Southern New Hampshire University

Enhancement One:

Software Design and Engineering

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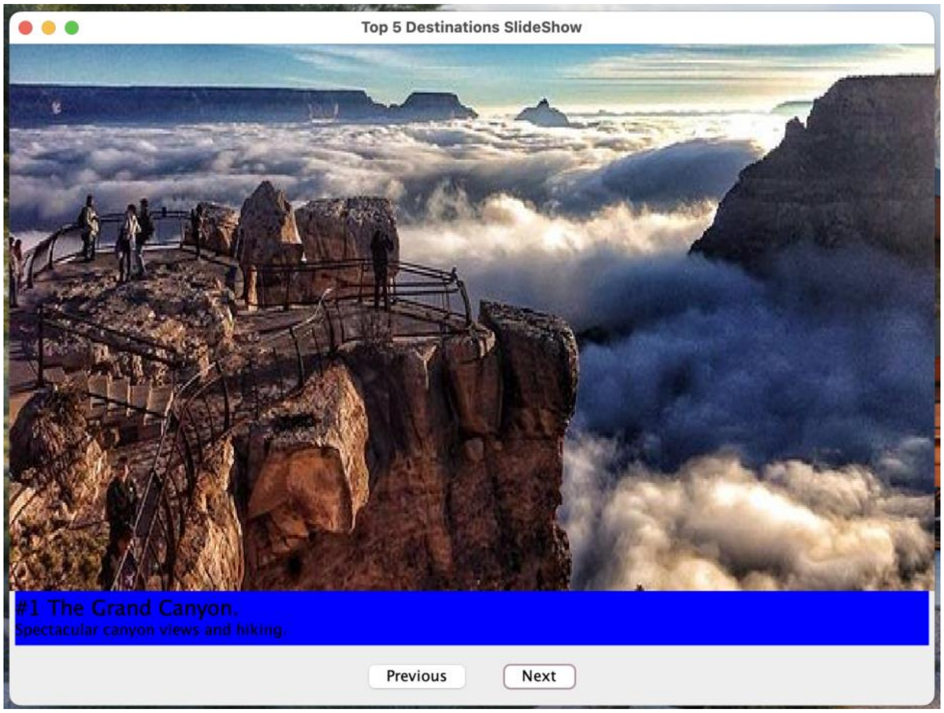
Artifact:

The artifact I selected for my ePortfolio is the SNHU Travel: Niche Vacation Booking System, a simple Vacation Slideshow application from CS 250: Software Development Lifecycle. The original application is a Java desktop app that shows the user five different images or “vacations” in a slideshow format, allowing the user to view vacation destinations.



#1 The Grand Canyon.

Spectacular canyon views and hiking

Enhanced Version:

The enhanced version is a total “redesign”. I took the original Java desktop vacation booking application and turned it into something totally different. I created a web application using

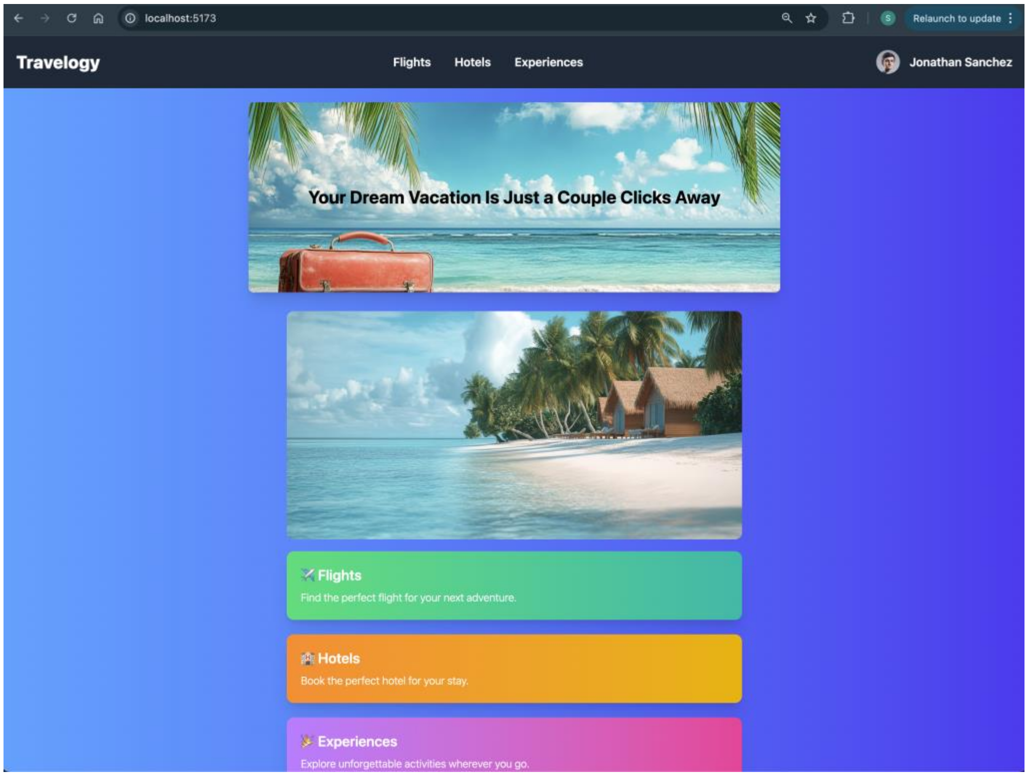
Vite, React, Tailwind CSS, Express.js, and the Amadeus API:

https://developers.amadeus.com/self-service. The updated app now allows users to:

- Search for Flights: Departure and Return
- Search for Hotels in cities.
- Explore Points of Interest in those cities.
- User Friendly Interface, with responsive pages and intuitive navigation.
- Features 4 ‘Pages’
    - HomePage: Header, Banner, Slideshow, and Navigation Cards.
    - Flights: Header, Card Style Form,
        - The user can search for departure and return flights.
            - The frontend makes a call to the server passing the city name to an Amadeus Location API that converts the city names to the Airport Code, passes the Airport codes, departure date, and return date to the Amadeus Flights API and returns available flights with the price, dates, departure times, and layovers using the Amadeus API.
            - The user can then book using a link to Expedia.
    - Hotels: Header, Card Style Form, and Map
        - The user can search for hotels in a certain city and use Expedia to book.
            - The front end calls the server, passing the city name to the Amadeus location API to convert it to a City Code. Then, it passes the city code to the Amadeus Hotels API, which returns hotels within a radius of 1 km. The front end then displays the Hotel name and a link to Expedia to book.
    - Experiences: Header, Card Style Form
        - The user can search for ‘Experiences’ in and around a specific city. The frontend passes the city name to the Amadeus Location API to get the city’s geoCode: Lat & Long, this is then passed to the Amadeus POIS API, which returns the title of an experience and a description of the experience.

See Screenshots Below

Home:



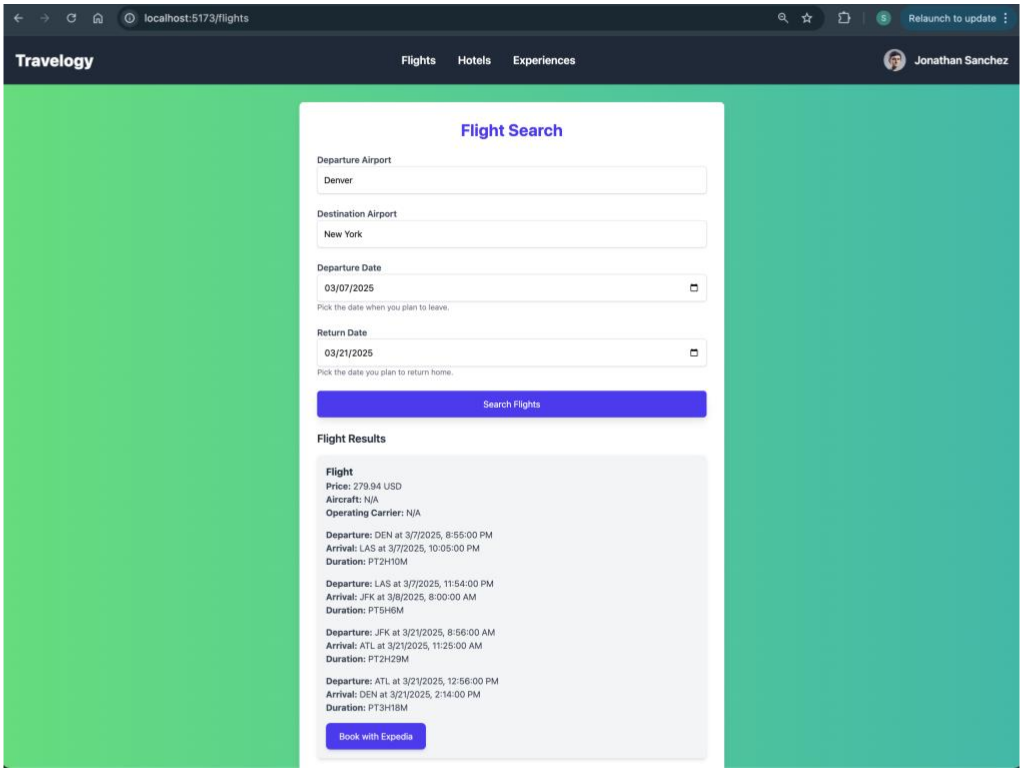
Your Dream Vacation Is Just a Couple Clicks Away

Flights
Find the perfect flight for your next adventure.

Hotels
Book the perfect hotel for your stay.

Experiences
Explore unforgettable activities wherever you go.

Flights:



Flight Search

Departure Airport
Denver

Destination Airport
New York

Departure Date
03/07/2025
Pick the date when you plan to leave.

Return Date
03/21/2025
Pick the date you plan to return home.

Flight Results

Flight
Price: 279.94 USD
Aircraft: N/A
Operating Carrier: N/A

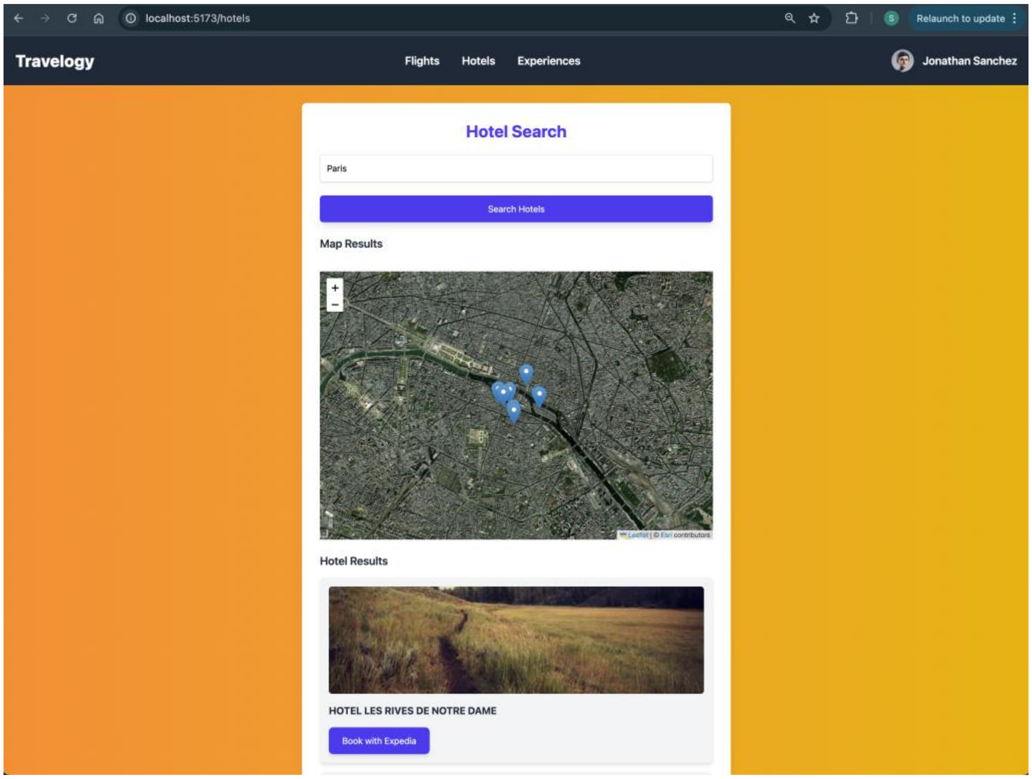
Departure: DEN at 3/7/2025, 8:55:00 PM
Arrival: LAS at 3/7/2025, 10:05:00 PM
Duration: PT2H10M

Departure: LAS at 3/7/2025, 11:54:00 PM
Arrival: JFK at 3/8/2025, 8:00:00 AM
Duration: PT5H6M

Departure: JFK at 3/21/2025, 8:56:00 AM
Arrival: ATL at 3/21/2025, 11:25:00 AM
Duration: PT2H29M

Departure: ATL at 3/21/2025, 12:56:00 PM
Arrival: DEN at 3/21/2025, 2:14:00 PM
Duration: PT3H18M

Hotels:



localhost:5173/hotels

Relaunch to update

Travelogy

Flights Hotels Experiences

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Hotel Search

Paris

Search Hotels

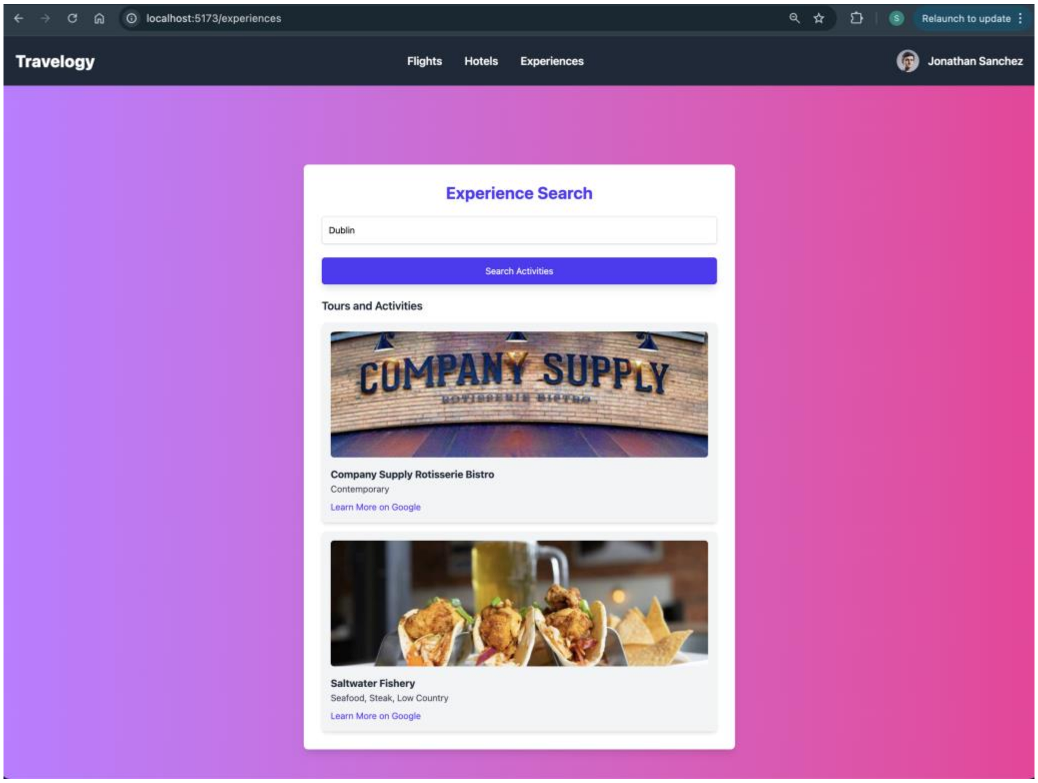
Map Results

Hotel Results

HOTEL LES RIVES DE NOTRE DAME

Book with Expedia

Experiences:



localhost:5173/experiences

Relaunch to update

Travelogy

Flights Hotels Experiences

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Experience Search

Dublin

Search Activities

Tours and Activities

Company Supply Rotisserie Bistro

Contemporary

Learn More on Google

Saltwater Fishery

Seafood, Steak, Low Country

Learn More on Google

Justification:

I chose this artifact because I knew that I have the skills and knowledge to take a simple Java application and idea, and transform it into a modern, dynamic web application. Key skills demonstrated:

- **Technical Design:** Before starting development, I planned and designed the application. I started by thinking about the infrastructure and architecture of the applications, identifying key features and deciding how to structure the frontend and backend.
- **Requirements Gathering:** I revisited notes from CS 250: SDLC, but in reality I became the customer. I took into account the slideshow from CS 250 and added what I thought was useful in an application. I knew that if I was going to use an API to fetch travel information, I would have to think about wants, needs, and implementation. In full transparency, I used the Hopper app as my inspiration.
- **React & API Integration:** My use of React and the Amadeus API proves my ability to work with modern frameworks and third-party APIs. I integrated real-time flight, hotel, and points-of-interest search, giving the app a more interactive, user-friendly experience than the original Java version.
- **Modern Web Dev Practices:** By leveraging Vite, Tailwind CSS, and Express.js, I was able to create a highly efficient and professional web app. The use of Vite led to quicker development and allowed me to reload pages without having to kill the project and recompile every time I made a change. Tailwind CSS proved to be one of the best CSS frameworks/tools, allowing me to provide a responsive design and a modern look and feel. Express.js served as the backend framework for my application. Express.js handled the application’s logic and calls to the Amadeus API, allowing me to demonstrate my knowledge of client/server development.
- **UI/UX:** The slideshow, search functionalities, fun colors, and modern card significantly improve the user experience compared to the original desktop application. I also proved that I understand how to design software with the app’s purpose and user in mind.

Course Alignment:

The project’s enhancements allowed me to meet several course outcomes and showcase my web development skills. Course outcomes:

- **Design and Evaluate Solutions:** I transformed a basic Java application into a functional, web-based solution, addressing real-world user needs. Implementing the ability to search for flights, hotels, and experiences involved applying algorithmic principles and managing design trade-offs to create a robust and scalable system.

- **Demonstrate Knowledge and Use of Modern Tools:** Transforming a Java desktop application idea to React and Express.js helped me develop new skills in web development and API integration, allowing me to implement a modern solution that aligns with industry needs and practices.
- **Develop a Security Mindset:** Although security was not my primary focus in this application, I ensured that all API calls follow modern best practices. I also used a client/server model, which allowed me to store tokens and passkeys on the server side.

Reflection:

I encountered numerous challenges throughout the project that I had to make the best out of.

Thus, leading to valuable learning opportunities:

- **Choosing the Right APIs:** One of the first hurdles I encountered was selecting the most suitable APIs for the project. There are not many robust travel APIs. I chose Amadeus because they provided the most travel-related information, but Amadeus' developer APIs are complicated to work with. I had to convert the city names into IATA codes (Airport codes), city codes (abbreviations), and geoCodes (latitude and longitude) to ensure users could properly search. Amadeus does not just accept the city name for every search like my front end does. This required data manipulation and multiple calls to the API to ensure the app could accurately search and return flights, hotels, and experiences.
- **Modular Code Design:** I knew the project would be bigger than the Java application, which meant I had to think about the folder structure of my app. This meant I had to organize and name my files well. I also had to ensure that I could reuse components and call them by name when I used them. Adopting this mindset saved me headaches when I ran into bugs/errors during development.
- **Design Challenges:** I will be the first to admit that art is not my strongest skill. Which led me to struggle when selecting colors for my app. I knew I wanted fun colors because it is a vacation/travel application, but I fear I may have chosen colors that are too loud.

Summary:

This project is a good example of how I can apply my full-stack development skills to create a complex, useful, and interactive web app. I was able to show applicable skills, such as API integrations, architecture & design, modular code, and that I can take a simple application and idea and turn it into a functional application. If I were to revisit this project in the future, I would consider a couple of additions. Such as a user login, flights and hotel booking, and an option to change the background colors to more subtle colors. This experience allowed me to put my skills to the test and pushed me to think outside the box.