

LAB 1 – RAILWAY RESERVATION SYSTEM

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AIM - To write the Problem Statement and Software Requirements Specification (SRS) for Railway Reservation System.

Problem Statement:

The current manual process for railway reservation and ticketing is time-consuming, inefficient, and error-prone. Passengers have to physically visit the railway station to book their tickets and often face long queues and delays. The railway authorities also face challenges in managing the ticketing process, such as maintaining records, tracking ticket availability, and managing cancellations and refunds. There is a need for an automated railway reservation system that can provide a fast, efficient, and reliable booking experience for passengers and simplify the ticketing process for railway authorities. The system should be able to handle a large volume of reservations and transactions, provide real-time information on ticket availability, and ensure that customer data is secure and protected. Overall, there is a need for a modern and user-friendly railway reservation system that can improve the customer experience and streamline the ticketing process for railway authorities.

Software Requirement Specification(SRS)

1 Introduction:

1.1 Purpose:

The purpose of this document is to provide a detailed description of the requirements for the development of a Railway Reservation System. This document outlines the functional and non-functional requirements of the system and serves as a guide for the development team.

1.2 Scope:

The document covers the functional and non-functional requirements of the Railway Reservation System. It also includes design constraints, interface requirements, performance requirements, non-functional attributes, and a preliminary schedule and budget.

1.3 Overview:

A railway reservation system is an automated system designed to facilitate the booking and management of train tickets for passengers. It is a critical component of the railway industry, providing an efficient and user-friendly interface for passengers to book, modify or cancel their train tickets. The railway reservation system plays a vital role in ensuring the smooth operation of train services by automating the booking process and enabling efficient seat management.

2 General Description:

A railway reservation system is an automated system that allows passengers to book and manage train tickets. It is a critical component of the railway industry, providing an efficient and user-friendly interface for passengers to search for trains, check availability, and book their tickets.

The railway reservation system can be accessed through various channels, including online portals, mobile apps, and reservation counters at railway stations. The system allows passengers to book tickets, modify their bookings, or cancel their reservations.

The railway reservation system also provides valuable data and insights to railway operators, enabling them to optimize train schedules, manage seat inventory, and improve service quality. The system can also be integrated with other services, such as food and beverage services, baggage handling, and other amenities, to provide a seamless travel experience for passengers.

3 Functional Requirements:

Here are the functional requirements of a Railway Reservation System:

- **User Registration and Login:** The system should allow users to create an account and log in securely to the system.
- **Train Search and Booking:** The system should enable users to search for trains based on their origin, destination, travel dates, and other parameters. It should also allow users to book seats on the available trains and generate confirmation of the booking.
- **Seat Management:** The system should manage seat availability and allocate seats to users based on their booking requests.
- **Payment Gateway Integration:** The system should integrate with a secure payment gateway to enable users to make payments online.
- **Ticket Cancellation and Modification:** The system should allow users to cancel or modify their bookings, subject to the applicable rules and regulations.
- **Refund Processing:** The system should automatically process refunds for cancelled tickets, subject to the applicable rules and regulations.

4 Interface Requirements:

Here are the interface requirements of a Railway Reservation System:

- **User Interface:** The system should have an intuitive and user-friendly interface that allows users to easily search for trains, check availability, and book their tickets.
- **Multi-Channel Access:** The system should be accessible through various channels, such as online portals, mobile apps, and reservation counters at railway stations.
- **Responsive Design:** The system should have a responsive design that can adjust to different screen sizes and resolutions, ensuring a consistent user experience across devices.
- **Booking Process Flow:** The system should have a clear and simple booking process flow that guides users through the steps of selecting a train, choosing a seat, making payment, and generating confirmation of the booking.

5 Performance Requirements:

Here are the performance requirements of a Railway Reservation System:

- **Response Time:** The system should have a fast response time to ensure a seamless user experience, with minimal delays or latency.
- **Scalability:** The system should be able to handle a large number of simultaneous user requests, especially during peak hours and festival seasons.
- **Availability:** The system should have high availability, with minimal downtime or maintenance windows, to ensure uninterrupted access for users.
- **Security:** The system should be secure, with robust authentication, authorization, and data protection mechanisms, to prevent unauthorized access or data breaches.

6 Design Constraints:

Here are the design constraints of a Railway Reservation System:

- **System Integration:** The system should integrate with various other railway systems and services, such as train scheduling, seat management, payment gateway, and passenger information, to ensure seamless operation.
- **Compliance with Regulations:** The system should comply with various regulations and standards related to railway reservation and ticketing, such as fare structures, cancellation rules, and data privacy laws.
- **Compatibility with Existing Infrastructure:** The system should be compatible with the existing railway infrastructure, such as the network, signaling, and communication systems, to ensure smooth operation.
- **Accessibility Constraints:** The system should ensure accessibility for users with disabilities, such as visual impairment, hearing impairment, and mobility impairment, to ensure inclusive access.

7 Non-Functional Attributes:

Here are the non-functional requirements of a Railway Reservation System:

- **Usability:** The system should be easy to use, with a simple and intuitive interface, and clear navigation, to ensure user satisfaction and adoption.
- **Accessibility:** The system should be accessible to all users, including those with disabilities, such as visual, hearing, or mobility impairments, to ensure inclusive access.
- **Maintainability:** The system should be easy to maintain and upgrade, with modular and well-documented code, to ensure efficient and cost-effective maintenance.
- **Interoperability:** The system should be interoperable with other railway systems and services, such as train scheduling, seat management, payment gateway, and passenger information, to ensure seamless operation.
- **Compliance:** The system should comply with various regulations and standards related to railway reservation and ticketing, such as fare structures, cancellation rules, and data privacy laws.
- **User Experience:** The system should provide a seamless and convenient user experience, with personalized recommendations, notifications, and alerts, to ensure user satisfaction and loyalty.

8 Preliminary Schedule and Budget:

Schedule:

Requirements Gathering and Analysis - 2 weeks

Design and Architecture - 3 weeks

Development - 12 weeks

Testing and Quality Assurance - 4 weeks

Deployment and Launch - 1 week

Post-launch Maintenance and Support - Ongoing

Total project duration: 22 weeks (approximately 6 months)

Budget:

Requirements Gathering and Analysis - \$10,000

Design and Architecture - \$15,000

Development - \$180,000

Testing and Quality Assurance - \$40,000

Deployment and Launch - \$5,000

Post-launch Maintenance and Support - \$25,000 per year

Total project cost: \$275,000