Software Requirements Specification

for

Railway Reservation System

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version
Shivani Shrivastava	09/03/2017	Updating the functional Requirements	1.1

1. Introduction

1.1 Purpose

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 Seat.
- Online Reservation
- Cancellation of Seat
- Check arrival and departure timings for railways

1.2 Document Conventions

The document is prepared using Microsoft Word 2010 and has used the font type 'Times New Roman'.The fixed font size that has been used to type this document is 11 pt with 1.0 line spacing. It has used the bold property to set the headings of the document.

1.3 Intended Audience and Reading Suggestions

This Software Requirements document is intended for:

− Developers who can review project's capabilities and more easily understand where their efforts should be targeted to improve or add more features to it (design and code the application – it sets the guidelines for future development).

− Project testers can use this document as a base for their testing strategy as some bugs are easier to find using a requirements document. This way testing becomes more methodically organized.

− Passengers can utilise this application to book tickets, cancel tickets , check their train's status online.

− Counter Clerks can use this document to check the train status, ticket availability and respond customer's request correspondingly via offline mode.

1.4 Product Scope

Technology has transformed many aspects of life in the 21st century, including the way many of us make train reservations. For example, to make ticketing more convenient for travelers, an online reservation system helps us in booking tickets from the comfort of our homes or offices. While this is convenient for most people, it has made things particularly easier for people residing in remote locations. The various advantages of using the online reservation system are as follows:

- Convenient – You can book or cancel your tickets sitting in the comfort of your home or office
- Saves Time and Effort - You can save the time needed to travel to the railway reservation office and waiting in the queue for your turn.
- Towards a greener planet – Instead of printing your ticket you can also choose to travel with the soft copy of your booked ticket in your laptop or even on your mobiles
- Freight Revenue enhancement.
- Passenger Revenue enhancement.
- Improved & optimized service

1.5 References

- https://web.cs.dal.ca/~hawkey/3130/srs_template-ieee.doc
- https://www.w3schools.com/
- https://www.tutorialspoint.com/uml/index.html/

2. Overall Description

2.1 Product Perspective

It enables us to maintain the railway train details like their timings, number of seat available and reservation billing and cancelling the tickets. 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 lead to inconsistency and inaccuracy in the maintenance of data.
- The data, which is stored on the paper only, maybe lost, stolen or destroyed due to natural calamity like fire and water.
- The existing system is sluggish and consumes a lot if time causing inconvenience to customers and railway 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 record of passenger is extremely difficult.
- An railways has many office around the world, an absence of a link between these office lead to lack of coordination and communication.

  Hence the Railway 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.
- It enables us to maintain the railway train details like their timings, number of seat available and reservation billing and cancelling the tickets. 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 lead to inconsistency and inaccuracy in the maintenance of data.

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The machine performs all calculations. Hence chances of error are nil.

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The system provides for user-ID validation, hence unauthorized access is prevented.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 is mind, an important feature of this software is that it is relatively simple to use. It encompasses :

- Search : This function allows booking agent to search for train that are available between the two travel cities, namely the Departure city and the Arrival city as desired by the traveller. The system initially prompts the agent for the departure and arrival city.It then displays the list of train available with different trains between designated destinations.
- 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. Place of Departure
3. Pace of Arrival
4. Arrival Time
5. Departure Time

- Review : If seats are available , then the software verifies for the booking of train else a message indicating “Seat Not Available” is displayed..

- Traveller Information : It asks for the details of all passengers supposed to travel including name, address, email id and contact number.
- Cancellation : The system also allows the passenger to cancel an existing reservation. This function registers the information regarding a passenger who has requested for a cancellation of his/her attack.

2.3 User Classes and Characteristics

There are 3 user levels in out HMS.

1. Administrator
2. Database
3. User

Administrator: The administrator has access to the the train database system. He is solely responsible for updating the train details .It can view user information, booking information and train information, analyze them and take the decision accordingly. He is required to have experience on managing a railway previously and have a basic knowledge of database and application server.

Database : The databases include passenger database which has the details of the passenger, admin database that has the details of the admin, train database that has the train schedule and the booking database that has details of trains and seat booked by the passenger.

Customer: They are a vital part of the system. They have access to book a ticket, search train, cancel a ticket, view booked tickets.They should be able to confirm the booking and cancel if necessary. The customer should be able to use the interface.

2.4 Operating Environment

- Distributed database
- Client/Server system

- Operating system: Windows and Linux
- SQL Database
- Platform : Sublime Text Editor
- Language : Php

2.5 Design and Implementation Constraints

The constraints are as follows:

- It allows only single user to login at a time.
- Information regarding cancellation and delay of trains are not displayed.
- Booking Agents will be having a valid username and password to access the software.
- The software requires booking agent to have complete knowledge of railway reservation system.
- Software is dependent on access to internet.
- The system shall be a web based application.
- The system must be user friendly.
- The development environment shall be Windows 8.
- The language used in the system must be easily understandable to the public.
- The computer must have sufficient memory.

2.6 User Documentation

The manual on how to use the website will be provided to the client, administrator and user.

Since their functionalities are different, each actor will have a different manual.

The user will have a manual which includes instructions on how to use the website.

The admin will be given a manual that contains details on the MySQL database working in the background and how to use the website.

2.7 Assumptions and Dependencies

- It is assumed that all reservations are single.
- A customer is not allowed to login as an admin.
- It is assumed that the users will possess decent internet connectivity.

3. External Interface Requirements

3.1 User Interfaces

- The frontend will be developed using several languages like html, css, javascript, php, bootstrap etc.
- Screen Format : The introductory screen will be the first to be displayed which will allow the users to enter the login details and check the availability of the ticket or cancel a ticket.
- Page format : If the tickets are not available then a window would pop up showing a message that no more tickets are available. If tickets are available then the booking page is opened and booking confirmation is displayed.

3.2 Hardware Interfaces

The system must basically support certain input and output devices. Their descriptions are as follows.

Name of Item	Description of Purpose	Source of Input / Description of output
Key board	To accept data from user like pin code, personal details, railway details	Source of Input
Printer	To print the bookings mode Eg: Destination chosen with date and timings.	Destination of Output

3.3 Software Interfaces

- Any Linux Based or Windows Based Operating System
- SQL Database
- Tools : Jupyter Notebook

- Libraries : Pandas , Numpy

3.4 Communications Interfaces

- The system requires an HTTP to communicate with the server. The system can be configured to be accessed via any available port.
- The web based UI is the only means of communication between the user and the system.
- A proper internet connection is recommended.

4. System Features

4.1 Login Requirement

4.1.1 Description and Priority

It provides member authentication.

4.1.2 Stimulus/Response Sequences

The member is directed to main page on successful login.The input is verified by checking if the member already exists in the database. The correct input will result in the next page i.e the analysis page being loaded. If the input is incorrect then an error message will be displayed.

4.1.3 Functional Requirements

REQ-1: Validation for username and corresponding password should be fast.

4.2 Registration Form Requirement

4.2.1 Description and Priority

It provides registration of a non member. The user is asked to enter details like name, birthdate, address, contact number, email id and password.

4.2.2 Stimulus/Response Sequences

The input is validated using client side as well as server side validation. The client side validation will include checks for missing information in the required fields and other text fields like email and phone numbers will be checked for validity. The server side validation

will involve checking if the username entered is already used by a member in the database. The appropriate error messages are displayed if the input is not acceptable

4.1.3 Functional Requirements

REQ-1: The system must have sufficient memory to store the corresponding details of the customer.

REQ-2: The software should not be architecture specific.

REQ-3: Response to user errors and undesired situations should be handled.

4.3 Passengers Information Management

4.3.1 Description and Priority

The system will maintain record of passengers id,train id , allotted seat number and the date of travel. The system will allow creation/modification/deletion of new or existing passenger.

4.3.2 Stimulus/Response Sequences

Passenger information for a particular passenger will have to be entered before any enquiry details, cancellation details can be entered for the student.

4.3.3 Functional Requirements

REQ-1: Only user with controller or data entry operator will be authorized to access the passengers information management module. Information check should be fast for checking authenticity.

4.4 Trains Information System

4.4.1 Description and Priority

The system will maintain information about the train name, train number. Number of seats in each train is fixed. The system will allow addition of more seats.

4.4.2 Stimulus/Response Sequences

Ticket information will be present in the system before it can be issued.

4.4.3 Functional Requirements

REQ-1: If any of the above validations/sequencing flow does not hold true, appropriate error messages will be prompted to the user for doing the needful.Retrieval of data should be fast.

4.5 Issued Tickets Management

4.5.1 Description and Priority

The system will maintain information about seats that are issued. Corresponding passenger details and date of travel.

4.5.2 Stimulus/Response Sequences

Passenger information and seat information must be entered before a seat can be allotted . The issue details must be present before the seat is cancelled.

4.5.3 Functional Requirements

REQ-1: Only user will role of controller or data entry operator can access issuedbook's information. Information check should be fast.

4.6 Cancel Ticket Information Management

4.6.1 Description and Priority

If a passenger wishes to cancel a ticket the user can do so.

4.6.2 Stimulus/Response Sequences

The entry will be removed from the database.

4.6.3 Functional Requirements

REQ-1: Only user will role of controller or data entry operator can access this module. Information check must be fast.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- The database should be scalable; it must have the capacity to hold large number of users in future.

- The number of connections to the system should not slow down the application to a large degree.
- The data for the analysis will be obtained from the database of users, so the response time for a query from the client side to the database side should not be more than 5 seconds.
- Error handling should be implemented and the application should be able to handle all runtime errors.
- The application should be flexible for future enhancements, for example, the addition of a few more additional features.

5.2 Safety Requirements

None

5.3 Security Requirements

- Users shall be required to log in to the RRS for their own reservation information and modification with email address and password.
- The system shall permit only authorized members who are in the authorized database.
- The system shall permit customers to view only their own previously placed orders, not orders placed by other customers.

5.4 Software Quality Attributes

5.4.1 Usability

The airline website design shall allow deployment on both Windows and UNIX(Linux) servers. The design should support Windows Server 2003, Linux 2.6.x, V10 UNIX and later.

5.4.2 Robustness

The system design shall include recovery scenarios allowing the ability to restore astate no older than one business day old.

5.4.3 Correctness

It should satisfy the normal regular HMS operations to fulfil end user objectives.

5.4.4 Efficiency

Resources should be implemented to achieve the particular task efficiency without hassle.

5.4.5 Flexibility

We should be able to add new features and handle them conveniently.

5.4.6 Integrity

System should focus on securing customer information and avoid data loss as much as possible.

5.4.7 Portability

System should run in any Windows or Linux system.

5.4.8 Maintainability

System should be maintainable.

5.5 Business Rules

None

6. Other Requirements

When the system is completely developed and submitted to the client, few sessions will be required to make the users of the system understand the functionality and adapt to the system. After these sessions, it is required that a member from the development team should spend some time in the system background for an agreed time period. That time period will be used to identify new bugs.

Appendix A: Glossary

Abbreviated terms and their meanings:

SRS: Software Requirement Specifications

HTML: HyperText Markup Language

PHP: Hypertext Preprocessor

CSS: Cascading Style Sheets

SQL: Structured Query Language

HTTP(S): Hypertext Transfer Protocol (Secure)

Appendix B: Analysis Models

Documents attached.

Appendix C: To Be Determined List

None.