Project Documentation

Project Title: Flight Reservation System in C++

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GitHub Repository Link

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Introduction

Project Overview:

The Flight Reservation System is a console-based C++ program that enables users to:

- Book a flight
- Cancel a flight
- View their bookings

The system utilizes file handling to store and manage flights and customer bookings.

Purpose:

This project was chosen to enhance understanding of file handling, exception handling, and fundamental C++ programming concepts while building a real-world application.

Objectives

- To develop a functional flight reservation system using C++.
- To implement file handling for data storage and retrieval.
- To practice exception handling for better error management.
- To reinforce knowledge of functions, loops, and conditional statements.

Tools and Technologies

- **Programming Language**: C++
- **IDE**: Dev-C++
- **File Handling**: Text-based storage (flight.txt, bookings.txt)
- **Concepts Used**: Loops, Functions, File Handling, Exception Handling

Project Design

Workflow:

1. The user selects an option: Book Flight, Cancel Flight, or View Bookings.
2. If booking a flight:
    - The system asks for departure and arrival locations.
    - It searches flight.txt for matching flights.
    - The user selects a flight and class.
    - The booking is stored in bookings.txt.
3. If canceling a flight:
    - The user provides booking details.
    - The system removes the booking from bookings.txt.
4. If viewing bookings:
    - The system retrieves and displays bookings from bookings.txt.

Implementation

- The project consists of a single source file (flight.cpp).
- **File Handling**: ifstream and ofstream are used for reading and writing data.
- **Functions**:
    - bookFlight(): Handles flight booking.
    - cancelFlight(): Manages booking cancellations.
    - viewBookings(): Displays user bookings.
- **Error Handling**: Try-catch blocks handle file I/O errors and invalid inputs.

Testing

Test Cases:

Input	Expected Output	Actual Output
Book flight (LHE -> KHI)	Flight options displayed, booking confirmed	Same
Cancel booking (Valid ID)	Booking successfully canceled	Same
Cancel booking (Invalid ID)	Error: Booking not found	Same
View bookings	List of bookings displayed	Same

Results

The program successfully allows users to book, cancel, and view flights while maintaining data using file handling. The system performs well and meets all requirements.

Conclusion

This project helped in understanding:

- File handling and exception management in C++.
- The importance of structured code using functions.
- Real-world applications of C++ programming concepts.

The project can be further enhanced by integrating a GUI and database support in the future.