

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