

Flight Reservation System Project Overview

This project report presents a console-based Flight Reservation System developed in C, designed to simulate airline booking functionalities. It uses arrays to manage flights and linked lists to handle passenger details dynamically. The system supports booking, cancellation, flight display, and passenger listing, demonstrating core data structure concepts and memory management in C.

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Background and Objectives

Background

The aviation industry's growth demands efficient reservation systems. Traditional manual bookings are error-prone and slow, leading to the rise of computerized systems for real-time data handling and improved customer satisfaction.

Objectives

- Design a flight reservation system using C.
- Manage flights with arrays and passengers with linked lists.
- Implement booking, cancellation, and information display features.
- Enhance understanding of data structures and memory management.

Existing Systems and Their Limitations

Traditional Systems

Manual bookings were time-consuming and error-prone.

Early computer reservation systems improved efficiency but lacked passenger autonomy and real-time updates.

Limitations

- Limited seat selection and boarding pass printing.
- Delayed notifications on cancellations or delays.
- Data silos hindered information sharing.
- Security vulnerabilities in centralized databases.

Modern Advances

New systems use user-centered design, microservices, AI for dynamic pricing, and blockchain for secure transactions, enhancing efficiency and customer experience.



System Requirements and

Requirements Analysis

- Functional: Flight and passenger management, seat allocation, search.
- Non-Functional: Performance within 2 seconds, usability, reliability, maintainability.
- Constraints: C language, arrays and linked lists, console-based on Windows/Linux.

Design Objectives

- Modularity for flight, passenger, and UI modules.
- Efficiency using arrays and linked lists.
- Scalability and maintainability.
- Console interface with clear menus and input validation.

Proposed System Architecture and



Flight Management

Add, update, delete flights; display flight details including seat availability.

Passenger Management

Book and cancel reservations; list passengers per flight using linked lists.

Search and Persistence

Search flights by criteria; store data in files to maintain session continuity.

Advantages

Improved efficiency, accessibility, data integrity, and scalability over traditional systems.

OUTPUT

```
--- Flight Reservation System ---
1. Display Available Flights
2. Book a Seat
3. Cancel Reservation
4. Display Passengers
5. Exit
Enter your choice: 2

Enter Flight Number to Book: 102
Enter Passenger Name: DONLEE
Enter Passport Number: 202051221
Seat booked successfully for DONLEE.
```

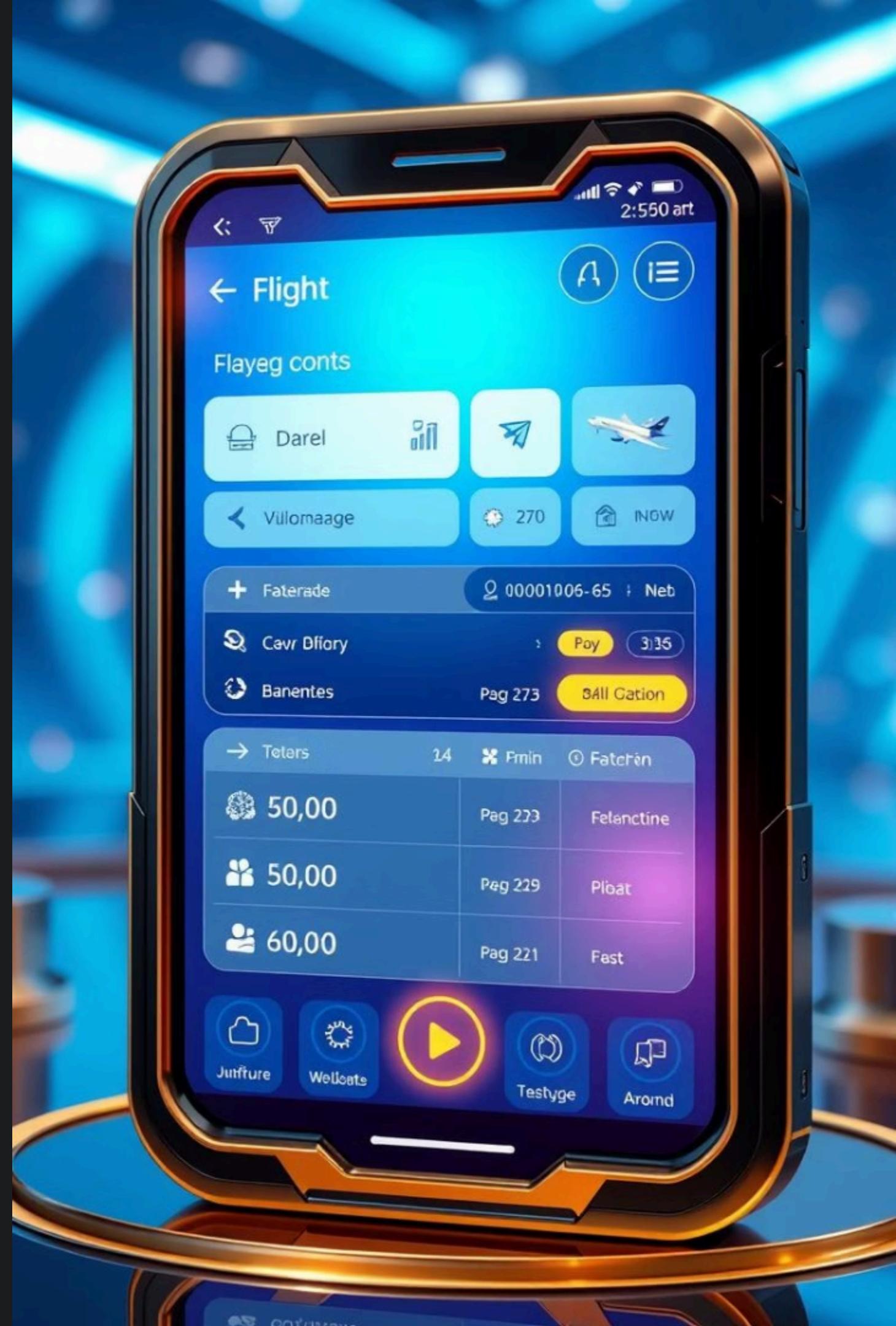
Conclusion and Future Enhancements

Conclusion

The system effectively demonstrates data structure use in flight reservations with a user-friendly console interface and data persistence, serving as a foundational educational tool.

Future Work

- Develop GUI for better user experience.
- Integrate databases for robust data management.
- Implement authentication and real-time flight info.
- Expand to mobile apps, multilingual support, and advanced search.



THANK YOU VERY