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:

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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 SANNIDHI M (1BM21CS189) during the 6th Semester Mar-June-2024.

Signature of the Faculty Incharge:

NAME OF THE FACULTY: Dr. LATHA N.R.

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

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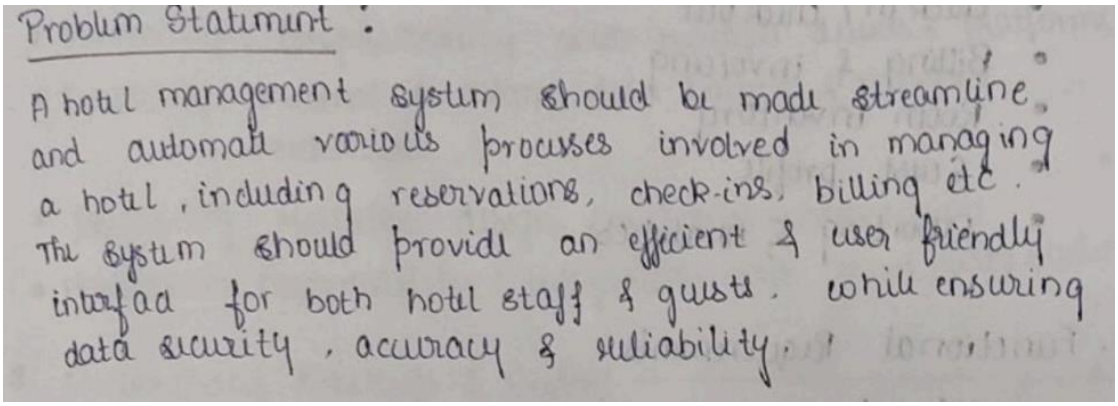
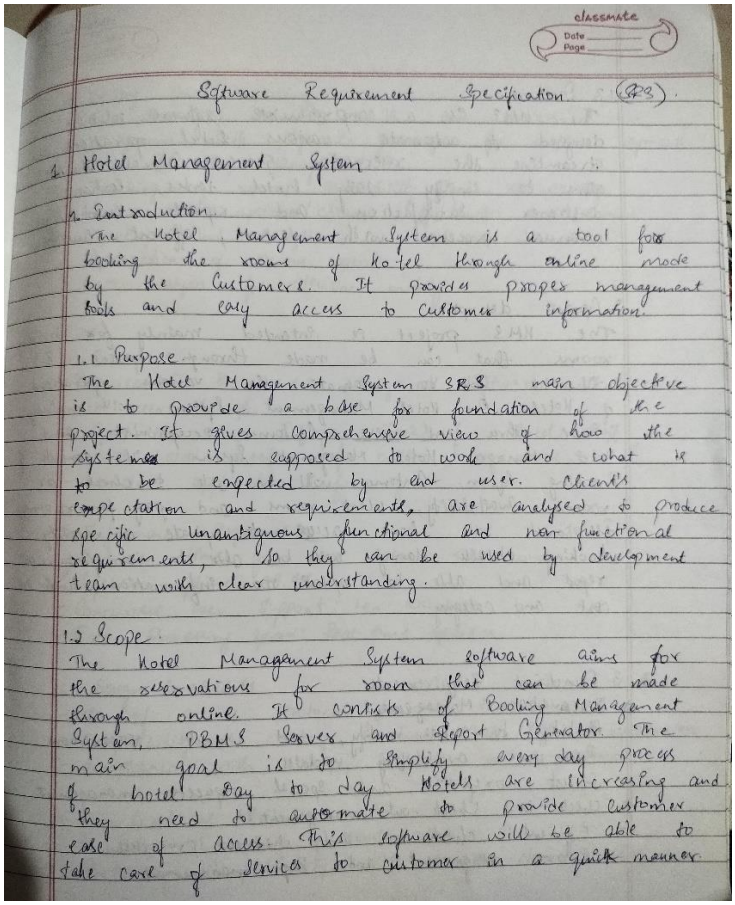
1.1 Problem Statement



Problem Statement :

A hotel management system should be made streamline and automate various processes involved in managing a hotel, including reservations, check-ins, billing etc. The system should provide an efficient & user friendly interface for both hotel staff & guests. while ensuring data security, accuracy & reliability.

1.2 SRS-Software Requirements Specification



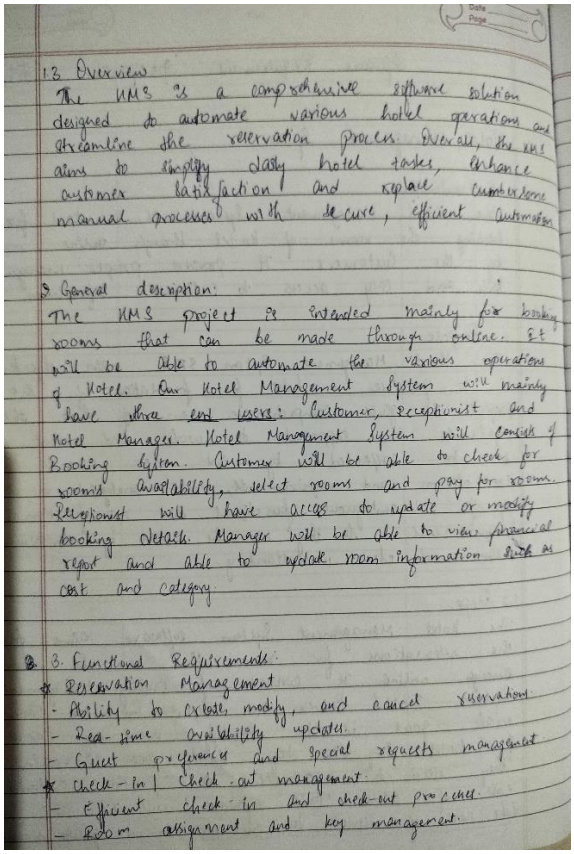
Software Requirement Specification (SRS).

1. Hotel Management System

1. Introduction
The Hotel Management System is a tool for booking the rooms of hotel through online mode by the Customers. It provides proper management tools and easy access to customer information.

1.1 Purpose
The Hotel Management System SRS main objective is to provide a base for foundation of the project. It gives comprehensive view of how the system is supposed to work and what is to be expected by end user. Client's expectation and requirements, are analysed to produce specific unambiguous functional and non functional requirements, so they can be used by development team with clear understanding.

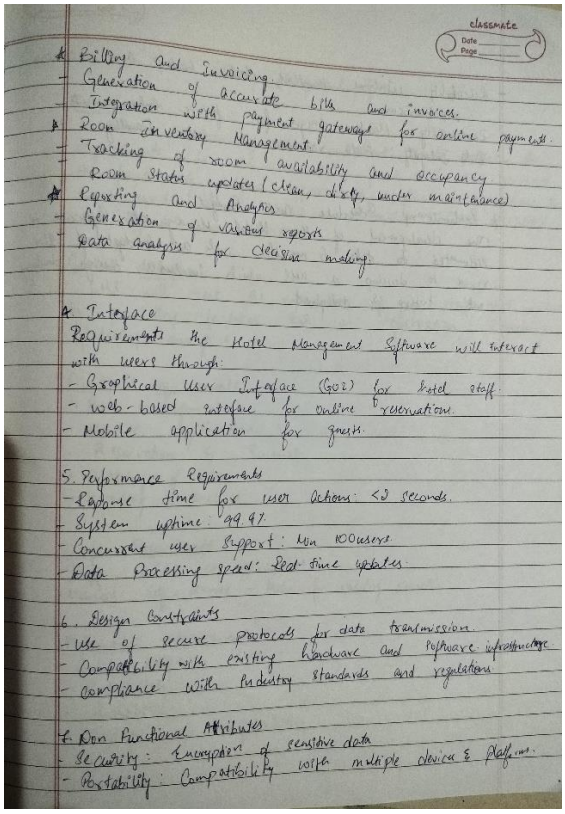
1.2 Scope
The Hotel Management System software aims for the reservations for room that can be made through online. It consists of Booking Management System, DBMS Server and Report Generator. The main goal is to simplify every day process of hotel. Day to day Hotels are increasing and they need to automate to provide customer ease of access. This software will be able to take care of services to customer in a quick manner.



1.3 Overview
The HMS is a comprehensive software solution designed to automate various hotel operations and streamline the reservation process. Overall, the HMS aims to simplify daily hotel tasks, enhance customer satisfaction and replace cumbersome manual processes with secure, efficient automation.

2 General description:
The HMS project is intended mainly for booking rooms that can be made through online. It will be able to automate the various operations of Hotel. Our Hotel Management System will mainly have three end users: Customer, receptionist and Hotel Manager. Hotel Management System will consist of Booking system. Customer will be able to check for rooms availability, select rooms and pay for room. Receptionist will have access to update or modify booking details. Manager will be able to view financial report and able to update room information such as cost and category.

3. Functional Requirements:
* Reservation Management
- Ability to create, modify, and cancel reservations
- Real-time availability updates
- Guest preferences and special requests management
* Check-in / Check-out management
- Efficient check-in and check-out process
- Room assignment and key management



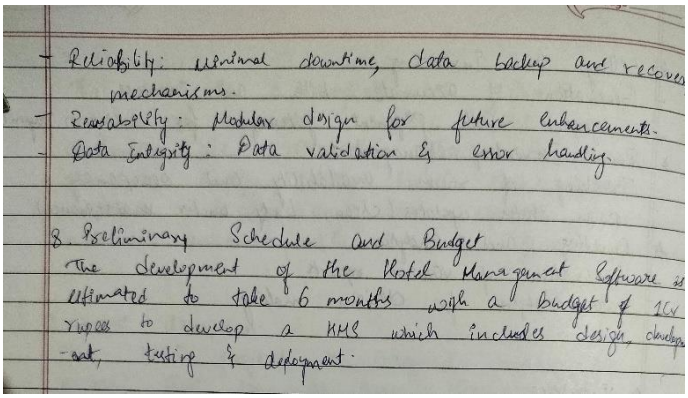
* Billing and Invoicing
- Generation of accurate bills and invoices
- Integration with payment gateways for online payments
* Room Inventory Management
- Tracking of room availability and occupancy
- Room status updates (clean, dirty, under maintenance)
* Reporting and Analytics
- Generation of various reports
- Data analysis for decision making

4. Interface
Requirements: The Hotel Management Software will interact with users through:
- Graphical User Interface (GUI) for hotel staff
- Web-based interface for online reservations
- Mobile application for guests

5. Performance Requirements
- Response time for user actions: <2 seconds
- System uptime: 99.9%
- Concurrent user support: Min 100 users
- Data processing speed: Real-time updates

6. Design Constraints
- Use of secure protocols for data transmission
- Compatibility with existing hardware and software infrastructure
- Compliance with industry standards and regulations

7. Non Functional Attributes
- Security: Encryption of sensitive data
- Portability: Compatibility with multiple devices & platforms

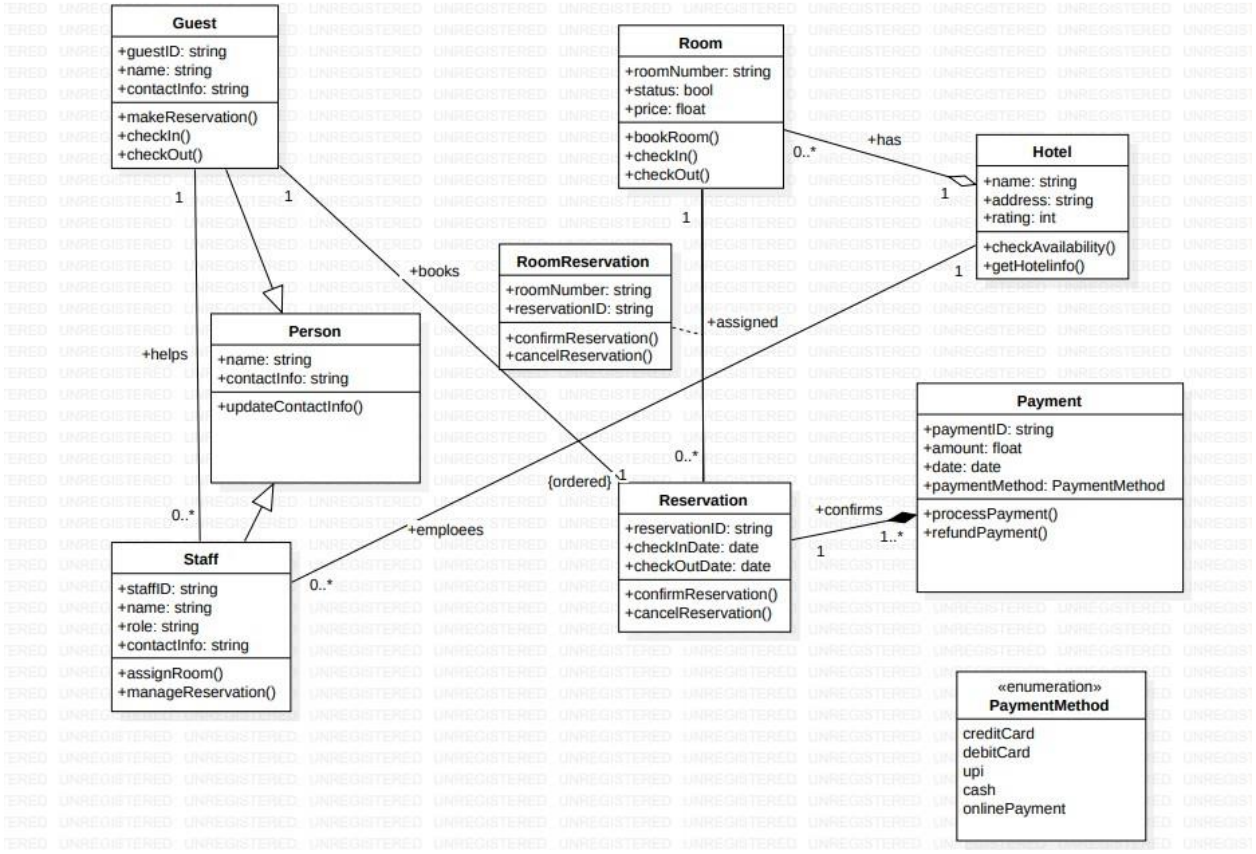


- Reliability: Minimal downtime, data backup and recovery mechanisms.
- Scalability: Modular design for future enhancements.
- Data Integrity: Data validation & error handling.

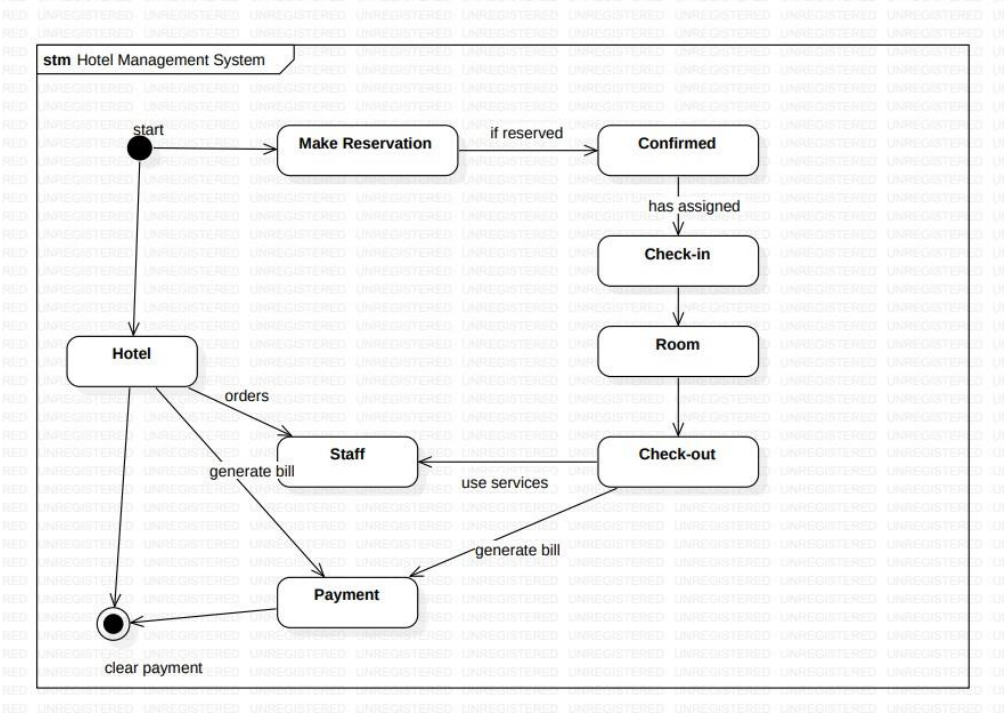
3. Preliminary Schedule and Budget

The development of the Hotel Management Software is estimated to take 6 months with a budget of 10 lakhs to develop a HMS which includes design, development, testing & deployment.

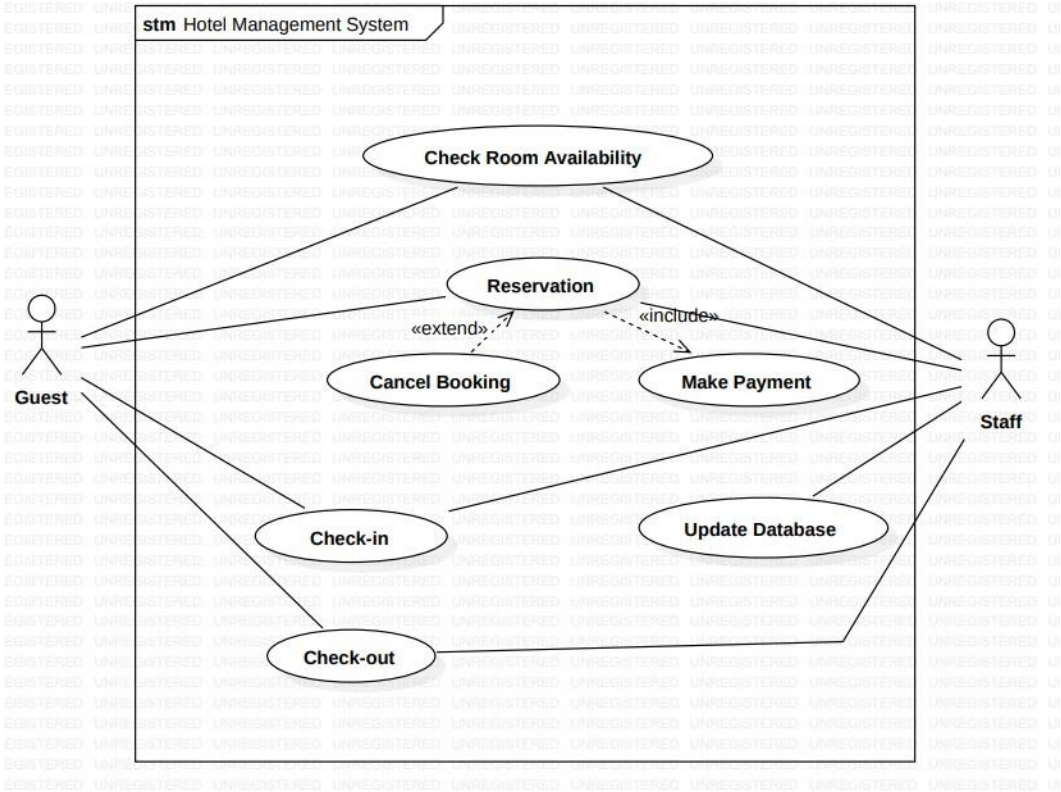
1.3 Class Diagram



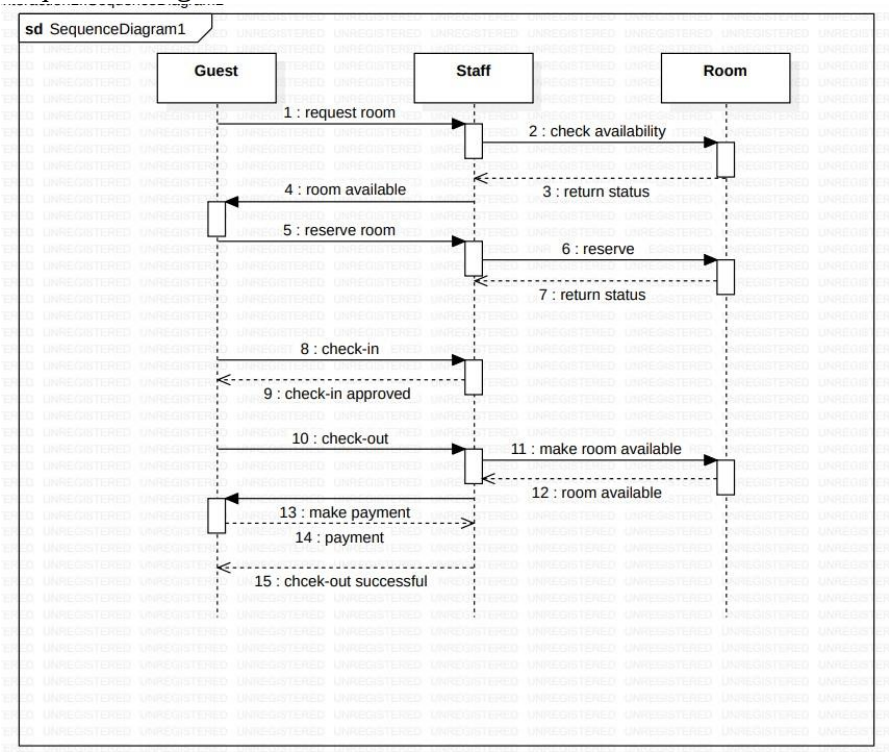
1.4 State Diagram



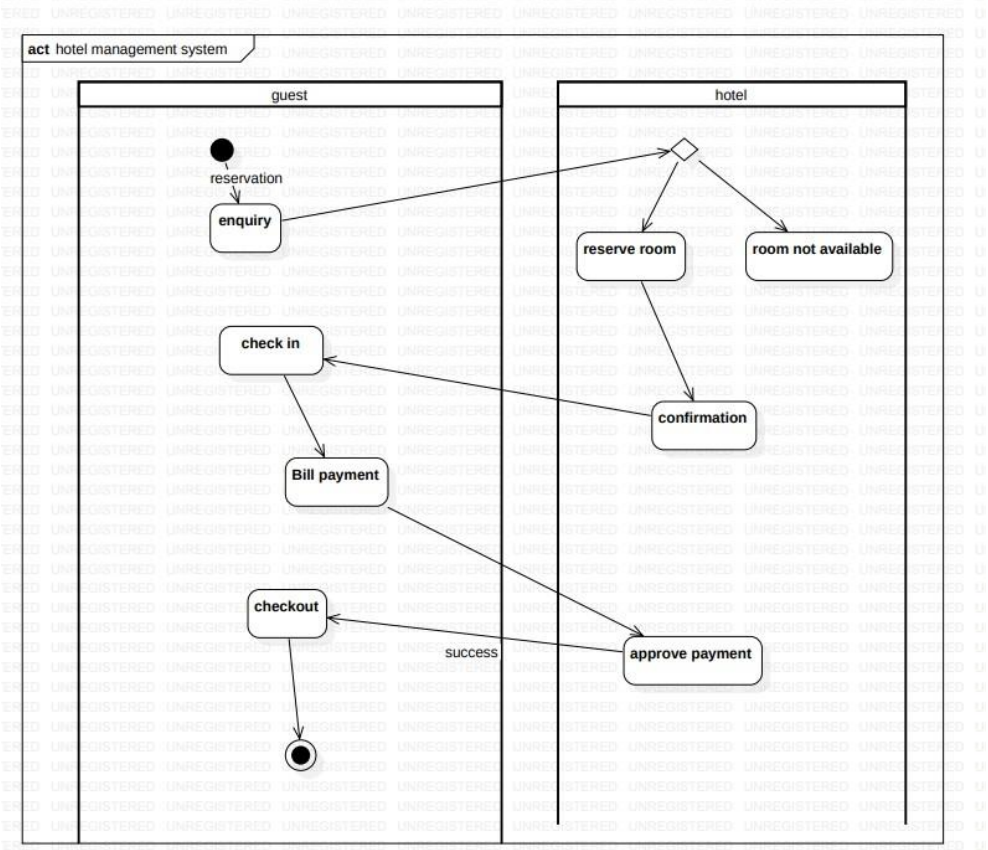
1.5 Use Case Diagram



1.6 Sequence Diagram

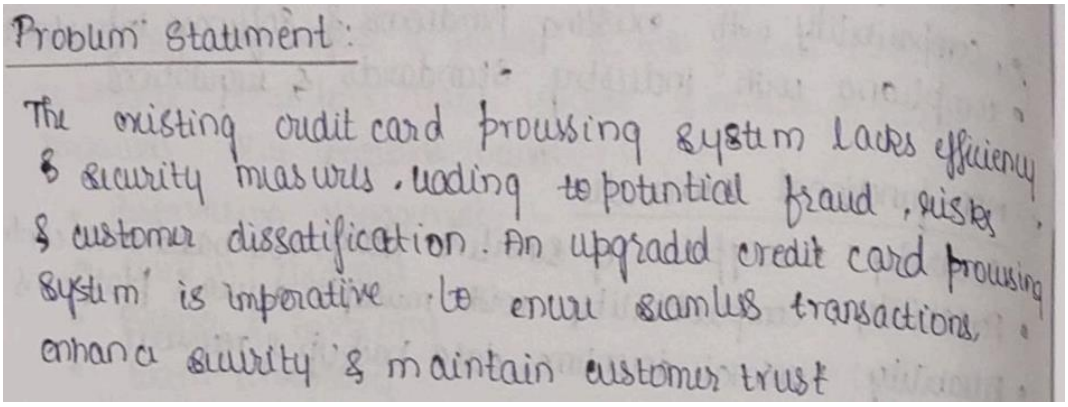


1.7 Activity diagram



2. Credit Card Processing System

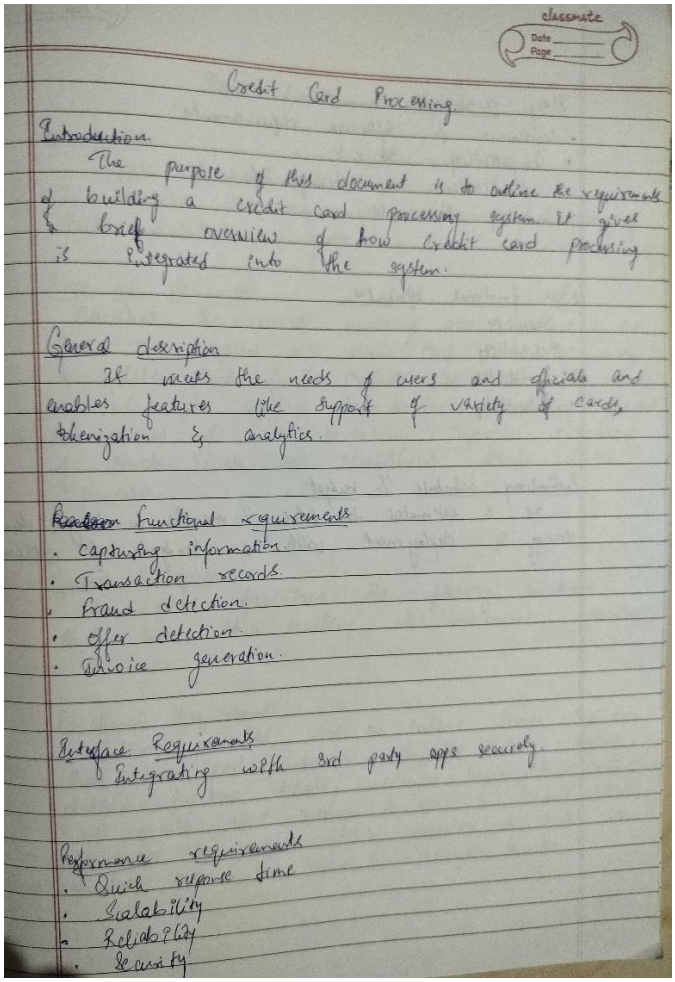
2.1 Problem Statement



Problem Statement:

The existing credit card processing system lacks efficiency & security measures, leading to potential fraud, risks & customer dissatisfication. An upgraded credit card processing system is imperative to ensure seamless transactions, enhance security & maintain customer trust

2.2 SRS-Software Requirements Specification



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Credit Card Processing

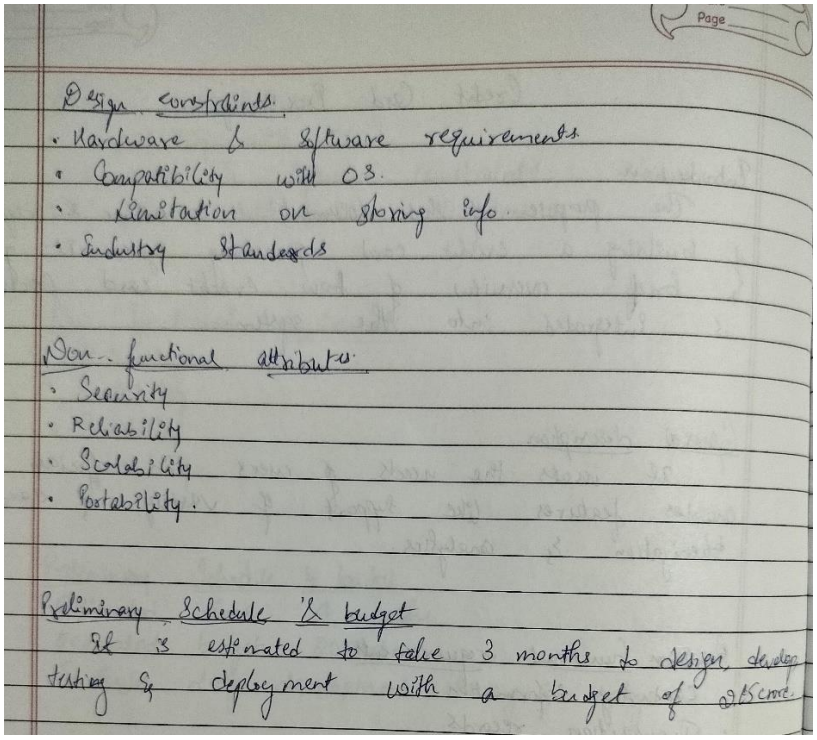
Introduction.
The purpose of this document is to outline the requirements of building a credit card processing system. It gives a brief overview of how credit card processing is integrated into the system.

General description
It meets the needs of users and officials and enables features like support of variety of cards, tokenization & analytics.

Functional requirements
- capturing information
- Transaction records
- Fraud detection
- Offer detection
- Invoice generation

Interface Requirements
Integrating with 3rd party apps securely

Performance requirements
- Quick response time
- Scalability
- Reliability
- Security

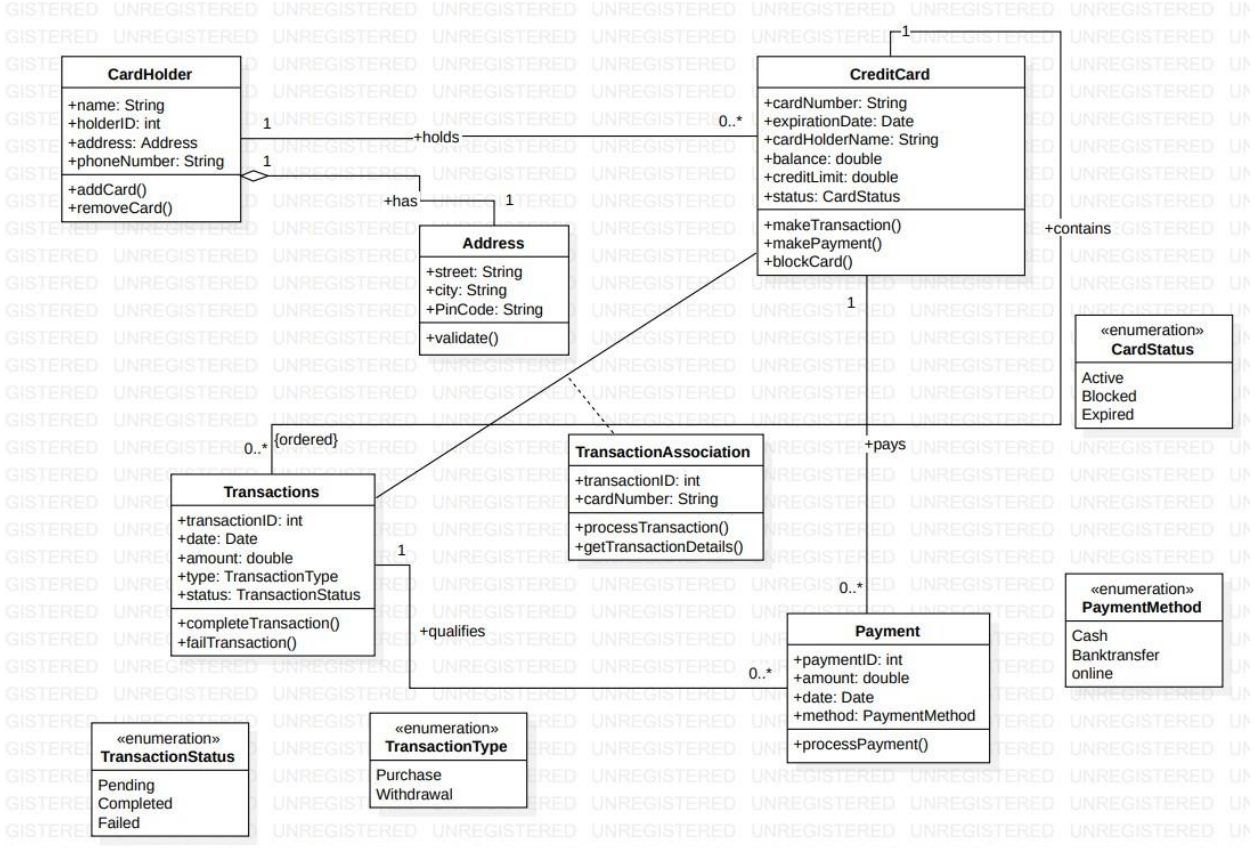


Design constraints.
- Hardware & Software requirements
- Compatibility with OS.
- Limitation on storing info.
- Industry Standards

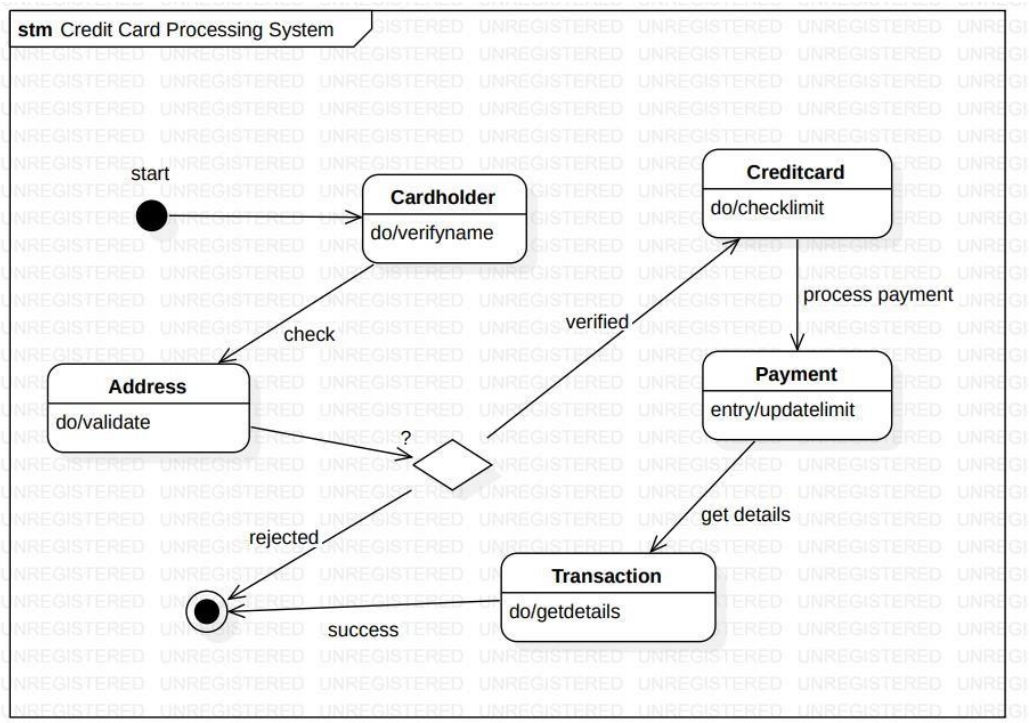
Non-functional attributes.
- Security
- Reliability
- Scalability
- Portability.

Preliminary Schedule & budget
It is estimated to take 3 months to design, develop, testing & deployment with a budget of 25 crore.

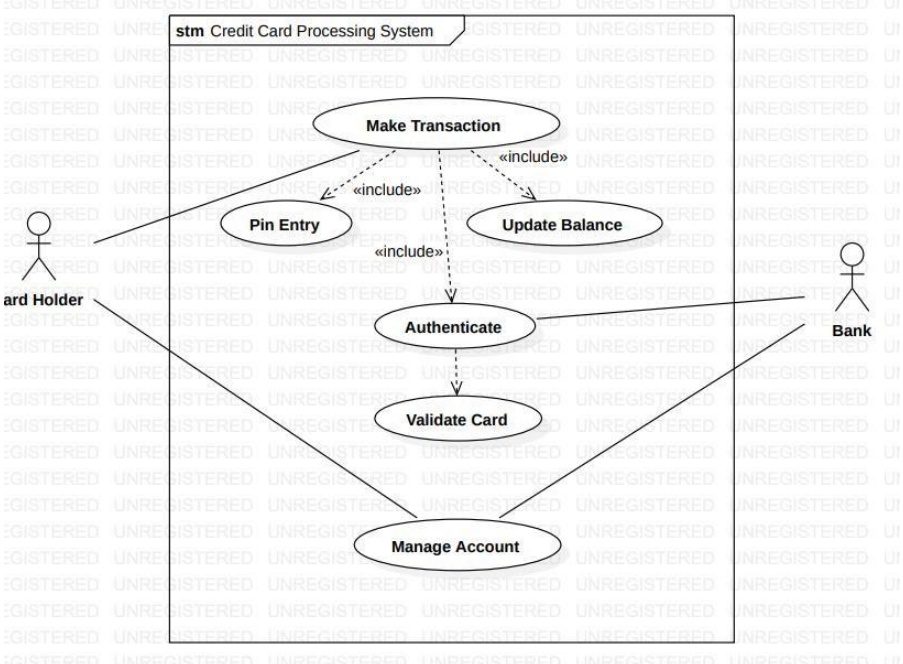
2.3 Class Diagram



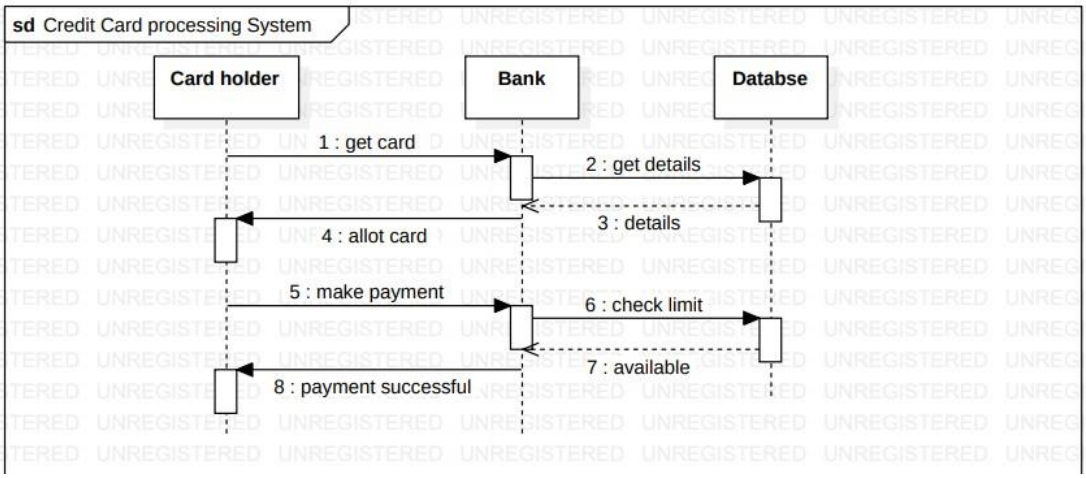
2.4 State Diagram



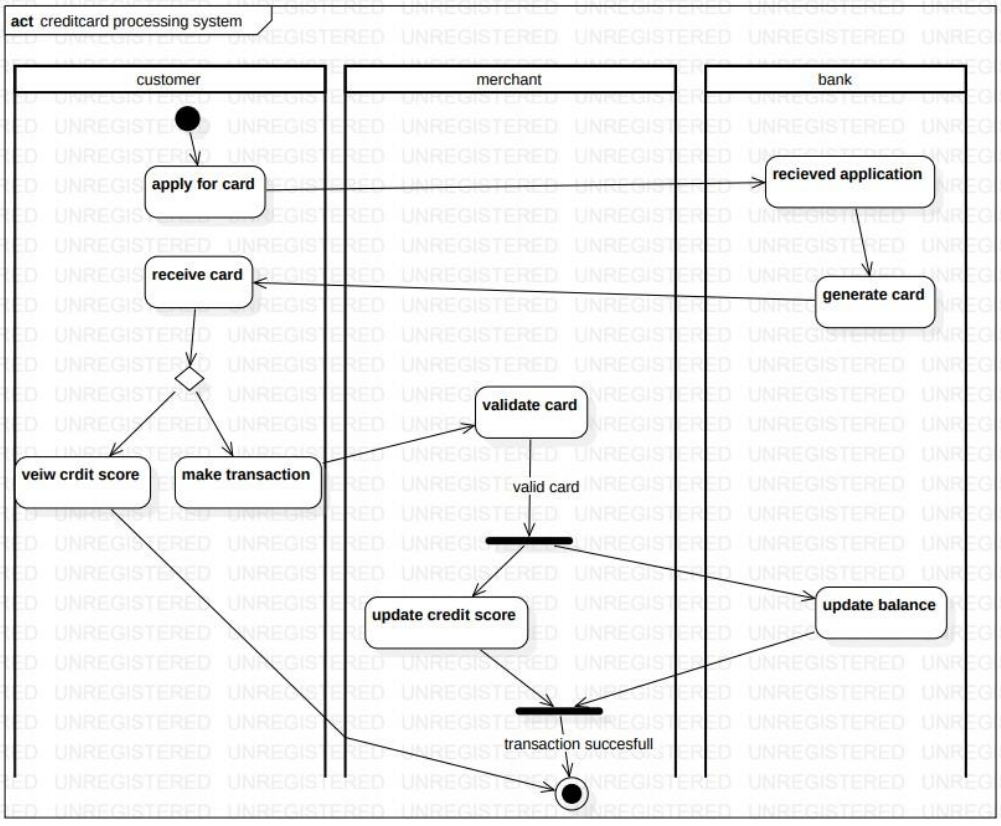
2.5 Use Case Diagram



2.6 Sequence Diagram

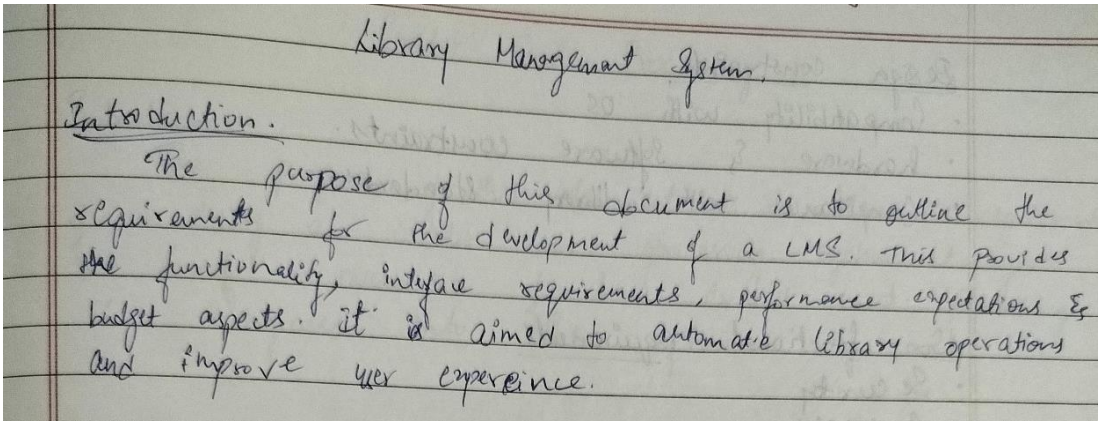


2.7 Activity diagram



3. Library Management System

3.1 Problem Statement

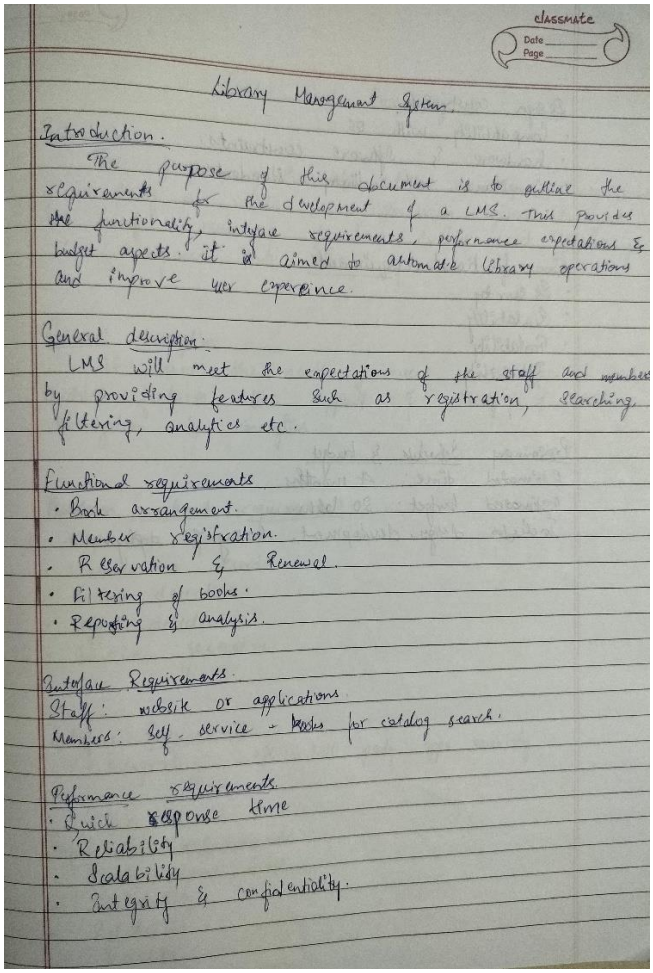


Library Management System.

Introduction.

The purpose of this document is to outline the requirements for the development of a LMS. This provides the functionality, intyface requirements, performance expectations & budget aspects. it is aimed to automate library operations and improve user experience.

3.2 SRS-Software Requirements Specification



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Library Management System.

Introduction.

The purpose of this document is to outline the requirements for the development of a LMS. This provides the functionality, intyface requirements, performance expectations & budget aspects. it is aimed to automate library operations and improve user experience.

General description.

LMS will meet the expectations of the staff and members by providing features such as registration, searching, filtering, analytics etc.

Functional requirements

- Book arrangement.
- Member registration.
- Reservation & Renewal.
- Filtering of books.
- Reporting & analysis.

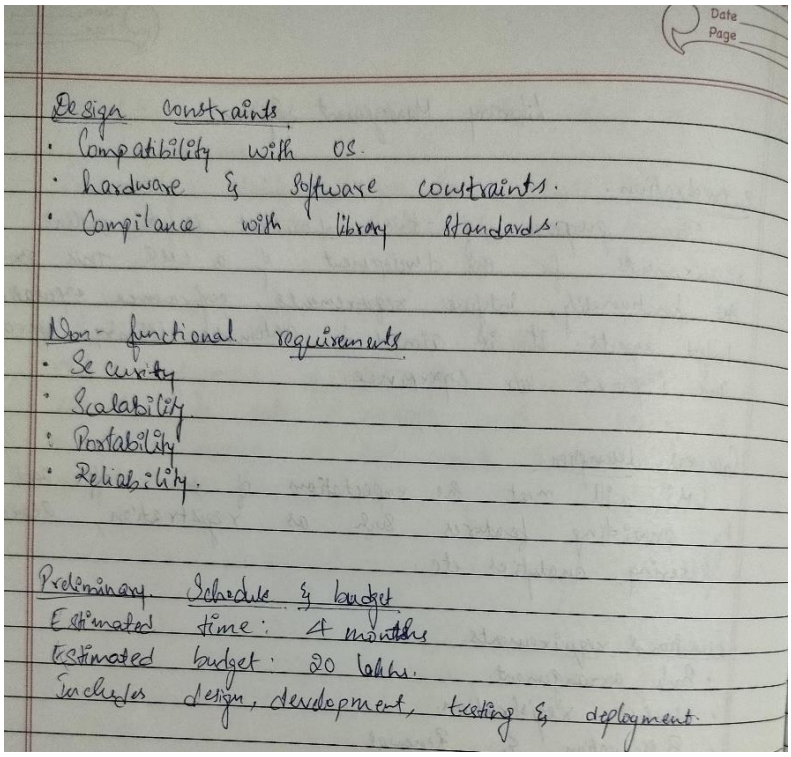
Intyface Requirements.

Staff: website or applications

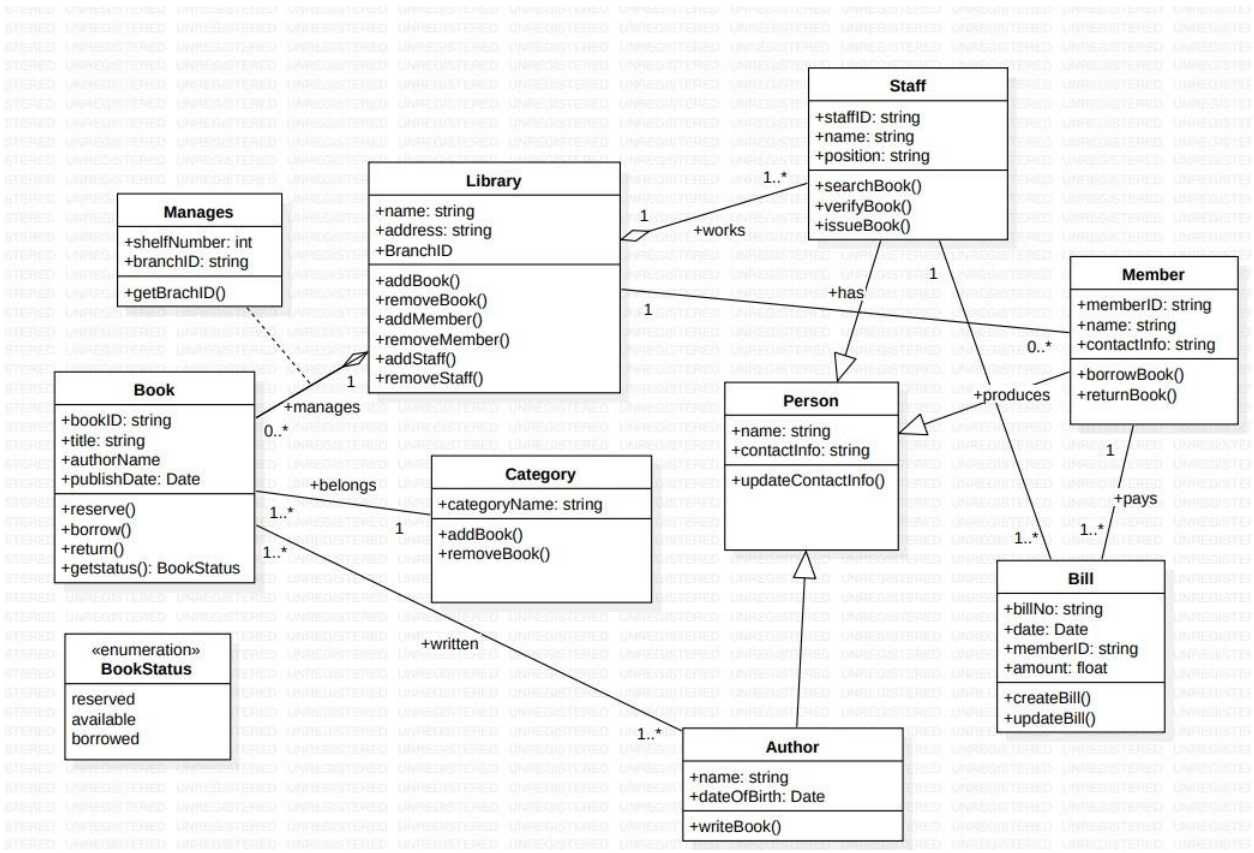
Members: Self - service - kiosks for catalog search.

Performance requirements

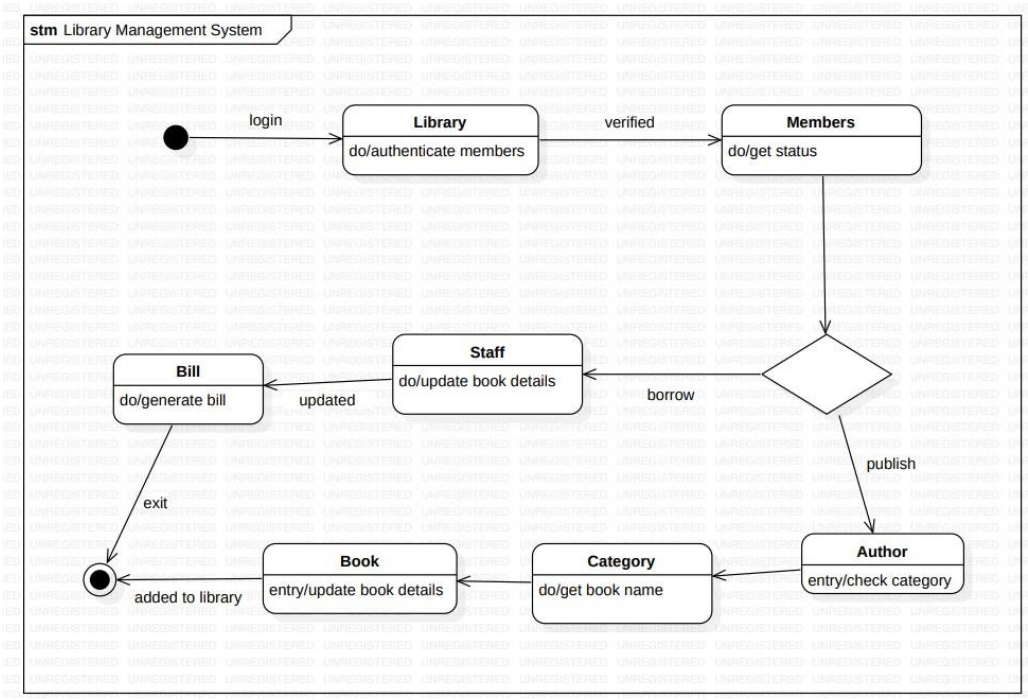
- Quick response time
- Reliability
- Scalability
- Integrity & confidentiality.



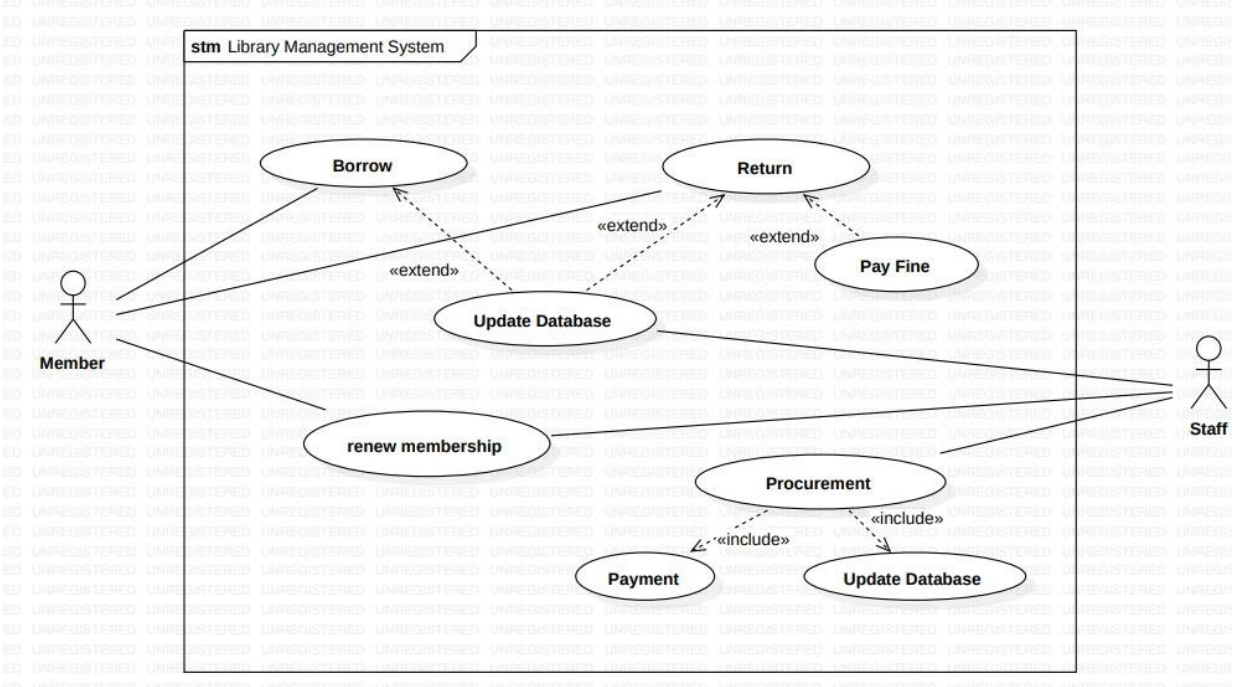
3.3 Class Diagram



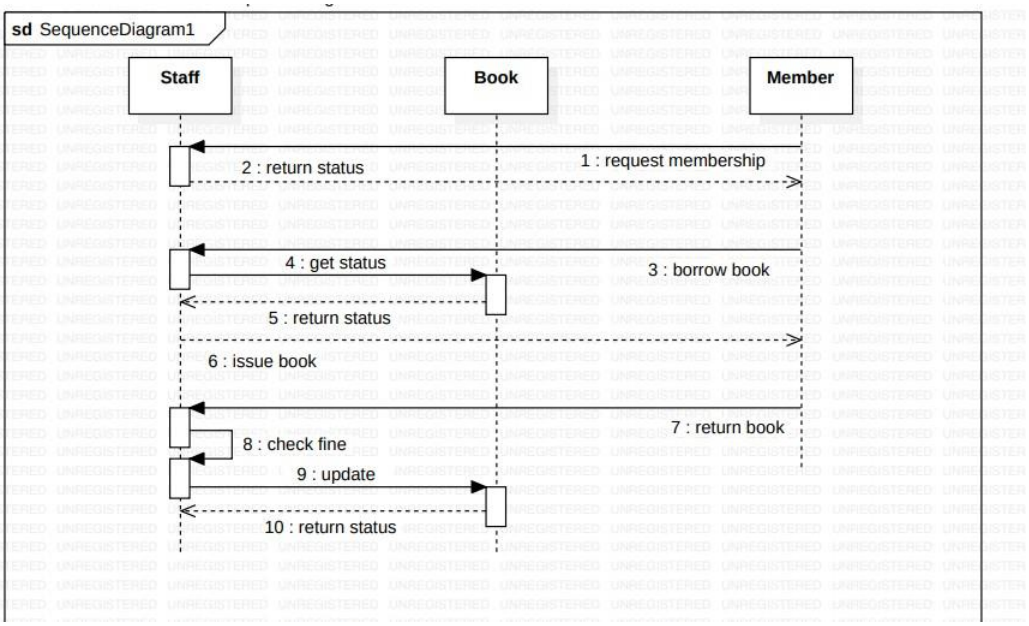
3.4 State Diagram



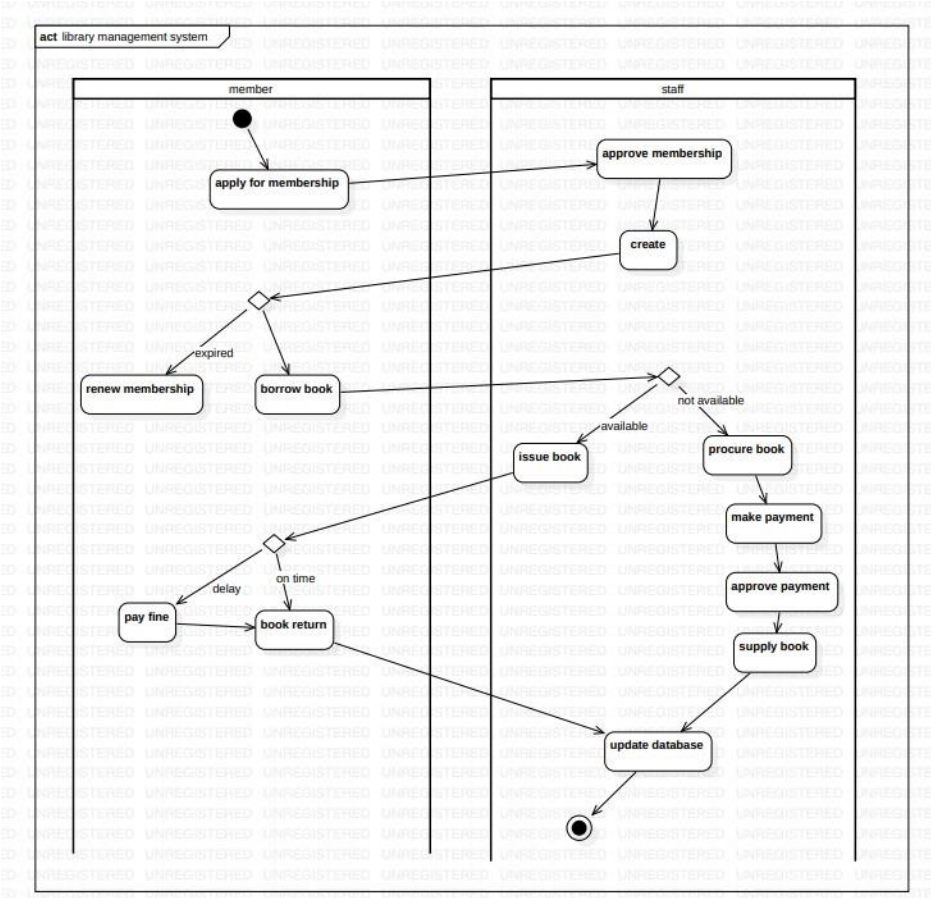
3.5 Use Case Diagram



3.6 Sequence Diagram

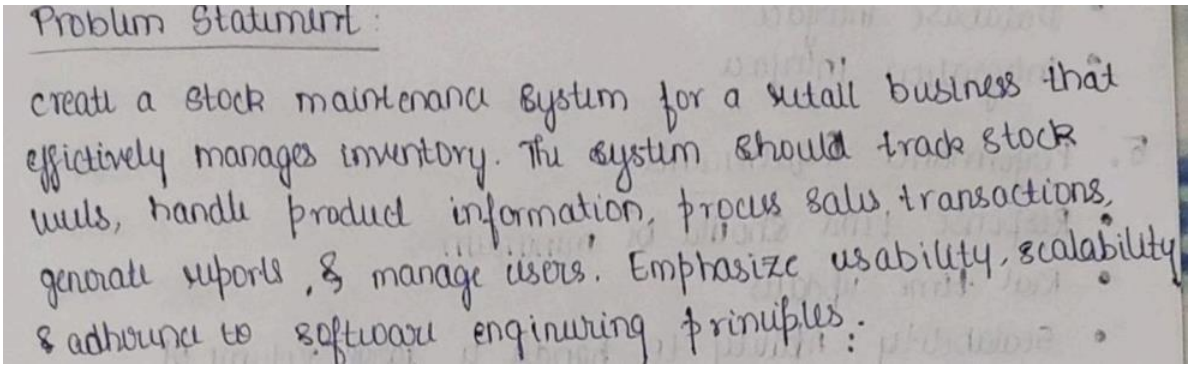


3.7 Activity diagram



4. Stock Maintenance System

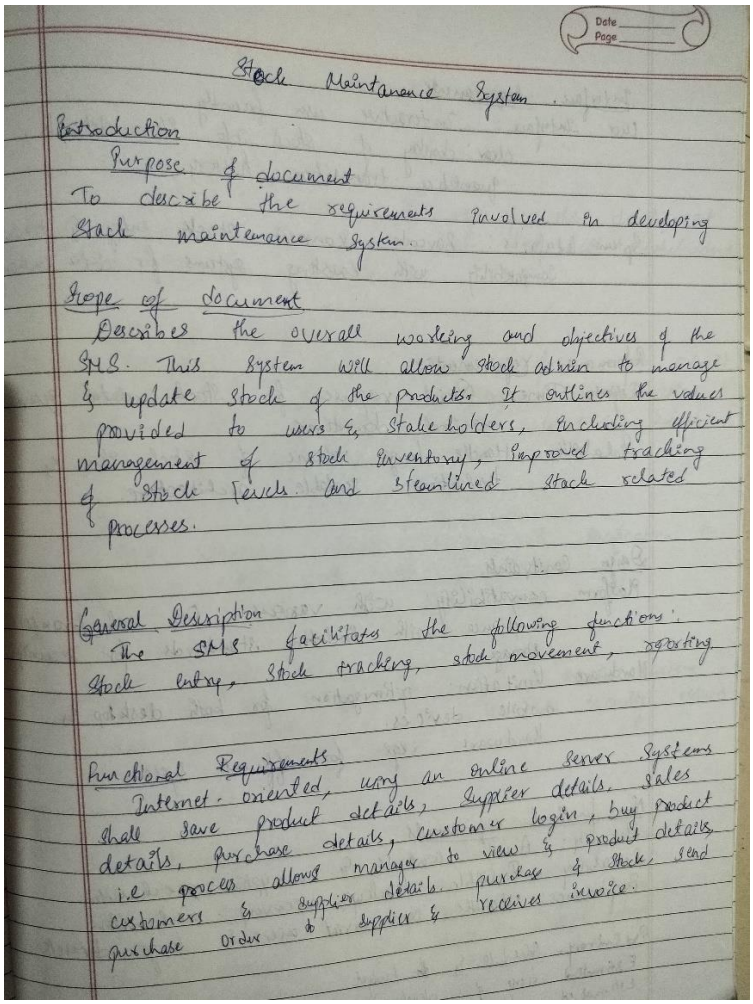
4.1 Problem Statement



Problem Statement:

create a stock maintenance system for a retail business that effectively manages inventory. The system should track stock levels, handle product information, process sale transactions, generate reports, & manage users. Emphasize usability, scalability & adherence to software engineering principles.

4.2 SRS-Software Requirements Specification



Stock Maintenance System

Introduction

Purpose of document

To describe the requirements involved in developing stock maintenance system.

Scope of document

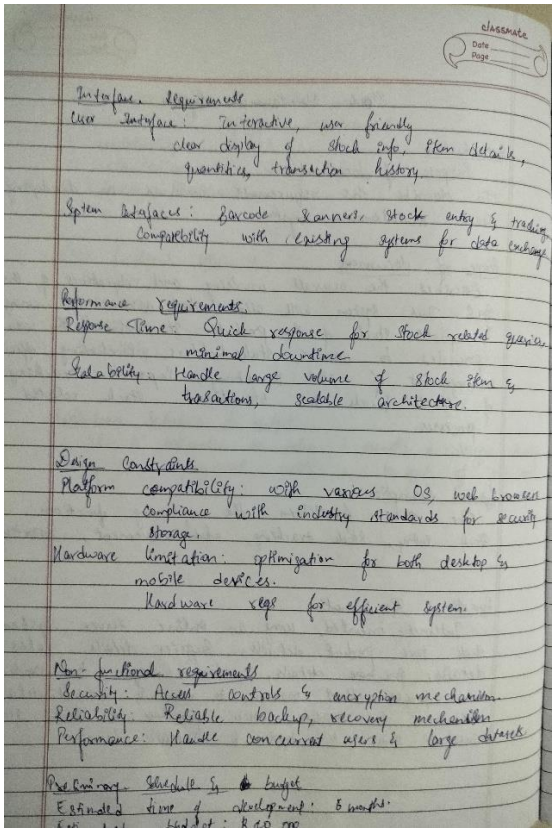
Describes the overall working and objectives of the SMS. This system will allow stock admin to manage & update stock of the products. It outlines the values provided to users & stake holders, including efficient management of stock inventory, improved tracking of stock levels and streamlined stock related processes.

General Description

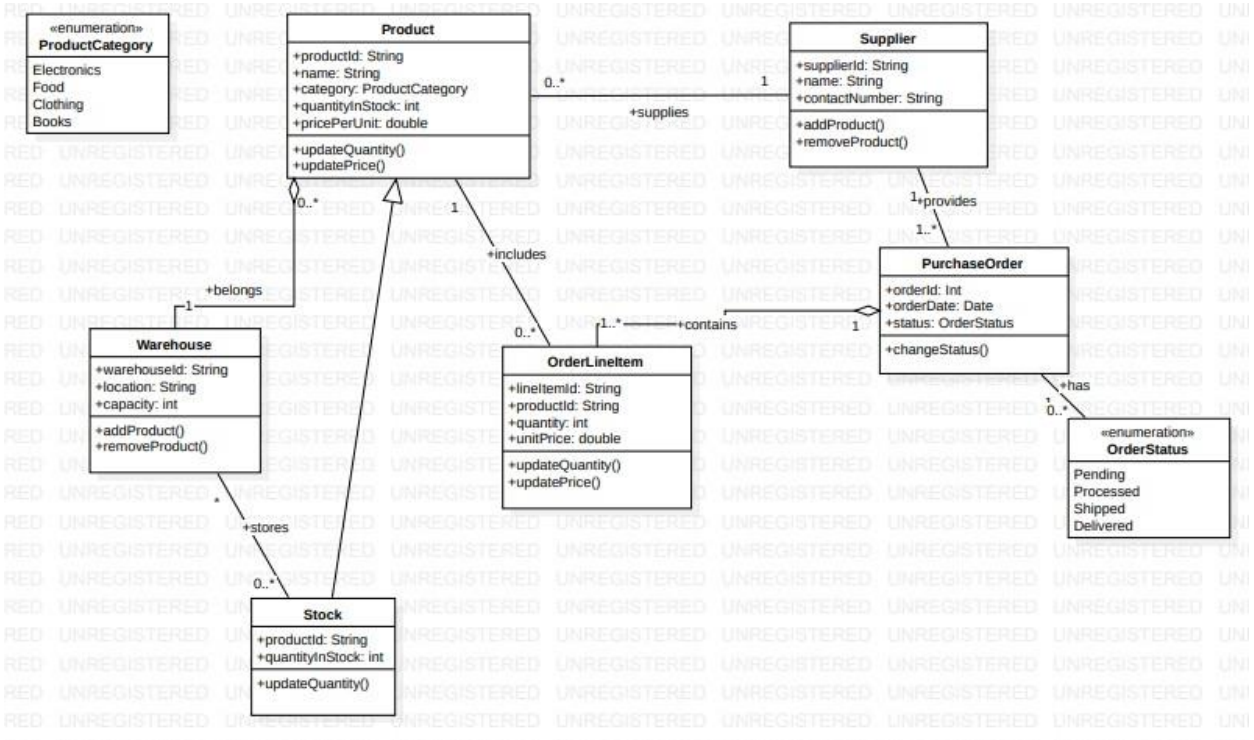
The SMS facilitates the following functions: Stock entry, Stock tracking, stock movement, reporting

Functional Requirements

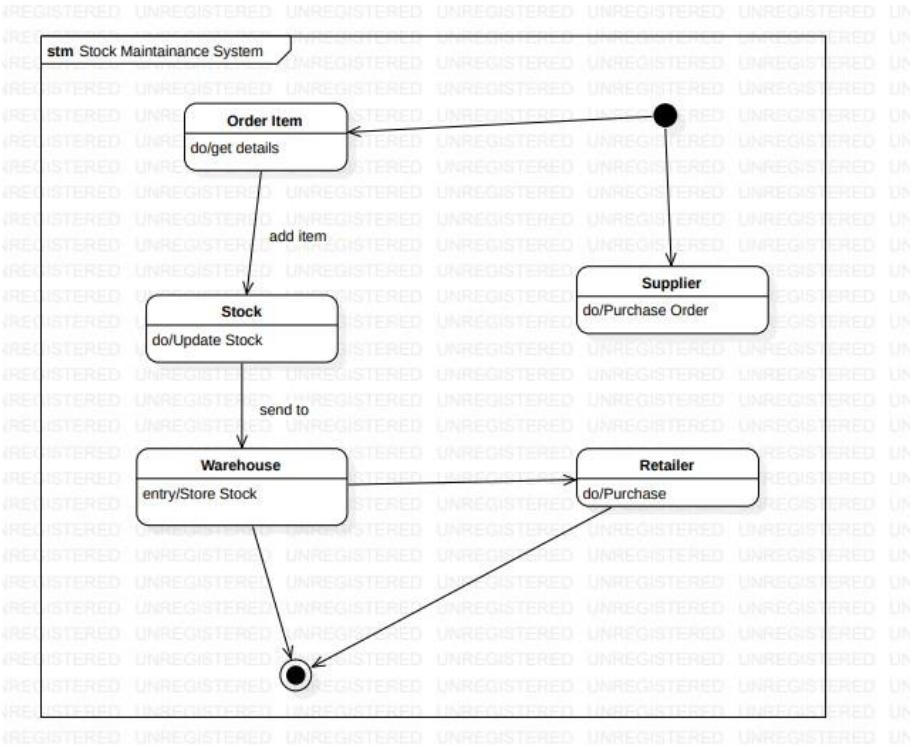
Internet-oriented, using an online server. Systems shall save product details, Supplier details, Sales details, purchase details, customer login, buy product i.e process allows manager to view & product details customers & supplier details. purchase & Stock, send purchase order to supplier & receives invoice.



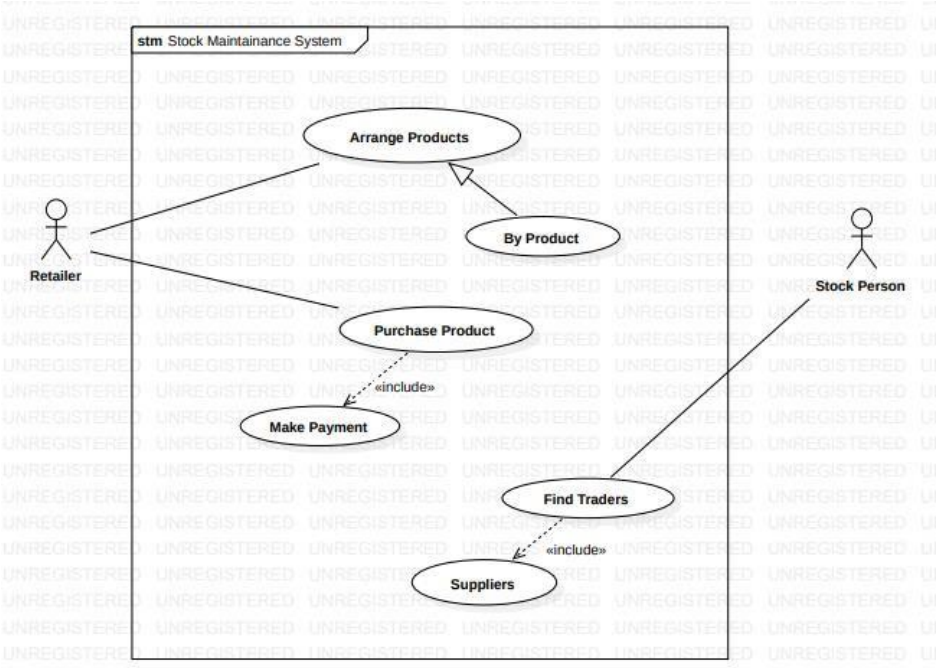
4.3 Class Diagram



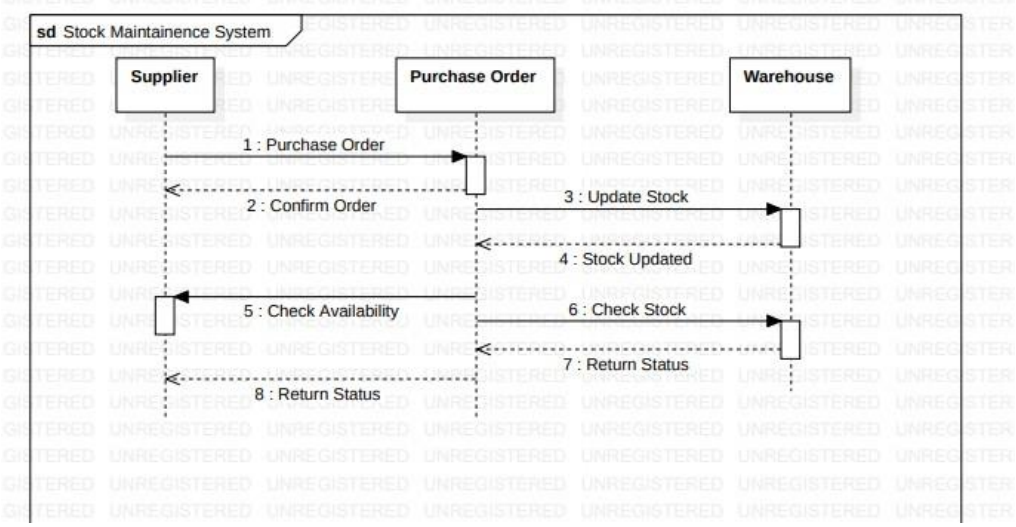
4.4 State Diagram



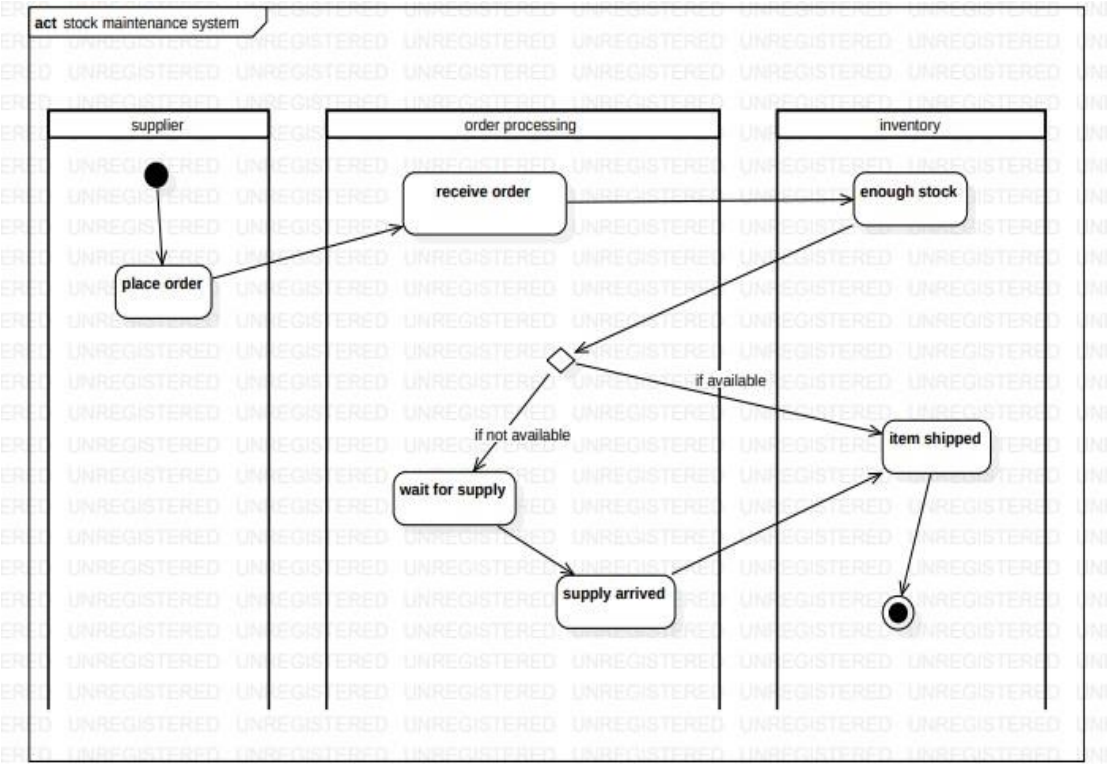
4.5 Use Case Diagram



4.6 Sequence Diagram

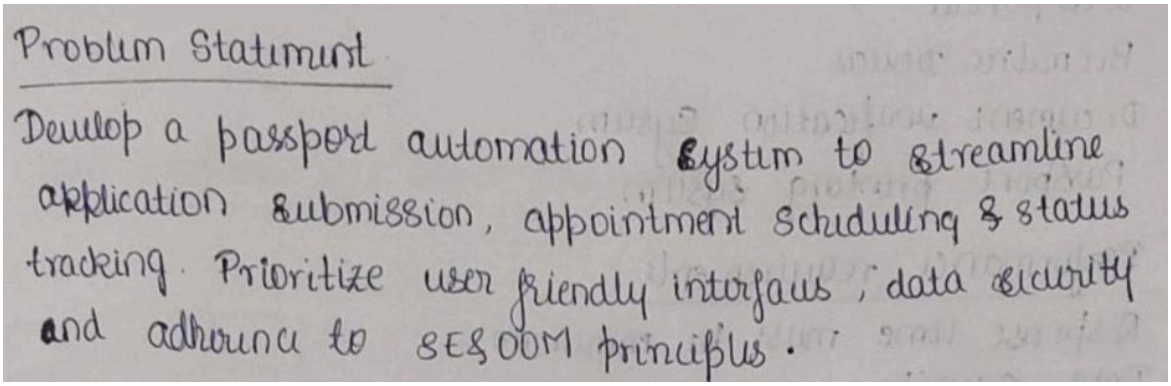


4.7 Activity diagram



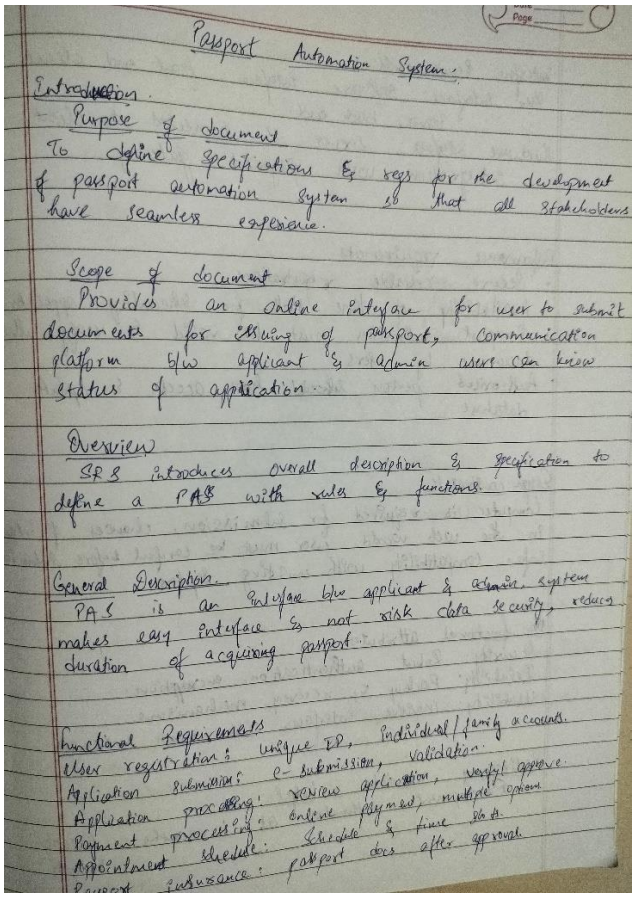
5. Passport Automation System

5.1 Problem Statement


Problem Statement

Develop a passport automation system to streamline application submission, appointment scheduling & status tracking. Prioritize user friendly interfaces, data security and adherence to SE&OOM principles.

5.2 SRS-Software Requirements Specification


Passport Automation System:

Introduction:

Purpose of document

To define specifications & reqs for the development of passport automation system & that all stakeholders have seamless experience.

Scope of document

Provides an online interface for user to submit documents for issuing of passport, communication platform b/w applicant & admin users can know status of application.

Overview

SRS introduces overall description & specification to define a PAS with roles & functions.

General Description

PAS is an interface b/w applicant & admin, system makes easy interface & not risk data security, reduces duration of acquiring passport.

Functional Requirements

User registration: unique ID, individual/family accounts.

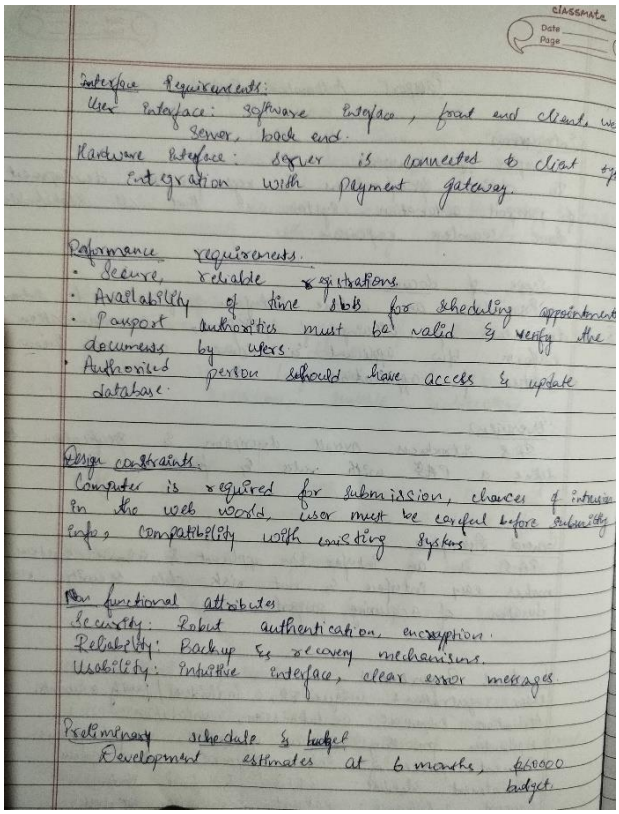
Application submission: e-submission, validation.

Application processing: review application, verify/approve.

Payment processing: online payment, multiple options

Appointment Schedule: Schedule & time slot

Passport issuance: passport docs after approval.



Interface Requirements:
User Interface: software interface, front end clients, we
Server, back end.
Hardware Interface: Server is connected to client
Integration with payment gateway.

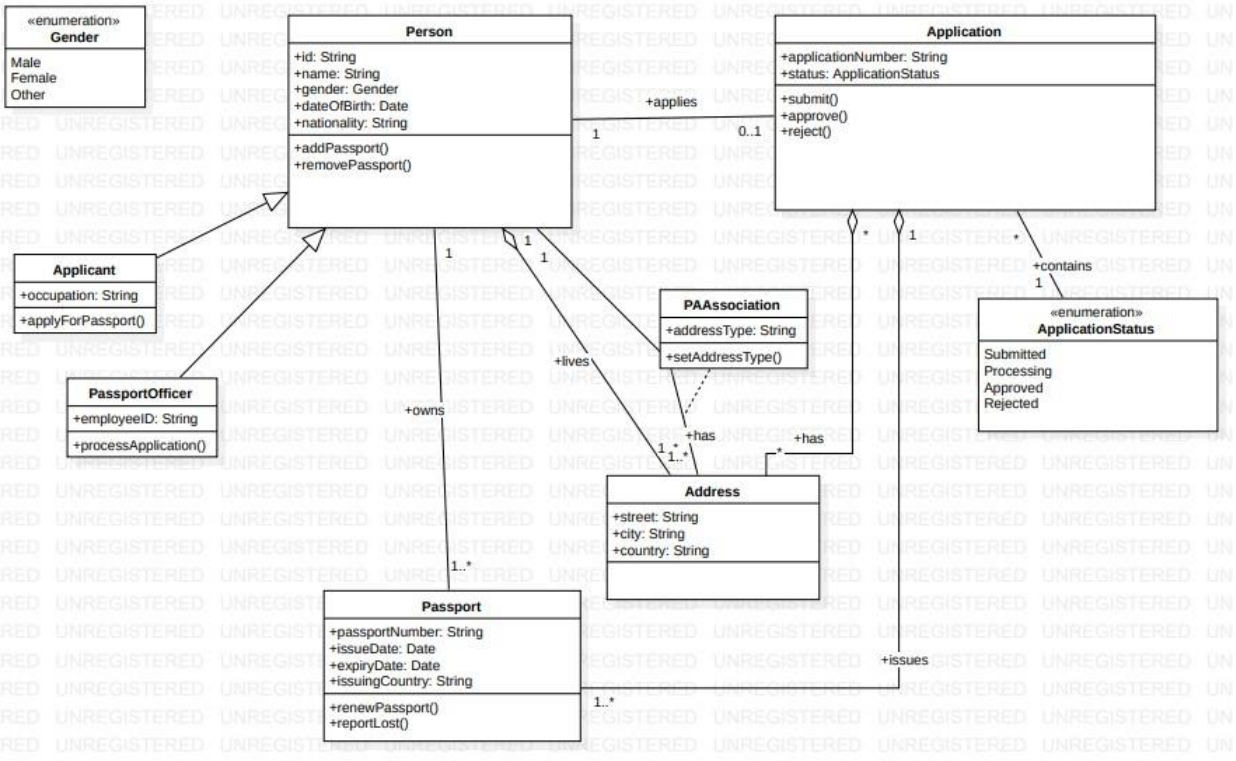
Performance requirements.
- Secure, reliable registrations.
- Availability of time slots for scheduling appointments
- Passport authorities must be valid & verify the documents by users
- Authorized person should have access & update database.

Design constraints.
Computer is required for submission, chances of intrusion in the web world, user must be careful before submitting
Ensure compatibility with existing systems

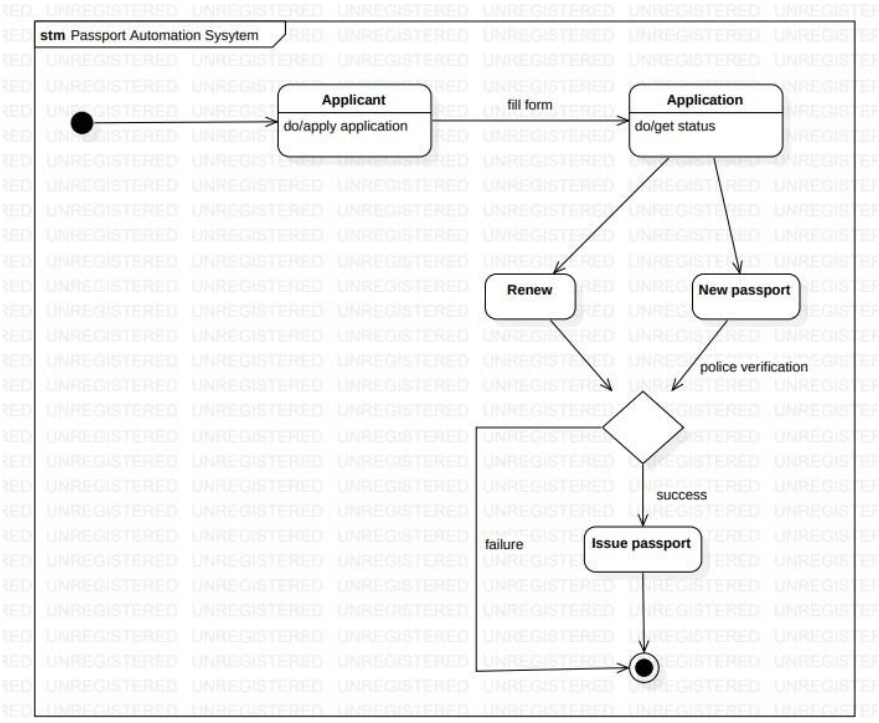
Non functional attributes
Security: Robust authentication, encryption.
Reliability: Backup & recovery mechanisms.
Usability: Intuitive interface, clear error messages

Preliminary schedule & budget
Development estimates at 6 months, ₹50000 budget.

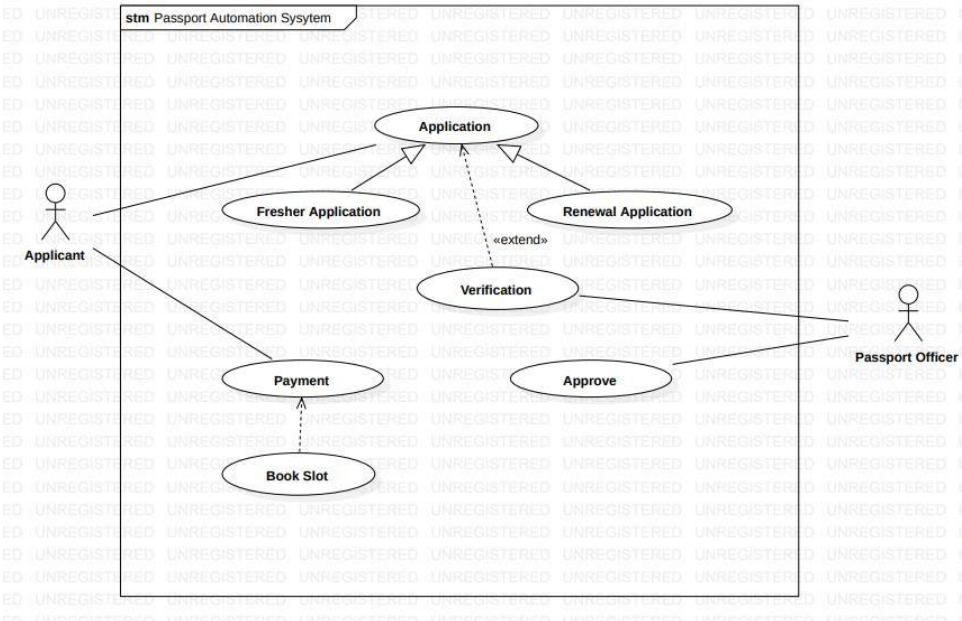
5.3 Class Diagram



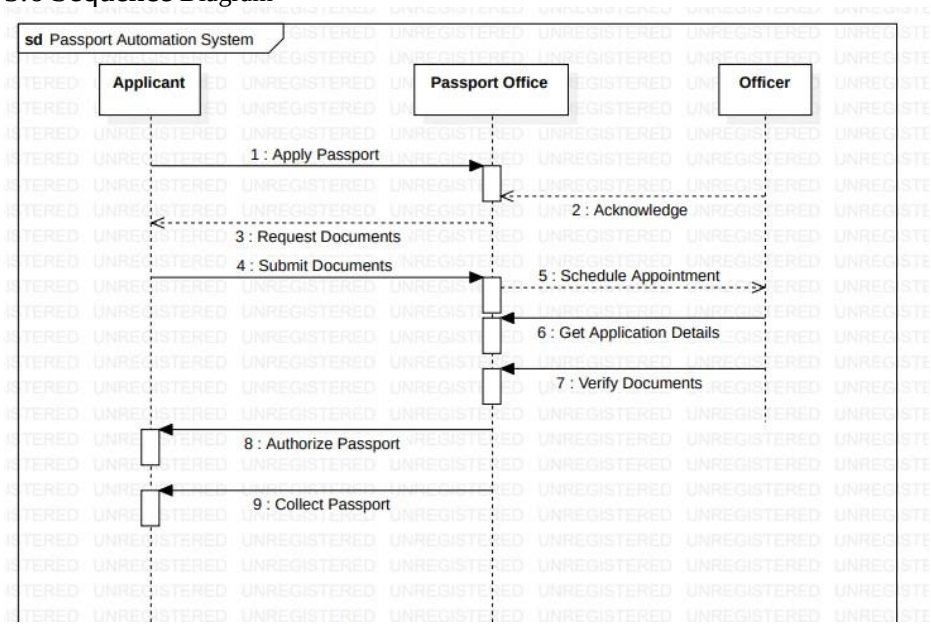
5.4 State Diagram



5.5 Use Case Diagram



5.6 Sequence Diagram



5.6 Activity diagram