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AIRLINE RESERVATION SYSTEM

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Abstract—
The Airline Reservation System (ARS) is a web-based application designed to facilitate the booking and management of airline tickets by automating the processes involved in flight scheduling, seat availability checking, ticket reservation, payment, and customer support. This system addresses the growing demand for efficient, accurate, and user-friendly platforms in the aviation industry, providing a seamless interface for both airline staff and passengers. The primary objective of the ARS is to eliminate manual and paper-based reservation systems, thereby reducing operational complexity, enhancing speed, and minimizing human error. The system allows users to search for available flights, view real-time seat availability, select preferred flight options, make reservations, and process secure payments online. For administrative users, it provides tools for managing flight schedules, monitoring booking statistics, updating aircraft information, and handling customer inquiries.

Keywords:
HTML, CSS, PHP

I. INTRODUCTION

An Airline Reservation System (ARS) is a software solution that manages and integrates various aspects of flight operations, including inventory, fares, reservations, and ticket-less operations. It evolved from basic systems in the late 1950s to become a comprehensive suite of tools that support airline management and customer service. Airline Reservation Systems are essential tools used by airlines to manage flight bookings, ticketing, schedules, and other critical aspects of airline operations. In the digital age, customers expect fast, reliable, and user-friendly ways to book flights, access real-time information, and manage reservations. The purpose of this project is to develop a comprehensive web-based reservation and management system that caters to both customers and administrators. The motivation stems from the need to replace traditional manual processes with an automated system that improves efficiency, accuracy, and user experience.

II. LITERATURE REVIEW

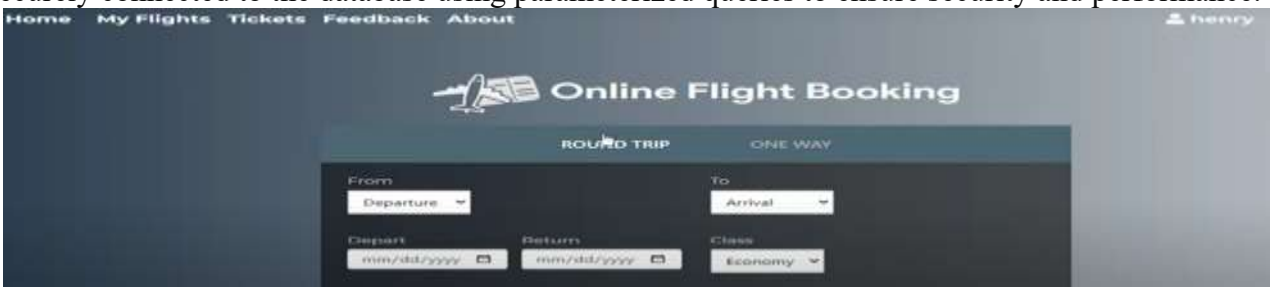
Airline Reservation Systems (ARS) have evolved from manual processes to sophisticated Computerized Reservation Systems (CRS) like Sabre and later into Global Distribution Systems (GDS) such as Amadeus and Galileo. These systems automate bookings, improve accuracy, and offer real-time flight data. With the rise of the internet, web-based and cloud-enabled reservation platforms have become standard, offering scalable, user-friendly solutions. Studies highlight the importance of secure databases, real-time processing, and responsive interfaces for user satisfaction. Recent advancements also include AI for price prediction and machine learning for demand forecasting. Despite technological progress, challenges like complexity, cost, and data security remain. This project builds on these insights to create a lightweight, efficient system suitable for academic or mid-scale airline operations.

III. SYSTEM DESIGN

The Airline Reservation System is built using a three-tier architecture: **Presentation Layer** (user interface with HTML/CSS/JS), **Application Layer** (business logic using PHP or Python), and **Data Layer** (MySQL database). Users can register, search for flights, and book tickets, while admins manage flights, bookings, and users via a secure dashboard. The system ensures data integrity, role-based access, and secure authentication. Admin features include flight scheduling, booking oversight, and analytics reporting, all managed through a user-friendly interface.

IV. IMPLEMENTATION

The Airline Reservation System is implemented using a modular approach with a web-based frontend (HTML, CSS, JavaScript), a backend server (PHP or Python), and a relational database (MySQL). Key functionalities like user registration, flight booking, admin management, and payment handling are developed as independent modules and then integrated. Admins manage flights and bookings through a secure dashboard, while users interact with a simple booking interface. All data operations are securely connected to the database using parameterized queries to ensure security and performance.



V. RESULTS

The Airline Reservation System achieved all its core functionalities as planned. The system was deployed in a controlled environment and tested with multiple user roles including passengers and administrators. Users were able to successfully create accounts, search for available flights based on origin, destination, and date, and book seats in real-time. The system accurately updated seat availability upon each successful booking. On the administrative side, the admin panel enabled administrators to add, modify, or delete flight details, manage booking records, and generate reports. The data operations performed smoothly with proper validations, and all transactions were securely logged in the database.

VI. CONCLUSION

The Airline Reservation System successfully fulfils the objective of automating the flight booking and airline management process. By providing a user-friendly interface for customers and a robust administrative backend, the system improves both operational efficiency and customer experience. Core features such as real-time flight search, secure booking, seat availability updates, and admin-level control over flight schedules and passenger data were implemented effectively. The system eliminates many of the issues found in traditional reservation methods, such as double-booking, manual errors, and delays in information updates. Additionally, the modular design and clean database integration make the system easy to maintain, extend, and deploy in real-world scenarios. Through testing and user feedback, the system proved to be reliable, responsive, and secure. It sets a strong foundation for future development, including advanced analytics, mobile app integration, AI-powered pricing models, and third-party API connections.

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