



Class Diagram - Alphabetical Ordered Classes

Admin

«entity»

Attributes

None (inherits from User)

Methods

- displayDashboard(): void
 - toString(): String
-

AdminController

«control»

Attributes

- flightDAO: FlightDAO
- userDao: UserDao

Methods

- addFlight(flightNumber: String, departureCity: String, arrivalCity: String, departureTime: LocalDateTime, arrivalTime: LocalDateTime, totalSeats: int, price: double): int
 - updateFlight(flightId: int, flightNumber: String, departureCity: String, arrivalCity: String, departureTime: LocalDateTime, arrivalTime: LocalDateTime, totalSeats: int, price: double): boolean
 - deleteFlight(flightId: int): boolean
 - getAllFlights(): List<Flight>
 - getTotalUsers(): int
 - getTotalFlights(): int
-

AdminDashboard

«boundary»

Attributes

- admin: Admin
- adminController: AdminController
- bookingController: BookingController
- flightSearchController: FlightSearchController
- cardLayout: CardLayout
- cardPanel: JPanel

Methods

- initializeUI(): void
 - createNavButton(text: String): JButton
 - createDashboardPanel(): JPanel
 - createManageFlightsPanel(): JPanel
 - createViewBookingsPanel(): JPanel
 - createReportsPanel(): JPanel
 - showAddFlightDialog(): void
 - showEditFlightDialog(flight: Flight): void
 - addFormField(dialog: JDialog, gbc: GridBagConstraints, row: int, label: String, field: JTextField): void
 - styleButton(button: JButton, bgColor: Color): void
 - logout(): void
-

Agent

«entity»

Attributes

None (inherits from User)

Methods

- displayDashboard(): void
 - toString(): String
-

AgentController

«control»

Attributes

- userDAO: UserDAO
- bookingDAO: BookingDAO

Methods

- searchCustomerByEmail(email: String): User
 - getCustomerBookings(userId: int): List<Booking>
 - cancelCustomerBooking(bookingId: int): boolean
 - getAllBookings(): List<Booking>
-

AgentDashboard

«boundary»

Attributes

- agent: Agent
- agentController: AgentController
- cardLayout: CardLayout
- cardPanel: JPanel

Methods

- initializeUI(): void
 - createNavButton(text: String): JButton
 - createDashboardPanel(): JPanel
 - createSearchCustomerPanel(): JPanel
 - createManageCustomersPanel(): JPanel
 - createViewAllBookingsPanel(): JPanel
 - showEditCustomerDialog(customer: User): void
 - addFormField(dialog: JDialog, gbc: GridBagConstraints, row: int, label: String, field: JTextField): void
 - styleButton(button: JButton, bgColor: Color): void
 - logout(): void
-

AuthenticationController

«control» (Singleton)

Attributes

- instance: AuthenticationController (static)
- currentUser: User
- userDao: UserDao

Methods

- getInstance(): AuthenticationController (static)
 - login(email: String, password: String): User
 - signup(email: String, password: String, firstName: String, lastName: String, address: String, phone: String, role: String, receivePromotions: boolean): User
 - logout(): void
 - getCurrentUser(): User
 - isLoggedIn(): boolean
 - hashPassword(password: String): String
 - isValidEmail(email: String): boolean
 - isValidPassword(password: String): boolean
-

AuthFrame

«boundary»

Attributes

- cardLayout: CardLayout
- cardPanel: JPanel
- loginPanel: LoginPanel
- signupPanel: SignupPanel
- role: String

Methods

- initializeUI(): void
 - showLoginPanel(): void
 - showSignupPanel(): void
-

Booking

«entity»

Attributes

- bookingId: int
- userId: int
- flightId: int
- bookingDate: LocalDateTime
- status: String
- seatNumber: String
- customerName: String
- customerEmail: String
- flightNumber: String
- route: String

Methods

- toString(): String
-

BookingController

«control»

Attributes

- bookingDAO: BookingDAO
- flightDAO: FlightDAO

Methods

- createBooking(userId: int, flightId: int, seatNumber: String): int
 - cancelBooking(bookingId: int): boolean
 - getUserBookings(userId: int): List<Booking>
 - getAllBookings(): List<Booking>
 - getBookingById(bookingId: int): Booking
 - modifyBooking(bookingId: int, newSeatNumber: String): boolean
-

BookingDAO

«boundary»

Attributes

None

Methods

- createBooking(userId: int, flightId: int, seatNumber: String): int
 - cancelBooking(bookingId: int): boolean
 - getUserBookings(userId: int): List<Booking>
 - getAllBookings(): List<Booking>
 - getBookingById(bookingId: int): Booking
 - extractBookingFromResultSet(rs: ResultSet): Booking
-

BookingDialog

«boundary»

Attributes

- customer: Customer
- flight: Flight
- bookingController: BookingController
- paymentController: PaymentController
- seatNumberField: JTextField
- paymentMethodCombo: JComboBox<String>
- cardNumberField: JTextField
- cvvField: JTextField
- expiryField: JTextField
- nameOnCardField: JTextField
- bookingSuccessful: boolean

Methods

- initializeUI(): void
- createFlightDetailsPanel(): JPanel
- createSeatSelectionPanel(): JPanel
- createPaymentPanel(): JPanel

- confirmBooking(): void
 - isBookingSuccessful(): boolean
 - createBoldLabel(text: String): JLabel
 - createLabel(text: String): JLabel
 - styleTextField(field: JTextField): void
-

BookingPanel

«boundary»

Attributes

- customer: Customer
- bookingController: BookingController
- paymentController: PaymentController
- bookingsTable: JTable
- tableModel: DefaultTableModel
- viewDetailsButton: JButton
- cancelBookingButton: JButton
- refreshButton: JButton

Methods

- initializeUI(): void
 - loadBookings(): void
 - viewBookingDetails(): void
 - createBookingDetailsPanel(booking: Booking, payment: Payment): JPanel
 - createBoldLabel(text: String): JLabel
 - createLabel(text: String): JLabel
 - cancelBooking(): void
-

Customer

«entity»

Attributes

None (inherits from User)

Methods

- displayDashboard(): void
 - receivePromotion(promotionMessage: String): void
 - toString(): String
-

CustomerDashboard

«boundary»

Attributes

- customer: Customer
- cardLayout: CardLayout
- cardPanel: JPanel

Methods

- initializeUI(): void
 - createNavButton(text: String): JButton
 - logout(): void
-

DatabaseConnection

«boundary»

Attributes

- instance: DatabaseConnection (static)
- URL: String (static final)
- connection: Connection

Methods

- getInstance(): DatabaseConnection (static)
 - getConnection(): Connection
 - initializeDatabase(): void
 - close(): void
-

Flight

«entity»

Attributes

- flightId: int
- flightNumber: String
- origin: String
- destination: String
- departureTime: LocalDateTime
- arrivalTime: LocalDateTime
- airline: String
- availableSeats: int
- price: double
- aircraftType: String
- totalSeats: int

Methods

- hasAvailableSeats(): boolean
 - getDepartureCity(): String
 - getArrivalCity(): String
 - toString(): String
-

FlightDAO

«boundary»

Attributes

None

Methods

- initializeSampleData(): void
- insertSampleFlights(): void
- addFlight(flightNumber: String, origin: String, destination: String, departureTime: LocalDateTime, arrivalTime: LocalDateTime, availableSeats: int, price: double): int
- updateFlight(flightId: int, flightNumber: String, origin: String, destination: String, departureTime: LocalDateTime, arrivalTime: LocalDateTime, availableSeats: int, price: double): boolean

- deleteFlight(flightId: int): boolean
 - searchFlights(origin: String, destination: String, date: String, airline: String): List<Flight>
 - getFlightById(flightId: int): Flight
 - getAllFlights(): List<Flight>
 - getAllOrigins(): List<String>
 - getAllDestinations(): List<String>
 - getAllAirlines(): List<String>
 - updateAvailableSeats(flightId: int, newSeatCount: int): boolean
 - decrementAvailableSeats(flightId: int): boolean
 - incrementAvailableSeats(flightId: int): boolean
 - getTotalFlightCount(): int
 - extractFlightFromResultSet(rs: ResultSet): Flight
-

FlightSearchController

«control»

Attributes

- flightDAO: FlightDAO

Methods

- searchFlights(origin: String, destination: String, date: LocalDate): List<Flight>
 - searchFlights(origin: String, destination: String, date: String, airline: String): List<Flight>
 - getAllFlights(): List<Flight>
 - getFlightById(flightId: int): Flight
 - getAllOrigins(): List<String>
 - getAllDestinations(): List<String>
 - getAllAirlines(): List<String>
 - getAllCities(): List<String>
-

FlightSearchPanel

«boundary»

Attributes

- searchController: FlightSearchController

- customer: Customer
- departureCityCombo: JComboBox<String>
- arrivalCityCombo: JComboBox<String>
- airlineCombo: JComboBox<String>
- dateField: JTextField
- flightTable: JTable
- tableModel: DefaultTableModel
- searchButton: JButton
- bookButton: JButton
- clearButton: JButton

Methods

- initializeUI(): void
- loadFilters(): void
- clearFilters(): void
- loadAllFlights(): void
- searchFlights(): void
- displayFlights(flights: List<Flight>): void
- bookFlight(): void

Guest

«entity»

Attributes

None (inherits from User)

Methods

- displayDashboard(): void
- canBook(): boolean
- isGuest(): boolean
- toString(): String

GuestDashboard

«boundary»

Attributes

- guest: Guest

Methods

- initializeUI(): void
-

HomePage

«boundary»

Attributes

None

Methods

- initializeUI(): void
 - createRoleButton(role: String, description: String): JButton
 - openGuestMode(): void
 - openAuthFrame(role: String): void
-

LoginPanel

«boundary»

Attributes

- emailField: JTextField
- passwordField: JPasswordField
- loginButton: JButton
- switchToSignupButton: JButton
- parentFrame: AuthFrame
- preSelectedRole: String

Methods

- initializeUI(): void

- `handleLogin(): void`
 - `clearFields(): void`
-

MainFrame

«boundary»

Attributes

None

Methods

- `main(args: String[]): void (static)`
-

Payment

«entity»

Attributes

- `paymentId: int`
- `bookingId: int`
- `amount: double`
- `paymentMethod: String`
- `cardNumber: String`
- `paymentDate: LocalDateTime`

Methods

- `getMaskedCardNumber(): String`
 - `toString(): String`
-

PaymentController

«control»

Attributes

- paymentDAO: PaymentDAO

Methods

- processPayment(bookingId: int, amount: double, paymentMethod: String, cardNumber: String): int
 - getPaymentByBookingId(bookingId: int): Payment
 - maskCardNumber(cardNumber: String): String
 - validateCardNumber(cardNumber: String): boolean
 - validateCVV(cvv: String): boolean
-

PaymentDAO

«boundary»

Attributes

None

Methods

- createPayment(bookingId: int, amount: double, paymentMethod: String, cardNumber: String): int
 - getPaymentByBookingId(bookingId: int): Payment
-

ProfilePanel

«boundary»

Attributes

- customer: Customer
- userDAO: UserDAO
- promotionManager: PromotionManager
- emailField: JTextField
- firstNameField: JTextField
- lastNameField: JTextField
- addressField: JTextField

- phoneField: JTextField
- promotionsCheckbox: JCheckBox
- promotionDisplayArea: JTextArea
- promotionPanel: JPanel

Methods

- initializeUI(): void
 - createPromotionDisplayPanel(): JPanel
 - togglePromotionDisplay(): void
 - createLabel(text: String): JLabel
 - styleTextField(field: JTextField): void
 - updateProfile(): void
 - refreshPanel(): void
-

PromotionManager

«control» (Singleton + Observer)

Attributes

- instance: PromotionManager (static)
- subscribers: List<PromotionObserver>

Methods

- getInstance(): PromotionManager (static)
 - subscribe(observer: PromotionObserver): void
 - unsubscribe(observer: PromotionObserver): void
 - notifyAllSubscribers(promotionMessage: String): void
 - sendMonthlyPromotion(): void
 - getSubscriberCount(): int
 - isSubscribed(userId: int): boolean
-

PromotionObserver

«interface»

Methods

- receivePromotion(promotionMessage: String): void
-

SignupPanel

«boundary»

Attributes

- emailField: JTextField
- firstNameField: JTextField
- lastNameField: JTextField
- addressField: JTextField
- phoneField: JTextField
- passwordField: JPasswordField
- confirmPasswordField: JPasswordField
- receivePromotionsCheckBox: JCheckBox
- parentFrame: AuthFrame
- preSelectedRole: String

Methods

- initializeUI(): void
 - addLabelAndField(labelText: String, field: JTextField, gbc: GridBagConstraints): void
 - handleSignup(): void
 - clearFields(): void
-

User

«entity» (Abstract)

Attributes

- userId: int
- email: String
- password: String
- firstName: String
- lastName: String
- address: String
- phone: String

- role: String
- receivePromotions: boolean

Methods

- displayDashboard(): void (abstract)
 - isGuest(): boolean
 - canBook(): boolean
 - getFullName(): String
 - toString(): String
-

UserDAO

«boundary»

Attributes

None

Methods

- authenticateUser(email: String, hashedPassword: String): User
 - emailExists(email: String): boolean
 - insertUser(email: String, hashedPassword: String, firstName: String, lastName: String, address: String, phone: String, role: String, receivePromotions: boolean): int
 - getUserById(userId: int): User
 - getUserByEmail(email: String): User
 - updatePromotionPreference(userId: int, receivePromotions: boolean): boolean
 - updateUserProfile(userId: int, firstName: String, lastName: String, address: String, phone: String): boolean
 - getTotalUserCount(): int
 - extractUserFromResultSet(rs: ResultSet): User
-

UserFactory

«control» (Factory Pattern)

Attributes

None

Methods

- `createUser(userId: int, email: String, password: String, firstName: String, lastName: String, address: String, phone: String, role: String, receivePromotions: boolean): User` (static)
 - `createUser(userId: int, email: String, password: String, firstName: String, lastName: String, address: String, phone: String, role: String, receivePromotionsInt: int): User` (static)
-