BookMyTicket

Ticket Booking System

FUNCTIONAL SPECIFICATION DOCUMENT

Ver 1.0

February 23, 2025

AUTHORS

NAME	ROLE	DEPARTMENT
Gauri Mahesh Paithankar	Business Analyst	IT

DOCUMENT HISTORY

DATE	VERSION	DOCUMENT REVISION DESCRIPTION	DOCUMENT AUTHOR
23/02/2025	1.0	Initial Draft	Gauri Paithankar

APPROVALS

APPROVAL DATE	APPROVAL VERSION	APPROVER ROLE	APPROVER
23/02/2025	1.0	Project Manager	MJ

1. Introduction

1.1. Purpose of document

This Functional Specification Document (FSD) outlines the detailed functional requirements for the **BookMyTicket** Bus Ticket Booking System. It is derived from the Business Requirement Document (BRD) and provides traceability between business needs and system functionality.

1.2. Project Scope

The **BookMyTicket** platform will facilitate bus ticket bookings with route-based bookings, user management, payment processing, and automatic notifications. Initially, it will support only bus ticket bookings with features such as multi-user booking and gender-based seat selection.

1.3. Scope of document

This Functional Specification Document (FSD) defines the detailed functional and non-functional requirements for the **BookMyTicket** system. It outlines the system's functionalities, interactions, and constraints to ensure a clear understanding of the implementation.

1.3.1. Development of an online bus ticket booking platform.

1.3.2. Predefined journey selection (Limited to 10 fixed routes).

ID	JOURNEY	BOARDING POINT	DROPPING POINT	TIME INTERVALS	FIRST BUS	LAST BUS
1	Pune-Mumbai	Swargate, Kothrud , Chandni Chowk, Wakad, Talegaon Toll Naka	Kalamboli, Kharghar, CBD Belapur, Nerul, Vashi, Chembur, Sion, and Bandra	Every 1 hour.	6:00 am	12:00 am
2	Mumbai -Pune	Andheri (E), Dadar (E), Chembur, Bandra East, Kandivali (E), Borivali West	Ravet, Wakad, Balewadi, Baner, Bavdhan, Kothrud, Nal Stop, Swargate	Every 1 hour.	6:00 am	12:00 am
3	Pune-Nagpur	Sangamwadi, Wakad, Swargate, Nigdi, Chinchwad, Viman Nagar	Chatrapati Square, Dharampeth, Ashirwad Theatre, Wadi	Every 12 hours.	8:00 am	8:00 pm
4	Nagpur-Pune	Ashirwad Theatre, Dharampeth, Ravi Nagar Chatrapathi Square	Wagholi, Viman Nagar, Sangamwadi, Chinchwad	Every 12 hours.	8:00 am	8:00 pm
5	Pune-Nashik	Swargate, Sangamwadi, Wakad, Bhosari, Nashik Phata	Dwarka Circle, Mumbai Naka, Thakkar Bazar, Nashik CBS	Every 1 hour.	6:00 am	12:00 am

ID	JOURNEY	BOARDING POINT	DROPPING POINT	TIME INTERVALS	FIRST BUS	LAST BUS
6	Nashik-Pune	Dwarka Circle, Thakkar Bazaar, Mumbai Naka, Bytco Point	Alandi Phata, Akurdi, Birla Hospital, Bopodi, Aundh, Baner, Bavdhan	Every 1 hour.	6:00 am	12:00 am
7	Pune-Akola	Sangamwadi, Wakad, Swargate, Nigdi,	Nimwadi Luxury Bus Stand, Ramlata Business Center	Every 12 hours.	8:00 am	8:00 pm
8	Akola-Pune	Ramlata Business Center, Nimwadi Luxury Bus Stand, Kaneri Phata,	Sangamwadi, Yerwada, Viman Nagar	Every 12 hours.	8:00 am	8:00 pm
9	Pune-Kolhapur	Swargate, Shivaji Nagar, Sangamwadi, Wakad	Bus Stand, Kawala Naka, and Kolhapura Bypass	Every 1 hour.	6:00 am	12:00 am
10	Kolhapur-Pune	Kolhapur Bypass, Tawde Hotel, Kawala Naka	Swargate, Nigdi, Wakad, Sangamwadi.	Every 1 hour.	6:00 am	12:00 am

1.3.3. Boarding point selection via dropdown.

1.3.4. Dropping point selection via dropdown.

1.3.5. Date selection via calendar picker.

1.3.6. Real-time seat selection and availability updates.

1.3.7. The system must restrict male passengers from selecting seats next to female passengers unless no other seats are available.

1.3.8. Multi-passenger booking.

1.3.9. Automatic fare calculation.

1.3.10. User notifications via SMS/email for booking confirmations and cancellations.

1.3.11. Session timeout handling to log out inactive users.

1.3.12. User management.

1.3.13.Payment gateway integration (UPI, debit/credit cards, net banking).

1.4. Related Documents

DOCUMENT REFERNCE	NAME	DESCRIPTION
BRD	Business Requirements Document	Defines project goals, scope, and key requirements.
Use Case	Use Case Document	Describes system interactions, user actions, and expected outcomes.
Test Case	Test Case Document	Details test scenarios, inputs, expected outcomes, and execution steps.

1.5 Terms/ Acronyms & Definition

Term/ Acronym	Definition	Description
PCI DSS	Payment Card Industry Data Security Standard	Ensures secure processing, storage, and transmission of cardholder data to prevent fraud.
GDPR	General Data Protection Regulation	Protects personal data by enforcing strict privacy rules and giving individuals control over their information.
SSL Certification	Secure Sockets Layer Certification	Ensures **secure, encrypted communication** between users and the server, protecting sensitive data.

1.6. Risks and Assumptions

1.6.1. Assumptions

1.6.1.1. Users have stable internet access.

1.6.1.2. Payment gateway is externally managed.

1.6.1.3. SSL certificate is always renewed and updated to maintain secure transactions.

1.6.1.4. Users will follow system guidelines for seat selection and payment completion.

1.6.1.5. The server infrastructure will support peak traffic loads of up to 1,000 CONCURRENT users.

1.6.2. Risks

1.6.2.1. High traffic load may cause performance degradation.

1.6.2.2. Cybersecurity threats such as hacking or phishing.

1.6.2.3. Payment failures due to network issues.

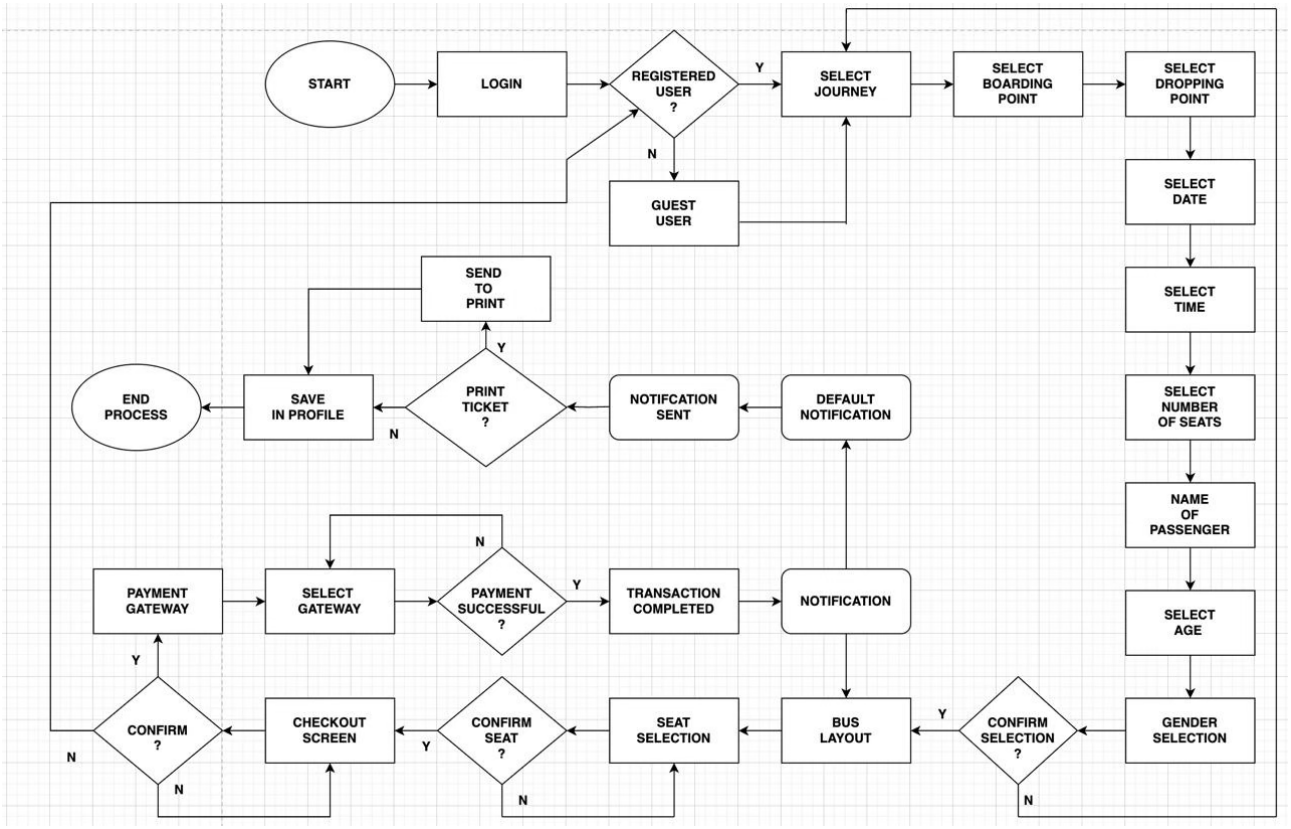
1.6.2.4. Users may enter incorrect details leading to booking errors.

1.6.2.5. Seat conflicts due to multiple users selecting the same seat simultaneously.

2. System / Solution Overview

The **BookMyTicket** platform allows users to search for buses, select seats, and make secure payments for their journeys. Users can choose from predefined routes, boarding/dropping points, and travel dates while ensuring real-time seat availability. Gender-based seating restrictions apply for safety. Once the booking is confirmed, users receive SMS and email notifications with e-tickets. The platform ensures a secure, efficient, and user-friendly booking experience.

2.1. Process Flow Diagram



2.2. System Actors

2.2.1 User Roles and Responsibilities / Authority Requirements

ID	User/Role	Example	Frequency of Use	Security/Access, Features Used	Additional Notes
2.2.1.1	User	Passenger	High	Read, Write, Access Control	Can book and manage tickets.
2.2.1.2	System User	Support Staf	High	Read, Write, Amend, Access Control	Can read, write information within system.
2.2.1.3	Administra -tor	Bus Company Manager	Medium	Add, Read, Write, Amend, Delete, Access Control	Can add, read, write and delete information within system.

2.3 Dependencies and Change Impacts

2.3.1 System Dependencies

- Integration with third-party payment gateway.

2.3.2 Change Impacts

2.3.2.1. Enhancements in UI/UX may improve navigation but require user adaptation.
2.3.2.2. Changes in banking or RBI regulations can impact payment processing, requiring compliance updates and potential modifications in transaction workflows.
2.3.2.3. Updates must adhere to PCI DSS and GDPR standards to ensure data protection.
2.3.2.4. Changes in ticketing rules or pricing may require staff training and policy updates.
2.3.2.5. API changes in the payment gateway may require integration updates, testing, and adjustments to ensure seamless transaction processing.

3. Functional Specification

ID	REQUIREMENTS	PRIORITY	RAISED BY
FS-01	Users must be able to log in using username and password.	Critical	GP
FS-02	The system must support guest users to book tickets without registration.	Critical	GP
FS-03	Users must be able to reset passwords	Critical	GP
FS-04	Users must select a journey from 10 predefined routes via a dropdown.	Critical	GP

ID	REQUIREMENTS	PRIORITY	RAISED BY
FS-05	Users must choose boarding points from dropdown.	Critical	GP
FS-06	Users must choose dropping points from dropdown.	Critical	GP
FS-07	Users must select a travel date using a calendar picker (only next 30 days, past dates disabled).	Critical	GP
FS-08	Users must select a time slot from a dropdown.	Critical	GP
FS-09	Users must select up to 5 passengers per booking and provide name, age, and gender.	Critical	GP
FS-10	The system must ensure passenger details before proceeding to seat selection.	Critical	GP
FS-11	Users must be able to select available seats in real-time, ensuring that male passengers cannot select seats adjacent to female passengers unless no other seats are available.	Critical	GP
FS-12	Users must be able to cancel bookings, with applicable refund policies enforced.	Critical	GP
FS-13	The system must auto-calculate total fare (per-seat fare × number of passengers).	Critical	GP
FS-14	Users must be redirected to the payment gateway for secure transactions.	Critical	GP
FS-15	Users must receive payment confirmation and be redirected to the success page.	Critical	GP
FS-16	The system must generate an digital-ticket with journey details.	Critical	GP
FS-17	Users must receive SMS and email notifications with ticket details.	Critical	GP
FS-18	The system must save the ticket in the user’s profile for future reference.	Critical	GP
FS-19	Users must be able to view and download tickets from their profile.	Critical	GP
FS-20	The system must support real-time seat availability updates to prevent conflicts.	Critical	GP
FS-21	The booking session must expire after inactivity, prompting users to restart.	Critical	GP
FS-22	The system must provide error messages for invalid inputs (e.g., missing details, unavailable seats).	Critical	GP

3.1 Use Cases

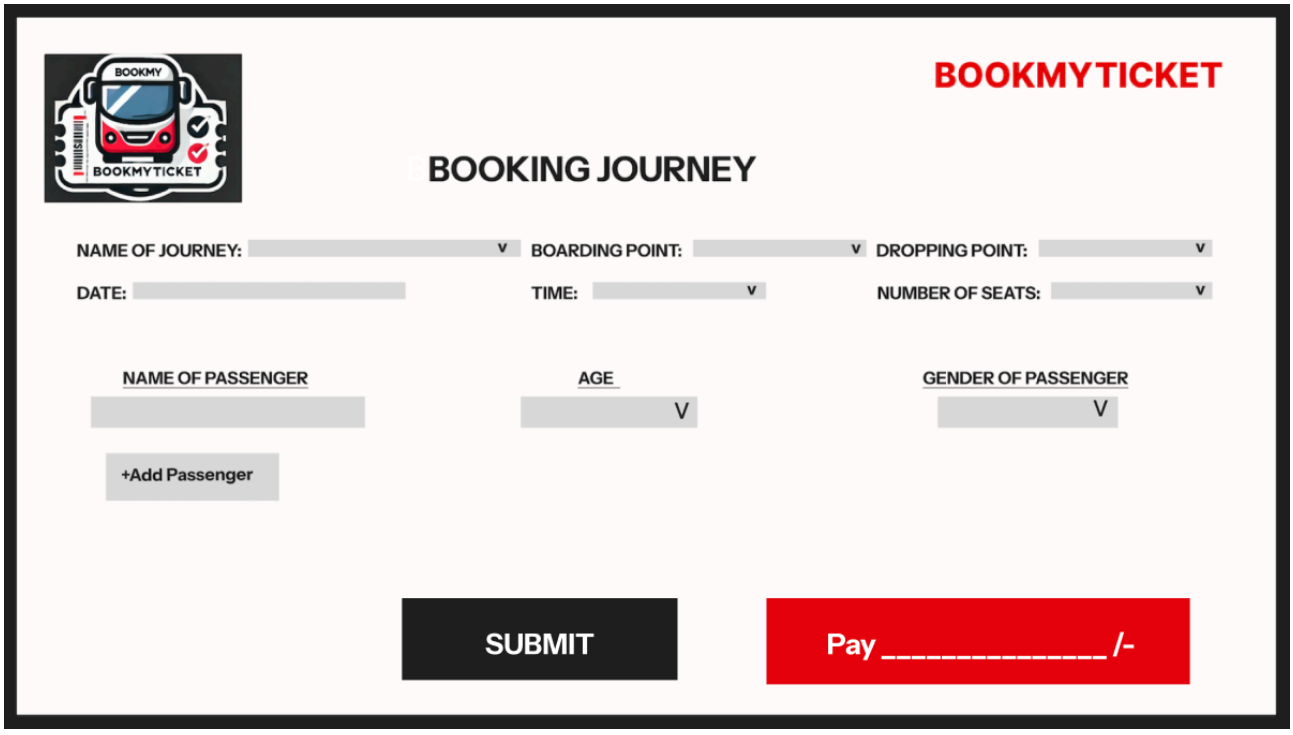
USE CASE ID	DESCRIPTION	LINK TO UC	TEST CASES	REMARK
UC_01	Login for Users	NA	NA	NA
UC_02	User Profile Creation	NA	NA	NA
UC_03	Booking Screen	Refer to 3.1.2.	Refer to Test Case Document	NA
UC_04	Amendment and Cancellation	NA	NA	NA
UC_05	Checkout	NA	NA	NA
UC_06	Send Notification	NA	NA	NA
UC_07	Print Ticket	NA	NA	NA

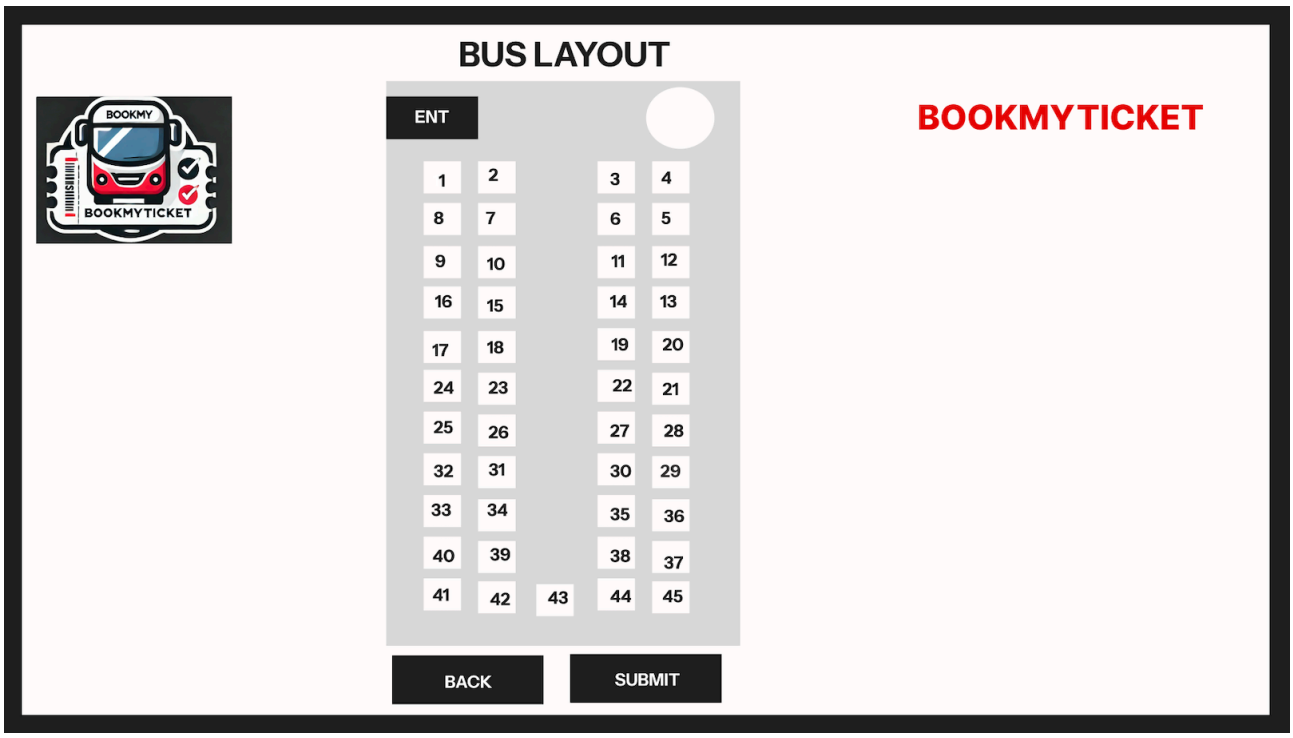
3.1.2. Use Case - Booking Screen

UC_03	BOOKING SCREEN
Primary Actors	User (Passenger) – Selects journey details, seats, and enters passenger information. System (BookMyTicket) – Displays available buses, validates seat selection, and updates booking details.
Stakeholders and Interests	User (Passenger) – Wants a smooth and hassle-free ticket booking experience. Bus Operator – Wants accurate seat reservations and timely updates. System Admin – Ensures smooth system operation and prevents booking conflicts.
Trigger	The user initiates the booking process by selecting a journey.
Pre-Conditions	1. The user has accessed the BookMyTicket platform. 2. The system has an updated list of available buses and routes.
Post-Conditions	1. The system records the selected seats and passenger details. 2. The user is redirected to the checkout page for payment.

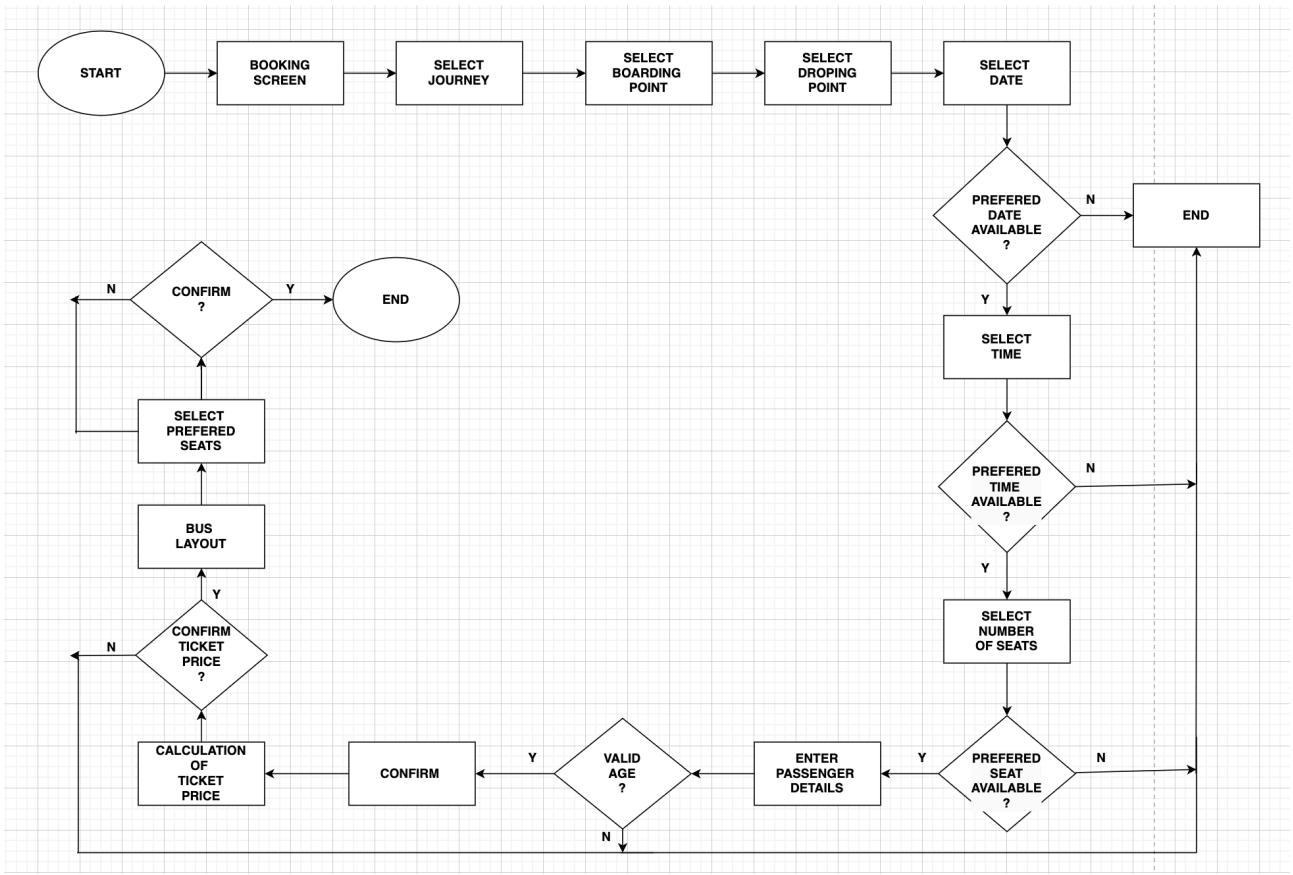
UC_03	BOOKING SCREEN
Main Success Scenario	1. User selects a journey from dropdown. 2. User selects a boarding point from dropdown. 3. User selects a dropping point from dropdown. 4. User selects a date from calendar picker. 5. User selects a time from dropdown. 6. Users selects the number of seats, with a maximum limit of 5 seats per booking. 7. User enters passenger details (name, age, gender). 8. System validates the details and 9. System calculates total fare. 10. System loads the bus seating layout. 11. Users must select available seats in real-time, ensuring gender-based restrictions prevent males from selecting seats next to females unless no other seats are available. 12. User confirms booking details. 13. System saves the booking details and redirects to checkout.
Priority	High – The booking screen is the core functionality of the system, and failure would prevent users from booking tickets.
Special Requirements	- Real-time seat availability updates to prevent double booking. - Gender-based seating restrictions applied where necessary. - Fare calculation must be automatic (per-seat fare × number of passengers). - Session timeout after inactivity to prevent fraud. - UI must be mobile-responsive for seamless booking across devices.
Open Questions	What happens if a seat gets booked simultaneously by two users before checkout?

3.1.3 Mockup





3.1.3.1. Use Case Diagram



3.1.4 Functional Requirements

Callout	Field Label	UI Control	Mandatory	Editable	Data Type	Value Set	Default Value	Data Example	Data Source
Mock up - 1	Name of Journey	Drop down	Yes	Yes	Alphabetic	Journey List (10 predefined routes)	NA	Mumbai-Pune	System Data
Mock up - 1	Boarding Point	Drop down	Yes	Yes	Alphabetic	City List	NA	Dadar	System Data
Mock up - 1	Dropping Point	Drop down	Yes	Yes	Alphabetic	City List	NA	Swargate	System Data
Mock up - 1	Date	Calendar	Yes	Yes	Date	Next 30 days (No past dates)	NA	28/02/2025	User Entry
Mock up - 1	Time	Drop down	Yes	Yes	Time	Available Slots	NA	6:00 am	System Data
Mock up - 1	Number of Seats	Drop down	Yes	Yes	Numeric	1-5	NA	3	User Entry
Mock up - 1	Name of Passenger	Textbox	Yes	Yes	Alphabetic	NA	NA	Manish	User Entry
Mock up - 1	Age	Textbox	Yes	Yes	Numeric	NA	NA	25	User Entry
Mock up - 1	Gender of Passenger	Drop down	Yes	Yes	Alphabetic	Male, Female	NA	Male	User Entry
Mock up - 1	Fare Calculation Display	Label /Text	Yes	No	Numeric	(Per-seat fare × No. of passengers)	NA	₹ 500	System Calculation
Mock up - 1	Seat Selection	Interactive Grid	Yes	Yes	Selection	Available seats only	NA	Seat 5	System Data
Mock up - 1	Session Timeout Warning	Alert Popup	No	NA	NA	Auto-logout after inactivity	NA	"Session expired, restart booking."	System Event

Callout	Field Label	UI Control	Mandatory	Editable	Data Type	Value Set	Default Value	Data Example	Data Source
Mock up - 1	Error Messages	Alert Popup	No	NA	NA	Input Validation Errors	NA	"Please select a seat before proceeding."	System Validation
Mock up - 1	Add Passenger Button	Button	No	NA	NA	NA	NA	NA	UI Control
Mock up - 1	Back Button	Button	No	NA	NA	NA	NA	NA	UI Control
Mock up - 1	Submit Button	Button	Yes	NA	NA	NA	NA	NA	UI Control

3.1.5 Business Rules

Field Label	Business Rule	Error Message	Data Dependencies	Additional Info
Name of Journey	User must select from 10 predefined routes via a dropdown.	"Please select a valid journey route."	System Data (Predefined Routes)	User cannot enter custom routes.
Boarding Point	Must be selected from available city list.	"Please select a valid boarding point."	System Data (City List)	User cannot enter manual locations.
Dropping Point	Must be selected from available city list.	"Please select a valid dropping point."	System Data (City List)	User cannot enter manual locations.
Date	The date must be selected via a calendar picker, allowing bookings for the next 1 month while keeping the past 1 month available only for cancellations, with no manual entry.	"Invalid date selected. Choose a date within the next 30 days."	System Data (Calendar Control)	User cannot manually enter the date.
Time	Must be selected from available time slots.	"Please select a valid time slot."	System Data (Available Bus Timings)	User cannot enter custom times.

Field Label	Business Rule	Error Message	Data Dependencies	Additional Info
Number of Seats	Max 5 passengers per booking.	"You can book up to 5 seats only."	User Entry	Dropdown selection (1-5).
Name of Passenger	Only alphabetic characters allowed.	"Please enter a valid name."	User Entry	No special characters or numbers allowed.
Age	Must be between 18 to 80.	"Please enter a valid age."	User Entry	No negative values or alphabets allowed.
Gender of Passenger	Must be selected from Male/Female dropdown.	"Please select a gender."	User Entry	Gender-based seat rules apply.
Fare Calculation Display	Auto-calculated based on per-seat fare × number of passengers.	NA	System Calculation	No manual input allowed.
Seat Selection	Users must select at least one seat, ensuring males cannot sit next to females unless no other seats are available.	"Please select at least one seat." / "Selected seat is unavailable. Choose another."	System Data (Real-time Seat Availability)	Real-time updates prevent double booking.
Session Timeout Warning	Auto-logout if inactive for 2 minutes.	"Session expired. Please restart the booking process."	System Timer	Prevents fraud and seat blocking.
Error Messages	Displayed for invalid/ missing inputs.	NA	System Validation	Ensures smooth user experience.
Add Passenger Button	Allows adding up to 5 passengers.	"Cannot add more than 5 passengers."	User Entry	Button disables after 5 passengers.
Back Button	Navigates to the previous screen.	NA	UI Control	Retains previously entered data.
Submit Button	Validates all fields before proceeding.	"Please complete all required fields before submitting."	System Validation	Only enabled after validation success.

4. System Configuration

4.1 Admin panel for managing bus schedules.
4.2 Secure authentication mechanisms.

5. Other System Requirements / Non-functional Requirements

ID	NFR	REQUIREMENT
5.1	24/7 Availability	The portal should be accessible 24/7.
5.1.1	System EOD	System End of Day (EOD) will be performed at 12:00 AM.
5.1.2	System Restart	The system will be back online by 12:05 AM after maintenance
5.2	Screen Activation	All screens should be responsive and mobile-friendly.
5.2.1	Load Time	Screens should load within 5 seconds.
5.2.2	Lock Screen	Lock screen status should retain user data when reactivated.
5.2.3	Navigation Time	Navigation between screens should not exceed 5 seconds.
5.3	Transaction Cycle	Transactions should be processed efficiently without delays.
5.3.1	Transaction Speed	The entire booking transaction should complete within 1 minute.
5.4	Concurrent Users	The system should handle 1,000 concurrent users at peak times.
5.5	Disaster Recovery	The system should have a disaster recovery mechanism in place
5.6	Data Backup	Daily backups should be performed at 11:45 PM to prevent data loss.
5.6.1	Incomplete Transaction Recovery	Users should have the option to abort and reset transactions if needed.

6. Reporting Requirements

- Print Ticket

7. Integration Requirements

7 .1 Exception Handling / Error Handling

Error ID	Error	Cause	Solution Strategy
ER-01	Journey Not Selected	User has not chosen a predefined journey route.	Display an error message and prevent proceeding until a journey is selected.
ER-02	Boarding Point Missing	User has not selected a valid boarding point.	Show a warning and prevent booking submission until a selection is made.
ER-03	Dropping Point Missing	User has not selected a valid dropping point.	Show a warning and prevent booking submission until a selection is made.
ER-04	Time Slot Not Selected	User has not chosen a departure time.	Display an error message and restrict further steps until a valid time slot is selected.
ER-05	Date Not Selected	User has not chosen a date	Display an error message and restrict further steps until a valid Date is selected.
ER-06	Number of Seats Not Selected	User has not specified the number of passengers.	Show a prompt requiring seat selection before proceeding.
ER-07	Passenger Details Missing	Name, Age, or Gender is not provided for one or more passengers.	Highlight missing fields and prevent submission until completed.
ER-08	Selected Seats Unavailable	The user-selected seats have already been booked by another user.	Notify the user and allow them to select another available seat.
ER-09	Fare Mismatch Error	System detects an inconsistency in fare calculation.	Prevent checkout and prompt the user to refresh or restart the booking process.
ER-10	Session Timeout	User takes too long to complete the booking process.	Show a timeout warning and redirect the user to restart the booking.
ER-11	System Crash or Unexpected Error	Internal server error occurs during booking.	Display a generic error message and log the issue for system administrators to investigate.

8. Data Migration / Conversion Requirements

8 .1 Data Conversion Strategy

NA

8 .2 Data Conversion on Preparation

NA

8 .3 Data Conversion on Specification

NA

9. References

NA

10. Open Issues

NA

Appendix

(To be added later)