Software Requirements Specification

for

Bus Booking System

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The main purpose of this project is to build an online system to make it convenient for the passengers to book bus tickets. It also allows the administrator to update buses and bus routes to ease the management. The system provides a solution to allow the user to search for buses satisfying the user criteria, to reserve seats, to manage the user account.

This SRS document presents a detailed description of the Bus Booking system. It represents the client requirements analysis that defines the functional and non-functional requirements of the bus management application and its different functionalities. It defines the abilities, guidelines and limitations of the system. This document will be complete in its scope of the system and the functions required. The system provides a solution to allow the user to search for buses satisfying the user criteria, to reserve seats, to manage the user account, and to book bus tickets.

1.2 Document Conventions

The document is prepared using Microsoft Word 2010 and has used the font type 'Times New Roman'. A fixed font size of 12 with 1.15 line spacing has been used. The headings in this document are set to bold.

1.3 Intended Audience and Reading Suggestions

This Software Requirements document is intended for:
− Developers who can review project's capabilities and easily understand where their efforts should be targeted to improve or add more features.
− Passengers can utilize this application to book tickets and check their bus status online.
− Admins can use this document to check the bus status, ticket availability and respond to customer's request.

1.4 Product Scope

The purpose of the online bus management system is to ease bus management and to create a convenient and easy-to-use application for passengers, trying to book bus tickets. The system is based on a relational database with management and reservation functions. This software provides options for viewing different buses available, with different timings for a particular date and

provides customers with the facility to book tickets for a particular reservation. A user can login either as a customer or an admin.

The various advantages of using the online booking system are as follows:

- Convenient – You can book 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 bus reservation office and waiting in the queue for your turn.
- 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
- Passenger Revenue enhancement.
- Improved & optimized service

1.5 References

This document follows IEEE standard convention, **IEEE Std** 830-1998.

2. Overall Description

2.1 Product Perspective

This project represents the initial version of the "Bus Booking system". All requirements listed herein describe a self-contained system. At a high level, this project will allow a user to book buses, check buses and query bus information. The goal is to allow customers greater and easier access to the bus booking system. The product is user-friendly and very inter-active. Functionalities like displaying the error messages are provided by the system.
Now the system is useful as follows:

- The computerization of the reservation system will reduce a lot of paperwork and hence the load on the administrative staff.
- The machine performs all calculations. Hence chances of error are nil.
- The passenger, reservation 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

The major functions include

- Providing bus details
- Bus bookings for a particular destination, date and time.
- Allowing the customer to book his reservation.
- When logged in as admin it allows to add, remove bus routes
- The admin can update bus details
- Printing or displaying the ticket details and customer.

2.3 User Classes and Characteristics

There are 2 actors present in the application:

- Customer: When a passenger logs in as a customer he can either book a reservation
- Administrator: An admin can add, delete the bus routes. He can update the bus details or remove a bus.

2.4 Operating Environment

Operating environment for the bus management system is as listed below.

- Client-server system
- Operating system: Windows
- Database: SQL database
- Platform: NetBeans
- Programming Language: Java

2.5 Design and Implementation Constraints

The general constraints of the system are as follows:

- It allows only a single user to login at a time
- Ticket confirmation details are not sent to the user
- Information regarding buses like delay are not shown in the application
- Passengers or the admin should have a valid username and password to access the software.
- Software is dependent on access to internet.
- The computer must have sufficient memory.

2.6 User Documentation

For user documentation please refer section: 3

2.7 Assumptions and Dependencies

- It is assumed that all transactions are single
- A customer is not allowed to login as an admin
- Actual payments are not allowed.

3. External Interface Requirements

3.1 User Interfaces

- Front-end software: NetBeans
- Back-end software: MySQL

The interfaces are easy to understand. The user interface includes
• Screen Format: The introductory screen will be the first to be displayed which will allow the users to login either as a customer or an admin.
• Window Format: When the user chooses some other option, then the information pertaining to that choice will be displayed in a new window which ensures multiple windows
to be visible on the screen and the users can switch between them.
• Data format: The data entered by the users will be alphanumeric.
• Error Messages: When there are some exceptions raising error like entering invalid details, then error messages will be displayed prompting the users to re-enter the details.

3.2 Hardware Interfaces

The system shall run on a computer with 64 GB RAM

3.3 Software Interfaces

Following are the software used for the bus management online application.

Software used	Description
Operating system	Windows operating system is chosen for its best support and user-friendliness.
Database	To save the bus records, passengers' records SQL database is chosen.
IDE	NetBeans

3.4 Communications Interfaces

This project supports all types of web browsers. Simple electronic forms are used for the reservation forms, ticket booking etc.

4. System Features

The ability of the software is to provide the details of the buses available and allow the customers to choose a particular destination and make a reservation. This section provides detailed features for the web design.

4.1 Login

4.1.1 Description and Priority

This function allows a registered user to login his account using his/her username and password. The system will check both the username and password, when a user attempts to login. If an invalid login occurs, the user is again allowed to enter the required details.

4.1.2 Stimulus/Response Sequences

When all the inputs are provided by user, indication that user is logged in to the system is displayed. The outputs are displayed on the screen as well as stored in the database.

4.1.3 Functional Requirements

- There should be two buttons on the webpage to login. One for the cutomer and another for admin.
- Validation for username and corresponding password should be fast.
- Database should be present to save the input entered in the page in the form of a table

4.2 Register

4.2.1 Description and Priority

If a user is not registered, the application allows the user to enroll first. A user can create an account either as an admin or a customer. When valid username and password are given, a new account is created.

4.2.2 Stimulus/Response Sequences

When all the inputs are provided by user, indication that user has created an account is displayed. The outputs are displayed on the screen as well as stored in the database.

4.2.3 Functional Requirements

The system must have sufficient memory to store the corresponding details of the customer.

4.3 Book Seats

4.3.1 Description and Priority

The user can use the Book Seats function to reserve seats in a bus. The system shall present the user with information on all current buses. The user may then select a bus to purchase seats.
The user can indicate the number of seats and placement of such. Finally, the system shall guide the user completely through the checkout process.

4.3.2 Stimulus/Response Sequences

When the user selects seats, a new webpage is opened after clicking on the payment option. After the required card details are filled and the payment is done, the seats are confirmed.

4.3.3 Functional Requirements

The availability of seats shown should be proper. When the customer books a seat required changes are made to database.

4.4 Add Bus Route

4.4.1 Description and Priority

The administrator after logging in can add required bus routes by giving details like boarding and dropping point.

4.4.2 Stimulus/Response Sequences

After adding required details, the new route is added to bus details and the database is updated.

4.3.3 Functional Requirements
Only the admin can make changes to these bus details.

4.5 Remove Bus Route

4.5.1 Description and Priority

After successfully logging in as an administrator few bus routes can be removed from the bus details database.

4.5.2 Stimulus/Response Sequences

After making necessary changes, new routes are updated in the database.

4.5.3 Functional Requirements

After removing the bus routes the database is updated. When logged in again, the customer views the new routes.

4.6 Update Bus Details

4.6.1 Description and Priority

Only the administrator can update the bus details. Details like bus timings, bus fares, boarding and dropping points can be changed.

4.6.2 Stimulus/Response Sequences

The bus details database is updated after necessary changes are made by the admin using this function.

4.6.3 Functional Requirements

Valid boarding and dropping points are to be given. Appropriate error messages should be prompted to the user if incorrect details are selected.

4.7 Print Ticket

4.7.1 Description and Priority

After the seat is confirmed, the customer can print the ticket details using print option.

4.7.2 Stimulus/Response Sequences

Details like name of the passenger, phone number, e-mail id and ticket details like seat number, boarding point and dropping point are displayed on the screen.

4.7.3 Functional Requirements

Only logged in user can access ticket's information. Retrieval of information to display the details should be quick.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- The Bus booking website shall have capability to accept only one login. For each session, the user can login either as a customer or as an administrator. A close operation will be performed when logged out. This design is to satisfy each user's usability.
- The database should be scalable; it must have the capacity to hold large number of users in future.
- The system shall check validity of e-mail and password immediately after the login is requested.
- The system shall update all bus status information every time the admin changes it.

5.2 Safety Requirements

None.

5.3 Security Requirements

- Passwords must be a minimum of eight characters and must contain minimum one digit.
- The system shall permit only authorized members who are in the authorized database.
- Email addresses should be verified before the system grants user access.
- All exchanges from client to server (database) involving private data shall occur using the available level of secure connection.

5.4 Software Quality Attributes

5.3.1 Usability:

The bus management website design shall allow deployment on Windows. The design will be implemented on NetBeans.

The system design shall include recovery scenarios allowing the ability to restore an older state.

5.3.3 Availability:

The system will be available at any time to the user.

5.3.4 Maintainability:

The bus booking management system is developed in Java. Java is an object oriented language. Hence it is easy to maintain.

5.3.5 Portability:

This project shall run on any windows environment that has NetBeans.

5.3.5 Integrity

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

5.5 Business Rules

- Only an administrator is allowed to make changes to the application by logging in as an admin.
- The user has to login to make reservations.

6. Other Requirements

None.