CSE111 (Data Structures)

Faculty of Computer Science & Engineering
New Mansoura University

Airline Reservation System (SOSKI)

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PROJECT SUPERVISOR

Dr. Omar El-Zeki

TEAM MEMBERS

Yousef Basem Kilany

Faris Mohammed Elsaeed

Youssef Mohamed Hashem

Amr Nader Mohammed

Mazen Walid Ibrahim

Kareem Abdulmajeed Mohamed

ABSTRACT

This project proposes the development of an **Airline Reservation System** using **Python** and CustomTkinter, designed to simplify the process of booking, canceling, and managing airline reservations. The application will allow users to search for flights, view availability, and book tickets through a user-friendly interface. This project will focus on building a robust backend to manage reservation data and integrating it with a responsive Windows-based graphical user interface. The aim is to provide a reliable, efficient, and secure solution that enhances the user experience and streamlines the booking process for airlines and customers alike.

PROBLEM OVERVIEW

Airline reservation systems play a crucial role in the travel industry by enabling customers to book flights and manage travel details. However, traditional systems often have complex interfaces and lack user-friendly features, leading to frustration for end-users. Additionally, these systems must ensure data accuracy and security while processing multiple requests simultaneously.

SOLUTION

The proposed solution is an interactive Airline Reservation System developed using Python for the backend and CustomTkinter for the user interface. The application will leverage *fundamental data structures* to manage passenger and flight records efficiently. Core features will include **adding new reservations**, **updating existing reservations**, **deleting canceled reservations**, and **retrieving booking information** based on flight details or passenger names.

SPECIFICATIONS & TECHNOLOGIES

Software

- **Languages & Frameworks**: Python, CustomTkinter
- **Tools**: Git, GitHub

GOALS

- **Comprehensive Flight Search and Filtering**
    - Enable users to search flights by location, date, time, and airline with real-time seat availability.
- **Streamlined Booking and Payment**
    - Secure booking flow with payment integration for immediate booking confirmation.
- **Reservation Management**
    - Allow users to view, modify, or cancel bookings and save preferences via their accounts.
- **Data Security and Integrity**
    - Protect user data with encryption and maintain data accuracy with error handling.
- **Intuitive Graphic User Interface**
    - User-friendly interface using WinUI 3 with clear navigation, feedback, and guidance.

CONCLUSION

The Airline Reservation System developed with Python and CustomTkinter aims to provide a reliable and user-friendly platform for managing airline reservations. By focusing on efficient backend operations, a responsive user interface, and secure data handling, this system will meet the needs of both customers and airlines, improving the overall experience and functionality of booking processes.

Future development could expand to mobile platforms and integrate more advanced features such as loyalty programs, customer profiles, and real-time notifications, making it a comprehensive solution for the airline industry.