**TADS - Airline Reservation System Project**

* **Seat Class TAD:**

**Description**: This TAD represents a seat class in the airline reservation system, which can be first class, business class or economy class.

**Attributes:**

**name:** The name of the seat class (first class, business class or economy class).

**seats:** The number of seats available in the seat class.

**bookedSeats:** The number of seats that are currently booked in the seat class.

**Operations:**

**getName():** Returns the name of the seat class.

**getSeats():** Returns the number of seats available in the seat class.

**getBookedSeats():** Returns the number of seats that are currently booked in the seat class.

**bookSeat():** Books a seat in the seat class and updates the bookedSeats attribute.

**cancelSeat():** Cancels a seat in the seat class and updates the bookedSeats attribute.

* **Passenger TAD:**

**Description:** This TAD represents a passenger in the airline reservation system.

**Attributes:**

**id:** The ID of the passenger.

**name:** The name of the passenger.

**Operations:**

**getId():** Returns the ID of the passenger.

**getName():** Returns the name of the passenger.

* **Booking TAD**

**Description:** This TAD represents a booking in the airline reservation system.

**Attributes:**

**passenger:** The passenger who made the booking.

**seat:** The seat that was booked.

**Operations:**

**getPassenger():** Returns the passenger who made the booking.

**getSeat():** Returns the seat that was booked.

* **Flight TAD:**

**Description:** This TAD represents a flight in the airline reservation system.

**Attributes:**

**id:** The ID of the flight.

**destination:** The destination of the flight.

**departureTime:** The departure time of the flight.

**firstClass:** The seat class object representing the first class seats on the flight.

**businessClass:** The seat class object representing the business class seats on the flight.

**economyClass:** The seat class object representing the economy class seats on the flight.

**bookings:** A list of bookings made on the flight.

**Operations:**

**getId():** Returns the ID of the flight.

**getDestination():** Returns the destination of the flight.

**getDepartureTime():** Returns the departure time of the flight.

**getFirstClass():** Returns the seat class object representing the first class seats on the flight.

**getBusinessClass():** Returns the seat class object representing the business class seats on the flight.

**getEconomyClass():** Returns the seat class object representing the economy class seats on the flight.

**getBookings():** Returns a list of bookings made on the flight.

**bookSeat():** Books a seat on the flight in the specified seat class.

**cancelSeat():** Cancels a seat on the flight in the specified seat class.

**makeBooking():** Makes a booking on the flight for the specified passenger and seat.

**TABLES:**

* Table 1: Seat Class TAD

|  |  |
| --- | --- |
| Attribute | Description |
| seats | Map of seat number to availability status |
| capacity | Maximum capacity of the seat class |
| Method signature | Description |
| boolean isAvailable(String seat) | Returns true if the seat is available, false otherwise |
| void bookSeat(String seat) | Marks the seat as booked |
| void cancelSeat(String seat) | Marks the seat as available again |

* Table 2: Economy Class TAD

|  |  |
| --- | --- |
| Attribute | Description |
| seats | Map of seat number to priority queue of booking dates |
| Method signature | Description |
| boolean isAvailable(String seat) | Returns true if the seat is available, false otherwise |
| boolean bookSeat(String seat, Date date) | Attempts to book the seat with the given booking date. If successful, returns true, otherwise returns false |
| void cancelSeat(String seat, Date date) | Cancels the booking for the given seat and booking date |
| List<String> getAvailableSeats() | Returns a list of all available seats |

* Table 3: Booking System TAD

|  |  |
| --- | --- |
| Attribute | Description |
| firstClass | Seat Class object for first class |
| businessClass | Seat Class object for business class |
| economyClass | Economy Class object |
| passengers | Map of passenger ID to passenger name |
| Method signature | Description |
| boolean bookSeat(String seat, String passengerId) | Attempts to book the given seat for the given passenger ID. If successful, returns true, otherwise returns false |
| boolean cancelBooking(String seat, String passengerId) | Cancels the booking for the given seat and passenger ID. If successful, returns true, otherwise returns false |
| String getPassengerName(String passengerId) | Returns the name of the passenger with the given ID |
| List<String> getAvailableSeats(String seatClass) | Returns a list of all available seats in the given seat class |
| void addPassenger(String passengerId, String passengerName) | Adds a new passenger to the system with the given ID and name |
| void removePassenger(String passengerId) | Removes the passenger with the given ID from the system |
| void displayPassengerList() | Displays a list of all passengers in the system, along with their IDs and booking information |
| void displaySeatMap(String seatClass) | Displays a map of the seats in the given seat class, along with their availability status and booking information |