Software Requirements Specification

for

Railway Reservation System

Version 1.10 approved

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version
railway reservation system	13/9/23	Changes to include Payment for the tickets	1.0

1. Introduction

1.1 Purpose

This is a documentation of the project Railways Reservation System done sincerely and satisfactorily by my group member,. A Software has to be developed for automating the manual Railway Reservation System.

RESERVE SEATS – Reservation form has to be filled by passenger. If seats are available entries like train name, number, destination are made.

CANCEL RESERVATION- The clerk deletes the entry in the System and changes in the Reservation Status.

VIEW RESERVATION STATUS-The user needs to enter the PIN number printed on the ticket.

1.2 Document Conventions

This Document was created based on the IEEE template for System Requirement Specification Documents.

1.3 Intended Audience and Reading Suggestions

Project Stakeholders: Understand project scope and constraints.
Software Developers: Focus on functional requirements.
QA Team: Develop test cases based on requirements.
System Architects: Consider design constraints and quality attributes.
Technical Writers: Use it as a reference for user documentation.
End-users: Refer to user documentation and UI mockups if needed.
Regulatory Authorities: Ensure compliance with regulations.

1.4 Product Scope

the purpose of this source is to describe the railway reservation system which provides the train timing details, reservation , billing and cancellation on various types of reservation namely,

- confirm reservation for confirm seat.
- reservation against cancellation
- waiting list reservation
- online reservation
- tatkal reservation

1.5 References

IEEE Template for System Requirement Specification Documents:
https://goo.gl/nsUFwy

Railway reservation system
https://www.slideshare.net/khushikalaria/srs-for-railway-reservation-system

2. Overall Description

2.1 Product Perspective

Before the automation, the system suffered from the following drawbacks::

- The existing system is highly manual involving a lot of paperwork and calculation and therefore may be erroneous. This has led to inconsistency and inaccuracy in the maintenance of data.
- The data, which is stored on the paper only, may be lost, stolen or destroyed due to natural calamity like fire and water.
- The existing system is sluggish and consumes a lot of time causing inconvenience to customers and the railway's staff.
- Due to manual nature, it is difficult to update, delete, add or view the data.Since the number of passengers have drastically increased therefore maintaining and retrieving detailed records of passengers is extremely difficult.
- Railways has many offices around the world, an absence of a link between these offices lead to lack of coordination and communication.

Hence the railways reservation system is proposed with the following

- The computerization of the reservation system will reduce a lot of paperwork and hence the load on the railway administrative staff.
- The machine performs all calculations. Hence chances of error are nil.
- The passenger, reservation, cancellation list can easily be retrieved and any required addition, deletion or updation can be performed.
- The system provides for user-ID validation, hence unauthorized access is prevented

2.2 Product Functions

Booking agents with varying levels of familiarity with computers will mostly use this system. With this in mind, an important feature of this software is that it is relatively simple to use. The scope of this project encompasses:

Search: This function allows the booking agent to search for trains that are available between the two travel cities, namely the "Departure city" and "Arrival city" as desired by the traveler. The system initially prompts the agent for the departure and arrival city, the date of departure, preferred time slot and the number of passengers. It then displays a list of trains available with different railways between the designated cities on the specified date and time.

Selection: This function allows a particular train to be selected from the displayed list. All the details of the train are shown :-

1. train Number,
2. Date, time and place of departure,
3. Date, time and place of arrival,
4. TRAIN Duration,
5. Fare per head, 6. Number of stoppages – 0, 1, 2…,etc.

Review: If the seats are available, then the software prompts for the booking of the train. The train information is shown. The total fare including taxes is shown and train details are reviewed. ¨ Traveller Information: It asks for the details of all the passengers supposed to travel including name, address, telephone number and e-mail id.
Payment: It asks the agent to enter the various credit card details of the person making the reservation.

1. Credit card type,
2. Credit card number,
3. CVV number of the card,
4. Expiration date of the card,
5. The name on the card

Cancellation : The system also allows the passenger to cancel an existing reservation. This function registers the information regarding a passenger who has requested a cancellation of his/her ticket. It includes entries pertaining to the train No., Confirmation No., Name, Date of Journey, Fare deducted.

2.3 User Classes and Characteristics

Passengers:

- Primary users
- Varying computer literacy
- Book tickets, manage reservations
- Require user-friendly interface

Administrators:

- Manage system
- Elevated privileges
- Access to reporting tools
- Proficient in admin tasks

2.4 Operating Environment

- Windows 7
- Windows 8
- Windows 10
- Mac OS
- Linux

2.5 Design and Implementation Constraints

software constraint: the system will work under the operating systems mentioned in operating environment

2.6 User Documentation

User manual will be provided along with the software for any help user might require

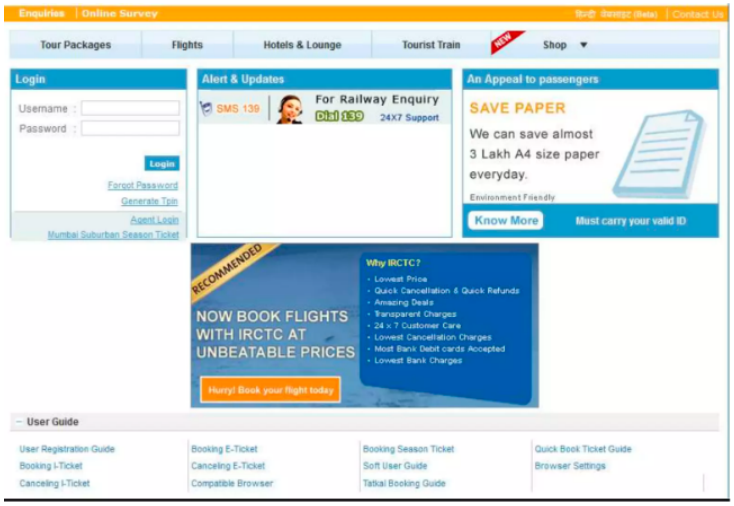
2.7 Assumptions and Dependencies

- Booking agents will be having a valid user name and password to access the software
- the software needs booking agent to have complete knowledge of railways reservation system
- software is dependent on access to the internet.

3. External Interface Requirements

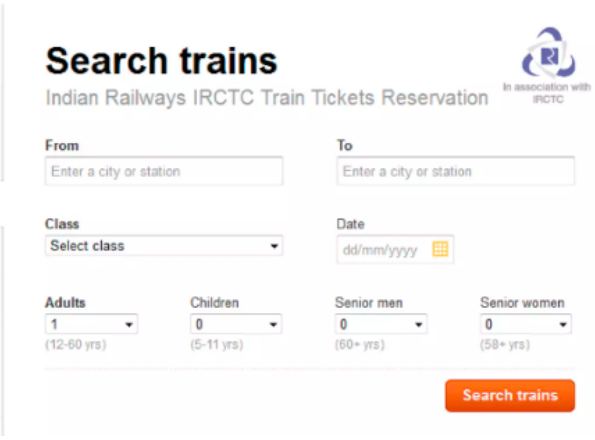
3.1 User Interfaces

1. Home Page



2. Login

3. **Search Train**



3.2 Hardware Interfaces

Railway reservation system requires minimum hardware specifications of 500 megahertz of CPU and requires 500 MegaBytes RAM with 40GB Storage on Hard Drive along with 512kb cache

3.3 Software Interfaces

Any Operating system (windows, mac or linux) is required with the ability to display the programs GUI. The system must be connected to the internet and is mandatory.

3.4 Communications Interfaces

Railway reservation system requires an internet connection to install new plugins, update already installed ones and update some of its components (APIs, modules etc.).

4. System Features

This section demonstrates Railway Reservation System's most prominent features and explains how they can be used and the results they will give back to the use

4.1 Booking And Cancellation

4.1.1 Description and Priority

The Railway reservation system maintains information on trains, prices, and bookings. Of course, this project has a high priority because it is very difficult to travel without prior reservations.

4.1.2 Stimulus/Response Sequences

- Search for trains for two Travel cities
- Displays a detailed list of available trains and makes a "Reservation" or Books a ticket on a particular journey.

- Cancel an existing Reservation.

4.1.3 Functional Requirements

Other Features of Railway reservation system include:

REQ-1: Distributed Database
REQ-2: Client/Server System

4.2 User Registration And Authentication

4.1.1 Description and Priority

The users on the Railway reservation system can create an account and use the rest of the features with proper authorization.

4.1.2 Stimulus/Response Sequences

- Sign up for an account
- authenticate and login to the system
- Logout from the system

4.1.3 Functional Requirements

Other Features of Railway reservation system include:

REQ-1: Distributed Database
REQ-2: Client/Server System

5. Other Nonfunctional Requirements

5.1 Performance Requirements

To ensure optimal performance of the Railway Reservation System, it is imperative that the system maintains swift response times for user actions, supports a specified number of concurrent users during peak loads, processes a predetermined volume of bookings per unit of time, scales effectively to accommodate increasing demands, optimizes database queries and caches frequently accessed data, facilitates rapid and reliable payment processing, employs load balancing and minimizes network latency, implements robust error handling and recovery mechanisms, conducts scheduled maintenance during off-peak hours with a documented backup process, establishes geographical redundancy for disaster recovery, complies with regulatory requirements, and preserves a responsive user interface even during periods of high traffic.

5.2 Safety Requirements

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to

archival storage and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

5.3 Security Requirements

The system uses ssl (secured socket layer) in all transactions that include any confidential customer information. the system must automatically log out all customers after a period of inactivity. the system should not leave any cookies on the customer's computer containing the user's password. The system's back-end servers shall only be accessible to authenticated management

5.4 Software Quality Attributes

AVAILABILITY: The trains should be available on the specified date and specified time as many customers are doing advance reservations.
CORRECTNESS: The trains should start from the correct starting platform and should reach the correct destination.
MAINTAINABILITY: The web application must support regular updates to ensure compatibility with the latest web technologies, Bug fixes, and security patches.
USABILITY: The train schedules should satisfy a maximum number of customers' needs. The application should be accessible on multiple devices, including desktop and mobile.

5.5 Business Rules

The Railway Reservation System must adhere to a set of critical business rules to operate effectively. User Registration necessitates validation of user-provided information to ensure accuracy and integrity in user profiles. Ticket Booking and Cancellation rules require adherence to fare structures, availability constraints, and refund policies.

6. Other Requirements

In addition to core functionality, the Railway Reservation System must satisfy several other critical requirements. Localization features are essential, including multilingual support, currency conversion, and region-specific date formats to accommodate diverse user bases.

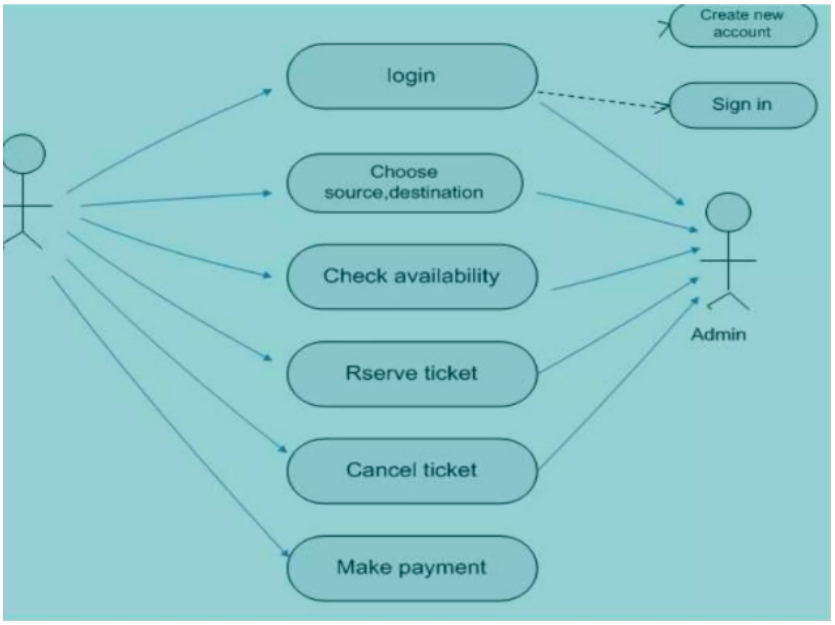
Appendix A: Glossary

Administrator	A transaction appointed agent responsible for the managing of a Conduit or a Special Purpose Vehicle. The responsibilities may include maintaining the bank accounts, making payments and monitoring the transaction performance.

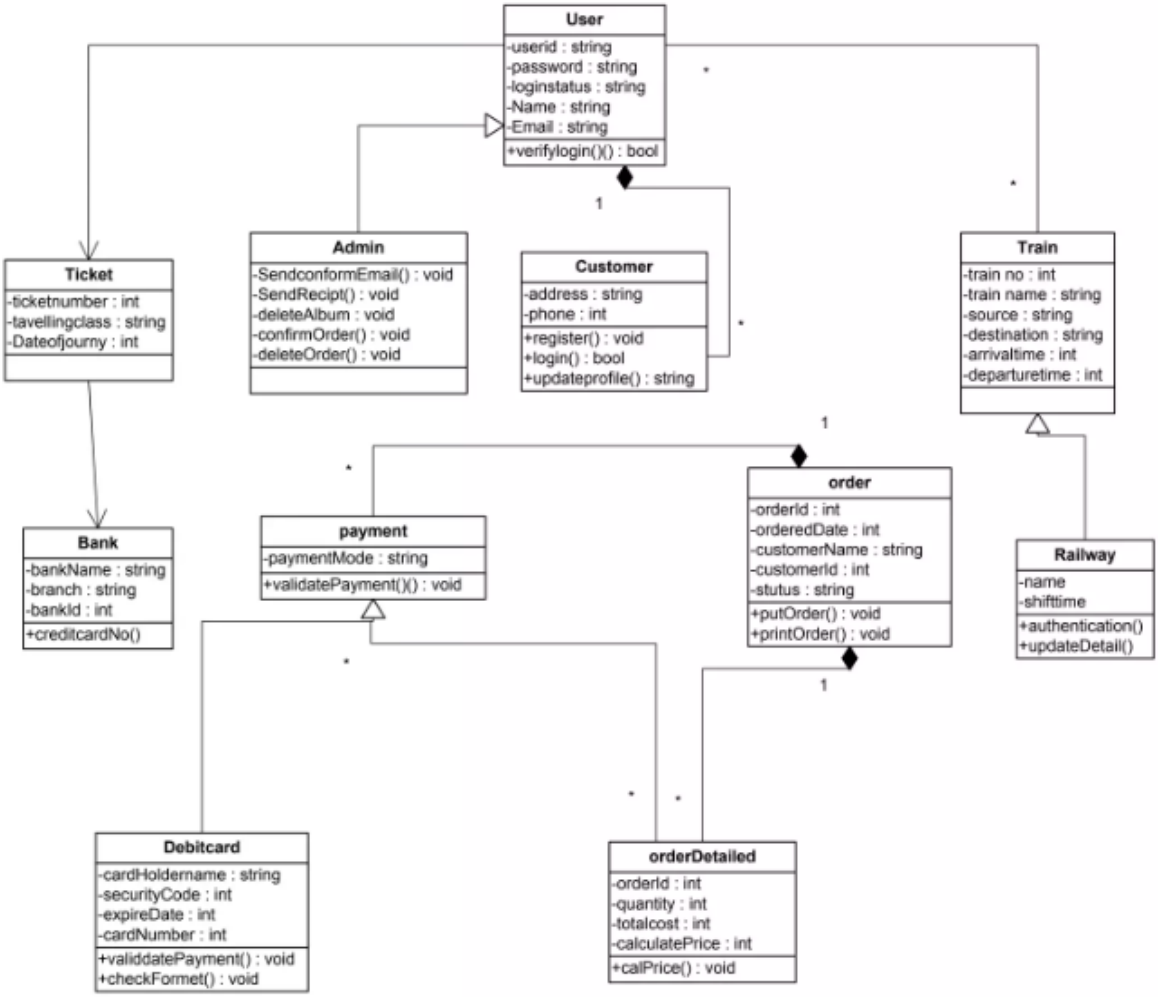
Cookies	a piece of data from a website that is stored within a web browser that the website can retrieve at a later time
ssl	SSL is standard technology for securing an internet connection by encrypting data sent between a website and a browser (or between two servers)
distributed database	A distributed database is a database in which data is stored across different physical locations. It may be stored in multiple computers located in the same physical location; or maybe dispersed over a network of interconnected computers
client/server system	The client–server model is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.
GUI	A graphical user interface (GUI) is a type of user interface through which users interact with electronic devices via visual indicator representations.
API	An application programming interface (API) is a way for two or more computer programs to communicate with each other. It is a type of software interface, offering a service to other pieces of software.
cache	an auxiliary memory from which high-speed retrieval is possible.
tatkal reservation	The Tatkal reservation is a ticketing program established by Indian Railways. The scheme is used for booking journeys at very short notice

Appendix B: Analysis Models

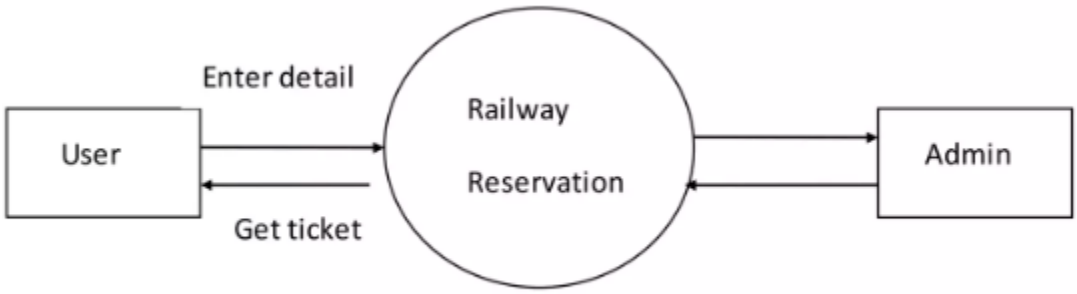
Use Case Diagram:



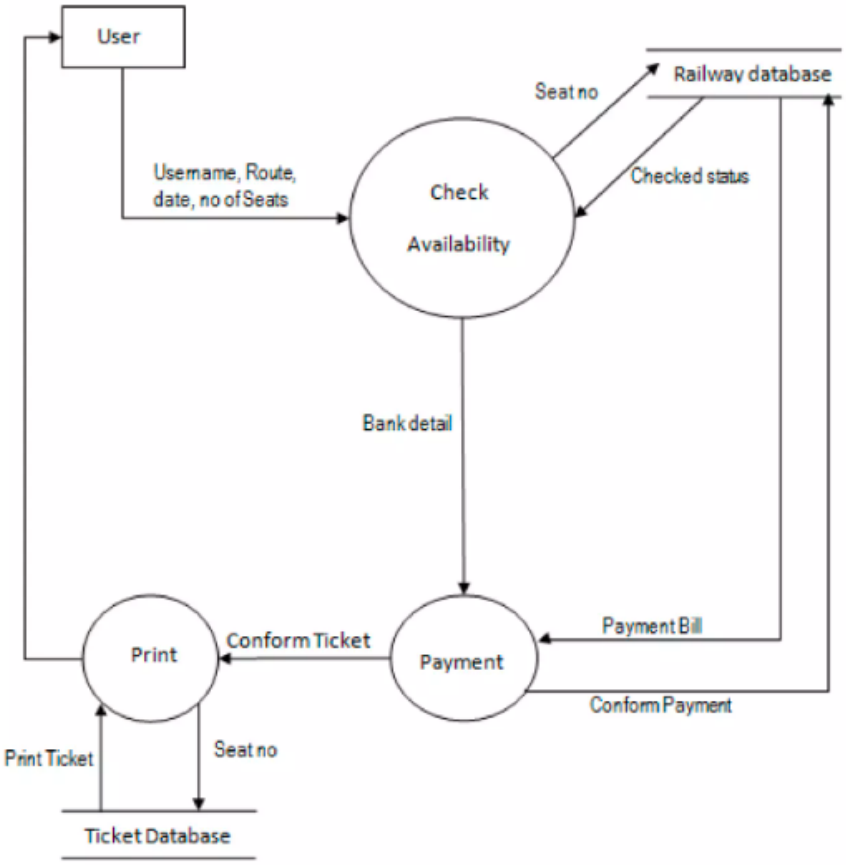
Class Diagram:



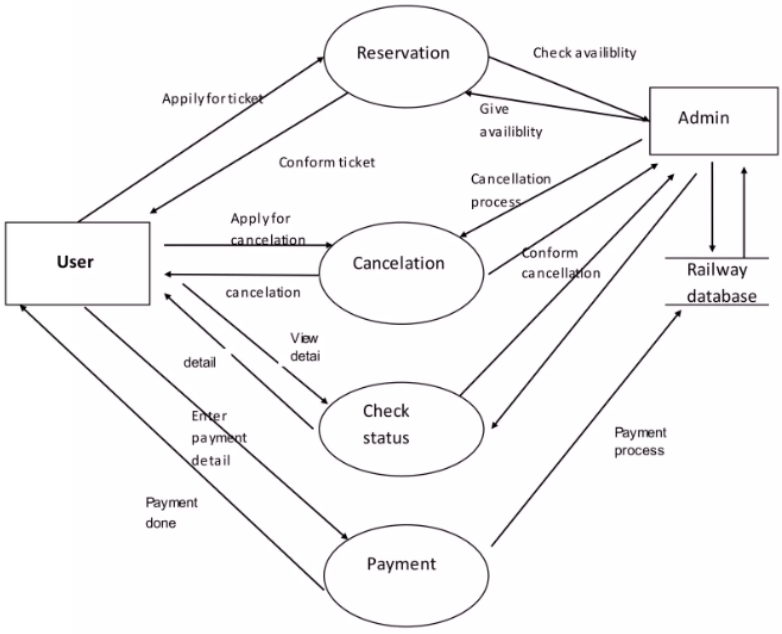
Data Flow Diagram:
DFD L0:



DFD L1:


User
Railway database
Seat no
Username, Route, date, no of Seats
Check Availability
Checked status
Bank detail
Print
Conform Ticket
Payment
Payment Bill
Conform Payment
Print Ticket
Seat no
Ticket Database

DFD L2:


Reservation
Check availiblity
Appily for ticket
Give availiblity
Admin
Conform ticket
Cancellation process
Apply for cancelation
User
Cancelation
Conform cancellation
Railway database
cancelation
View detai
detail
Check status
Enter payment detail
Payment process
Payment done
Payment