This Bus Reservation System is a comprehensive C program designed to automate and streamline bus ticket booking operations. The system allows users to book tickets, request refunds, and check bus status through a secure, phone number-verified interface.

The system begins with user authentication through a phone number and OTP verification process, ensuring secure access. Once authenticated, users can access three main functionalities:

1. Ticket Booking: Users can search for buses by specifying source and destination locations, view available seats, and book multiple seats in a single transaction.
2. Refund Processing: Passengers can cancel their bookings through a secure refund verification process, automatically updating seat availability.
3. Bus Status Check: Users can view real-time information about all buses, including seat availability, pricing, and schedules.

The program uses file handling to persistently store bus and booking data in "Bus\_data.dat", ensuring data retention between program executions. It implements a robust data structure using structs to manage bus information, including bus ID, total seats, available seats, booking details, routes, timings, and pricing.

Key features include:

* Phone number validation and OTP verification
* Dynamic seat allocation and visualization
* Automated billing system
* Secure refund processing
* Real-time bus status updates
* Multiple seat booking capability
* Route-based bus search

Purpose of the Project:

The Bus Reservation System is developed with the primary purpose of automating and modernizing the traditional manual bus ticket booking process. The key objectives include:

1. Simplifying Bus Booking:

* To eliminate the need for passengers to physically visit bus stations to book tickets
* To reduce the time and effort involved in the booking process
* To provide a convenient way to view and select seats

1. Improving Customer Service:

* To provide real-time information about bus availability
* To reduce booking errors and double bookings
* To offer a hassle-free refund process
* To make bus schedule and pricing information easily accessible

1. Enhancing Business Operations:

* To maintain accurate records of bookings and cancellations
* To improve seat inventory management
* To reduce paperwork and manual record-keeping
* To minimize human errors in the booking process

1. Ensuring Security:

* To implement secure user verification through phone numbers and OTP
* To maintain data integrity and prevent unauthorized access
* To create a reliable system for tracking bookings and refunds

The system serves as a bridge between bus service providers and passengers, making the entire booking process more efficient, transparent, and user-friendly. It's particularly valuable for both small and large bus operators who want to modernize their booking operations and improve customer satisfaction through a systematic and automated approach.

 