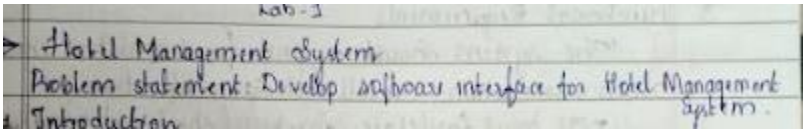
Department of Computer Science and Engineering
B.M.S. College of Engineering, Bangalore

Table of Contents

1. Hotel Management System
2. Credit Card Processing
3. Library Management System
4. Stock Maintenance System
5. Passport Automation System

1. Hotel Management System

1.1 Problem Statement

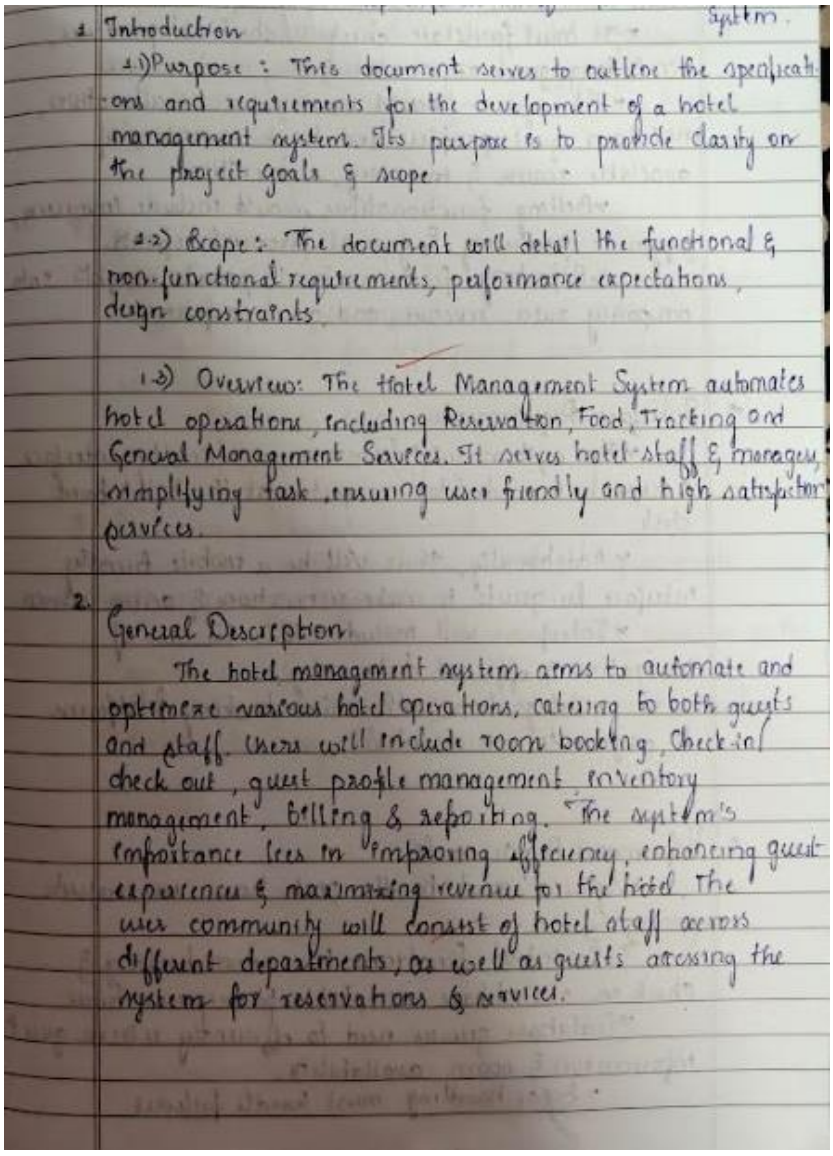

Lab-1

Hotel Management System

Problem statement: Develop software interface for Hotel Management System.

Introduction

1.2 SRS-Software Requirements Specification


1 Introduction

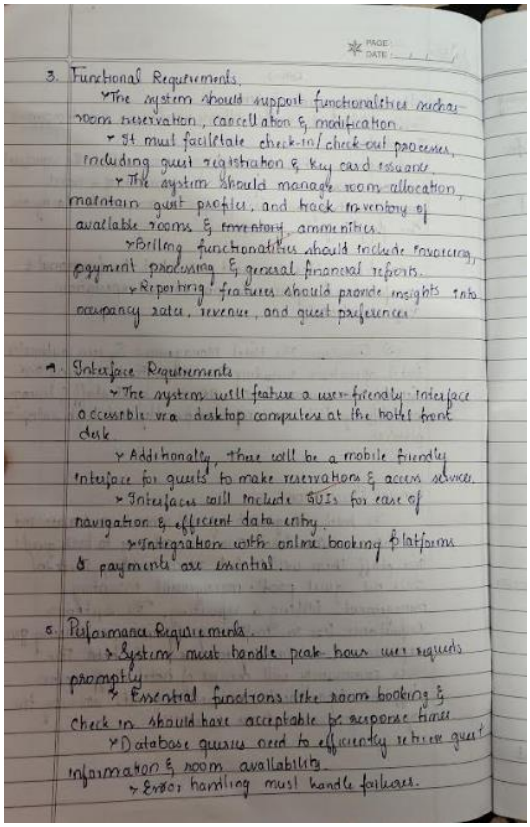
1.1) Purpose : This document serves to outline the specifications and requirements for the development of a hotel management system. Its purpose is to provide clarity on the project goals & scope.

1.2) Scope : The document will detail the functional & non-functional requirements, performance expectations, design constraints.

1.3) Overview: The Hotel Management System automates hotel operations, including Reservation, Food, Tracking and General Management Services. It serves hotel staff & managers, simplifying task, ensuring user friendly and high satisfaction services.

2. General Description

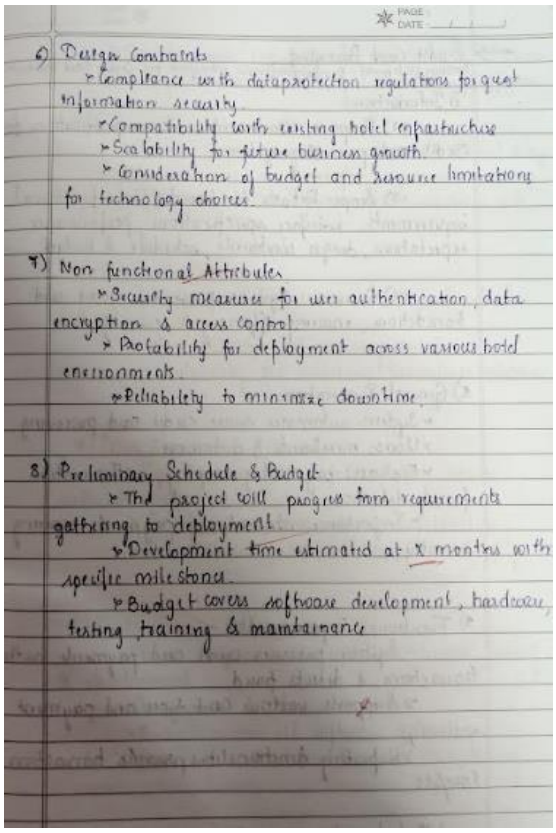
The hotel management system aims to automate and optimize various hotel operations, catering to both guests and staff. These will include room booking, check-in/check out, guest profile management, inventory management, billing & reporting. The system's importance lies in improving efficiency, enhancing guest experiences & maximizing revenue for the hotel. The user community will consist of hotel staff across different departments, as well as guests accessing the systems for reservations & services.



3. Functional Requirements.
- The system should support functionalities such as room reservation, cancellation & modification.
- It must facilitate check-in/check-out processes, including guest registration & key card issuance.
- The system should manage room allocation, maintain guest profiles, and track inventory of available rooms & inventory ammenities.
- Billing functionalities should include invoicing, payment processing & general financial reports.
- Reporting features should provide insights into occupancy rates, revenue, and guest preferences.

4. Interface Requirements
- The system will feature a user-friendly interface accessible via desktop computers at the hotel front desk.
- Additionally, there will be a mobile friendly interface for guests to make reservations & access services.
- Interfaces will include GUIs for ease of navigation & efficient data entry.
- Integration with online booking platforms & payments are essential.

5. Performance Requirements.
- System must handle peak hour user requests promptly.
- Essential functions like room booking & check in should have acceptable response times.
- Database queries need to efficiently retrieve guest information & room availability.
- Error handling must handle failures.

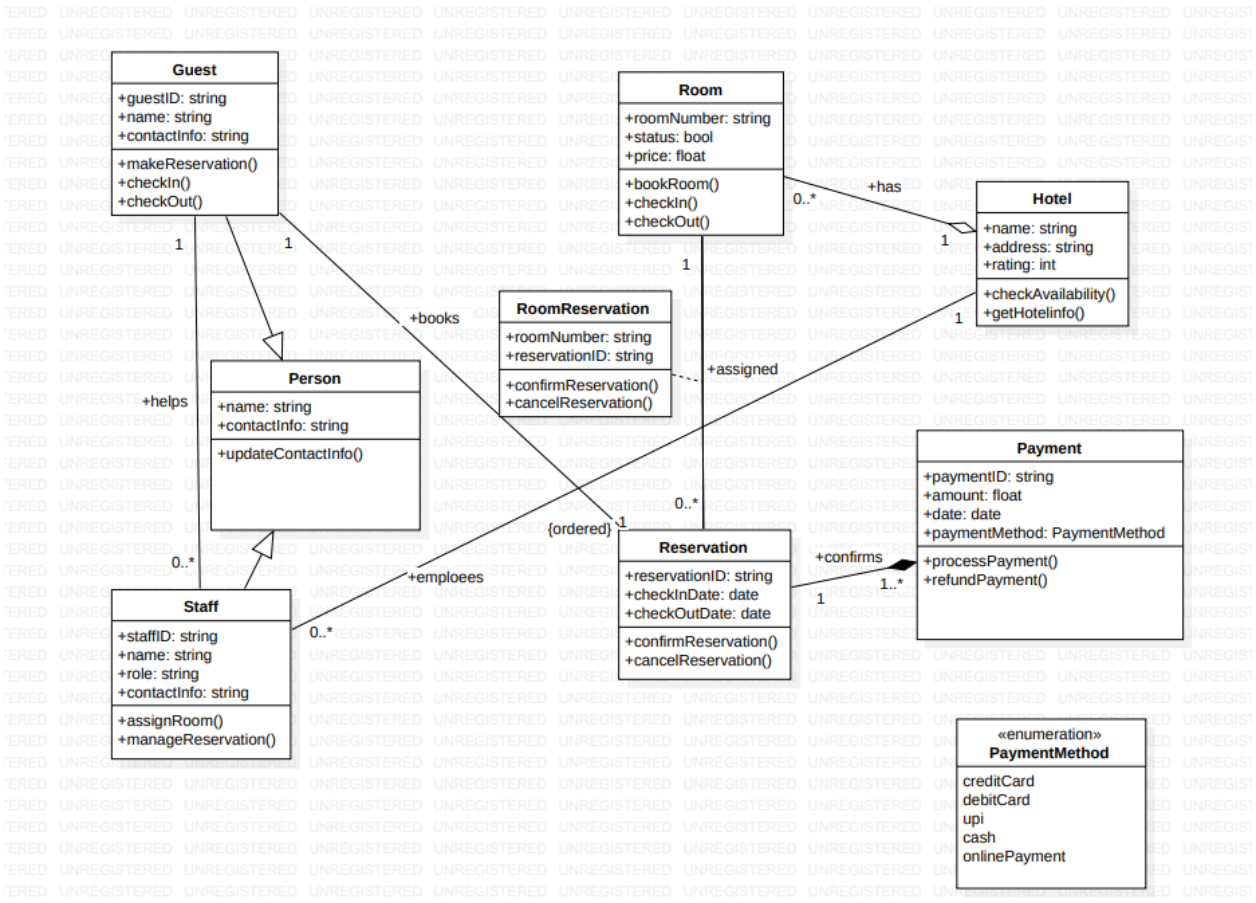


6) Design Constraints
- Compliance with data protection regulations for guest information security.
- Compatibility with existing hotel infrastructure.
- Scalability for future business growth.
- Consideration of budget and resource limitations for technology choices.

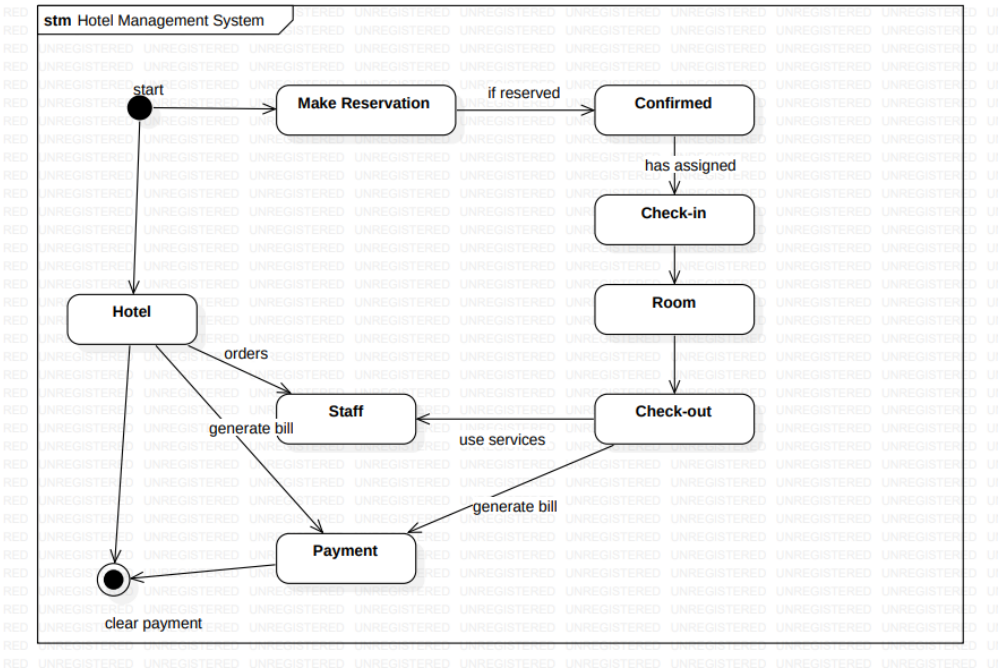
7) Non functional Attributes
- Security measures for user authentication, data encryption & access control.
- Portability for deployment across various hotel environments.
- Reliability to minimize downtime.

8) Preliminary Schedule & Budget
- The project will progress from requirements gathering to deployment.
- Development time estimated at x months with specific milestones.
- Budget covers software development, hardware, testing, training & maintenance.

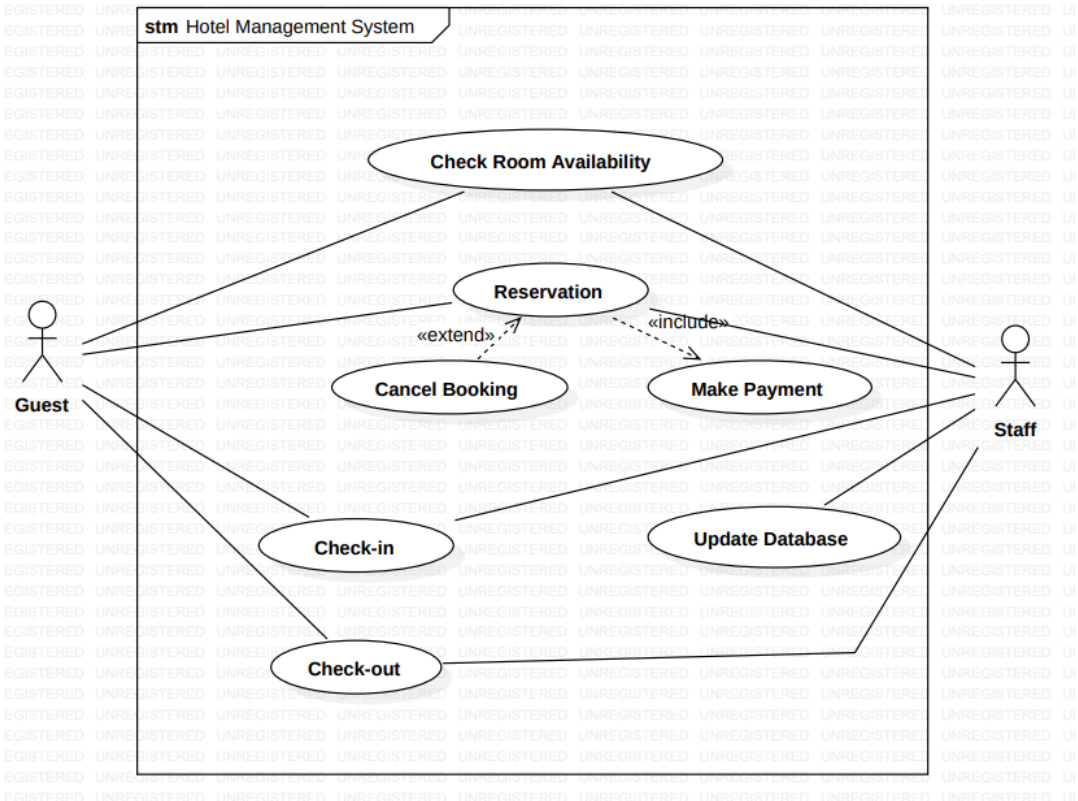
1.3 Class Diagram



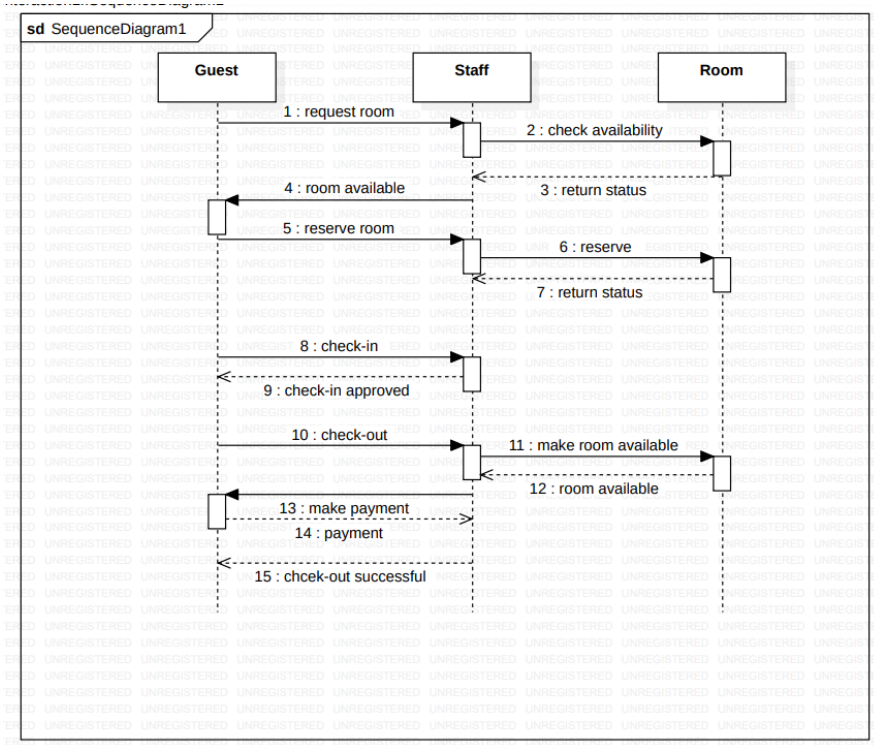
1.4 State Diagram



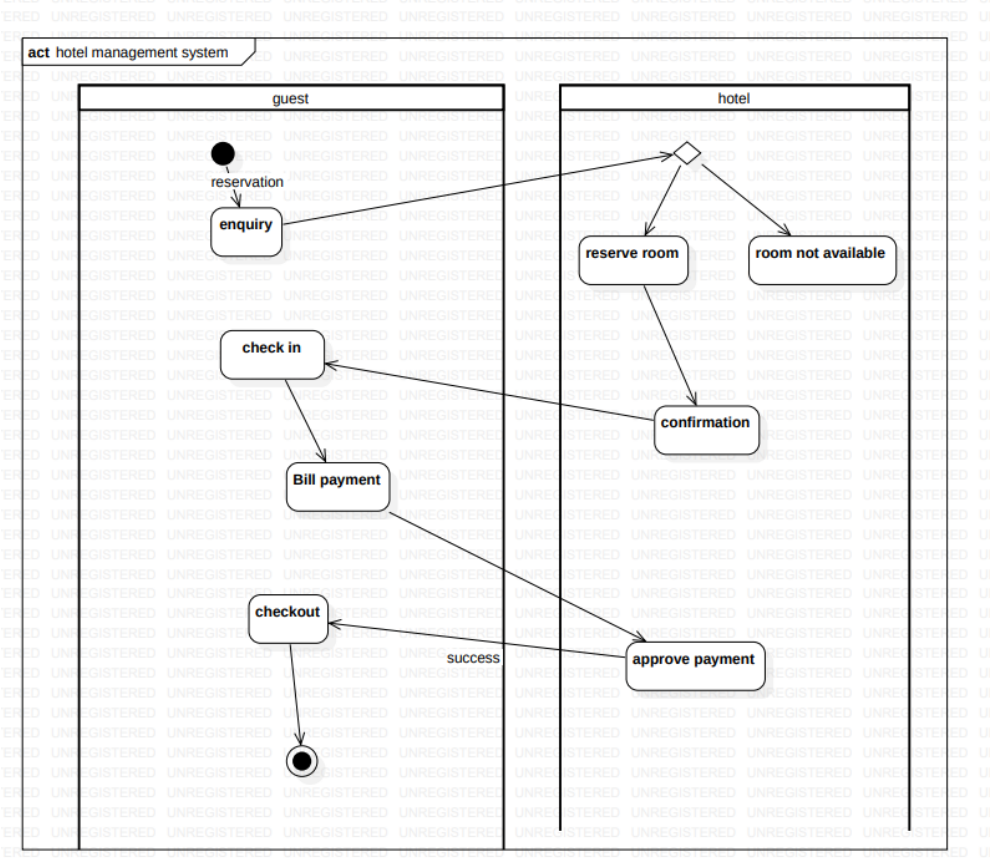
1.5 Use Case Diagram



1.6 Sequence Diagram

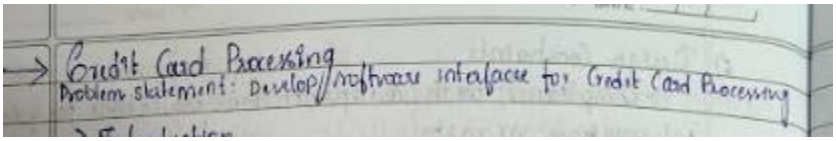


1.7 Activity diagram

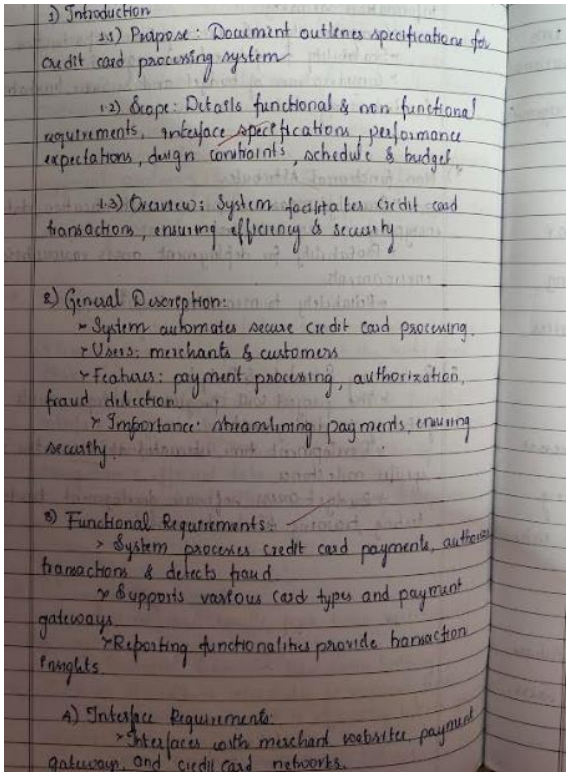


2. Credit Card Processing System

2.1 Problem Statement


Credit Card Processing
Problem statement: Develop software interface for Credit Card Processing

2.2 SRS-Software Requirements Specification


1) Introduction
1.1) Purpose: Document outlines specifications for credit card processing system

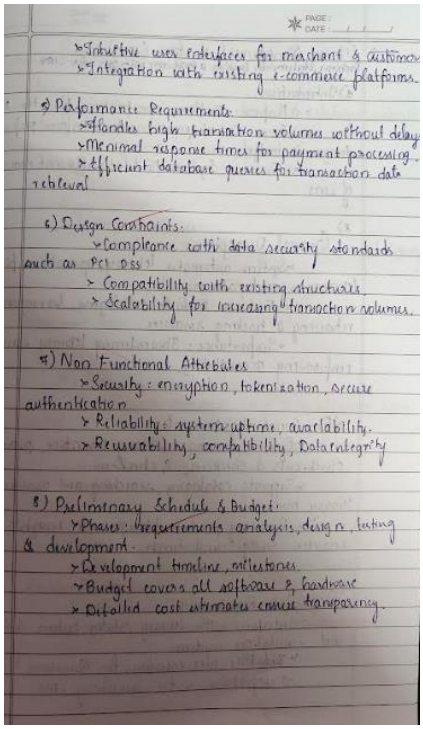
1.2) Scope: Details functional & non functional requirements, interface specifications, performance expectations, design constraints, schedule & budget

1.3) Overview: System facilitates credit card transactions, ensuring efficiency & security

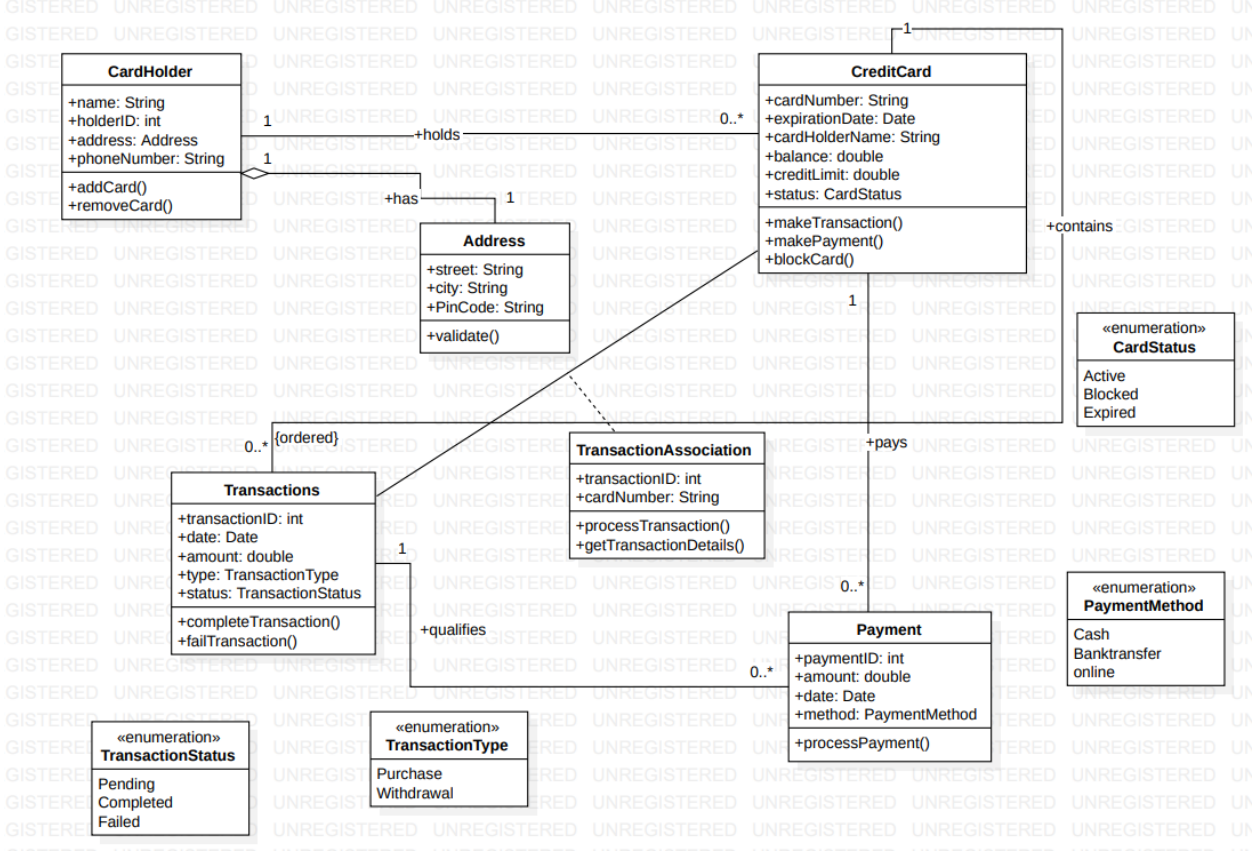
2) General Description:
- System automates secure credit card processing.
- Users: merchants & customers
- Features: payment processing, authorization, fraud detection
- Importance: streamlining payments ensuring security

3) Functional Requirements:
- System processes credit card payments, authorizes transactions & detects fraud
- Supports various card types and payment gateways
- Reporting functionalities provide transaction insights

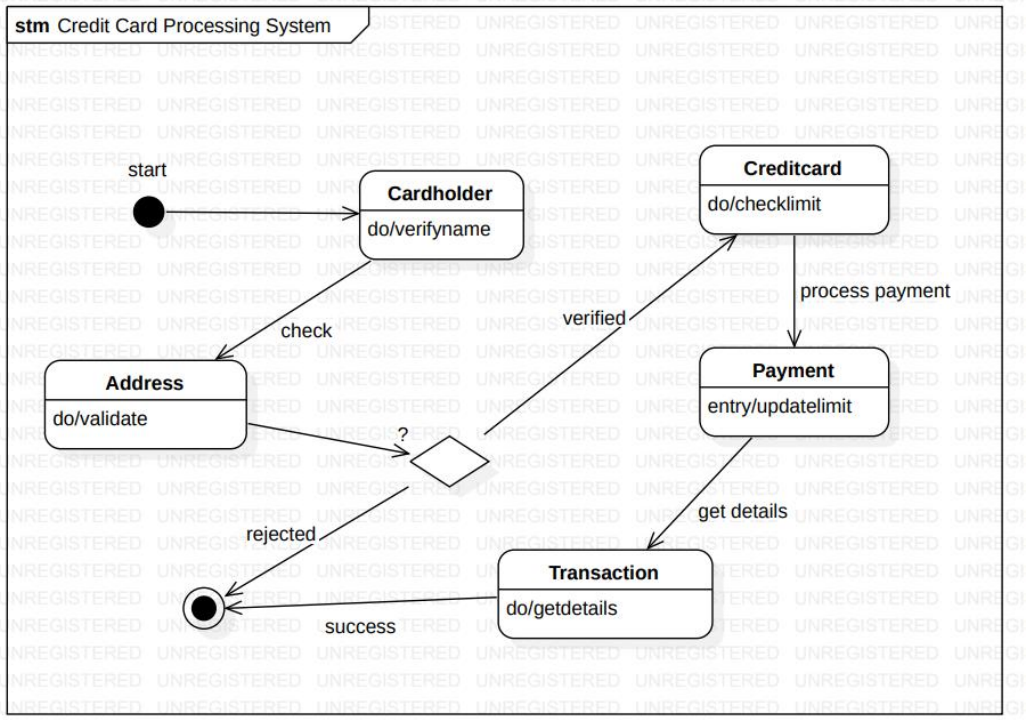
4) Interface Requirements:
- Interfaces with merchant websites payment gateways, and credit card networks.



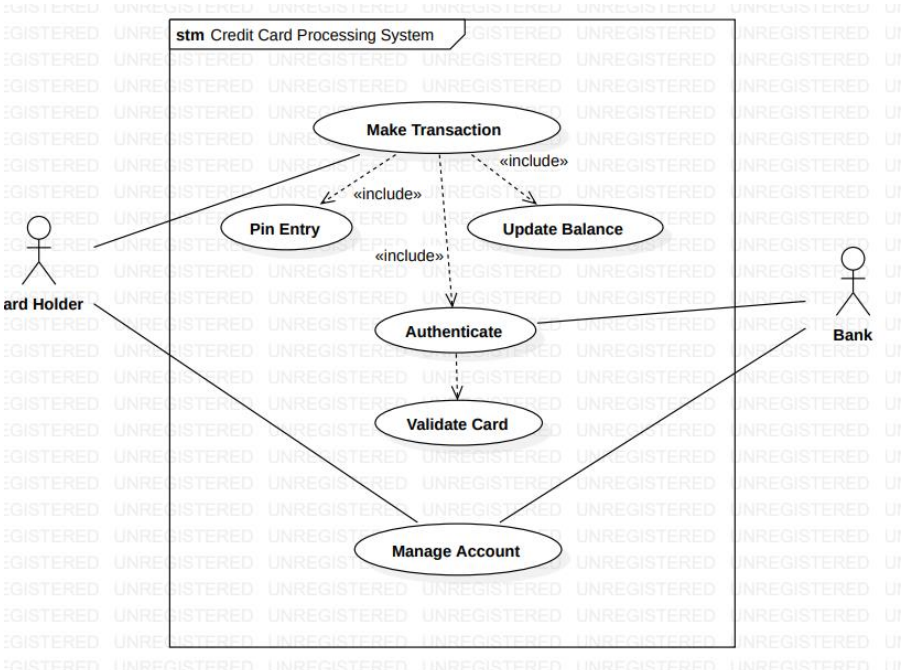
2.3 Class Diagram



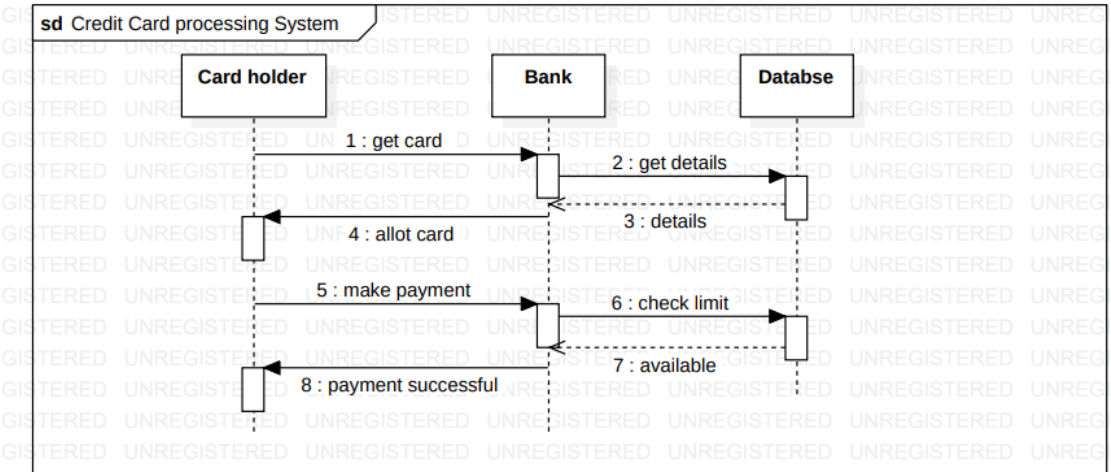
2.4 State Diagram



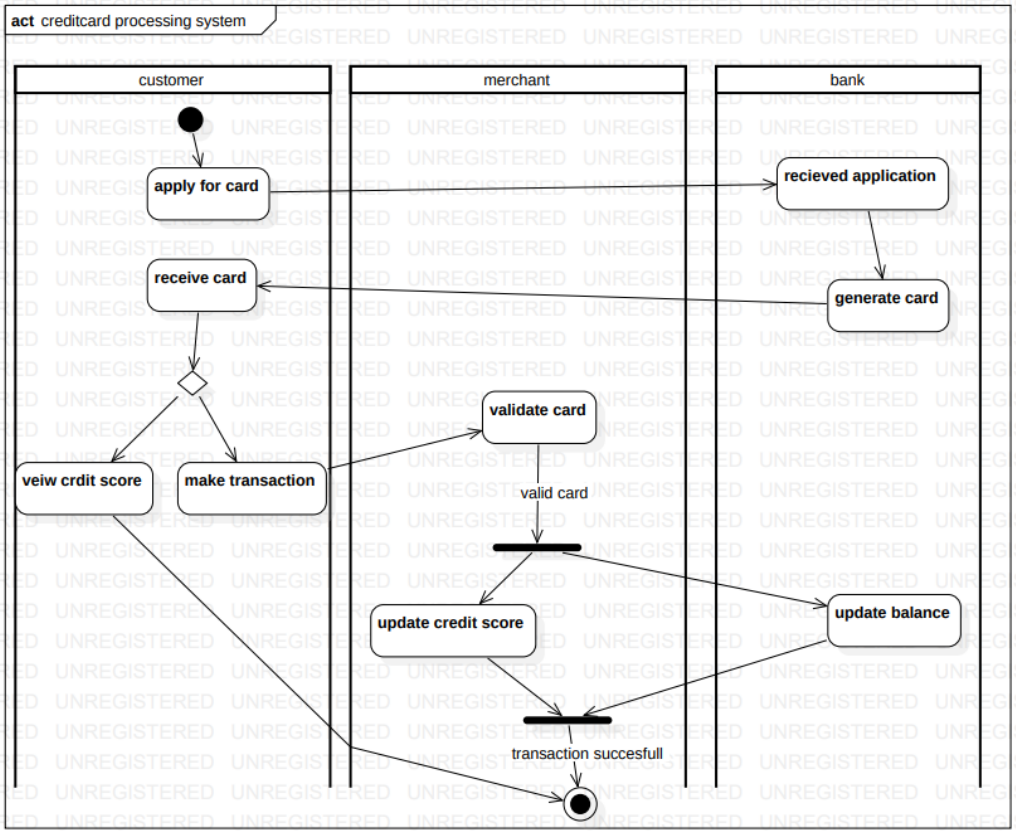
2.5 Use Case Diagram



2.6 Sequence Diagram

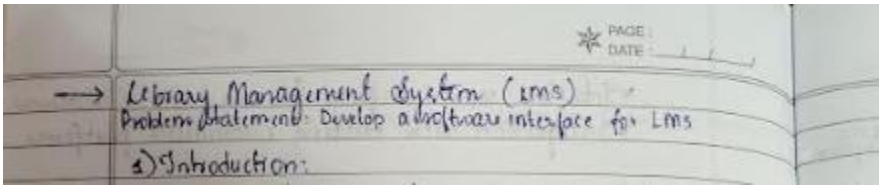


2.7 Activity diagram

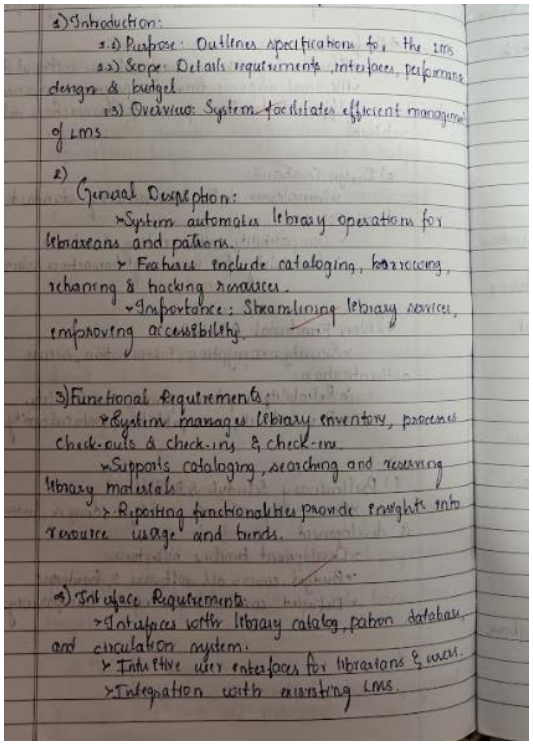


3. Library Management System

3.1 Problem Statement


Library Management System (LMS)
Problem Statement: Develop a software interface for LMS
1) Introduction:

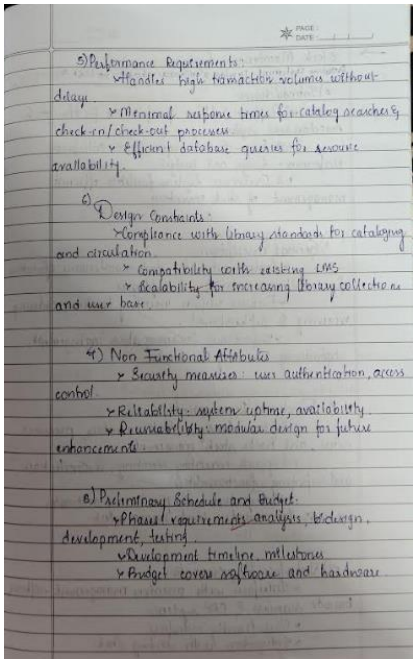
3.2 SRS-Software Requirements Specification


1) Introduction:
1.1) Purpose: Outlines specifications for the LMS
1.2) Scope: Details requirements, interfaces, performance, design & budget.
1.3) Overview: System facilitates efficient management of LMS.

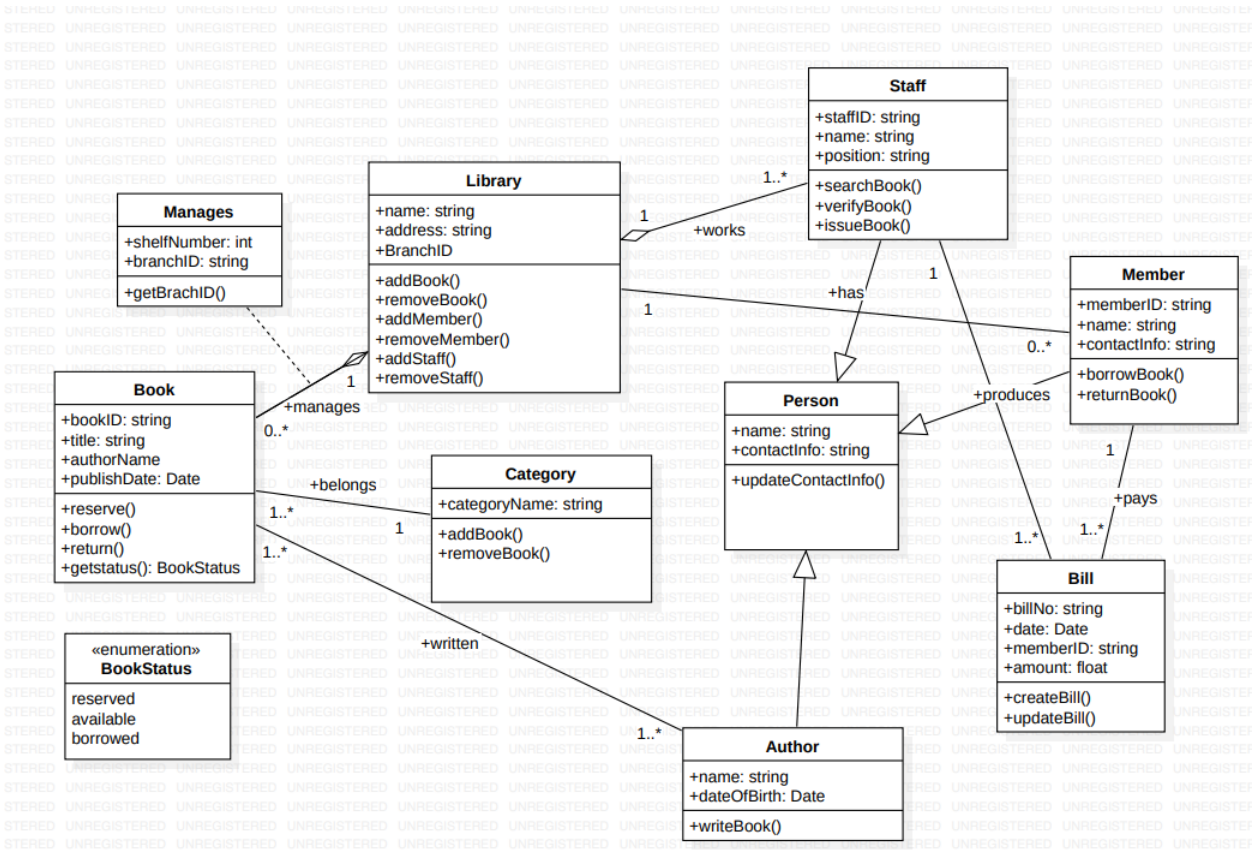
2) General Description:
- System automates library operations for librarians and patrons.
- Features include cataloging, borrowing, returning & tracking resources.
- Importance: Streamlining library services, improving accessibility.

3) Functional Requirements:
- System manages library inventory, processes check-outs & check-ins & check-ins.
- Supports cataloging, searching and reserving library materials.
- Reporting functionalities provide insights into resource usage and trends.

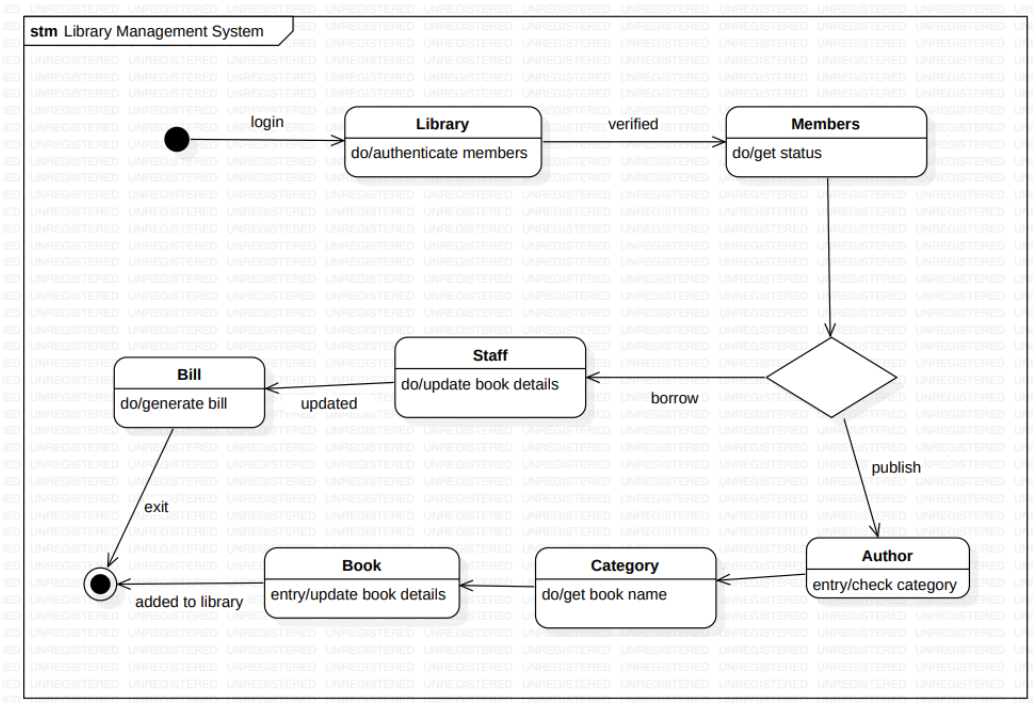
4) Interface Requirements:
- Interfaces with library catalog, patron database, and circulation system.
- Intuitive user interfaces for librarians & users.
- Integration with existing LMS.



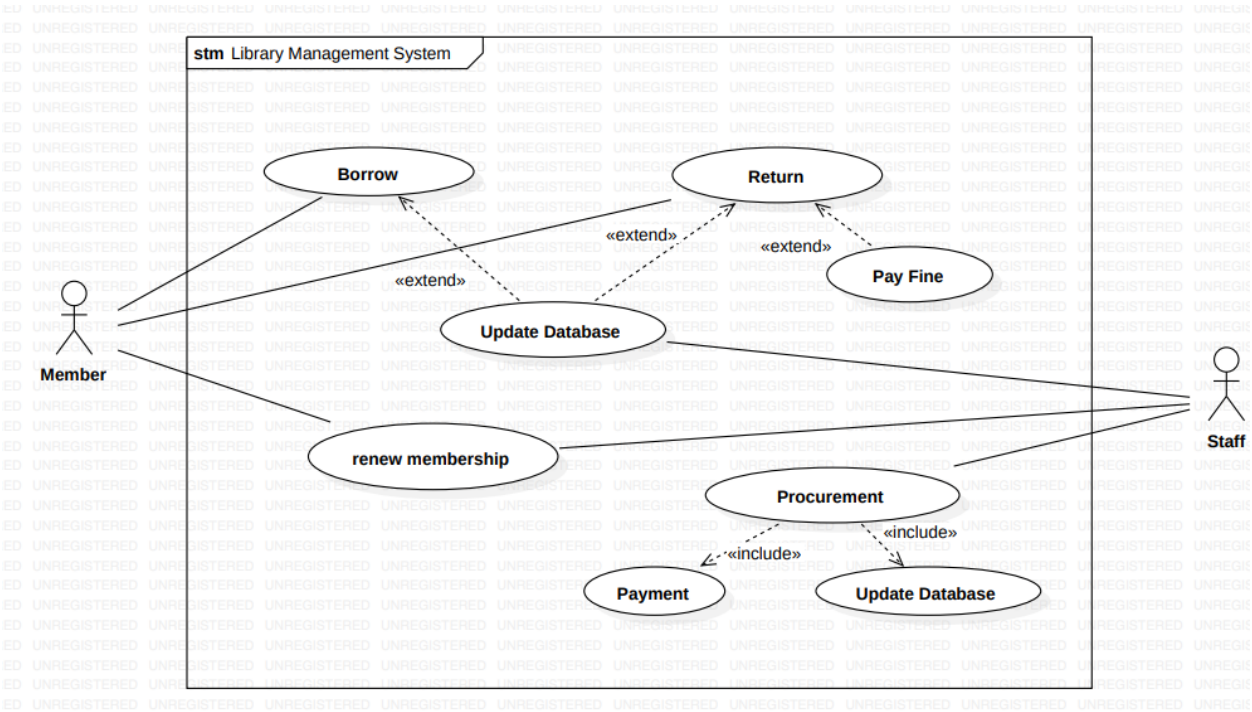
3.3 Class Diagram



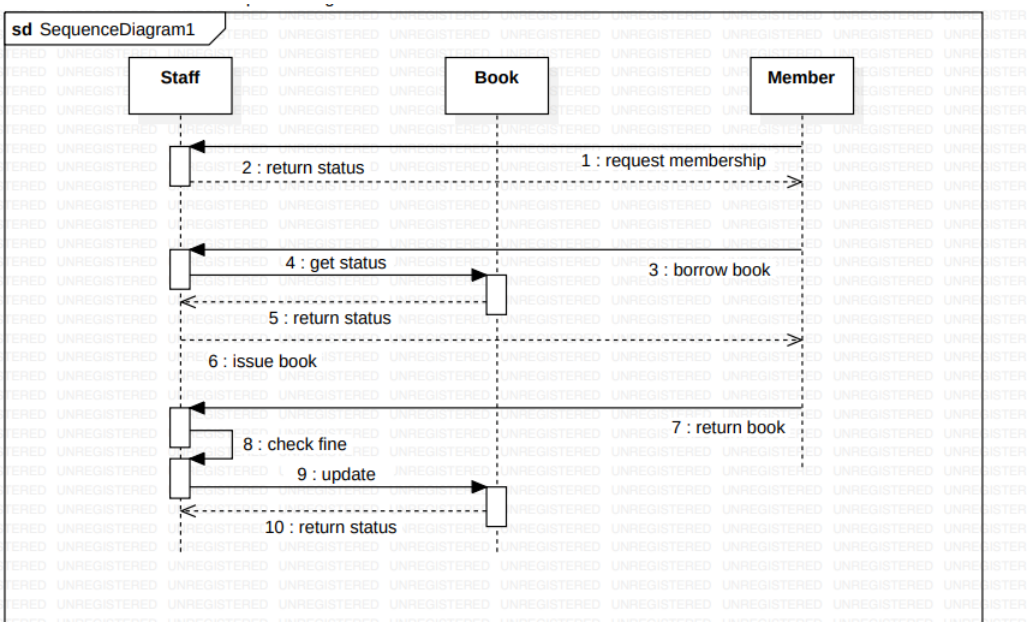
3.4 State Diagram



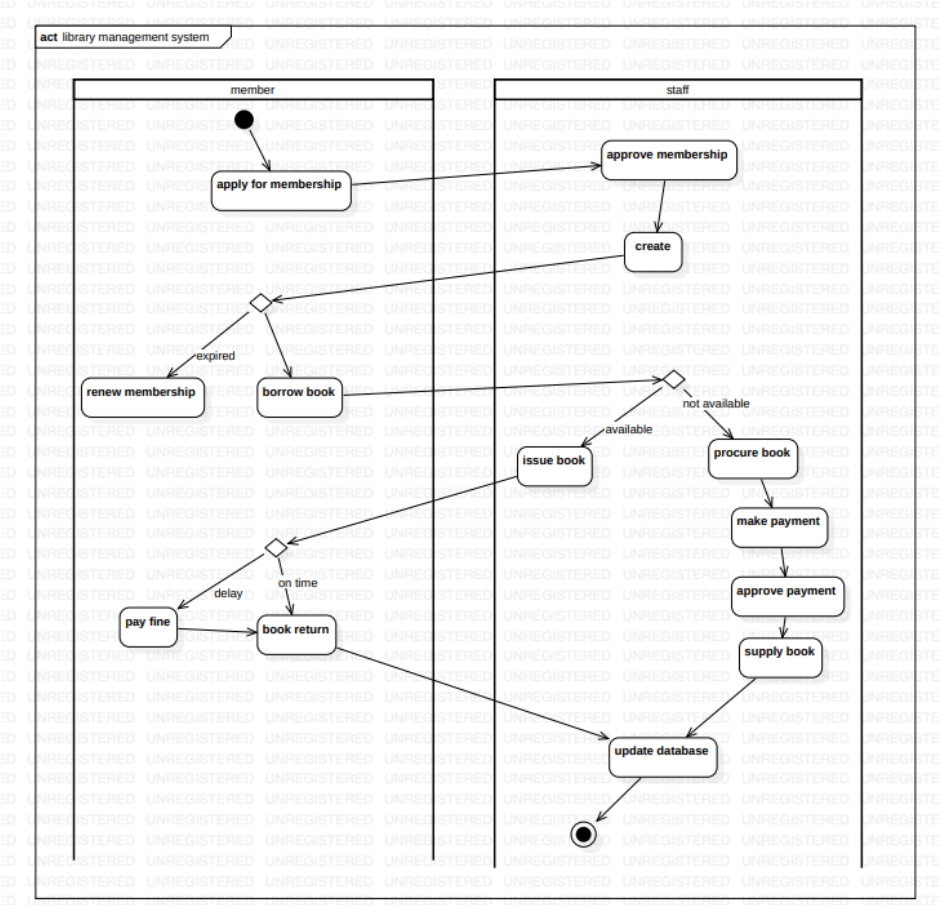
3.5 Use Case Diagram



3.6 Sequence Diagram

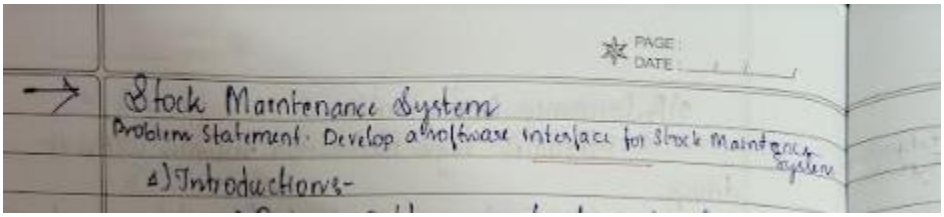


3.7 Activity diagram

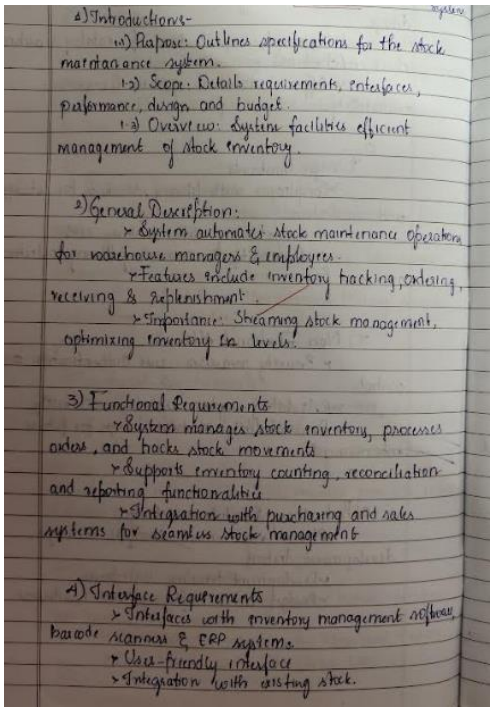


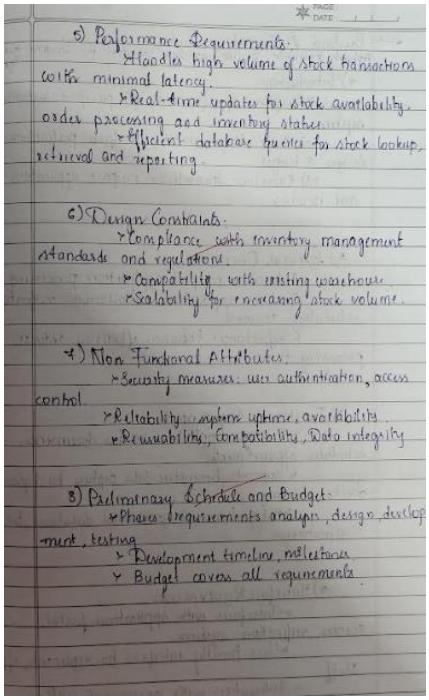
4. Stock Maintenance System

4.1 Problem Statement



4.2 SRS-Software Requirements Specification





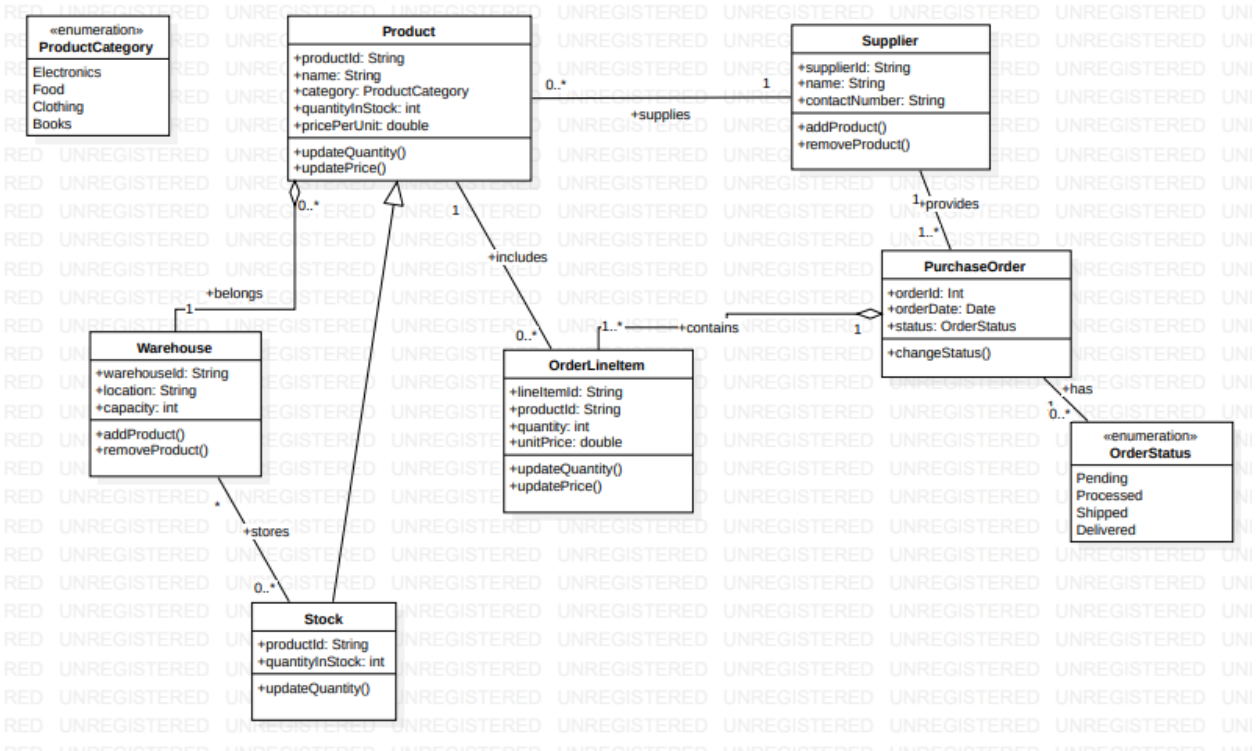
5) Performance Requirements:
- Handles high volume of stock transactions with minimal latency.
- Real-time updates for stock availability, order processing and inventory status.
- Efficient database queries for stock lookup, retrieval and reporting.

6) Design Constraints:
- Compliance with inventory management standards and regulations.
- Compatibility with existing warehouse.
- Scalability for increasing stock volume.

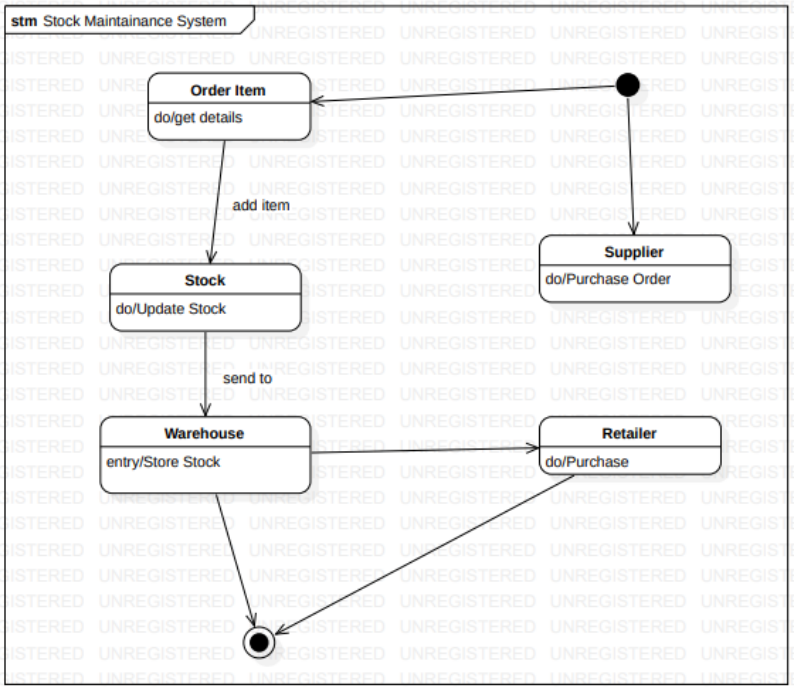
7) Non Functional Attributes:
- Security measures: user authentication, access control
- Reliability: system uptime, availability
- Reusability, Compatibility, Data integrity

8) Preliminary Schedule and Budget:
- Phases: Requirements analysis, design, development, testing
- Development timeline, milestones
- Budget covers all requirements

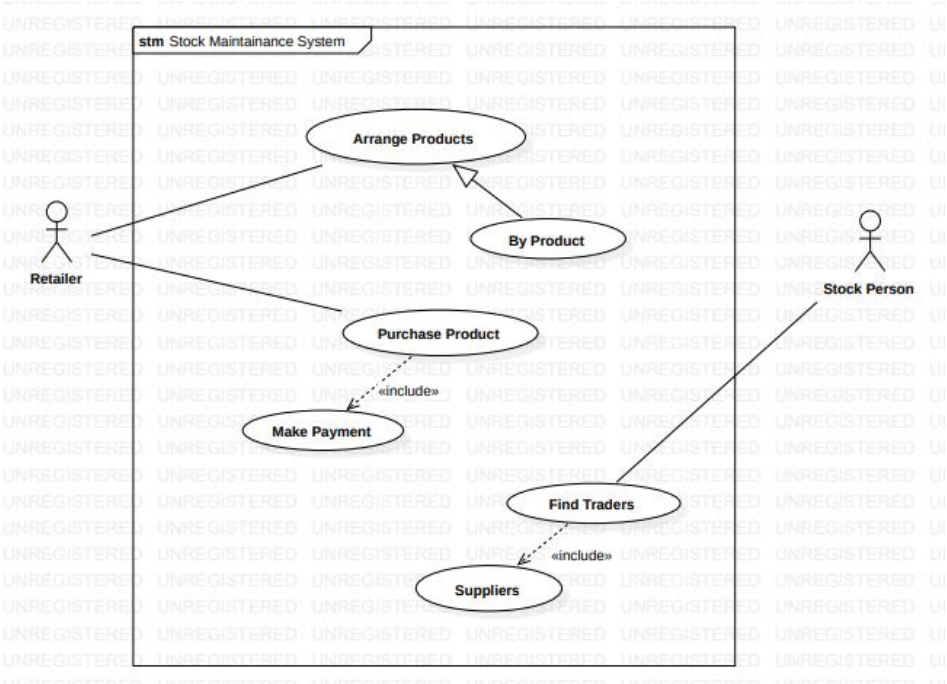
4.3 Class Diagram



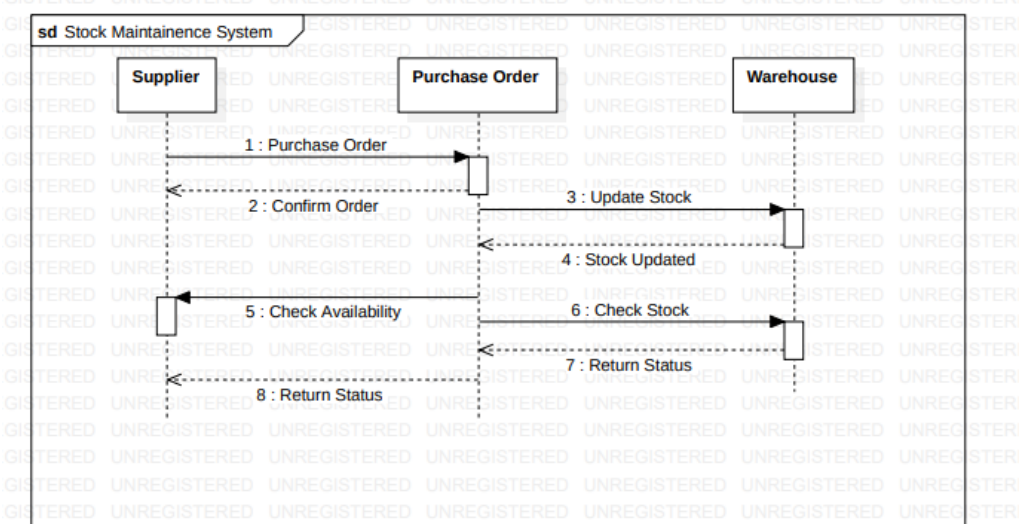
4.4 State Diagram



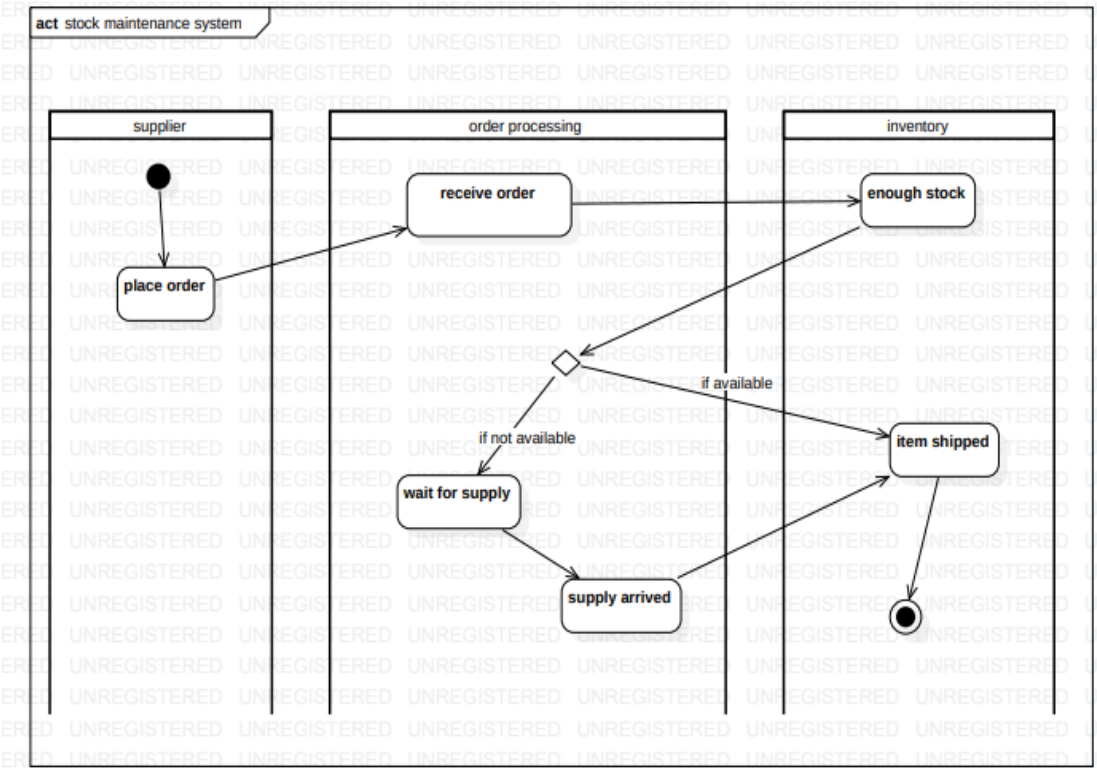
4.5 Use Case Diagram



4.6 Sequence Diagram

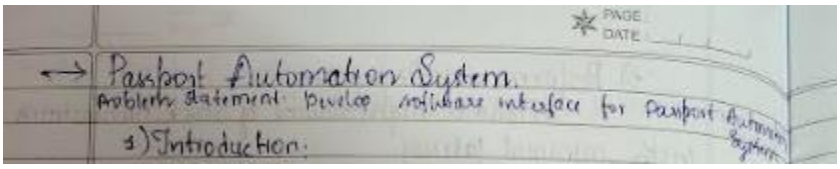


4.7 Activity diagram

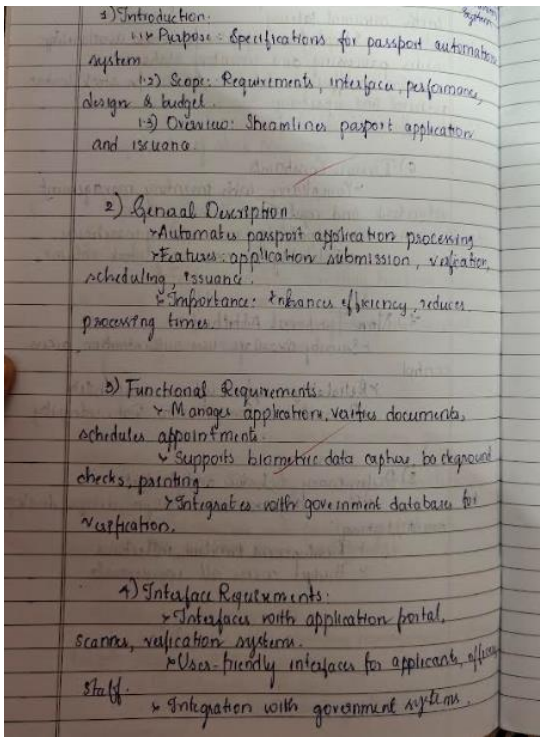


5. Passport Automation System

5.1 Problem Statement


Passport Automation System.
Problem statement: Develop database interface for Passport Automation System
1) Introduction:

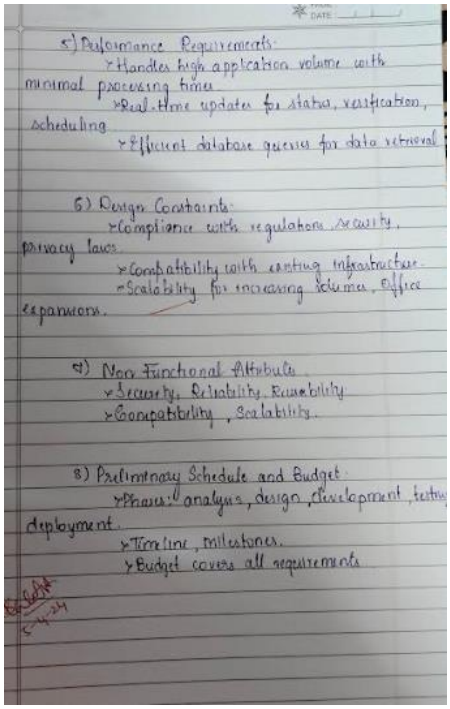
5.2 SRS-Software Requirements Specification


1) Introduction:
1.1 Purpose: Specifications for passport automation system
1.2) Scope: Requirements, interface, performance, design & budget.
1.3) Overview: Streamline passport application and issuance.

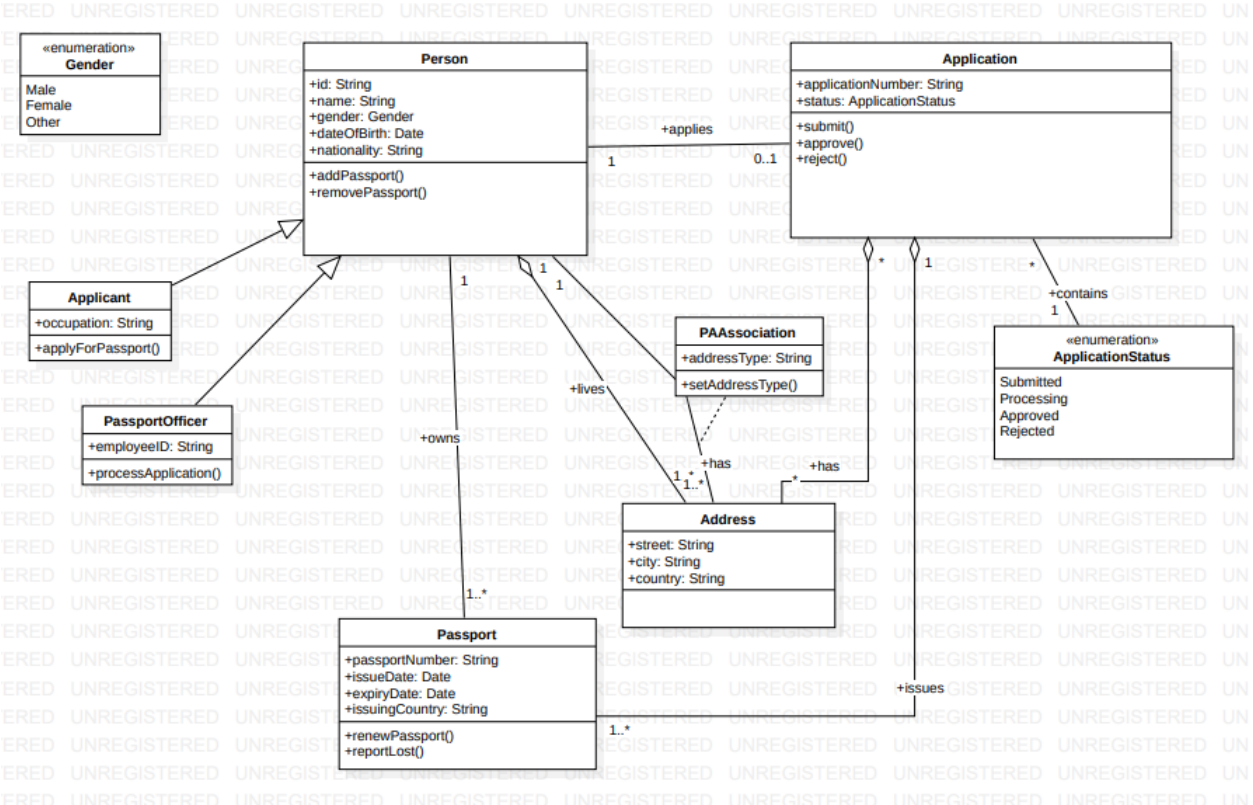
2) General Description
- Automate passport application processing
- Features: application submission, verification, scheduling, issuance.
- Importance: Enhances efficiency, reduces processing times.

3) Functional Requirements:
- Manages applications, verifies documents, schedules appointments.
- Supports biometric data capture, background checks, printing.
- Integrates with government database for verification.

4) Interface Requirements:
- Interfaces with application portal, scanners, verification systems.
- User-friendly interfaces for applicants, officials, staff.
- Integration with government systems.



5.3 Class Diagram



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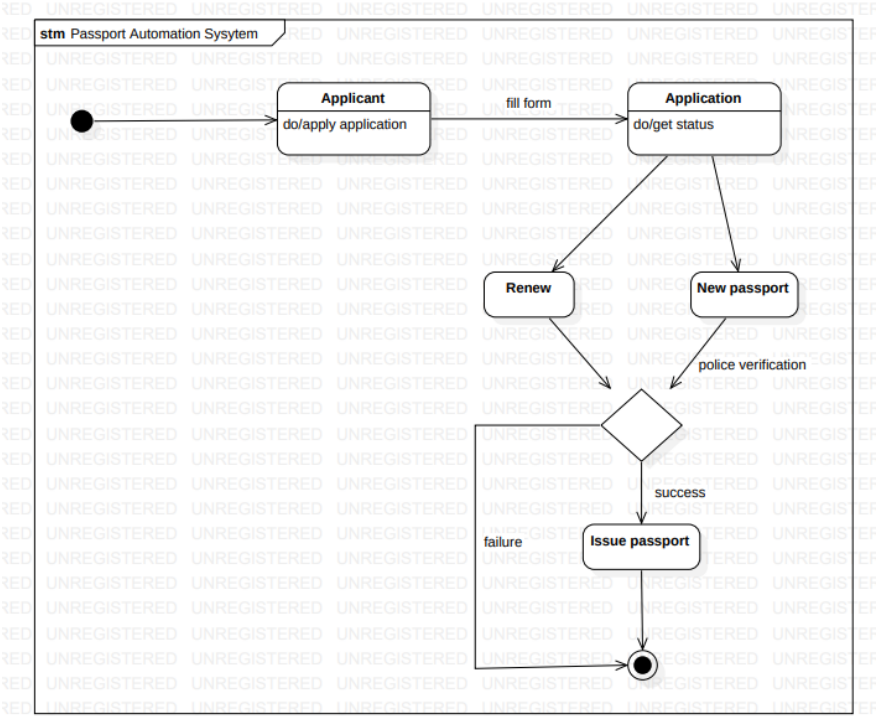
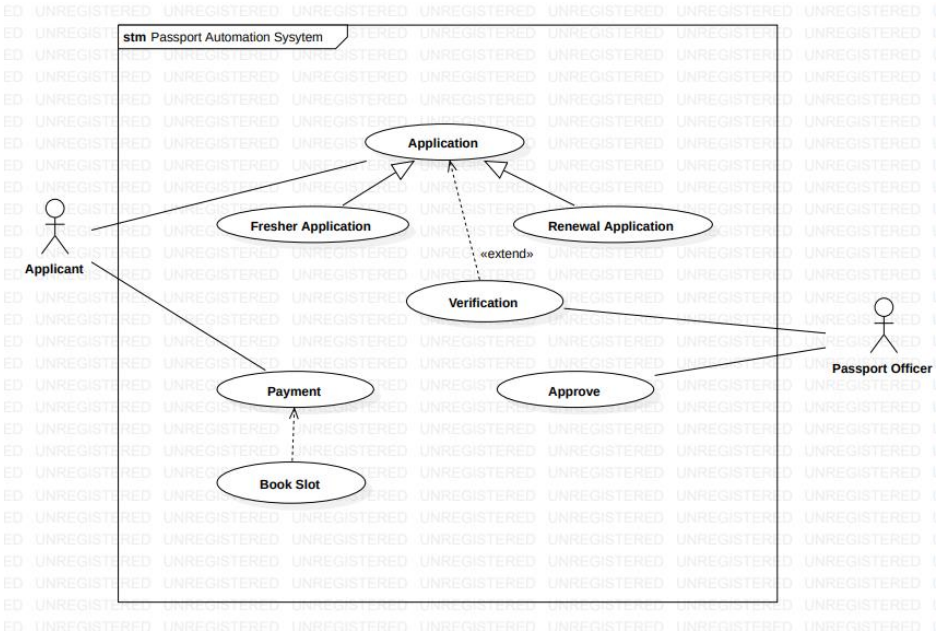


5.5 Use Case Diagram



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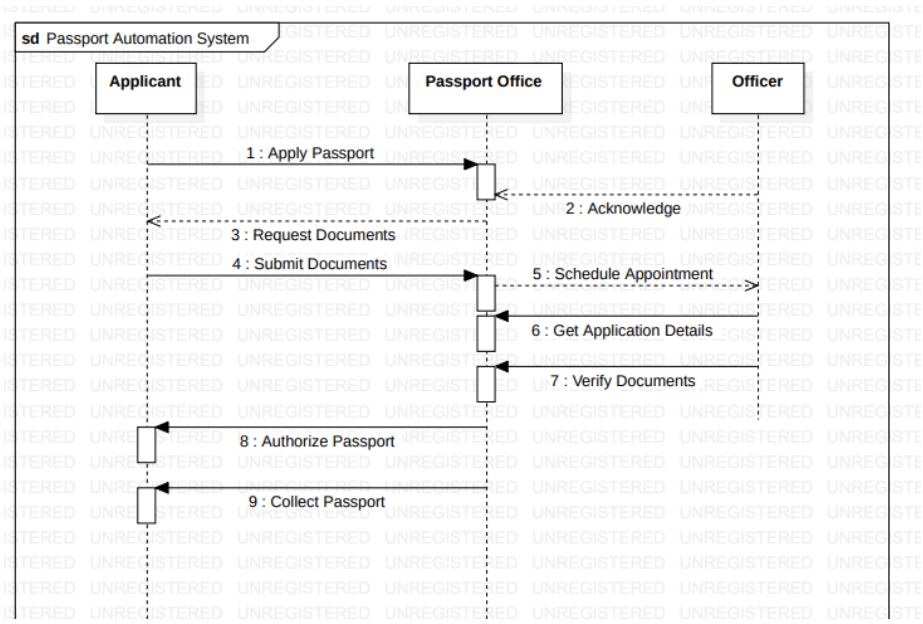
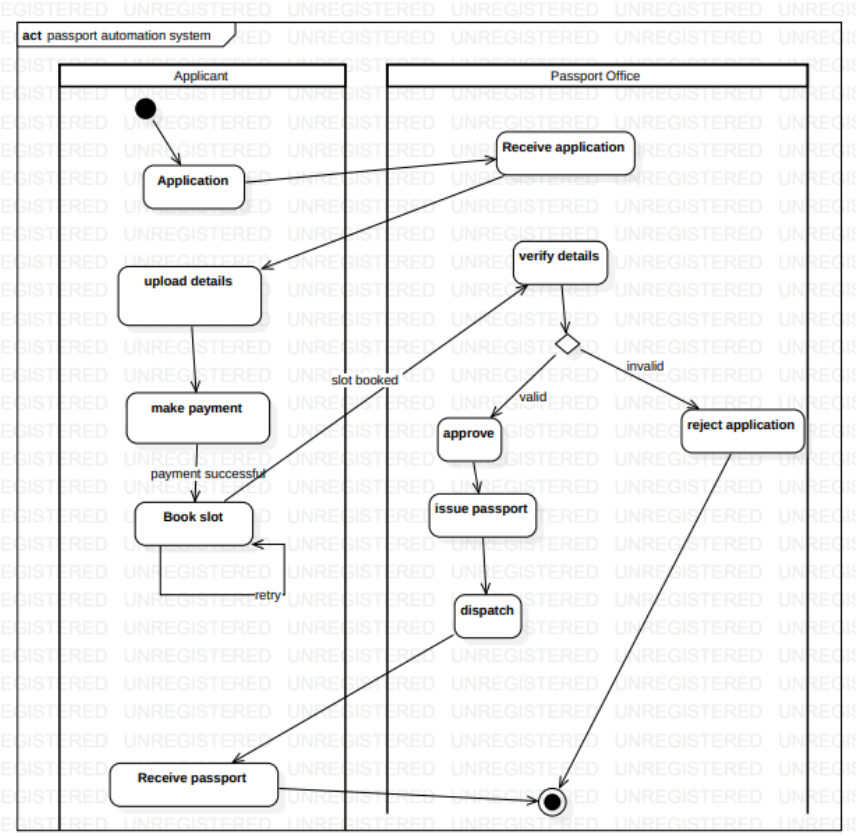
5.7 Activity diagram