SkyFare

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GitHub repo:

https://github.com/CMPT-276-SPRING-2025/final-project-19-leafs

Overview

Booking a flight can be stressful—bouncing between websites, comparing prices, and checking flight statuses takes a lot of time and effort. Our project makes this process easier by giving users a simple, all-in-one platform to search for flights, compare prices, and get real-time updates. Plus, with the help of an AI-powered chatbot, users can get instant assistance, making the experience smoother and more interactive.

Problems to solve

This project originated from the need for a streamlined flight search experience that minimizes manual effort and enhances user convenience. By integrating the Amadeus API and OpenAI API, we provide users with real-time flight information and intelligent chatbot support, ensuring a seamless searching process.

Potential Users:

- Casual Traveler - Whether it's a weekend getaway or a long-awaited vacation, finding the best deal without the hassle is important. Our app makes it easy to compare prices and get real-time updates so there are no surprises before takeoff.
- Business Traveler - Time is everything when you're traveling for work. Our app helps business travelers quickly find flights, stay updated on any schedule changes, and get instant answers from our AI chatbot—so they can focus on their meetings, not their itinerary.
- Family Traveler - Traveling with kids or in a group means juggling multiple tickets, layovers, and schedules. Our app simplifies the process by helping families find convenient flights, track real-time updates, and avoid last-minute disruptions.

List of Apis – 4

Main APIs
- Amadeus (https://developers.amadeus.com/self service/category/flights)
- OpenAI (https://platform.openai.com/docs/overview)

Backup APIs
- AviationStack (https://aviationstack.com/documentation)
- Google Gemini (https://ai.google.dev/gemini-api/docs)

Description of features to implement for each API

Amadeus API Features

- **Flight Offers Search:** Search flights from over 400 airlines based on departure, destination, date, and budget.
- **Flight Offers Price:** Confirm final pricing (after taxes).
- **Flight Status API:** Provide real-time flight schedule updates, including departure/arrival times, terminal, and gate information.

Feature	API Used	Endpoint
Flight Search	Flight Offers Search	/v2/shopping/flight-offers
Final Pricing	Flight Offers Price	/v1/shopping/flight-offers/pricing
Live Flight Updates	Flight Status API	/v2/schedule/flights

OpenAI API Features

- **Chat Completion:** AI chatbot answers flight-related queries.
- **Context Memory:** Helps users by remembering previous responses.
- **Summarization:** Provides clear explanations of ticket policies and booking details.

Feature	API Used	Endpoint
Chatbot (Flight Queries)	Chat Completion API	/v1/chat/completions
Context Memory	Chat Completion API (with history)	/v1/chat/completions
Summarization	Chat Completion API	/v1/chat/completions

AviationStack API Features

- **Flight Offers Search:** Search for flights based on departure, destination, and date.
- **Flight Offers Price:** Confirm final flight pricing (taxes).
  - o **NOTE:** AVIATIONSTACK **DOES NOT PROVIDE** PRICING DATA DIRECTLY.
  - o **Workaround**: Retrieve flight details from AviationStack.
  - o Redirect users to airline booking pages for final pricing.
- **Flight Status API:** Get live flight updates, including departure/arrival times, terminals, and gates.

Feature	API Used	Endpoint
Flight Offers Search	Flights API	/v1/flights
Flight Offers Price	Not available	Use airline sites
Flight Status API	Flights API	/v1/flights

Google Gemini API Features

- **Chat Completion:** AI chatbot answers flight-related queries.
- **Context Memory:** Helps users by remembering previous responses.
- **Summarization:** Provides clear explanations of ticket policies and booking details.

Feature	API Used	Endpoint
Chat Completion	Gemini Pro Model API	/v1/models/gemini-pro:generateContent
Context Memory	Gemini Pro Model API	/v1/models/gemini-pro:generateContent
Summarization	Gemini Pro Model API	/v1/models/gemini-pro:generateContent

API Costs:

- Amadeus API: Free
- OpenAI API: We'll use the GPT-4o Min**i** model for cost-efficiency, priced at **$0.15 per 1M input tokens** and **$0.60 per 1M output tokens**.
- AviationStack API: Free
- Google Gemini API (Gemini Pro Model): The cost is **$0.10 per 1M input tokens** and **$0.40 per 1M output tokens**.

We'll monitor usage to avoid unexpected costs.

Persona for each user group

Persona 1: Casual Traveler

Name: Emily Carter

Age: 29

Occupation: Marketing Specialist

Tech Proficiency: Moderate

Motivation: Looking for affordable and convenient flight options for vacations and work trips.

Pain Points: Struggles with comparing prices, tracking flights, and understanding ticket policies.

Persona 2: Business Traveler

Name: Daniel Lee

Age: 38

Occupation: Sales Manager

Tech Proficiency: High

Motivation: Needs quick, reliable, and efficient flight booking with minimal hassle.

Pain Points: Frequent last-minute travel changes, flight delays, and managing expenses.

Persona 3: Family Traveler

Name: Sarah Johnson

Age: 35

Occupation: Stay-at-home Parent

Tech Proficiency: Moderate

Motivation: Traveling with kids and family, prioritizing safety, convenience, and cost-effectiveness.

Pain Points: Managing multiple tickets, flight delays, and navigating airline policies for children.

User stories:

Main API 1: Amadeus API

1. **Flight Offers Search**
   As a traveler, I want to search for flights from over 400 airlines based on my departure, destination, date, and budget, so that I can quickly find options that fit my travel plans.

2. **Flight Offers Price**
   As a traveler, I want to confirm the final pricing of flights—including all taxes and fees—so that I can accurately plan my budget and avoid unexpected costs.

3. **Flight Status API**
   As a traveler, I want to receive real-time flight schedule updates, including departure/arrival times, terminal, and gate information, so that I can manage my travel schedule effectively.

Main API 2: OpenAI API

4. **User Story 4: Chat Completion for Flight Queries**

   As a traveler, I want to interact with an AI chatbot that leverages chat completion, so that I can ask flight-related queries (e.g., baggage policies, seat selection, in-flight services) and receive immediate, accurate responses.

5. **User Story 5: Context Memory for Personalized Assistance**

   As a traveler, I want the AI chatbot to remember my previous interactions and preferences, so that my experience becomes more personalized, and I don't have to repeat my information.

6. **User Story 6: Summarization of Ticket Policies and Booking Details**

   As a traveler, I want the AI chatbot to provide a concise summary of ticket policies, cancellations, and booking details, so that I can quickly understand the key information without wading through lengthy text.

Backup API 1: AviationStack API

7. User Story 7: Flight Offers Search

As a traveler, I want to search for flights based on departure, destination, and date using a backup API, so that I can still find available flights if the primary service is down.

8. User Story 8: Flight Offers Price

As a traveler, I want to retrieve flight details for pricing via a backup API and be redirected to the airline booking page, so that I can confirm the final cost even when direct pricing data is unavailable.

9. User Story 9: Flight Status (Backup)

As a traveler, I want to receive live flight status updates—including departure/arrival times, terminal, and gate information—from a backup API, so that I remain informed during my journey.

Backup API 2: Google Gemini API

10. User Story 10: Chat Completion for Flight Queries

As a traveler, I want to use an AI chatbot powered by the backup API to ask flight-related queries, so that I can continue receiving assistance if the primary chatbot is unavailable.

11. User Story 11: Context Memory for Ongoing Assistance

As a traveler, I want the backup AI chatbot to remember my previous queries and preferences, so that I can benefit from a personalized interaction even when the main service is down.

12. User Story 12: Summarization of Ticket Policies and Booking Details
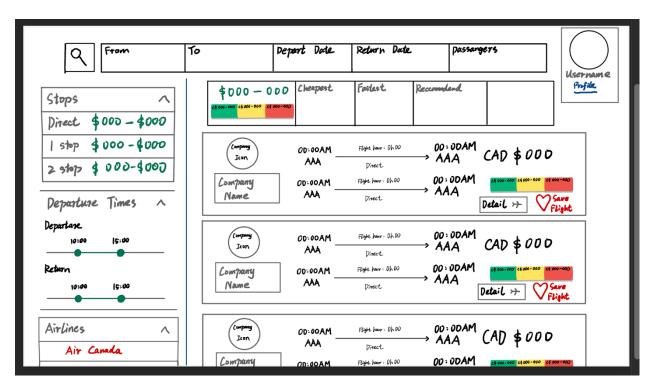
As a traveler, I want the backup AI chatbot to provide a clear and concise summary of ticket policies and booking details, so that I can quickly understand the essential information without confusion.
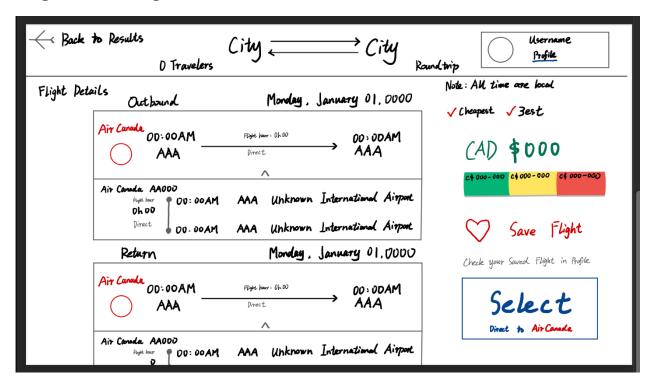
Low fidelity interfaces

1. Home/Landing Page

2. Flight Options Page

3. Flight Details Page

4. Saved Flights Page

User Flow

Also available on: https://www.figma.com/design/Y3XsMWMfqNgebyQjEJscRI/Untitled?node-id=0-1&t=yy94rCy9z3Ph8RQu-1

Tech stack:

- **Frontend Framework**
  - React.js

    Reason:
    - Component-based structure makes it easy to manage UI.
    - Efficient API calls using fetch or Axios.
    - React Query can handle caching API responses.

- **UI Library**
  - Tailwind CSS

    Reason: Lightweight and customizable for styling.

- **Testing**
  - Manual Testing (Acceptance Testing)

- **Deployment**
  - Vercel

    Reason:
    - Simple, free hosting for frontend-only apps.
    - Automatic CI/CD from GitHub repo.