

File Listing and Purpose

Python Files

app.py

Main Flask application file containing all route handlers and business logic. This file: - Defines all URL routes for customer and staff functionality - Handles user authentication (login/logout/registration) - Implements customer features: flight search, ticket purchase, viewing flights, writing reviews - Implements staff features: flight management, airplane management, customer viewing, ratings viewing, reports generation - Uses prepared statements for all database queries to prevent SQL injection - Manages user sessions and access control

config.py

Configuration file that manages database connection settings and application secrets: - Reads database credentials from environment variables (for production) or uses defaults (for local development) - Configures MySQL connection parameters (host, port, user, password, database name) - Sets Flask secret key for session management - Allows easy switching between local and production environments

database.py

Database utility module that provides connection management and query execution: - `get_db_connection()`: Establishes connection to MySQL database using settings from config.py - `execute_query()`: Executes SQL queries with optional parameters and returns results - `execute_prepared_query()`: Executes parameterized queries (prepared statements) for security - Handles connection errors gracefully and manages connection lifecycle (open/close) - Uses dictionary cursors to return results as dictionaries for easier access

SQL Files

schema.sql

Database schema definition file that creates all tables and relationships: - Defines table structures: Airport, Airline, Airplane, Flight, Customer, AirlineStaff, Phone, Ticket, Review - Sets up primary keys, foreign keys, and referential integrity constraints - Includes CHECK constraints for data validation (e.g., status values, rating range, card types) - Uses AUTO_INCREMENT for ticket_id generation - Establishes relationships between entities (e.g., Flight references Airline, Ticket references Flight and Customer)

sample_data.sql

Sample data file for testing and demonstration: - Inserts 4 airlines (Jet Blue, American Airlines, Delta Air Lines, United Airlines) - Inserts 10 airports across different countries - Inserts 12 airplanes (3 per airline) - Inserts 5 sample customers with hashed passwords - Inserts 8 staff members (2 per airline) - Inserts 52 flights spanning June 1 to December 31, 2025 - Inserts 35+ tickets with purchase dates throughout the date range - Inserts sample reviews for past flights - Provides test credentials for login testing

HTML Template Files

base.html

Base template that provides the common structure for all pages: - Defines HTML structure with navigation bar - Includes Bootstrap CSS for styling - Displays flash messages (success/error notifications) - Provides navigation links based on user login status (customer/staff/logged out) - Contains logout functionality - Serves as parent template that other templates extend

index.html

Home page template: - Landing page accessible to all users (logged in or not) - Displays welcome message and basic information about the airline reservation system - Provides links to registration and login - Shows different content based on user login status

login.html

User login page template: - Unified login form for both customers and staff - Single form that handles both customer (email) and staff (username) authentication - Displays error messages for invalid credentials - Redirects users to appropriate home page after successful login

register.html

User registration page template: - Unified registration form for both customers and staff - Toggle between customer and staff registration modes - Customer registration: email, name, password fields - Staff registration: username, password, name, date of birth, airline selection, email - Validates password confirmation - Shows list of available airlines for staff registration

customer_home.html

Customer home page template: - Displays customer's future flights by default - Shows flight details: airline, flight number, departure/arrival airports and cities, dates, times, status, ticket ID - Displays purchase date and time for each ticket - Provides link to view all flights with filtering options - Navigation to search flights, view reviews, and logout

view_my_flights.html

Customer flight viewing page with filtering: - Displays all customer's flights (past, future, or all) - Filtering options: date range, source airport/city, destination airport/city, flight type (future/past/all) - Shows same flight details as customer home - Allows customers to see their complete flight history

search_flights.html

Public flight search page: - Available to all users (no login required) - Search form with: source, destination, departure date, return date (optional), trip type - Allows searching by airport code or city name - Displays search results on separate page

search_results.html

Flight search results page: - Displays matching flights from search - Shows flight details: airline, flight number, departure/arrival airports and cities, dates, times, price, status - Provides purchase

button for each flight (requires customer login) - Shows error messages if no flights found or database errors occur

`purchase_ticket.html`

Ticket purchase page: - Displays flight details for the selected flight - Shows available seats remaining
- Payment form: card type, card number, cardholder name, card expiry month/year - Validates payment information before processing - Only accessible to logged-in customers - Prevents purchase of past flights or sold-out flights

`customer_reviews.html`

Customer review page: - Lists all past flights that customer can review - Shows flight details and existing review (if any) - Allows customers to submit new reviews or update existing reviews - Review form: rating (1-5 stars) and optional comment - Only shows flights that have already occurred

`staff_home.html`

Staff home page: - Displays flights for staff's airline (next 30 days by default) - Shows flight details: airline, flight number, departure/arrival airports and cities, dates, times, price, status - Displays number of tickets sold for each flight - Navigation to all staff functions

`staff_view_flights.html`

Staff flight viewing page with filtering: - Displays all flights for staff's airline - Filtering options: date range, source airport/city, destination airport/city, flight type (future/past/all) - Shows tickets sold count for each flight - Provides links to view customers for each flight

`staff_create_flight.html`

Staff flight creation page: - Form to create new flights - Fields: flight number, departure airport, departure date/time, arrival airport, arrival date/time, base price, airplane selection - Dropdown lists for airports and airplanes (filtered by staff's airline) - Validates that airplane belongs to staff's airline - Prevents duplicate flights (same airline, number, date, time)

`staff_change_status.html`

Staff flight status update page: - Lists all flights for staff's airline - Allows changing flight status between "on-time" and "delayed" - Dropdown selection for each flight to update status - Verifies staff can only change status for their airline's flights

`staff_add_airplane.html`

Staff airplane management page: - Displays all airplanes for staff's airline - Form to add new airplanes - Fields: airplane ID, number of seats, manufacturer, age - Validates that airplane ID is unique for the airline - Shows list of existing airplanes for reference

staff_view_customers.html

Staff customer viewing page: - Displays all customers who purchased tickets for a specific flight - Shows customer details: ticket ID, email, name, phone number, passport number - Displays purchase date and time - Shows flight details at the top - Only accessible for flights belonging to staff's airline

staff_view_ratings.html

Staff ratings overview page: - Lists all flights for staff's airline with average ratings - Shows flight details and number of reviews - Displays average rating for each flight - Provides links to view detailed reviews for each flight

staff_view_flight_reviews.html

Staff detailed reviews page: - Shows all individual reviews for a specific flight - Displays customer name, rating, and comment for each review - Shows average rating for the flight - Only accessible for flights belonging to staff's airline

staff_view_reports.html

Staff sales reports page: - Generates ticket sales reports for staff's airline - Report types: date range, last month, last year - Shows tickets sold and total revenue per day or month - Displays totals (total tickets sold, total revenue) for the report period - Helps staff analyze sales performance

staff_login.html, staff_register.html

Legacy staff-specific pages that redirect to unified login/register: - These templates exist for backward compatibility - All staff authentication now uses the unified login/register pages

Static Files

static/style.css

CSS stylesheet for application styling: - Custom styles for the application - Complements Bootstrap CSS framework - Defines colors, spacing, and layout for consistent UI - Styles for forms, tables, buttons, and navigation elements

Configuration Files

requirements.txt

Python package dependencies file: - Lists all required Python packages and versions - Flask==3.0.0: Web framework - mysql-connector-python==8.2.0: MySQL database connector - Werkzeug==3.0.1: WSGI utility library (dependency of Flask) - Used by pip to install all dependencies: `pip install -r requirements.txt`

README.md

Project documentation and setup instructions: - Provides installation instructions for MySQL and Python - Step-by-step database setup guide - Application setup instructions (virtual environment, dependencies) - Configuration instructions for database connection - Running instructions - Feature overview - Sample login credentials - Troubleshooting guide