

31/03/23

Lab - 1

The following UML diagrams to be designed for the given applications:

- Hotel Management system
- Credit card Processing
- Library Management System
- Stock Maintenance System
- Passport Automation system
- Railway Reservation system
- Online shopping system.

Set of UML diagrams to be done

- 1) problem statement
- 2) SRS -
 - User Req.
 - System Req.
 - Functional Req.
 - Non-functional Req.
- 3) class diagram (Detailed Class Model)
- 4) use case diagram
 - list actors
 - Scenario
 - Exception scenario
- 5) state diagram (Brief description)
 - simple state diagram
 - Advance state diagram
- 6) seq. Model : (Brief description)
 - simple seq. model
 - Advanced seq. model
- 7) Activity diagram
 - simple activity diagram
 - Advanced activity diagram

Hotel Management System

- 1) Introduction:
 - * purpose of this document: to define the requirements for a Hotel Management software system. It outlines the system's goals & features, including its functional & non-functional requirements, design constraints, & preliminary schedule & budget.
 - * scope of this document: requirements for a hotel management software system that will enable hotels to manage their reservations, guest information, inventory, billing & payments, staff management, and loyalty program management. The system should be user-friendly, efficient, & reliable.
 - * overview: The hotel management software system is designed to provide hotels with a comprehensive solution for managing their day-to-day operations. The system will be developed with modern technology & will be easily integrated with other systems used by the hotel.

- 2) General Description: Hotel mg software system will provide hotels with a user-friendly interface to manage their reservations, billing, payments, reporting

staff management, & loyalty program. The system will also provide a centralized database for storing & retrieving info.

3) Functional Requirements: for the hotel management software system include:-

- Room reservation mg.
- Guest info. mg.
- Inventory mg.
- Billing & payment mg.
- Reporting & analytics
- Staff mg.

4) Interface Requirements:- system should be able to communicate with other systems using standard interfaces such as API's or web services. The system should also provide a user-friendly interface for hotel staff & customers.

5) Performance Requirements:- system should be able to handle a large no. of simultaneous users & provide fast response times. The system should also be scalable to accomodate future growth.

6) Non-functional Attributes:- system should be able to be reliable, secure & portable. The system should also be easy to use, accessible & provide good performance.

c) Preliminary Schedule & Budget:- The development system will take approximately 12 months & will require a budget of \$5000,000. The schedule & budget will be reviewed periodically to ensure that the project stays on track.

Credit Card

- 1) Scope:- The document describes the overall objectives of the project & provides a detailed overview of the system requirements. It also outlines the estimated development costs & time required.
- 2) General Description:- system will be designed to meet the needs of financial institutions, merchants & customers. Its features will be credit card processing, fraud detection, & reporting. System will also provide customers with access to their account information & the ability to make payments online.
- 3) Functional Requirements:- system must be able to process credit card transactions securely & accurately. Ability to generate transaction reports, manage customers data, & provide customers with a user-friendly interface for managing their accounts.
- 4) Interface Requirements:- system should be able to integrate with other software applications, such as financial management software & e-commerce platforms.
- 5) Performance Requirements:- system should be able to handle a large number of transactions simultaneously without any delays or errors. It should also be able to process transactions securely and efficiently, with minimal downtime.

- 6) Design constraints:- System must be compliant with industry standards for security and data privacy. It should also be designed with scalability & flexibility in mind, to allow for future updates & enhancement.
- 7) Non-functional Attributes:- System should be secure, reliable, & easy to use. It should also be portable, with the ability to run on multiple platforms & devices. Other can be data integrity, scalability, & performance optimization.
- 8) Preliminary Schedule & Budget: The development of system is estimated to take approx. 12 months & will require a budget of \$ 500,000. The development team will consist of six software engineers, two quality assurance analysts, & one project manager.

Library Management

1) Intro

Scope:- This document will provide a clear understanding of the software system's objectives & features, including how it will benefit users & the library community as a whole.

2) General Description:- System aims to provide librarians with user-friendly, efficient platform that can help them manage. System will provide reserve materials, renew items. System's other features are tracking library materials, processing loan request, reserving materials, generating reports.

3) Functional Requirements:- Manage library resources, journals, multimedia materials, track library materials, process loan request from patrons, allow patrons to reserve materials & renew items.

4) Interface Requirements:- A user interface for library staff & librarians, a user interface for patrons to search & access library resources & manage their accounts. A database to store library resources, patron information & loan requests.

5) Performance Requirements:- System must be fast & responsive when searching for library resources, it must be able to handle multiple users concurrent. System must be able to maintain data integrity & security.

6) Design constraints:- System must be a web-based architecture, must be developed using any programming language, & must be designed to run on Windows & macOS platforms.

7) Non-functional attributes:- The system must meet security, reliability & scalability as the non-functional requirements.

8) Preliminary Schedule & Budget:- System will depend on various factors, such as the complexity of the system, the no. of features required, & the size of the development team. The budget will cover the costs associated with software development, such as salaries, hardware & software etc.

Online Shopping

- 1) Scope:- This document describes the objective & values that the software system will provide to the customers. It also includes the estimated cost.
- 2) General Description:- System should be able to provide a platform for customers to browse & purchase products online. Features are shopping cart, order tracking, search function.
- 3) Functional Requirements:- System should allow customers to browse products by category or keyword search, provide detailed information about each product, allow customer to add products to shopping cart, make payments securely.
- 4) Interface Requirements:- System should have user-friendly interface that allow customers to easily navigate & use the system. It should have a clear layout & customers should be able to find the products they are looking for easily.
- 5) Performance Requirements:- System should be able to handle a large number of users & transactions simultaneously without crashing. It should have fast response time & minimal downtime. It should be able to handle a large volume of product data without slowing down.

6) Design constraints :- system should be designed to be compatible with a variety of platforms & devices. It should be designed to work on both desktop & mobile devices.

7) Non-functional Attributes:- System should have the following:

- * Security
- * Portability
- * Reliability
- * Usability & Scalability

8) Preliminary Schedule & Budget:- The development of the online shopping software system should be completed within a reasonable time frame & budget. The estimated cost & time required for development should be included in the project plan.

Passport Automation

- 1) Scope:- This document is to describe the functionality, objectives, benefits, and value of the passport automation system as well as the developed cost & time required.
- 2) General description:- System aims to automate the passport application process, improve the accuracy of data & provide, user-friendly interface for both applicants & passport office staff. It will feature online application submission, automated form validation, biometric verification. System is designed for use by both citizens & generate reports. & govt officials.
- 3) Functional Requirements:- System should be able to process passport applications, validate data, capture biometric information, & issue passports. The system should also should provide real-time status & generate reports.
- 4) Interface Requirements:- System should have user-friendly interfaces for both applicants & passport office staff. These interfaces should include data input screen, data validation & generate report.
- 5) Performance Requirements:- System should be able to handle high volume of passport applications & process them in a timely & accurate manner.

- 6) Design constraints:- system should adhere to all relevant govt regulations and guidelines. The system should also be designed to work on a variety of hardware & software platforms.
- 7) Non-functional Attributes: System should be secure, reliable, portable, & compatible with other systems. System should ensure data integrity, scalability & reusability.
- 8) Preliminary Schedule & Budget :- The development of the system is estimated to take approximately six months & will require a budget of \$ 500, 000.

Railway Reservation

- 1) Scope:- The document outlines the objectives & scope of the railway reservation system along with the estimated development cost & timeline.
- 2) General Description:- System will allow passengers to book railway tickets online through user-friendly interface, with features including real-time train availability, seat selection and payment processing.
- 3) Functional Requirements:- User should be able to search for available trains, date & time of travel & class of travel. User should be able select seat, make payment, cancel ticket if necessary. System should generate e-ticket & also provide user-friendly interface with clear instructions & feedback messages.
- 4) Interface Requirements:- System should provide a user interface that is easy to use, with clear instructions & feedback messages for users. System should communicate through web browsers, mobile app, & email notification. System should be able to handle unexpected payment gateways & train schedules.
- 5) Performance Requirements:- System should be able to handle large no. of concurrent users, with fast responses. System should be able to handle peak loads during festival seasons & other busy periods without compromising performance. It should handle unexpected redundancy & fail-safes.

- 6) Design Constraints:- System should be designed to comply with industry standards & best practises with scalable architecture. System should be designed to be easily maintainable & extensible with robust error handling mechanism.
- 7) Non-functional Attributes:- System should be and have attributes such as security, portability, reliability, reusability, compatibility, data integrity & scalability. Should be consistent performance across different environments.

8) Preliminary schedule & budget:- Development of system is expected to take around 12 months, with estimated budget of \$500,000. The plan includes various phases such as gathering, design, development, testing, deployment & maintenance.

Stock Maintenance

- 1) scope :- The current manual system for managing stock inventory is inefficient & prone to errors, leading to issues such as inaccurate stock counts, delays in order fulfillment & difficulties in tracking inventory levels.
- 2) SRS
Introduction: System is designed to automate & digitize the processes involved in managing stock inventory. It aims to provide a user-friendly interface for inventory management.
- 3) Functional Requirements:-
 - User Management
 - Product Management
 - Stock Management
 - Order Management
 - Reporting & Analytics
 - Alerts & Notifications.
- 4) Non-functional Requirements:-
 - * Usability → It should provide real time updates & minimize delays in data processing
 - * Performance → It should provide real time updates & minimize delays in data processing.
 - * Security → Data encryption & secure protocols should be employed to protect sensitive information.

- * Scalability → It should be scalable to handle increased data volume & user load.
- 5) System constraints :- System will be developed using a web-based architecture. The system will utilize a database management system for data storage & retrieval.