

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:

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1. Hotel Management System

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

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Software Requirement Specification (SRS)

1. Hotel Management System

1.1 Introduction

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

1.1.1 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 room availability, select rooms and pay for rooms. 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

* 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: < 5 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

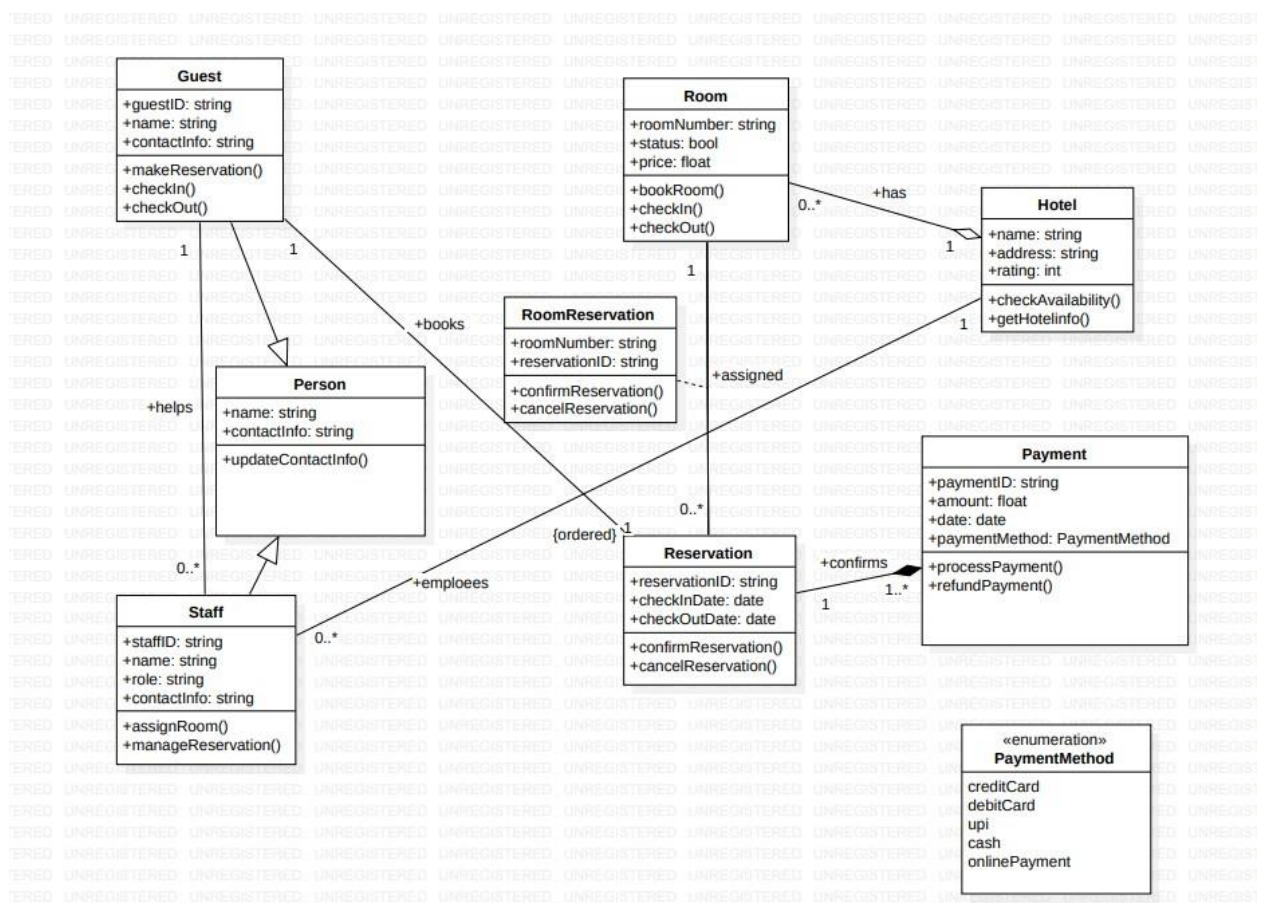
- Security: Encryption of sensitive data
- Reliability: Compatibility with multiple devices & platforms

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

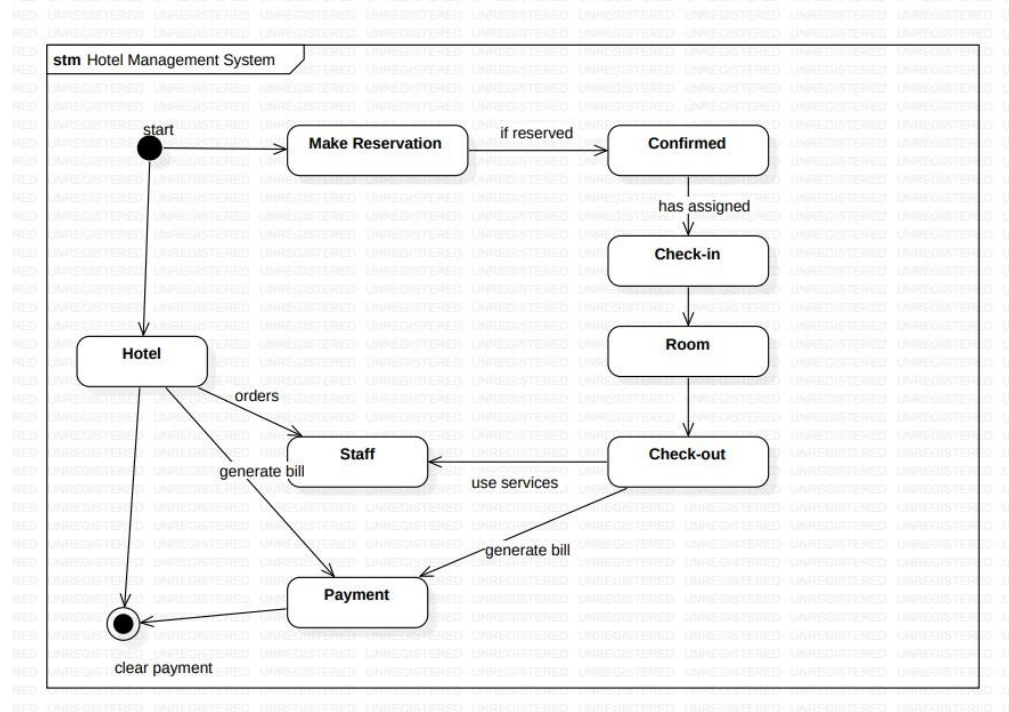
3. Preliminary Schedule and Budget

The development of the Hotel Management Software is estimated to take 6 months with a budget of ₹50,00,000 to develop a HMS which includes design, development, testing & deployment.

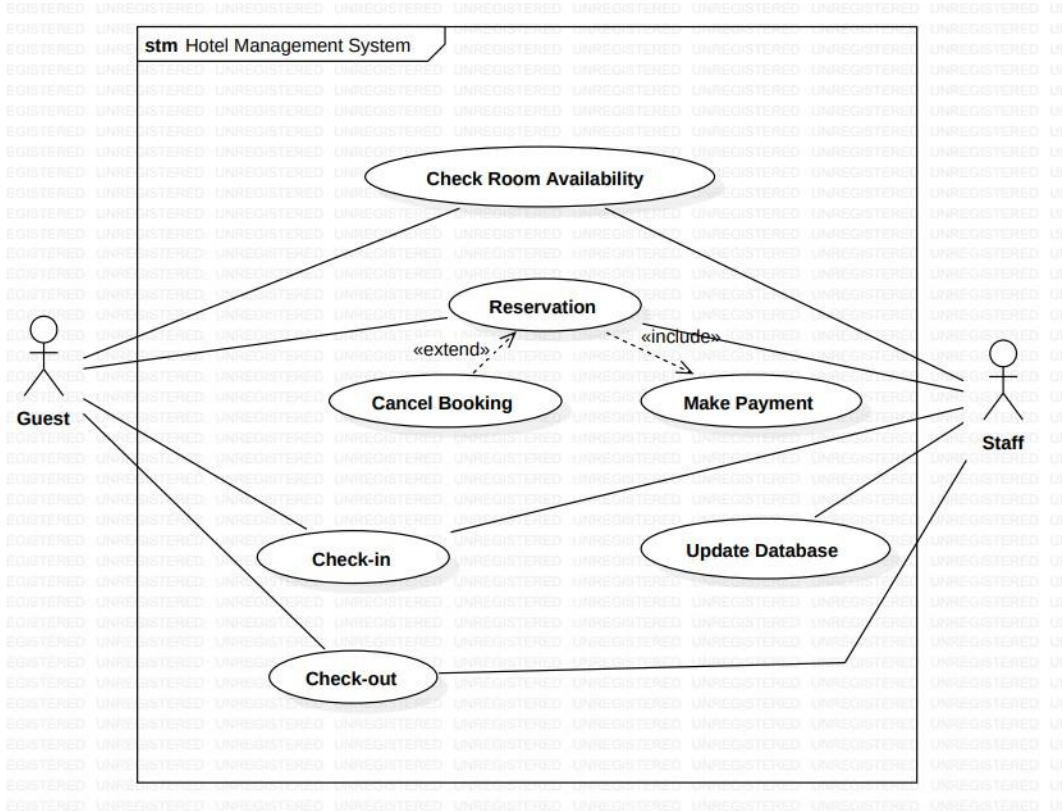
1.3 Class Diagram



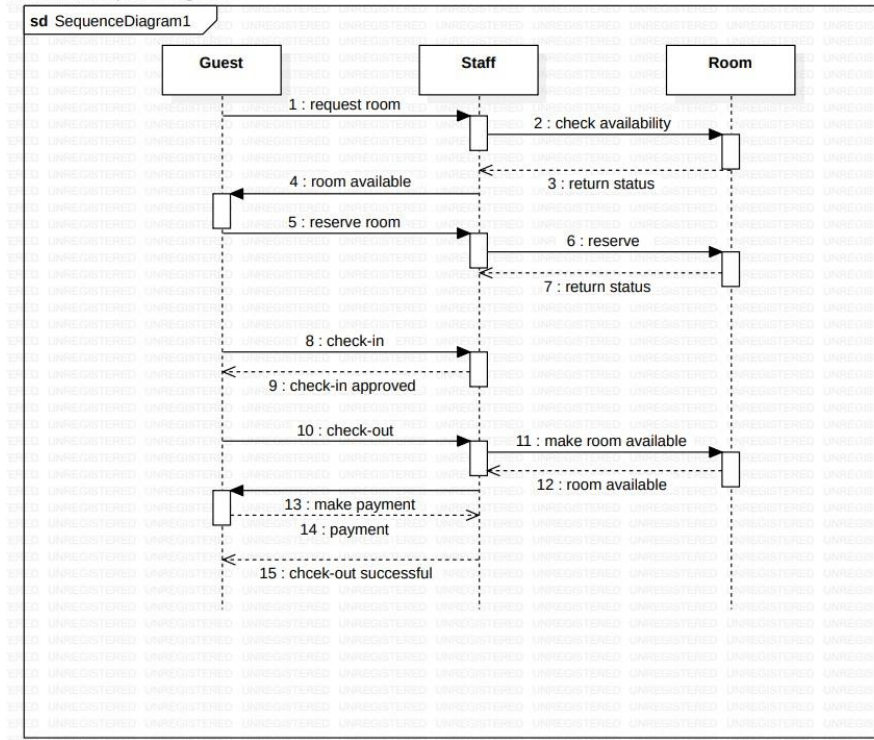
1.4 State Diagram



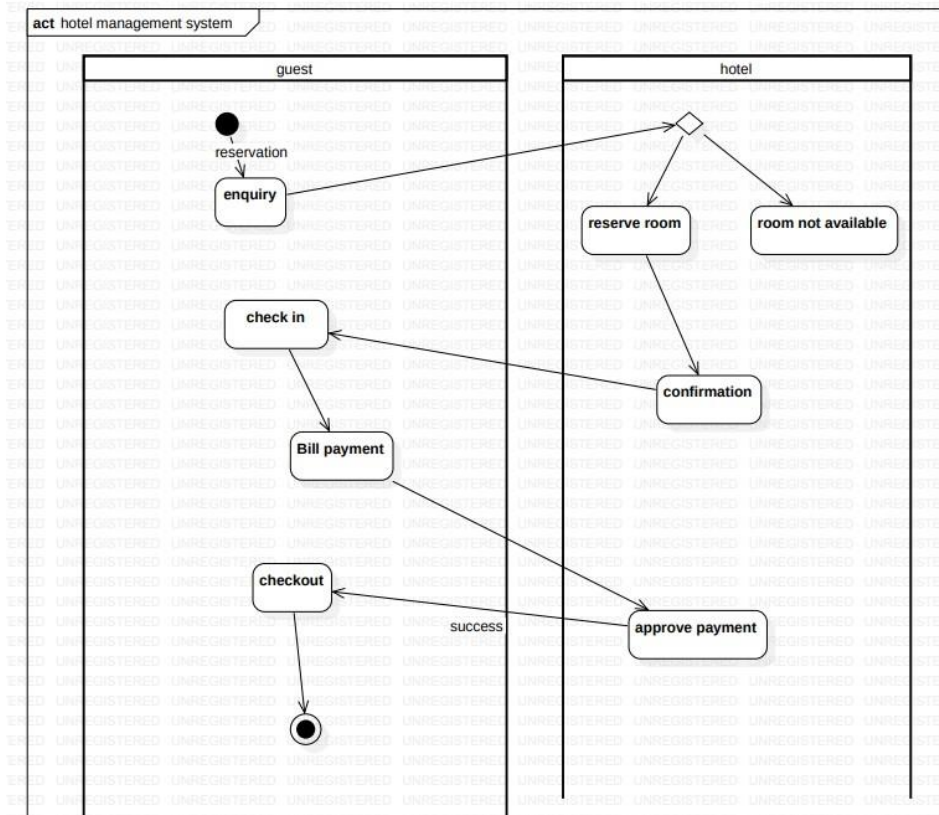
1.5 Use Case Diagram



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 dissatisfaction. 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, authorization & analytics.

Functional requirements

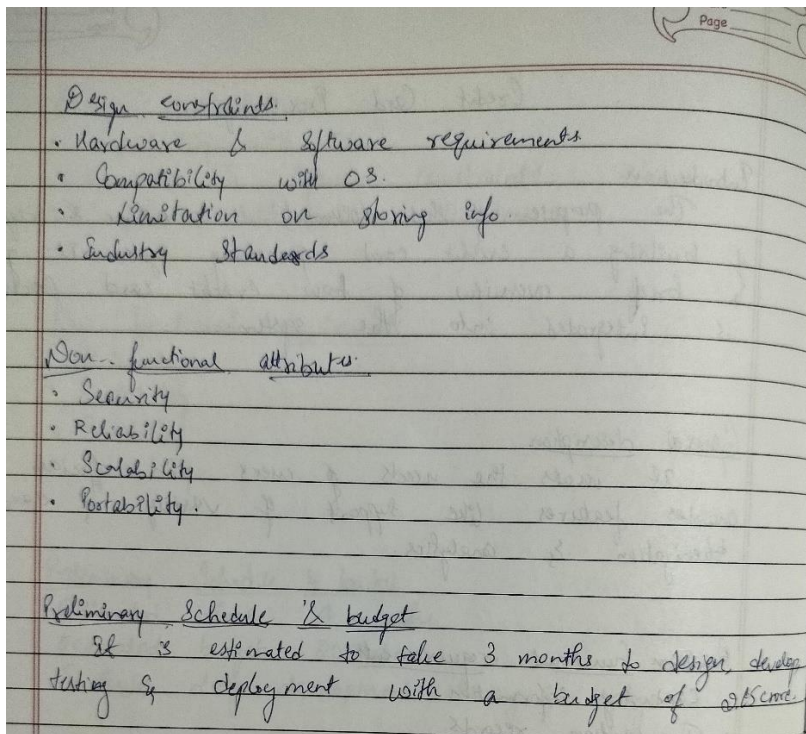
- capturing information
- Transaction records
- Fraud detection
- offer detection
- advice generation

Interface Requirements

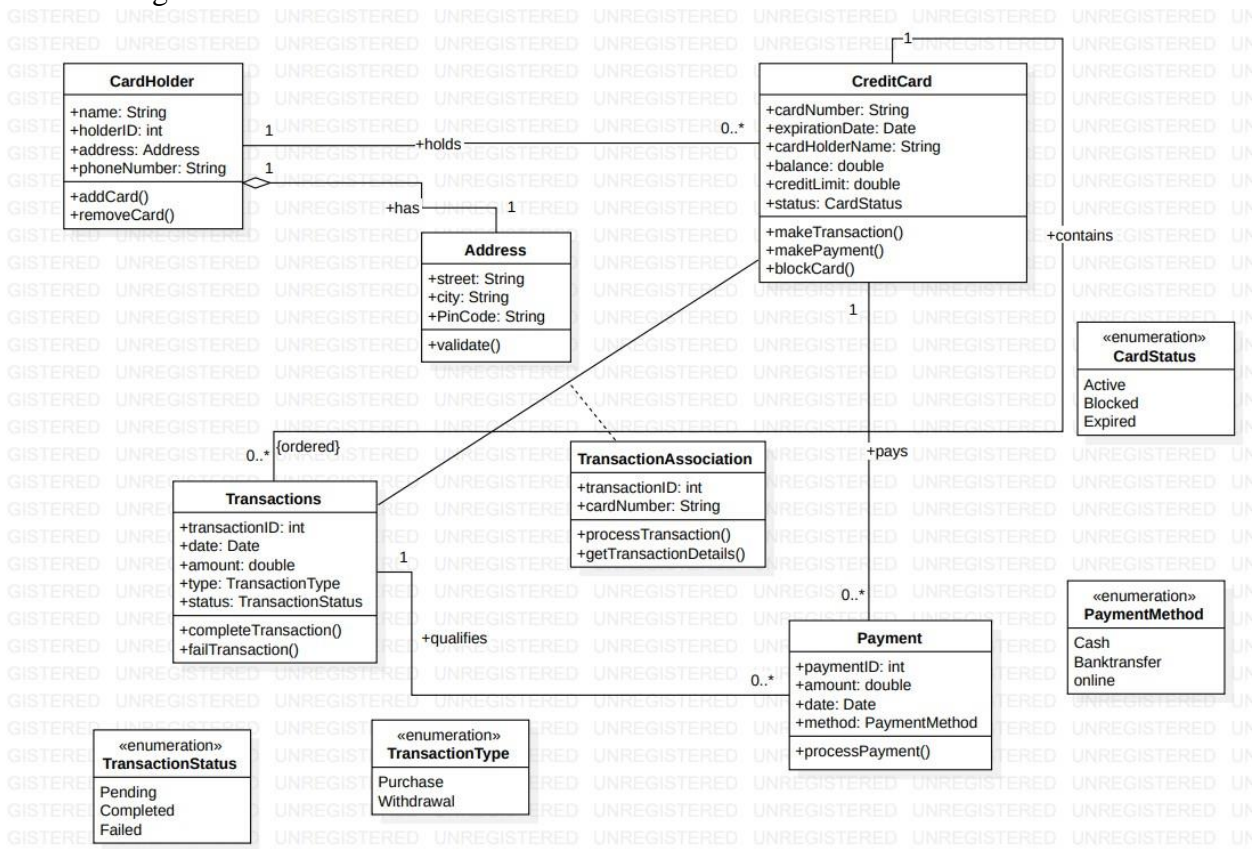
Integrating with 3rd party apps securely

Performance requirements

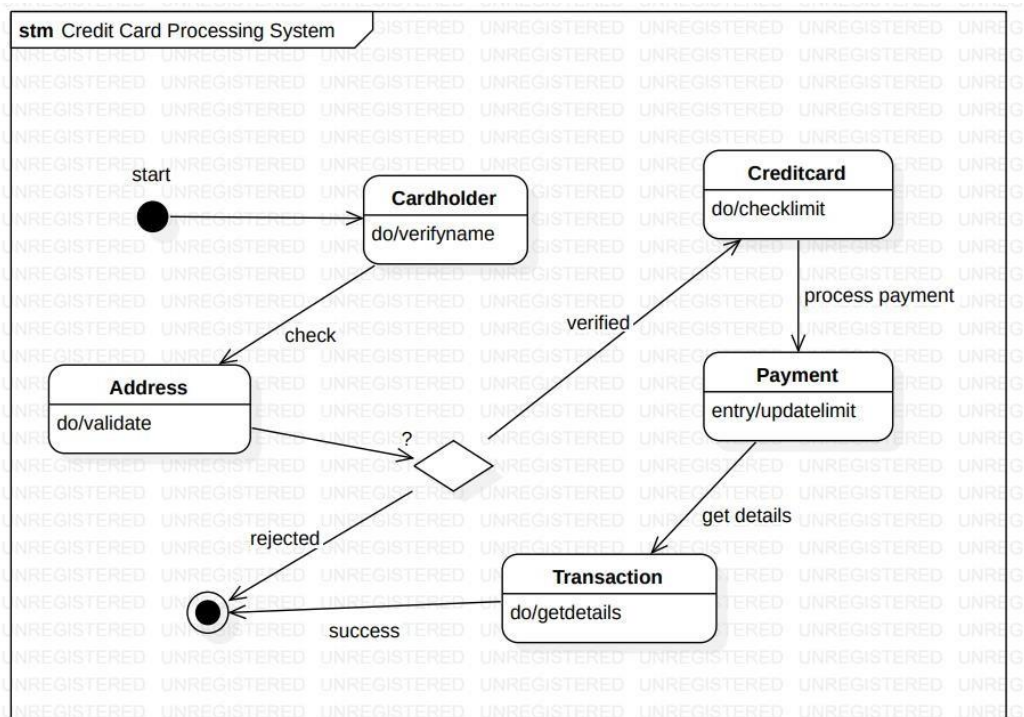
- Quick response time
- Scalability
- Reliability
- Security



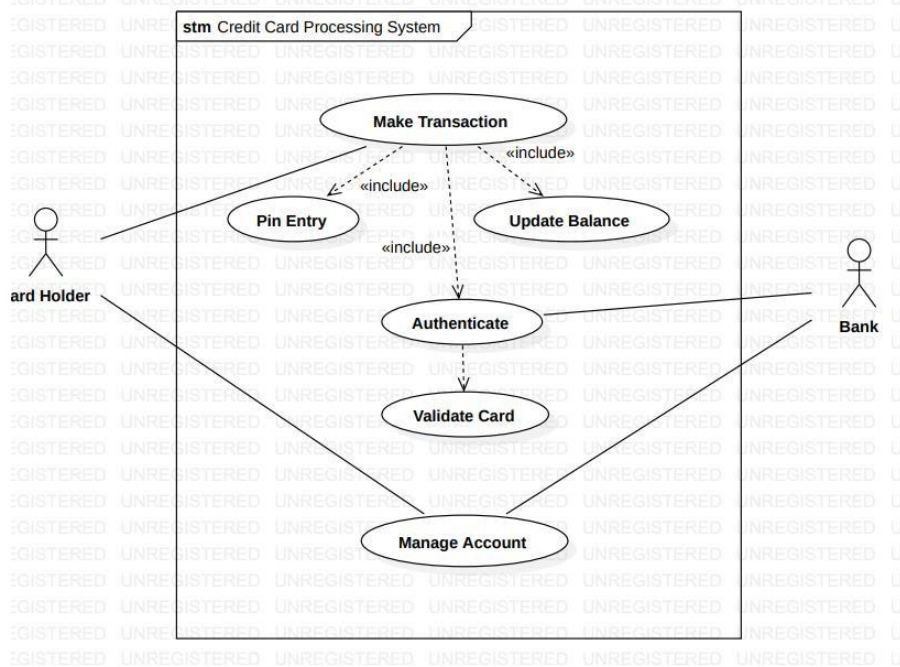
2.3 Class Diagram



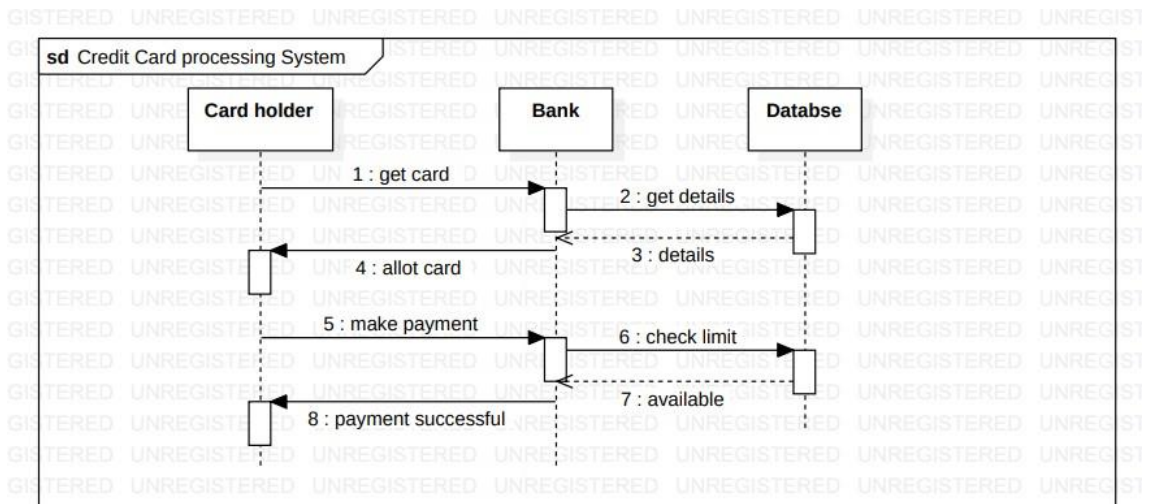
2.4 State Diagram



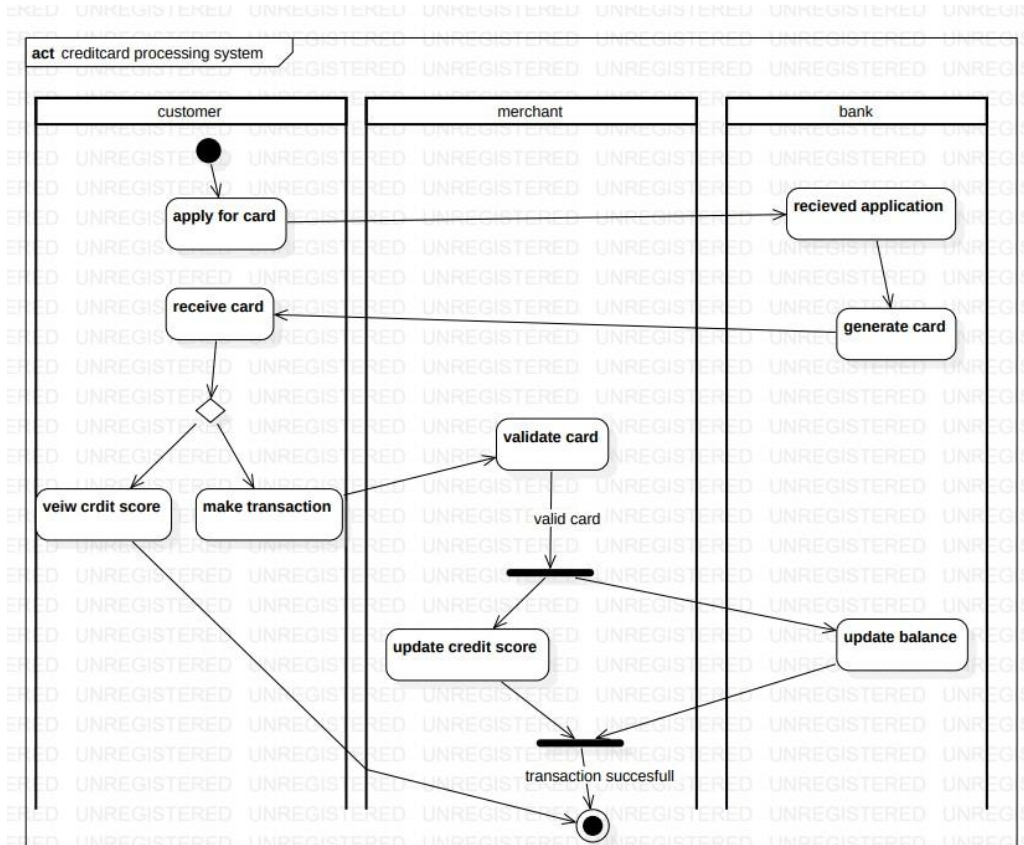
2.5 Use Case Diagram



2.6 Sequence Diagram

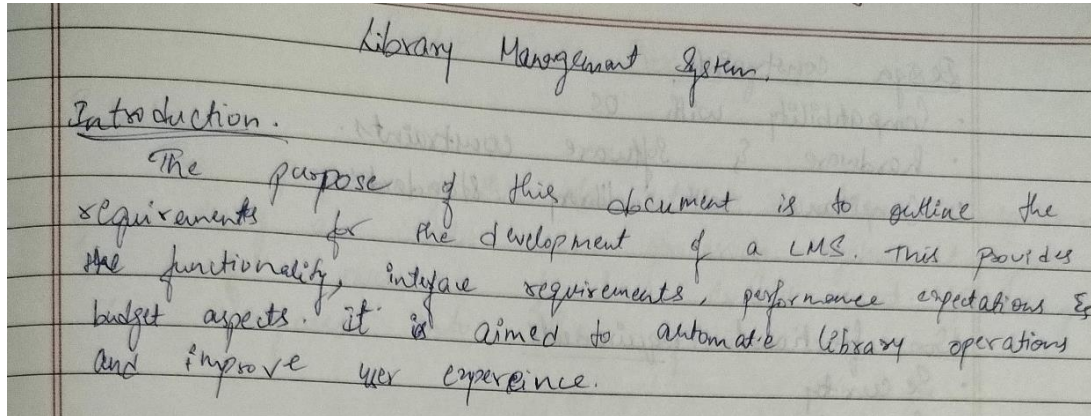


2.7 Activity diagram

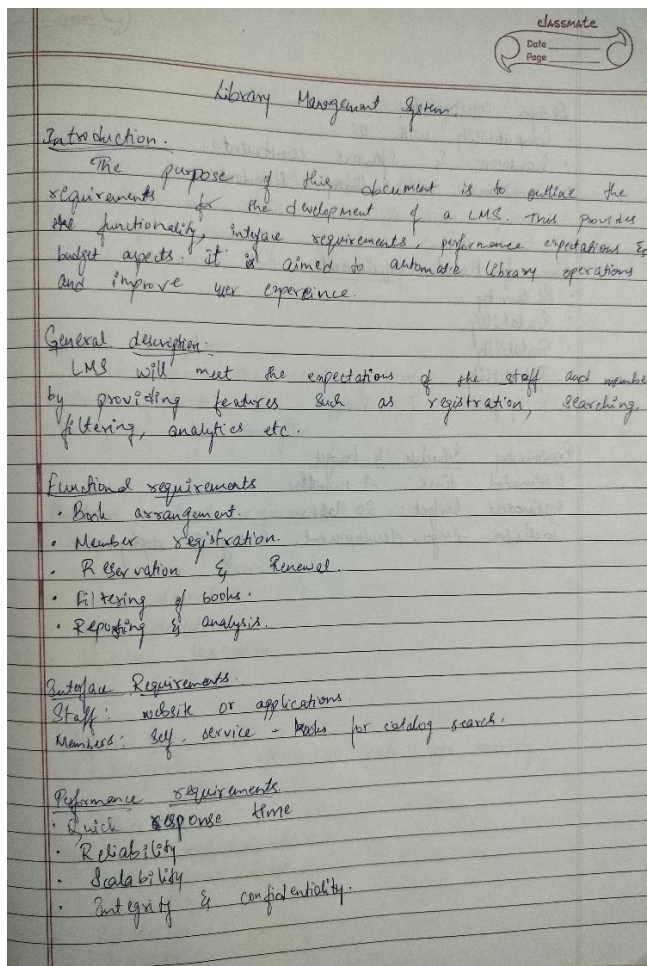


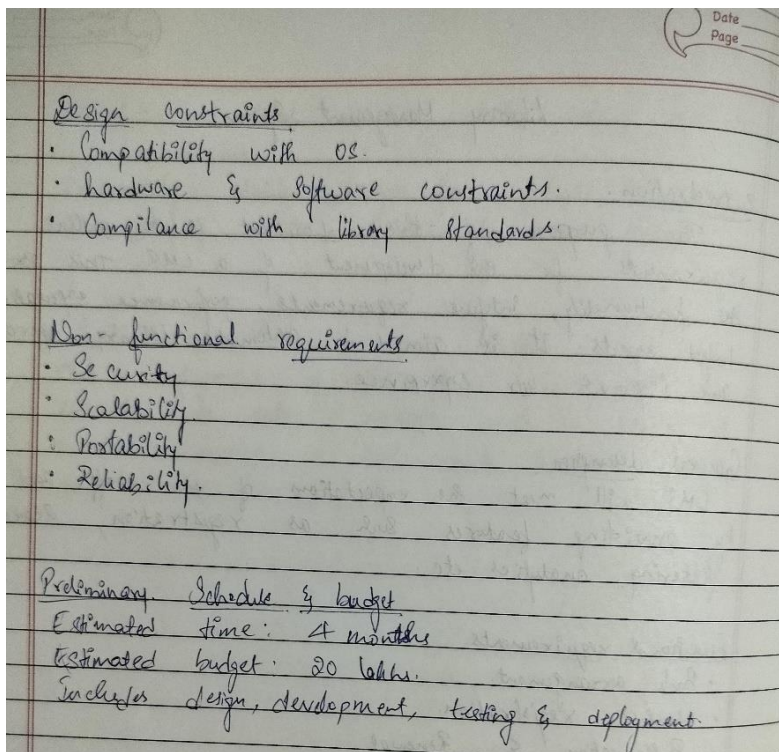
3. Library Management System

3.1 Problem Statement

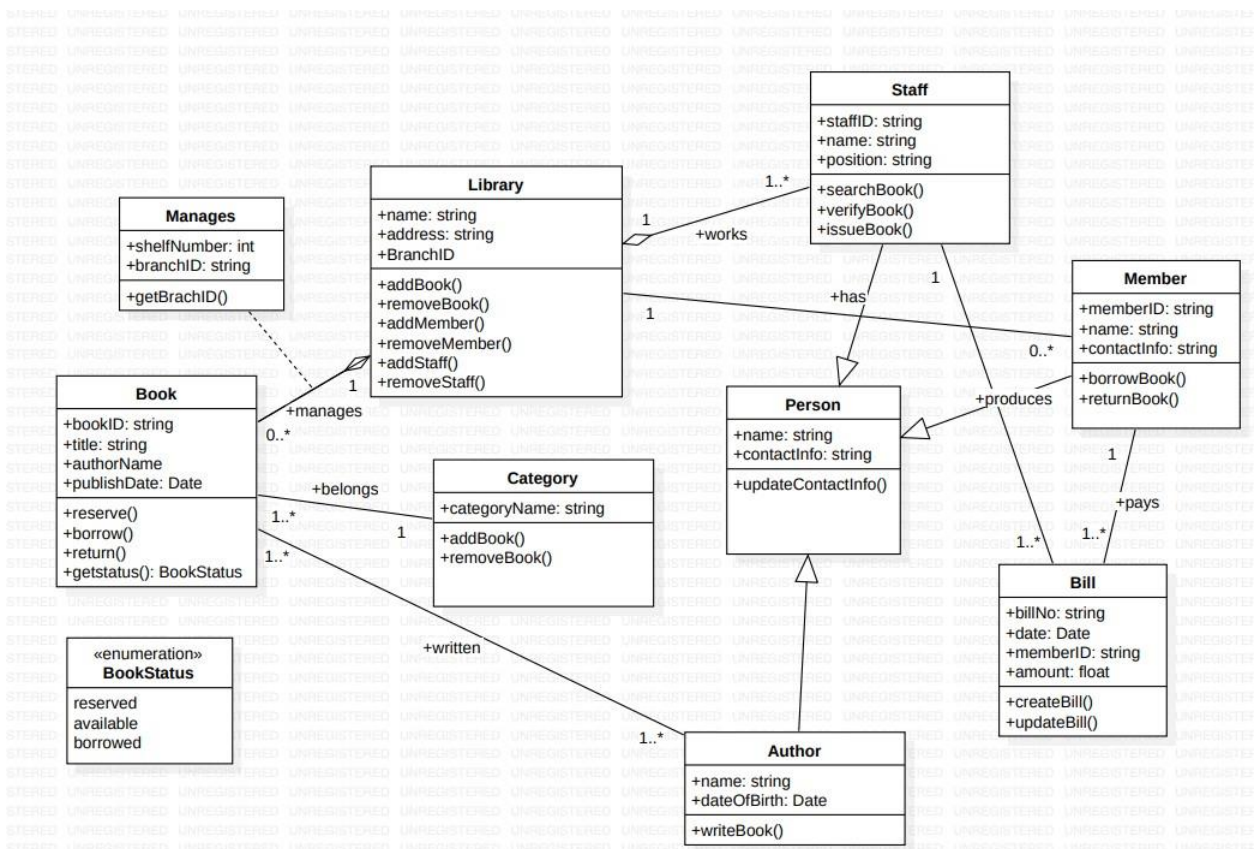


3.2 SRS-Software Requirements Specification

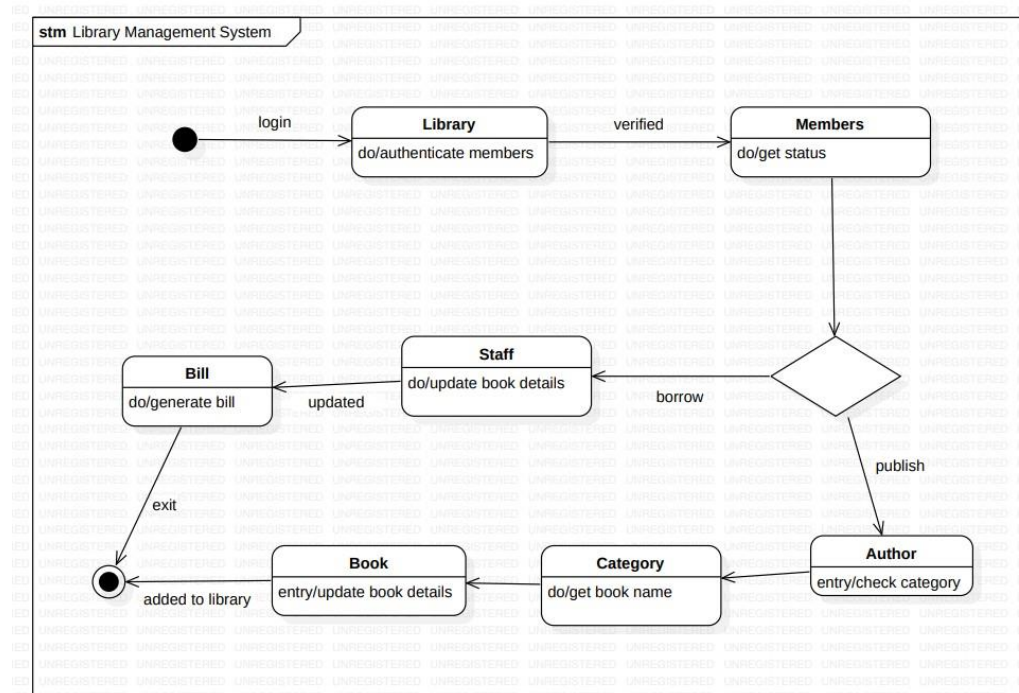




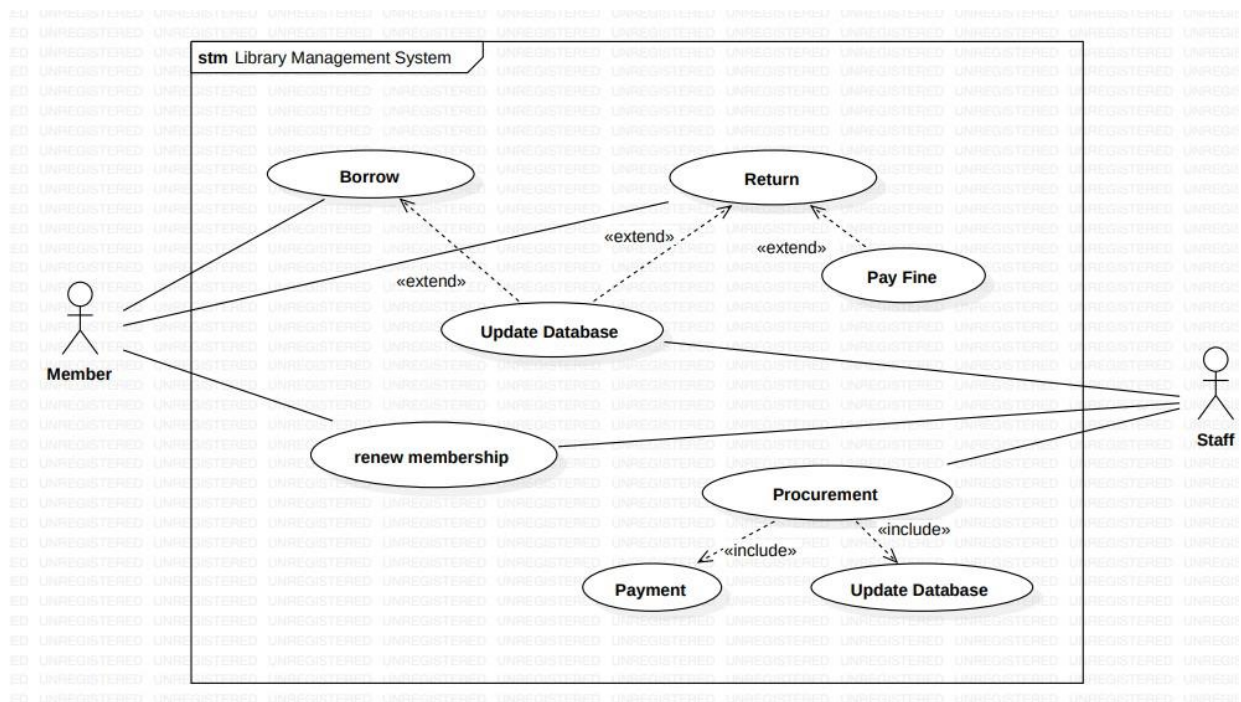
3.3 Class Diagram



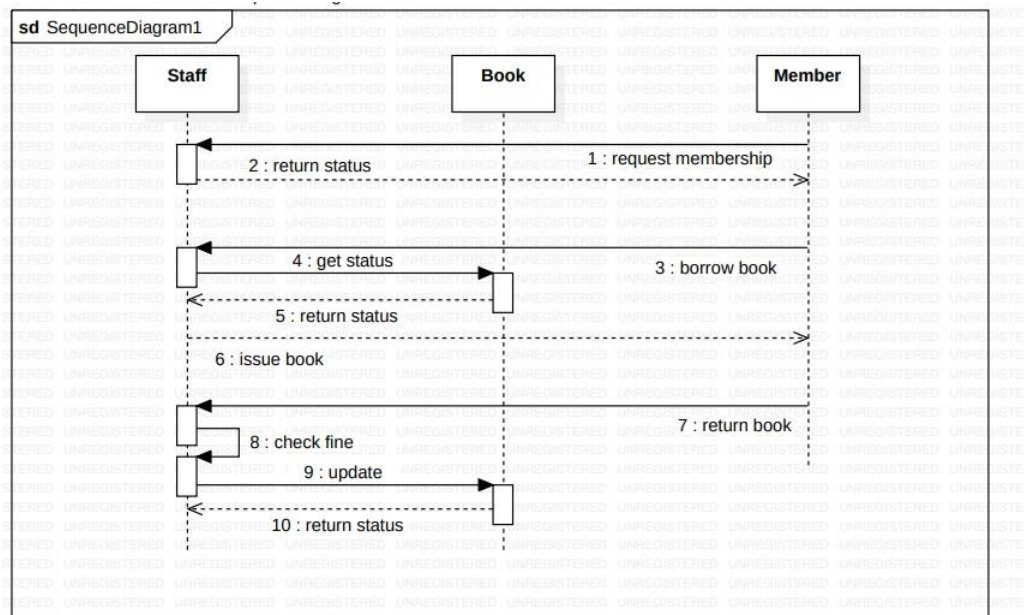
3.4 State Diagram



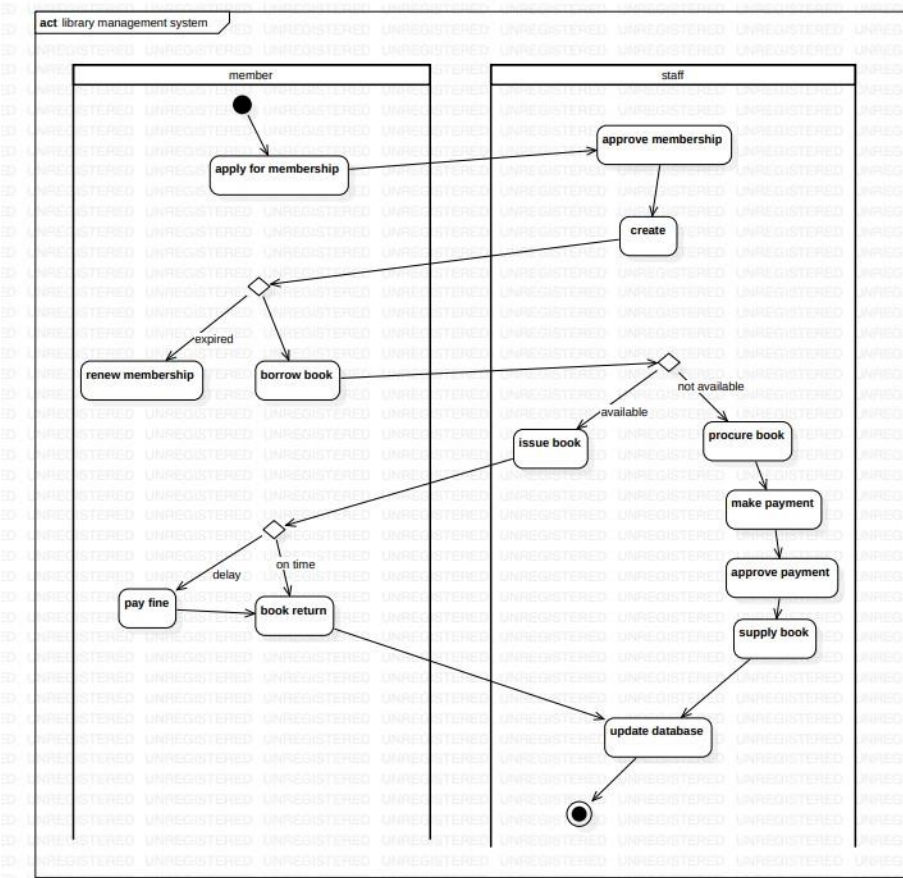
3.5 Use Case Diagram



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 sales 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 SRS. This system will allow stock admin to manage & update stock of the products. It outlines the values provided to users & stakeholders, including efficient management of stock inventory, improved tracking of stock levels and streamlined stock related processes.

General Description
The SRS 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 details. i.e. process allows manager to view & product details customers & supplier details. purchase & stock, send purchase order to supplier & receives invoice.

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Interface Requirements
 User Interface: Interactive, user friendly
 clear display of stock info, item details,
 quantities, transaction history.

System Interfaces: Barcode scanner, stock entry & tracking
 Compatibility with existing systems for data exchange.

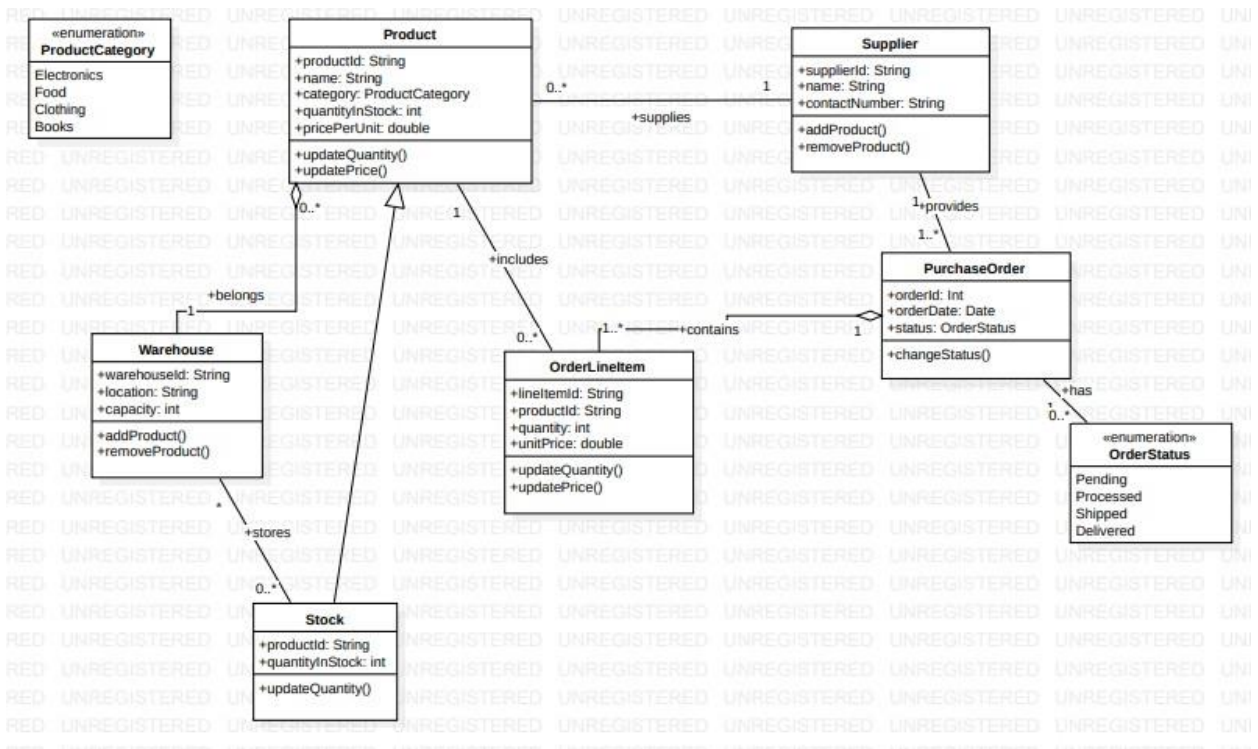
Performance Requirements
 Response time: Quick response for stock related queries,
 minimal downtime.
 Scalability: Handle large volume of stock items &
 transactions, scalable architecture.

Design Constraints
 Platform compatibility: with various OS, web browser
 compliance with industry standards for security
 storage.
 Hardware limitation: optimization for both desktop &
 mobile devices.
 Hardware reqs for efficient system.

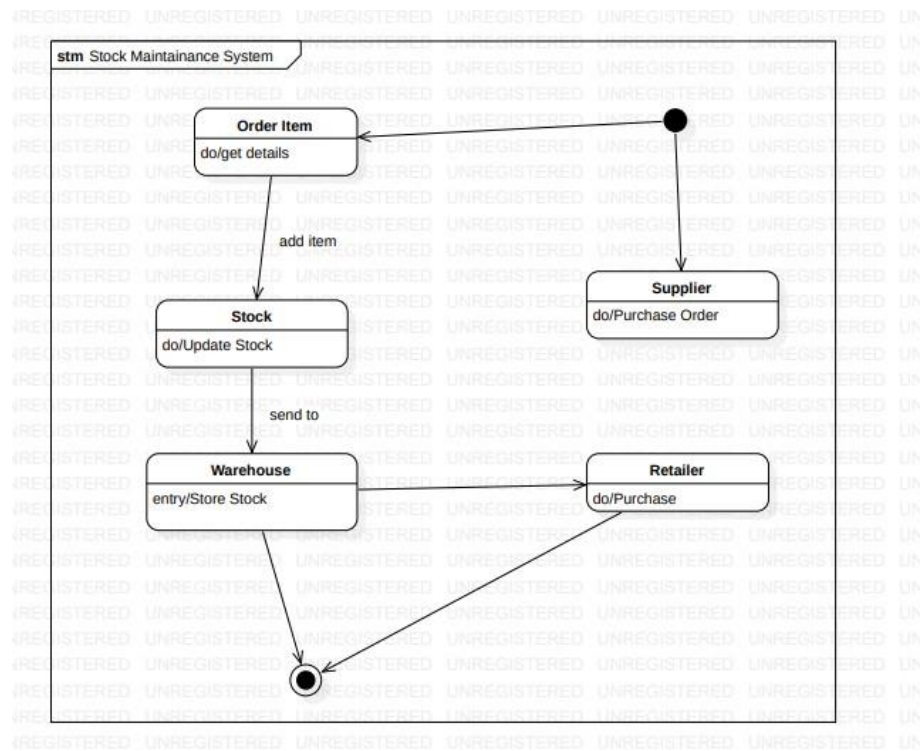
Non-functional requirements
 Security: Access controls & encryption mechanism.
 Reliability: Reliable backup, recovery mechanism.
 Performance: Handle concurrent users & large datasets.

Project Summary
 Schedule & Budget
 Estimated time of development: 8 weeks.
 Budget: ₹ 50,000

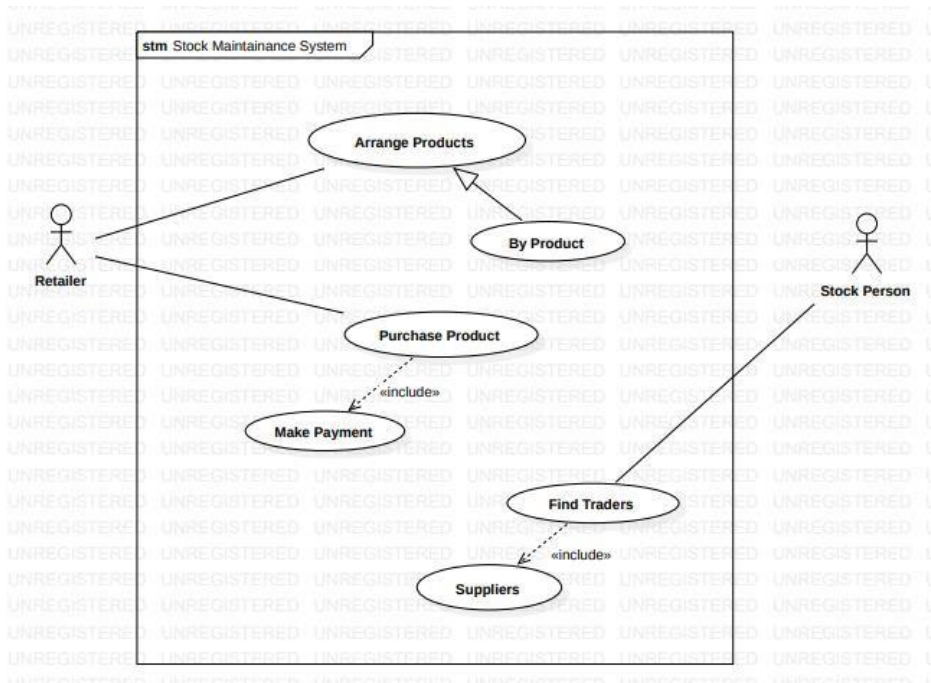
4.3 Class Diagram



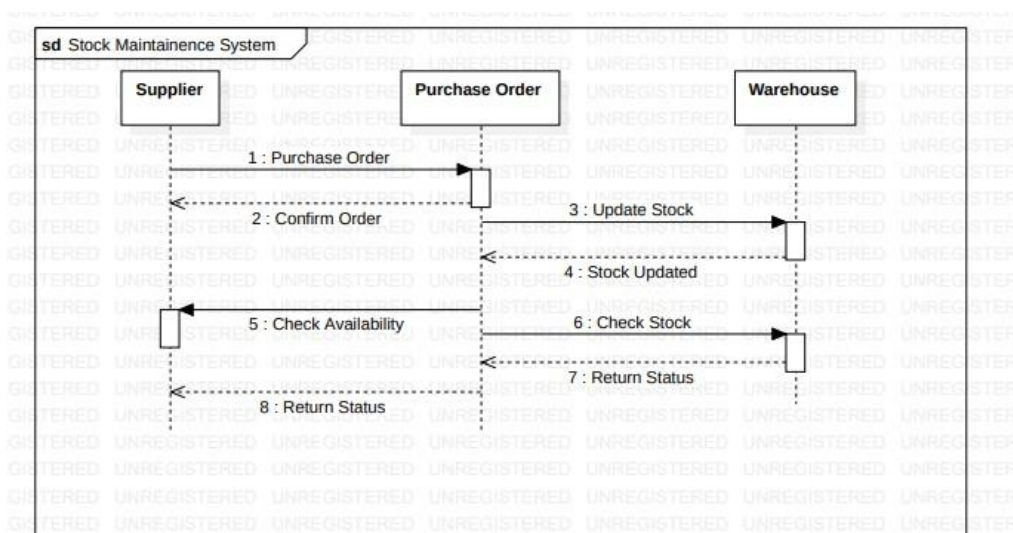
4.4 State Diagram



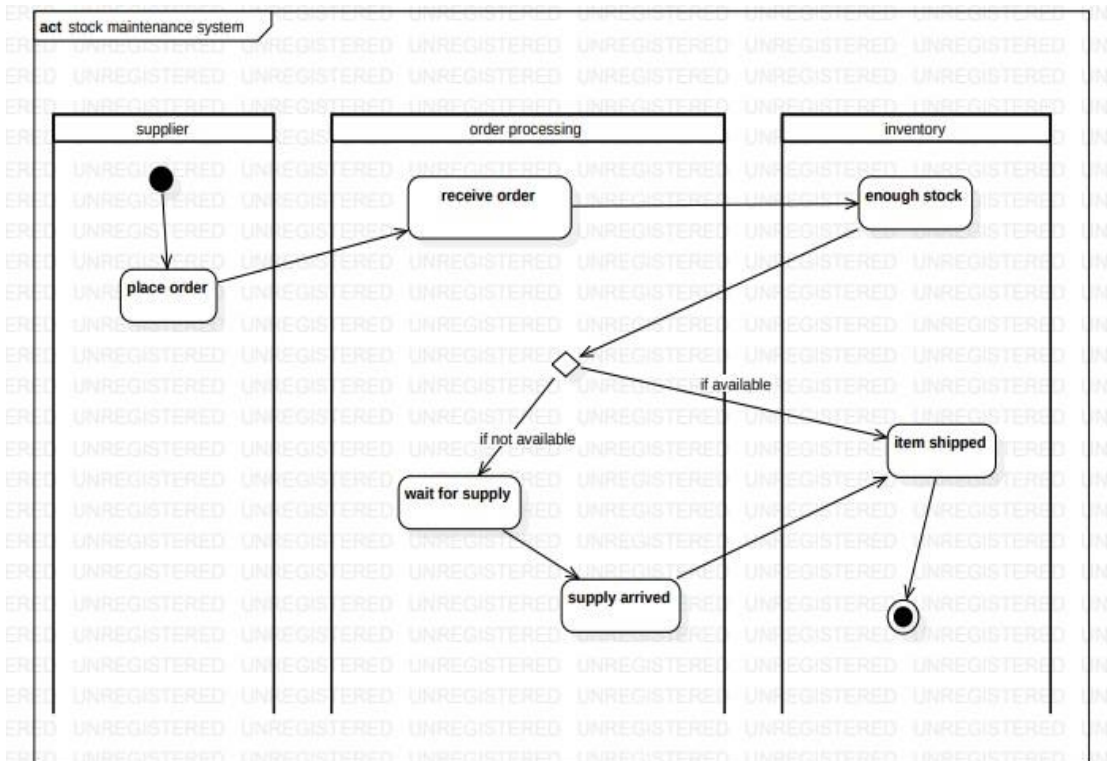
4.5 Use Case Diagram



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

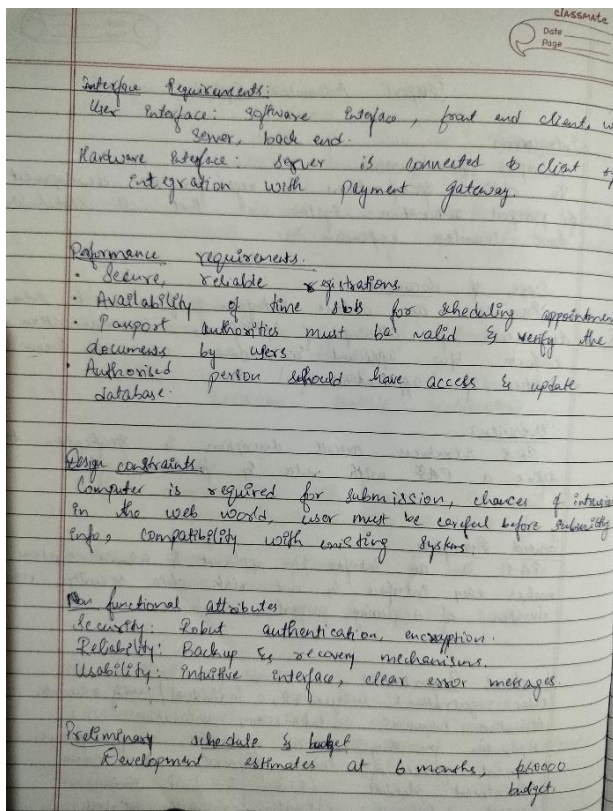
Purpose of document
To define specifications & reqs for the development of passport automation system so that all stakeholders have seamless experience.

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.

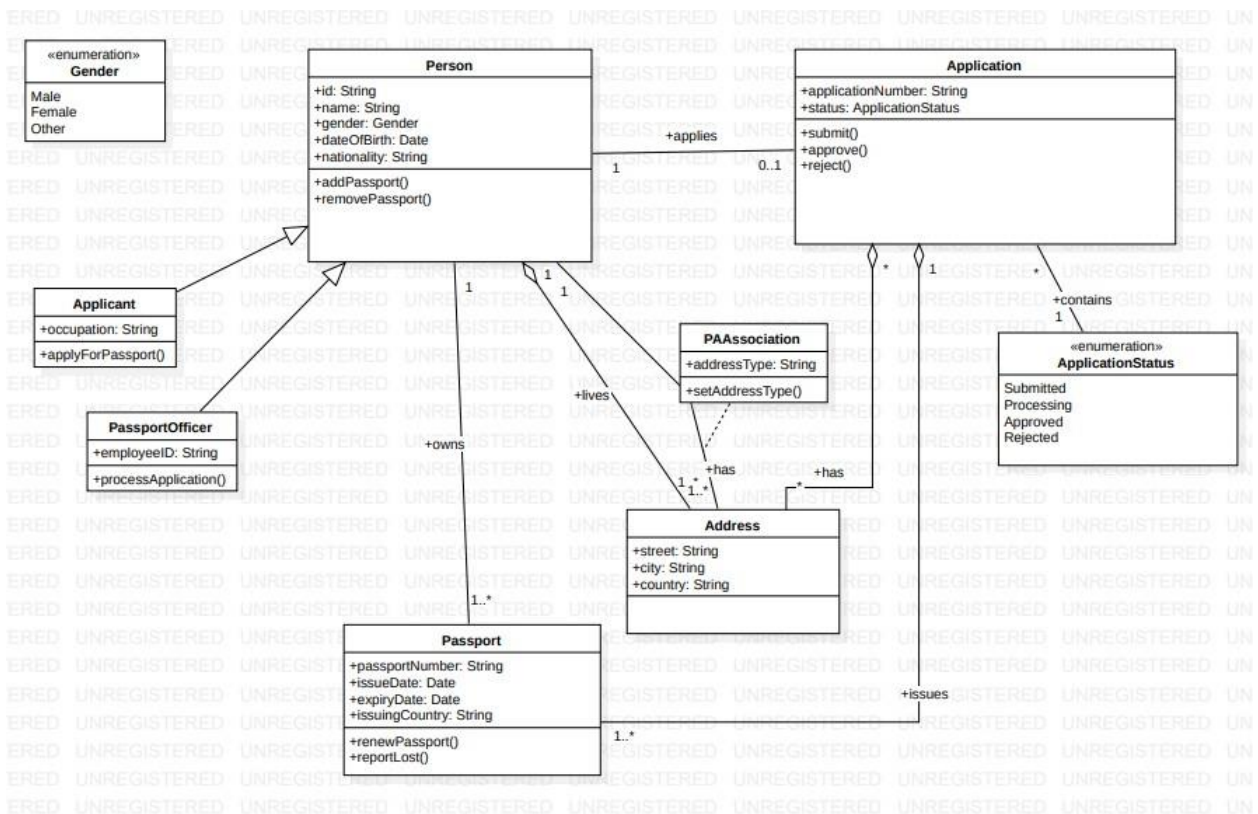
Overview
SRS introduces overall description & specification to define a PAS with rules & functions.

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

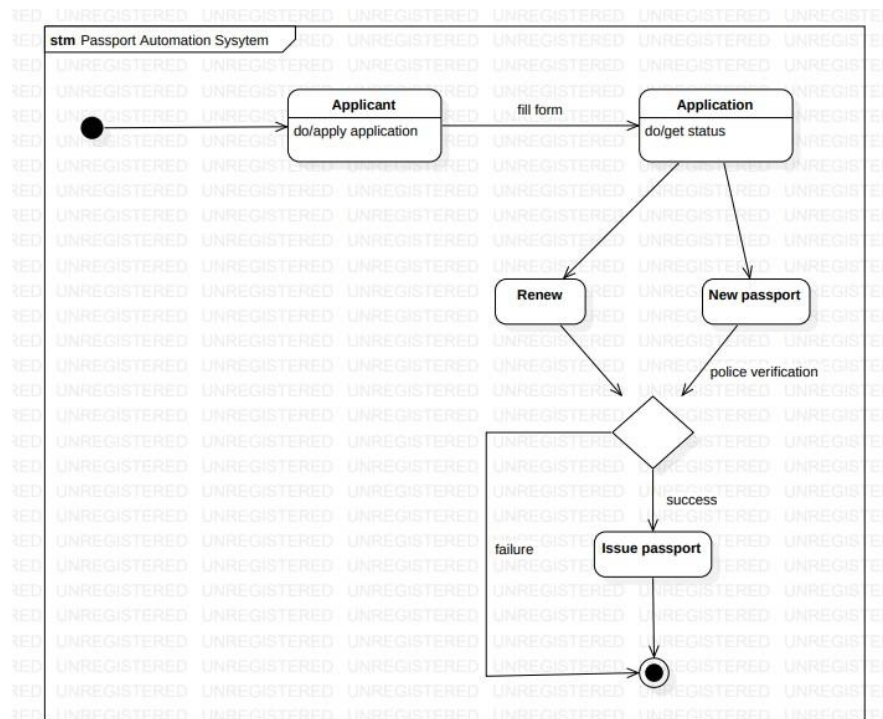
Functional Requirements
User registration: unique ID, individual/family accounts.
Application submission: e-submission, validation.
Application processing: review application, verify/approve.
Payment processing: online payment, multiple options.
Appointment scheduling: schedule & time slots.
Document submission: passport docs after approval.



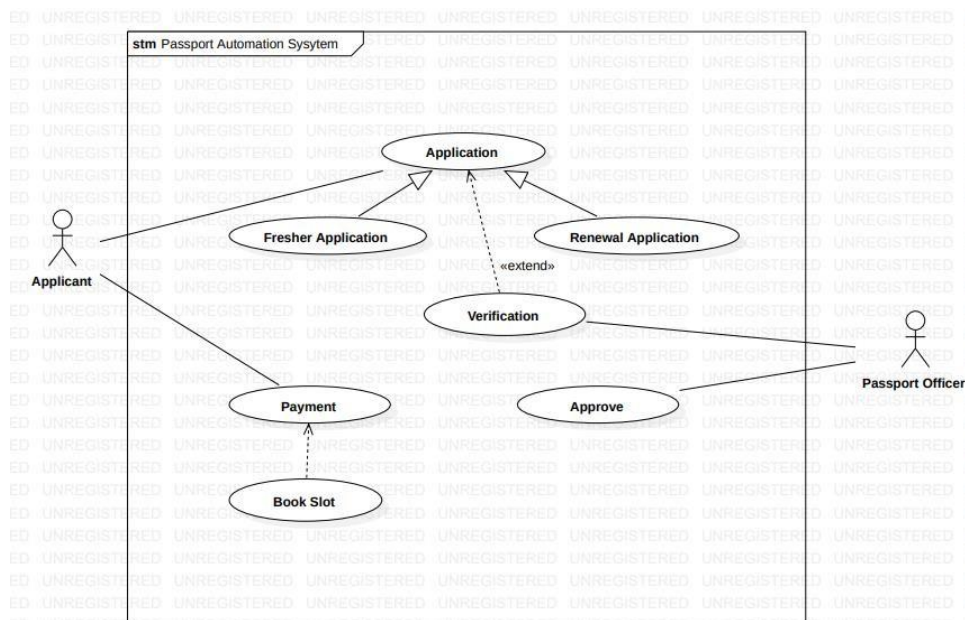
5.3 Class Diagram



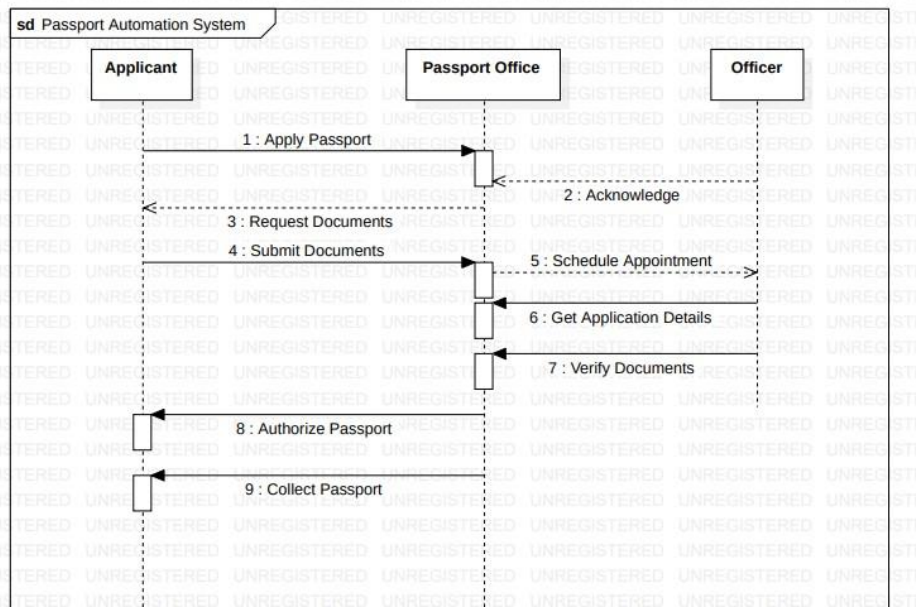
5.4 State Diagram



5.5 Use Case Diagram



5.6 Sequence Diagram



5.6 Activity diagram

