Title

Flight Management System – Read and Write File.

Background

An airline company aims to streamline its operations by implementing a Flight Management System. This system should assist airline staff in managing flight schedules, booking reservations, handling passenger check-ins, and providing necessary information to both passengers and crew members. Flight information, passenger reservations, and crew assignments is stored in a text file (Product.dat).

Program Specifications

Develop a Flight Management System with the following key features:

1. Flight schedule management
2. Passenger reservation and booking
3. Passenger check-in and seat allocation
4. Crew management and assignments
5. Administrator access for system management
6. Data storage for flight details, reservations, and assignments

Others- Quit.

Features:

This system contains the following functions:

- **Function 1: Flight schedule management - 50 LOC**
  - o Airlines staff can add new flights to the system, including details such as flight number, departure and arrival locations, departure time, and duration.

  - o Create a Flight class to represent flights. This class should include attributes such as:

    - Flight number (must be follow as: **F**xyzt, with xyzt is a number and no spaces, ex: F0001)

    - Departure city

    - Destination city

    - Departure time (check valid time)

    - Arrival time (check valid time)

    - Available seats

  - o Ask to go back to the main menu.

- **Function 2: Passenger Reservation and Booking – 50 LOC**
  - o Passengers can search for available flights based on departure and arrival locations and date.

  - o Passengers can make reservations by providing their personal information (name, contact details) and selecting a flight.

  - o A unique reservation ID is generated for each reservation

o   Ask to go back to the main menu.

- **Function 3: Passenger Check-In and Seat Allocation and Availability – 50 LOC**
    o   Passengers with reservations can check in for their flights by providing their reservation ID.

    o   Generate boarding passes with passenger and flight information.

    o   Allocate seats to passengers during check-in based on availability.

    o   Display the availability of seats for each flight and allow passengers to select seats if available.

    o   Ask to go back to the main menu.

- **Function 4: Crew Management and Administrator Access (50 LOC)**
    o   Manage crew assignments for each flight, including pilots, flight attendants, and ground staff.
    o   Administrators have additional privileges to manage flight schedules, crew assignments, and system settings.
    o   Ask to go back to the main menu.

- **Function 5: Save to file - 50 LOC**
    o   Implement a data storage solution to save flight information, passenger reservations, and crew assignments.
    o   Ask to go back to the main menu.

- **Function 6: Print all lists from file – 50 LOC**
    o   Loading list Flight information from the file into Collection

    o   Displaying list Flight information order by date descending.

    o   Ask to go back to the main menu.

- **Function 7: Create a layout – 50 LOC**
    o   The program is organized in the form of a function menu.

    o   The support function asks if the user wants to continue or not.

- **Bonus 50 LOC (maximum 500 LOC) if the student applies one of the Design Patterns (such as DAO pattern, Factory pattern, Repository pattern, and so on) in this project. More references for the design pattern:** https://www.tutorialspoint.com/design_pattern/index.htm
- The above specifications are only basic information; you must perform a requirements analysis step and build the application according to real requirements.
- The lecturer will explain the requirement only once on the first slot of the assignment.