



CSE 370 : Database Systems
Project Report
Project Title : Flight Ticketing System

Group No : 09, CSE370 Lab Section : 01, Fall 2024		
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Introduction

Aviatrax is a dynamic and user-friendly flight booking platform developed by our group as part of a database-driven web application project. Powered by a robust backend using MySQL, our system efficiently manages a range of functionalities for both passengers and airlines. Designed to simplify and enhance the travel booking process, our website integrates multiple key features tailored for a seamless experience.

With secure user authentication (login, registration, logout), users can create and manage their profiles with ease. Our intuitive flight search and booking system allows passengers to browse available flights by destination, availability, and class type (Economy or Business). We've also integrated a real-time weather check that influences ticket approval, ensuring safety and reliability in your travel plans.

Passengers can make payments through multiple methods (Visa, MasterCard, bKash, PayPal), cancel tickets with reason tracking, view booking history, and even download e-tickets in PDF format. The platform also supports profile updates, giving users full control over their personal information.

Our well-structured relational database includes tables for airlines, passengers, flights, subclasses, tickets, payments, and weather data, ensuring data integrity and streamlined operations throughout the system.

Whether you're planning a quick getaway or a long journey, Aviatrax ensures your booking experience is fast, secure, and tailored to your needs.

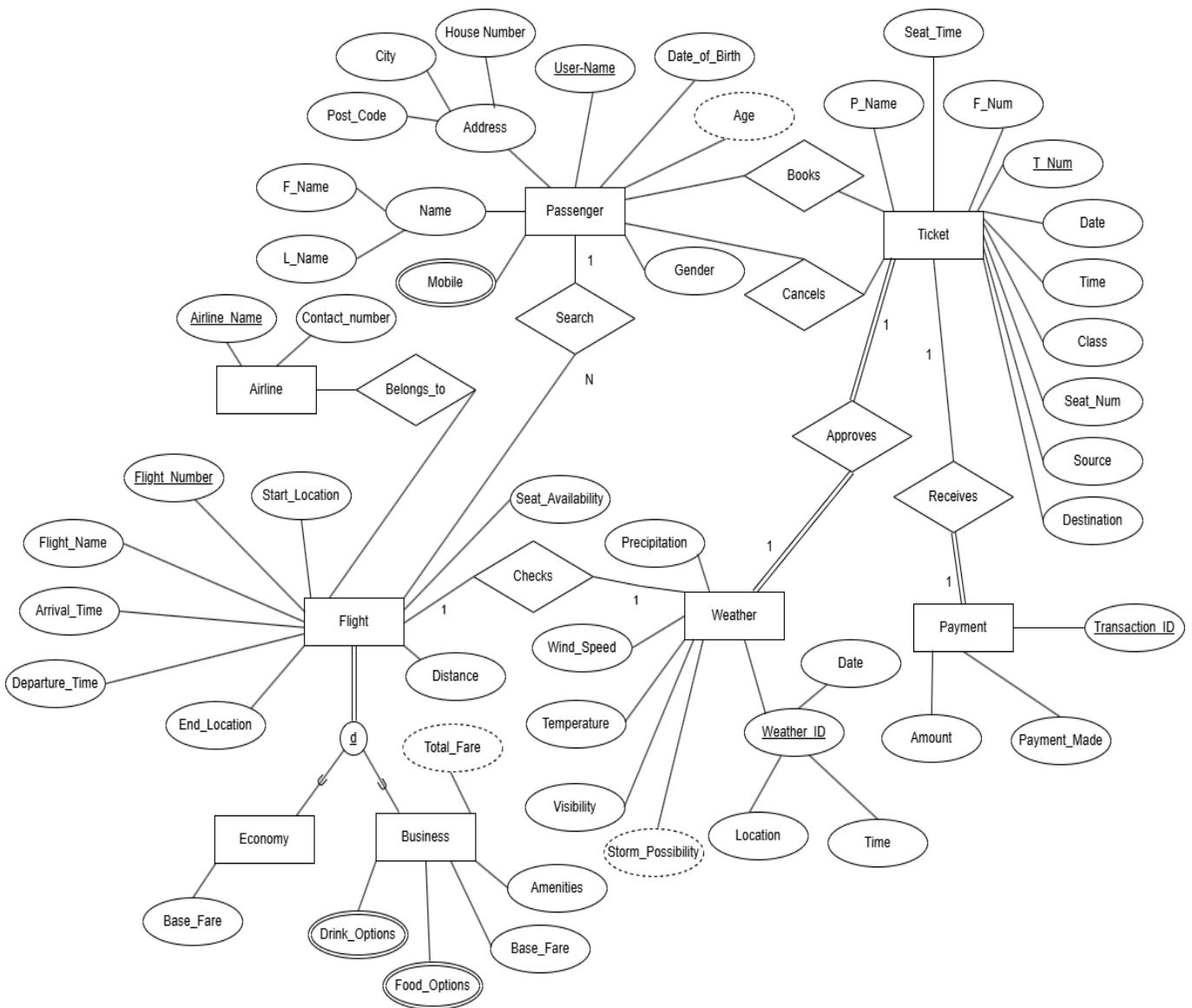
Project Features

Our flight booking website is designed to offer a smooth, secure, and comprehensive travel management experience. From account creation to ticket confirmation, each feature is built to ensure convenience, safety, and control for every user. The system supports a full booking lifecycle—from searching for flights to making payments, checking weather conditions, managing bookings, and downloading e-tickets. With an easy-to-navigate interface backed by a reliable MySQL database, SkyBound ensures a dependable and efficient booking process.

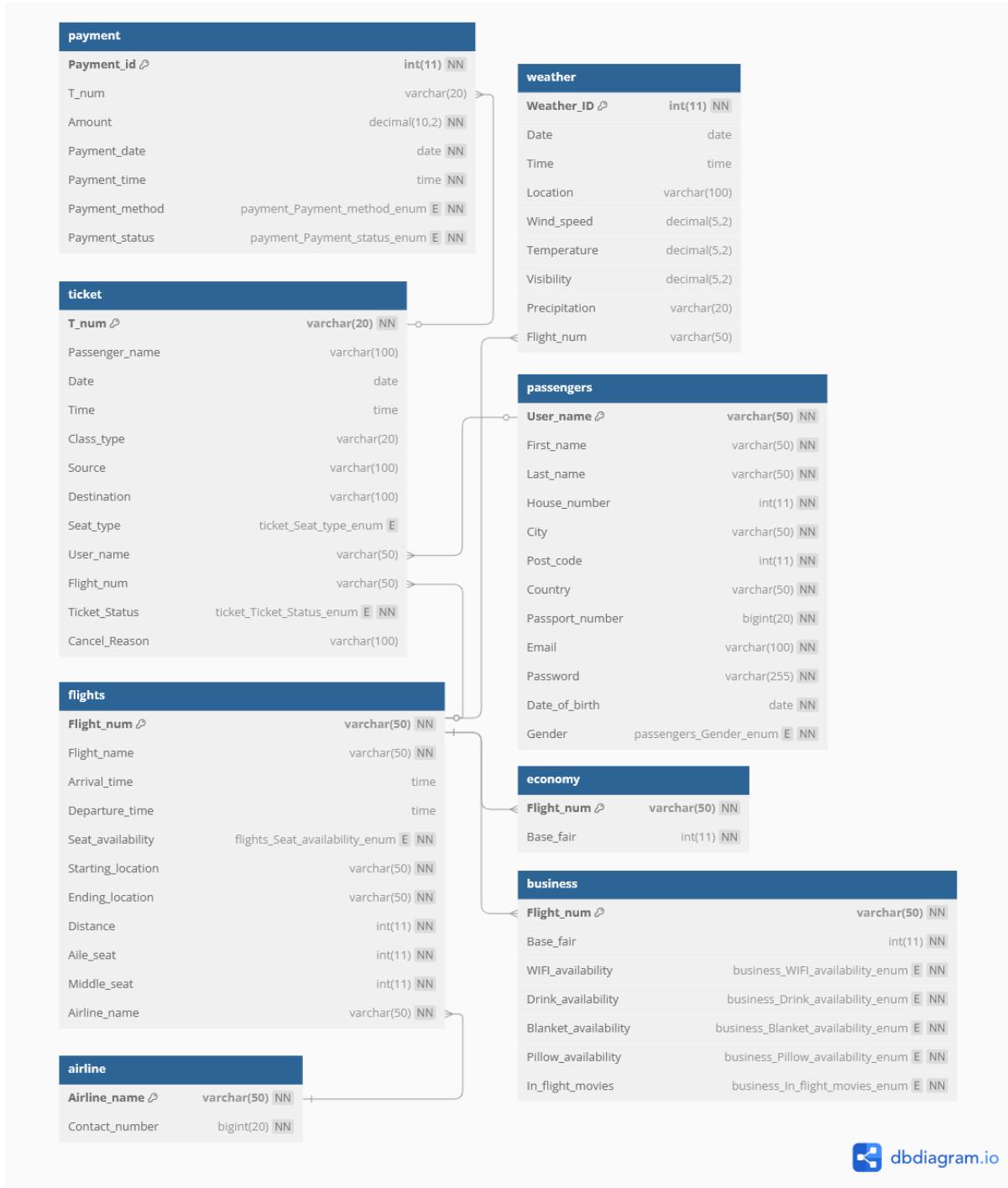
- **User Authentication:** Secure login, registration, and logout functionalities to manage personal accounts.
- **Flight Search:** Users can search for available flights based on route, time, and seat availability.
- **Flight Booking:** Users can book available flights based on route, time, and seat availability. Booking includes number of tickets selection, Business or Economy and seat type selection.
- **Ticket Cancellation:** Allows users to cancel tickets with an optional reason, and updates the ticket status accordingly.
- **Weather Check:** Real-time weather data is used to influence flight approval decisions for user safety.
- **Payment Processing:** Multiple payment options (Visa, MasterCard, bKash, PayPal) with live status updates (Pending, Completed, Failed).

- **Booking History & E-Ticket Download:** Users can view past bookings and download tickets in PDF format.
- **Profile Management:** Edit, update, or delete personal profile information to keep data accurate and up to date.

ER/EER Diagram



Schema Diagram



Frontend Development

Contribution of ID : 22201869, Name : Ameet Faisal -

1 - Login & Registration



The login form is titled "Login" and features two input fields: "User Name" and "Password". Below these is a dark blue "Login" button. At the bottom of the form is a link: "Don't have an account? Register".

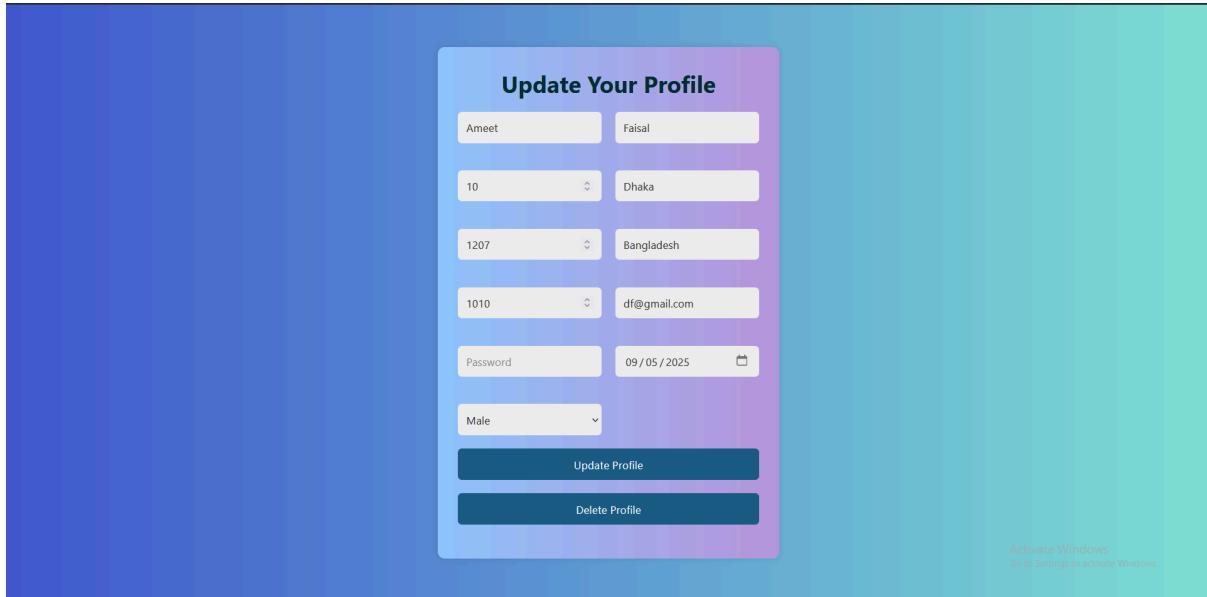
Activate Windows
Go to Settings to activate Windows.



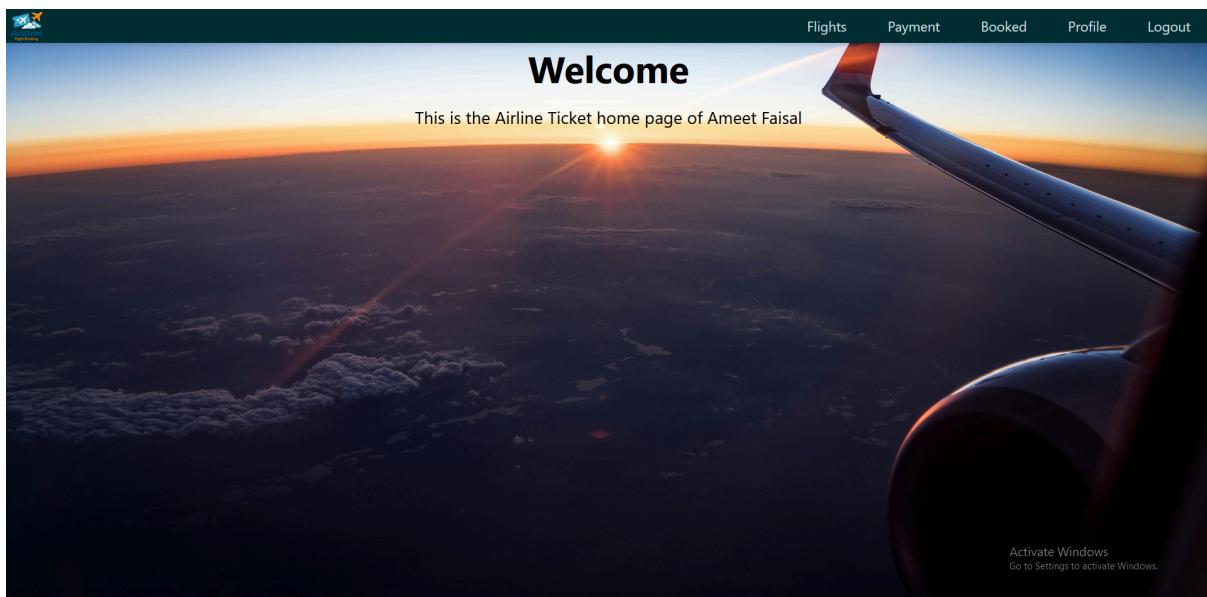
The register form is titled "Register" and contains several input fields arranged in pairs: "First Name" and "Last Name"; "Username" and "House number"; "City" and "Post code"; "Country" and "Passport number"; "Email" and "Password"; and "dd/mm/yyyy" and "Gender". Below these fields is a dark blue "Register" button. At the bottom of the form is a link: "Already have an account? Login".

Activate Windows
Go to Settings to activate Windows.

2 - Update & Delete profile



3 - Home page



4 - Print Ticket & Booking History

My Booked Tickets

Ticket #	Date	Time	Class	From → To	Seat Type	Status	Action
TK681E0BDDAF342	2025-05-09	16:06:21	Business	New York → London	Window	Approved	<button style="border: 1px solid red; color: red;">Delete</button> <button style="border: 1px solid red; color: red;">Print</button>

[Back to Home Page](#)

Activate Windows
Go to Settings to activate Windows.



5 - Weather Check

✖ Flight Cancelled Due to Bad Weather

Reason(s):

Visibility is too low (8.5)

Tickets have been cancelled and cannot proceed to payment.

Contribution of ID : 22201698, Name : Khan Farhan Mahdi

1. Flight Searching:

The image shows two screenshots of a flight search interface. The top screenshot displays a search form with fields for 'Fly From' (From), 'Fly To' (Destination), 'Departing' (mm/dd/yyyy), and 'Return' (mm/dd/yyyy). Below the form is an orange 'Search Flights' button. The background of the search form is a photograph of a person standing by a river. The bottom screenshot shows the results for flights from New York to London. It includes a search form with 'London' as the destination and dates '05/12/2025' for departure and return. An orange 'Search Flights' button is at the bottom. Below the search form, the text 'Available Flights from New York to London' is displayed. A table lists one flight: FL001, Sky Express, New York to London, departing at 12:00:00 and arriving at 14:30:00, with 1 seat available and the airline being SkyHigh Airlines. A blue 'Book' button is on the right.

Flight No	Flight Name	From	To	Arrival Time	Departure Time	Seats Available	Airline	Action
FL001	Sky Express	New York	London	14:30:00	12:00:00	YES	SkyHigh Airlines	<button>Book</button>

2. Flight Booking:

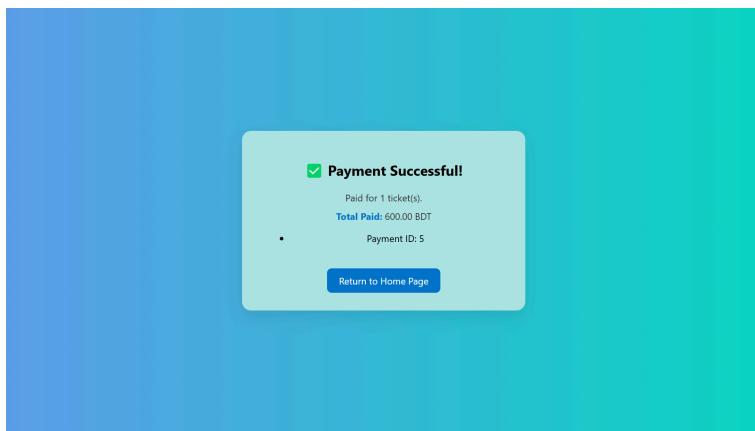
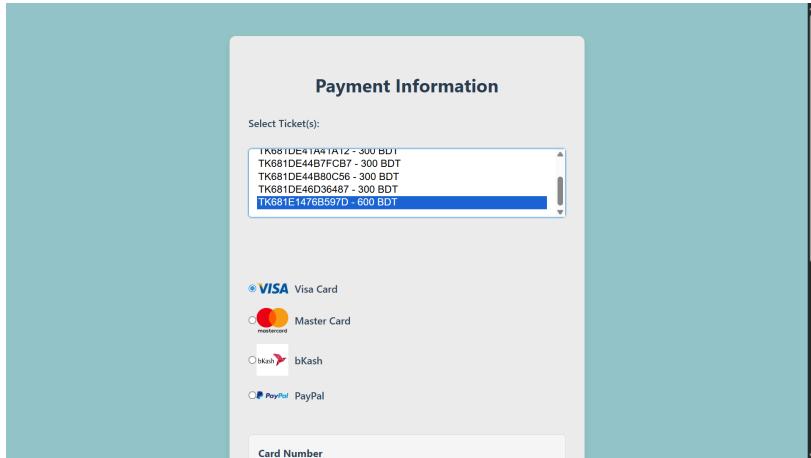
The image shows a flight booking interface. At the top, there's a 'Welcome' message and a 'Book Your Flight' button. Below this, there are fields for 'Number of Seats' (with a dropdown menu), 'Class' (Business selected, Economy available), and 'Seat Type' (Aisle selected, Window and Middle options available). A 'Book Ticket' button is located below these settings. To the right, there's a graphic of an airplane. The next section is titled 'Booking Summary' and contains a table with flight details. The table has columns for Ticket Number(s), Passenger Name, Flight Number, Flight Name, Class, From, To, Seats, and Total Price. The data in the table is as follows:

Ticket Number(s)	Passenger Name	Flight Number	Flight Name	Class	From	To	Seats	Total Price (.)
TK681E14768597D	Khan Farhan Mahdi	FL001	Sky Express	Business	New York	London	1	1600

At the bottom of the booking summary, there is an orange 'Proceed to Payment' button.

Contribution of ID : 22299020, Name : Shahriar Mohammad

1. Payment Processing:



2. Ticket Cancellation:

localhost says		Delete ticket TK681E1476B597D?					
Ticket #	Date						
		OK Cancel					
TK681DD39794E8B	2025-05-09			Pending	Delete	Print	
TK681DD397961CE	2025-05-09	12:06:15	Business	New York → London	Window	Pending	Delete
TK681DD397967E0	2025-05-09	12:06:15	Business	New York → London	Window	Approved	Delete
TK681DE41A41A12	2025-05-09	13:16:42	Economy	New York → London	Window	Pending	Delete
TK681DE41A41F2C	2025-05-09	13:16:42	Economy	New York → London	Window	Approved	Delete
TK681DE44B7FCB7	2025-05-09	13:17:31	Economy	New York → London	Middle	Pending	Delete
TK681DE44B80C56	2025-05-09	13:17:31	Economy	New York → London	Middle	Pending	Delete
TK681DE46D35EC2	2025-05-09	13:18:05	Economy	New York → London	Middle	Approved	Delete
TK681DE46D36487	2025-05-09	13:18:05	Economy	New York → London	Middle	Pending	Delete
TK681E1476B597D	2025-05-09	16:43:02	Business	New York → London	Window	Approved	Delete

My Booked Tickets								
Ticket TK681E1476B597D (and its payment record) deleted successfully. The ticket price has been refunded.								
Ticket #	Date	Time	Class	From → To	Seat Type	Status	Action	
TK681DD39794E8B	2025-05-09	12:06:15	Business	New York → London	Window	Pending	<button>Delete</button> <button>Print</button>	
TK681DD397961CE	2025-05-09	12:06:15	Business	New York → London	Window	Pending	<button>Delete</button> <button>Print</button>	
TK681DD397967E0	2025-05-09	12:06:15	Business	New York → London	Window	Approved	<button>Delete</button> <button>Print</button>	
TK681DE41A41A12	2025-05-09	13:16:42	Economy	New York → London	Window	Pending	<button>Delete</button> <button>Print</button>	
TK681DE41A41F2C	2025-05-09	13:16:42	Economy	New York → London	Window	Approved	<button>Delete</button> <button>Print</button>	
TK681DE44B7FCB7	2025-05-09	13:17:31	Economy	New York → London	Middle	Pending	<button>Delete</button> <button>Print</button>	

Backend Development

Contribution of ID : 22201869, Name : Ameet Faisal -

Backend Description

My part of the backend of this website is developed using PHP, JavaScript, and MySQL, running on a local server environment via XAMPP. It is responsible for managing user accounts, Show booked tickets, handling profile updates, Creating PDF of tickets, Letting Users download the pdf.

The backend enables the following key features:

1. User Authentication:

Users can securely register, log in, and log out. Registration data is validated and stored in the passenger table in the MySQL flightbookingdb database. Login verification is performed by matching the username and password against stored username and password, and PHP session handling is used to maintain user authentication status across pages.

2. Weather-Based Flight Approval:

Before confirming any flight booking, the backend checks weather conditions by querying the weather table in the MySQL flightbookingdb database. This table includes data such as precipitation, wind speed, and temperature. PHP logic evaluates these values to determine whether it is safe to approve the ticket. If the weather conditions do not meet predefined safety criteria, the booking is blocked for the user's safety.

3. Booking History & E-Ticket Generation:

Each user's confirmed bookings are stored in a dedicated table. PHP scripts retrieve and display booking history on the user's profile page. For each confirmed booking, a downloadable PDF ticket is generated using the FPDF library. These tickets are created dynamically based on data from the database.

4. Profile Management:

Users can view, edit, and delete their personal profile information. PHP scripts handle these operations by executing appropriate SQL queries (such as UPDATE and DELETE) to maintain data accuracy in the database. User inputs are validated on the server side to ensure data integrity and prevent errors.

Technology Stack

- **Languages & Tools:** PHP (backend/server-side logic), JavaScript (client-side interactivity), HTML/CSS (frontend layout and styling)
- **Database:** MySQL (via XAMPP)
- **PDF Generation:** FPDF (for generating printable e-tickets)
- **Server Environment:** Apache and MySQL using XAMPP on localhost

Contribution of ID : 22299020, Name : Shahriar Mohammad -

Backend Description

This backend module is focused on implementing payment processing and ticket cancellation, forming an essential part of the flight booking system. It is built using PHP and MySQL, running in a local XAMPP environment. The backend ensures secure transactions, proper state management of ticket records, and smooth user interaction through server-side logic.

1. Payment Processing

Users can pay for their booked tickets using various methods: Visa Card, Master Card, bKash, or PayPal. The backend handles this through the following logic:

- When a user completes a booking, a corresponding ticket record (Ticket table) is created first.
- A payment form captures the chosen method and other payment details, which are submitted to a PHP script.
- PHP processes this input and creates a new record in the Payment table, storing the ticket number (T_num), payment method, amount, and time/date.
- Each payment begins with a status of "Pending". Based on backend logic (e.g., simulated processing or real integration), the Payment_status field is updated to "Completed" or "Failed".
- The payment and its status are linked directly to the corresponding ticket via the T_num foreign key, allowing real-time updates to be reflected in the user dashboard.

2. Ticket Cancellation

The system allows users to cancel tickets through a dedicated PHP interface. The cancellation backend works as follows:

- Users can submit a cancellation request.
- The cancellation is validated to ensure that only tickets associated with the logged-in user can be modified.
- Once cancelled, the ticket is excluded from future processing (e.g., payment completion) and does not count toward seat availability.

Technology Stack

- **Backend Language:** PHP
- **Database:** MySQL (using XAMPP)
- **Frontend Interaction:** HTML, CSS, and JavaScript

Relevant Tables Used

- Ticket: Stores booking information, ticket status, and cancellation reason.
- Payment: Tracks all payments associated with ticket numbers, including payment method and status.

Contribution of ID: 22201698, Name: Khan Farhan Mahdi -

Backend Description: This backend module is focused on implementing ticket searching and ticket booking, forming an essential part of the flight booking system. It is built using PHP and MySQL, running in a local XAMPP environment. The backend ensures proper searching methods, keeping data in the specific tables of the database, booking tickets based on the choice of class (economy and business) and the seat position (window, aisle and middle).

1. Flight Searching

Users can search their desired flights by inserting their source, destination and date of travel. The backend handles this through the following logic:

- When a user inputs their starting location, destination and the date of travel and search their desired flights.

2. Flight Booking

The system allows users to cancel tickets through a dedicated PHP interface. The cancellation backend works as follows:

- User can book their seat or multiple number of seats according to their desire of Class and seat position.
- There are two classes for the users to choose from. One is Economy class and the second is Business class.
- The users can choose their seat positions beside the window, in the middle or along the aisle.

Technology Stack

- Backend Language: PHP
- Database: MySQL (using XAMPP)
- Frontend Interaction: HTML, CSS, and JavaScript

Relevant Tables Used

- Ticket: Stores booking information, ticket status, and cancellation reason is automatic stored as null.

- Flights: The website fetches the details of the flights from this table and displays on the webpage.
- Business: The base fare is fetched from this table and multiplied with the number of tickets booked.
- Economy: The base fare is fetched from this table and multiplied with the number of tickets booked.

Source Code Repository

<https://drive.google.com/drive/folders/1J1ihkkzfuBZYdAoH0LIyzIWQUDaCX4WB?usp=sharing>

Conclusion

In developing the Aviatrax flight ticketing system, we successfully implemented a comprehensive, user-friendly, and database-driven web application tailored for seamless flight booking. Our project integrates essential features such as user authentication, real-time flight and weather data management, flexible seat selection, multiple payment options, and PDF ticket generation. By combining a robust MySQL backend with an interactive frontend and secure PHP logic, we created a system that not only emphasizes functionality and performance but also enhances user experience and safety. This project provided us with valuable insights into real-world database applications, backend integration, and full-stack development practices. It was a collaborative effort that strengthened our skills in database design, system implementation, and web technologies.

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