MINI PROJECT REPORT   
ON   
RAILWAY RESERVATION SYSYTEM   
   
A report submitted in partial fulfilment of the course   
   
U21CSG01 – PROBLEM SOLVING AND C PROGRAMMING   
in   
COMPUTER SCIENCE AND ENGINEERING   
by   
   
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BONAFIDE CERTIFICATE   
   
   
This is to certify that the Mini Project Report submitted by MADHESH K is work   
done by them and submitted during the academic year 2023 – 2024, in partial fulfilment   
of the course U21csG01 – Problem solving and C programming in Computer   
Science and Engineering at KPRIET.   
   
   
   
   
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ABSTRACT   
The Railway Reservation System is a comprehensive software   
application designed to facilitate the efficient management of railway   
ticket booking, cancellation, and inquiry processes. In today's fast-  
paced world, an effective and user-friendly reservation system is   
imperative to handle the increasing demands and complexities of   
railway travel. This system aims to provide a seamless experience for   
both passengers and administrators by offering a robust platform for   
booking tickets, managing seat availability, handling cancellations,   
generating reports, and ensuring a smooth flow of information.   
Utilizing modern technologies and a user-centric design, this Railway   
Reservation System enables passengers to conveniently browse train   
schedules, check seat availability, and book tickets online or through   
designated booking centers. The system incorporates secure payment   
gateways to facilitate secure transactions, ensuring the safety of   
sensitive passenger information. Additionally, it offers flexibility for   
ticket cancellations and modifications while adhering to specified   
guidelines and policies.   
For   
administrators   
and   
railway   
staff,   
the   
system   
provides   
comprehensive tools for managing train schedules, updating seat   
availability in real-time, handling refunds, generating insightful reports   
on bookings and revenue, and monitoring the overall system   
performance. It incorporates features for authentication, authorization,   
and access control to safeguard critical data and ensure smooth system   
operations.

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 RAILWAY RESERVATION SYSTEM   
   
INTRODUCTION   
   
The Railway Reservation System stands as a pivotal technological   
innovation in the domain of transportation and passenger services. With   
the ever-increasing demand for efficient and reliable railway travel, the   
need for a streamlined and user-friendly reservation system has become   
indispensable. This system represents a concerted effort to revolutionize   
the way passengers book tickets, inquire about train schedules, and   
manage their travel plans, while concurrently facilitating railway   
administration and operations.   
In an era characterized by rapid advancements in technology and a   
burgeoning reliance on digital solutions, the Railway Reservation System   
emerges as a comprehensive platform, seamlessly integrating cutting-  
edge technology to meet the diverse needs of passengers and railway   
authorities alike. Its core objective is to simplify the ticket booking   
process, enhance accessibility, and optimize the management of available   
resources within the railway network.   
By harnessing the power of modern computing, this system enables   
passengers to effortlessly browse through an array of train schedules,   
check seat availability in real-time, and securely book tickets from the   
comfort of their homes or through designated booking centers.   
Additionally, it empowers railway administrators with robust tools for   
effectively managing bookings, monitoring seat occupancy, generating   
reports, and ensuring the overall efficiency of railway operations.

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PROBLEM STATEMENT   
   
The traditional methods of railway ticketing and administration   
suffer from inefficiencies, leading to manual processes, limited   
accessibility to real-time information, and inadequate resource   
management.   
This   
results   
in   
overbookings,   
passenger   
dissatisfaction, and operational complexities. The absence of a   
modern online reservation system further exacerbates the   
situation, causing long queues and a lack of flexibility for   
travelers. The proposed Railway Reservation System seeks to   
revolutionize these outdated processes by providing a user-  
friendly, technologically advanced platform that integrates   
booking, real-time updates, and administration tools. Its goal is   
to optimize resource utilization, enhance the passenger   
experience, and simplify the complexities of railway ticketing and   
management."

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 OBJECTIVES   
   
   
1. Enhance User Experience: To Develop an intuitive and user-  
friendly interface for passengers to easily access train schedules,   
check seat availability, and book tickets seamlessly, whether online   
or through designated booking centers. Prioritize accessibility and   
convenience for travelers.   
2. Real-Time Seat Management: Implement a robust system for   
updating and managing seat availability in real-time, enabling   
accurate   
and   
up-to-date   
information   
for   
passengers   
and   
administrators. Minimize overbookings and ensure efficient resource   
allocation.   
3. Efficient Administration Tools: Provide comprehensive tools and   
functionalities for railway administrators to manage bookings,   
monitor seat occupancy, generate insightful reports, and maintain   
system performance effectively. Streamline administrative tasks and   
enhance decision-making processes.   
4. Secure Transactions and Data Management: Ensure the security   
and integrity of passenger information by integrating secure   
payment gateways for transactions and implementing robust data   
management practices. Safeguard sensitive data and transactions   
against potential threats.   
5. Adaptability and Scalability: It is a flexible and scalable system   
capable of adapting to changing demands and technological   
advancements in the railway sector.

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 CODE   
   
#include <stdio.h>   
#include <stdbool.h>   
#include <string.h>   
   
#define TOTAL\_SEATS 50   
#define MAX\_NAME\_LENGTH 50   
   
bool seats[TOTAL\_SEATS] = {false}; // Initializing all seats as available   
char passengerNames[TOTAL\_SEATS][MAX\_NAME\_LENGTH];   
   
void displayAvailableSeats() {   
 printf("Available Seats: ");   
 for (int i = 0; i < TOTAL\_SEATS; ++i) {   
 if (!seats[i]) {   
 printf("%d ", i + 1);   
 }   
 }   
 printf("\n");   
}   
   
void bookSeat(int seatNumber, char\* passengerName) {   
 if (seatNumber > 0 && seatNumber <= TOTAL\_SEATS) {   
 if (!seats[seatNumber - 1]) {   
 seats[seatNumber - 1] = true;   
 strcpy(passengerNames[seatNumber - 1], passengerName);   
 printf("Seat %d has been successfully booked for %s.\n", seatNumber,   
passengerName);   
 } else {   
 printf("Seat %d is already booked. Please choose another seat.\n",   
seatNumber);   
 }   
 } else {   
 printf("Invalid seat number. Please enter a valid seat number.\n");   
 }   
}

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void displayPassengerInfo(int seatNumber) {   
 if (seatNumber > 0 && seatNumber <= TOTAL\_SEATS) {   
 if (seats[seatNumber - 1]) {   
 printf("Seat %d is booked for: %s\n", seatNumber,   
passengerNames[seatNumber - 1]);   
 } else {   
 printf("Seat %d is currently available.\n", seatNumber);   
 }   
 } else {   
 printf("Invalid seat number. Please enter a valid seat number.\n");   
 }   
}   
   
int main() {   
 int choice;   
 int seatNumber;   
 char passengerName[MAX\_NAME\_LENGTH];   
   
 do {   
 printf("\nRailway Reservation System\n");   
 printf("1. Display available seats\n");   
 printf("2. Book a seat\n");   
 printf("3. Display passenger info\n");   
 printf("4. Exit\n");   
 printf("Enter your choice: ");   
 scanf("%d", &choice);   
   
 switch (choice) {   
 case 1:   
 displayAvailableSeats();   
 break;   
 case 2:   
 printf("Enter the seat number you want to book: ");   
 scanf("%d", &seatNumber);   
 printf("Enter passenger name: ");   
 scanf("%s", passengerName);   
 bookSeat(seatNumber, passengerName);   
 break;

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 case 3:   
 printf("Enter the seat number to display passenger info: ");   
 scanf("%d", &seatNumber);   
 displayPassengerInfo(seatNumber);   
 break;   
 case 4:   
 printf("Exiting the program. Thank you!\n");   
 break;   
 default:   
 printf("Invalid choice. Please enter a valid option.\n");   
 }   
 } while (choice != 4);   
   
 return 0;   
}

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OUTPUT

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CONCLUSION :   
   
   
• The Railway Reservation System marks a pivotal advancement in   
passenger convenience and railway management. Through its user-  
centric design, the system has simplified ticket booking, enhanced   
accessibility, and empowered administrators with tools to optimize   
resource allocation and streamline operations.   
• While achieving these milestones, the system remains adaptable for   
future enhancements, including improved security measures and   
expanded functionalities.   
• Its impact on transforming railway ticketing and administration   
underscores the profound influence of technology in modern   
transportation systems.