1. INTRODUCTION

1.1 Project Overview

Explore with AI: Custom Itineraries for Your Next Journey is a generative AI–based web application designed to simplify and automate travel planning. The project allows users to generate personalized travel itineraries by providing basic inputs such as destination, number of days, and number of nights through an interactive web interface.

The system leverages a pre-trained generative AI model to create detailed and structured travel itineraries that include daily activities, nearby attractions, food recommendations, and useful travel tips. Instead of relying on manual research or static datasets, the application processes real-time user inputs and dynamically generates customized travel plans.

The application is developed using Python and Streamlit, providing a user-friendly interface for seamless interaction. By integrating generative AI with a lightweight web framework, the project demonstrates the practical application of AI in real-world travel planning scenarios. This solution is beneficial for individual travelers, travel agencies, and travel content creators by reducing planning effort, saving time, and improving the overall travel planning experience.

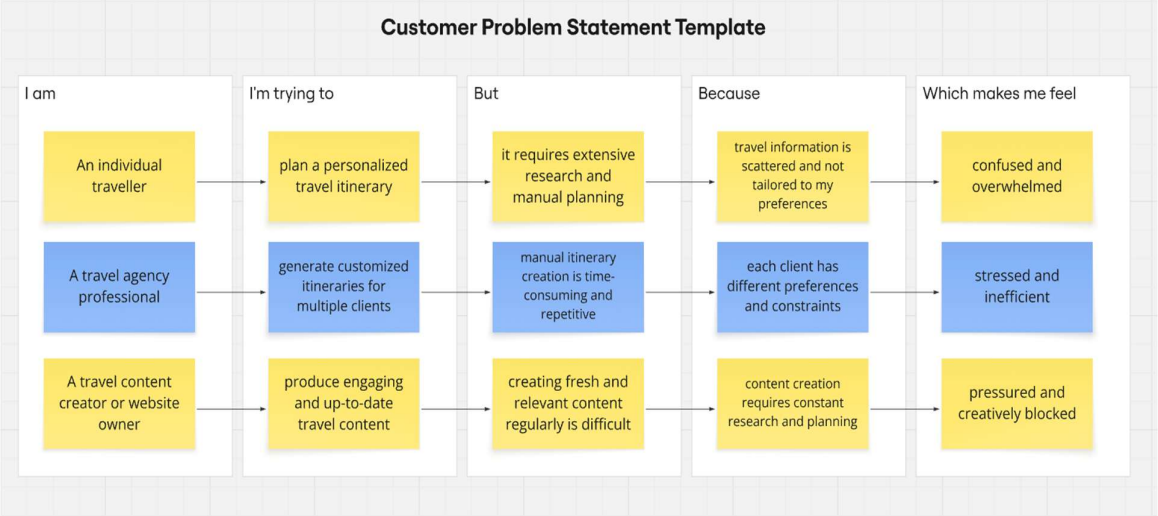
1.2 Objectives

- To develop an AI-based application for generating personalized travel itineraries.
- To use a pre-trained generative AI model for automated itinerary creation.
- To design a simple user interface using Streamlit for easy interaction.
- To validate user inputs for accurate and meaningful itinerary generation.
- To deploy the application as a working travel planning solution.

2. Ideation Phase

2.1 Define Problem Statements (Customer Problem Statement Template):

Travel planning and content creation often take a lot of time and effort because they require continuous research and personalization. Many individual travellers find it difficult to create customized travel itineraries that match their interests and trip duration, which can be confusing and frustrating. In the same way, travel agencies struggle to quickly prepare personalized itineraries for multiple clients due to repetitive manual work. Travel websites and content creators also face challenges in regularly producing engaging and updated travel content. These difficulties create a need for an intelligent and automated solution. The **Explore with AI** system addresses these challenges by using generative AI to automatically generate personalized travel itineraries and relevant travel content with minimal manual effort.



Reference: https://miro.com/templates/customer-problem-statement/

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	An individual traveller	plan a personalized travel itinerary	it requires extensive research and manual planning	travel information is scattered and not tailored to my preferences	confused and overwhelmed
PS-2	A travel agency professional	generate customized itineraries for multiple clients	manual itinerary creation is time-consuming and repetitive	each client has different preferences and constraints	stressed and inefficient
PS-3	A travel content creator or website owner	produce engaging and up-to-date travel content	creating fresh and relevant content regularly is difficult	content creation requires constant research and planning	pressured and creatively blocked

2.2 Empathy Map Canvas

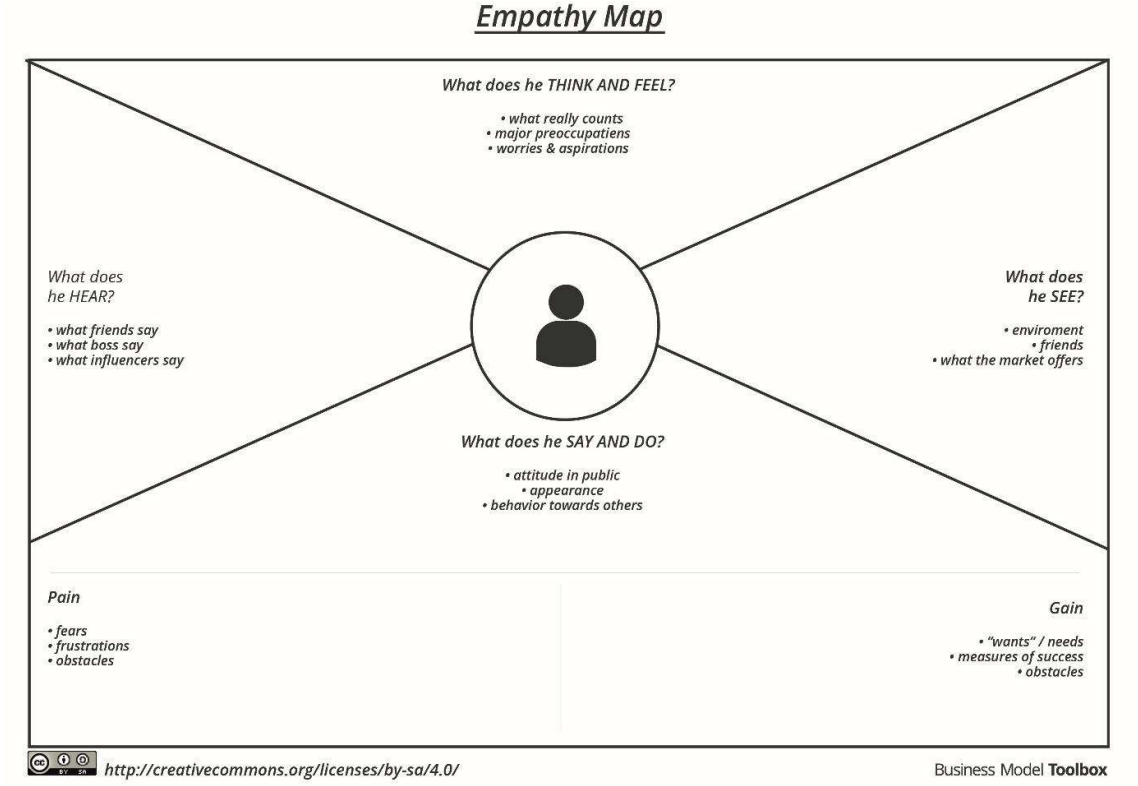
Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to helps teams better understand their users.

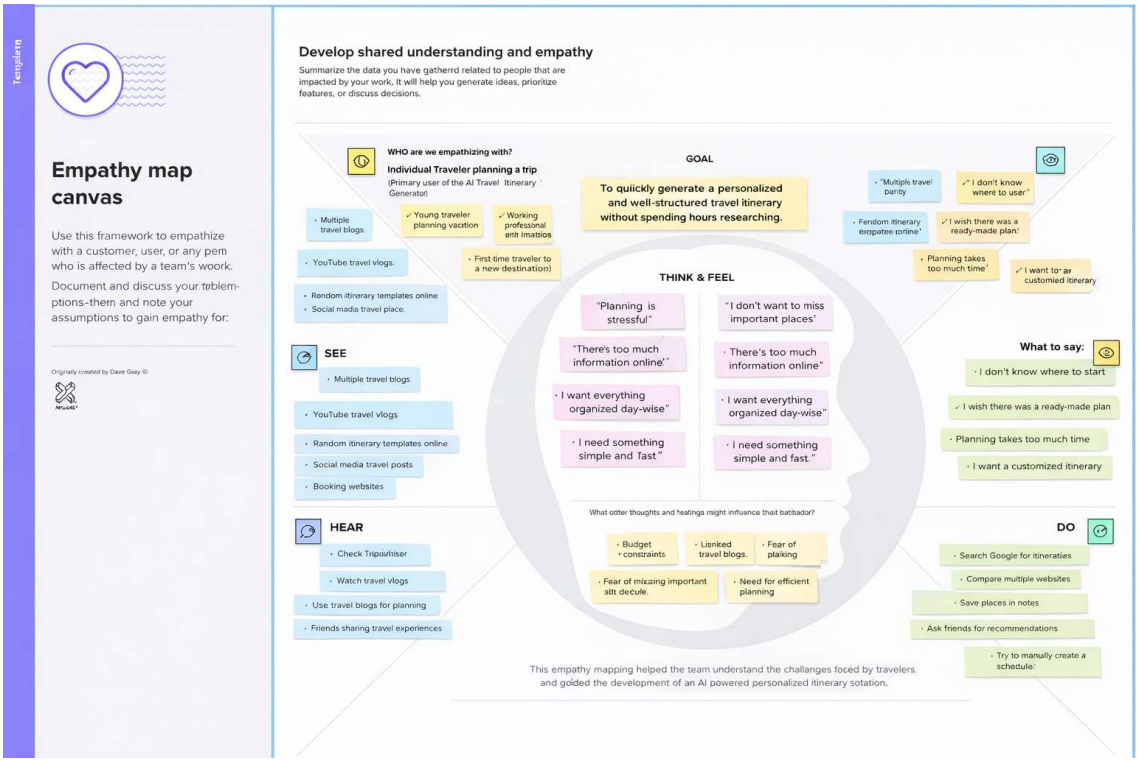
Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:



Reference: https://www.mural.co/templates/empathy-map-canvas

Example: Travel Itinerary Application



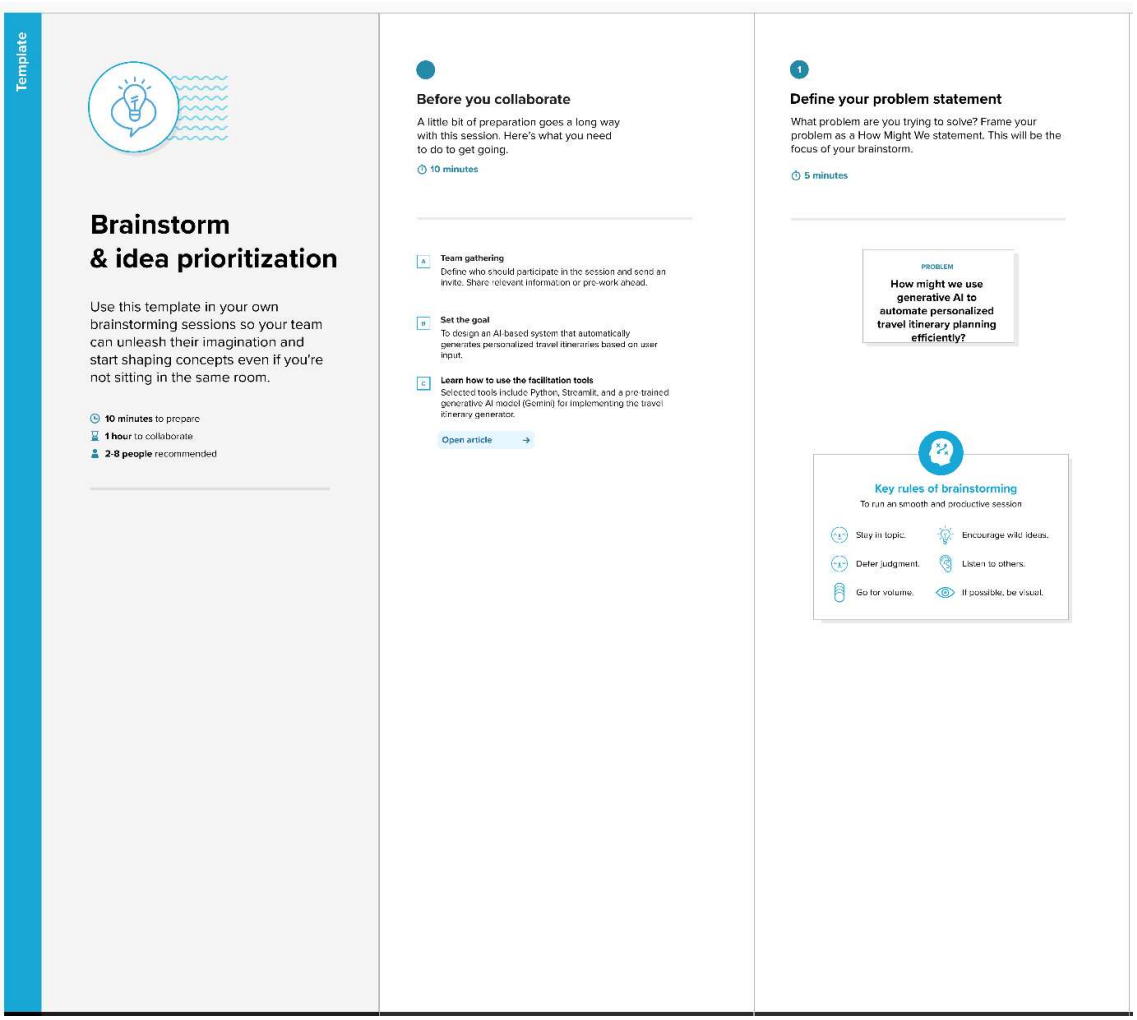
2.3 Brainstorming

Brainstorm & Idea Prioritization:

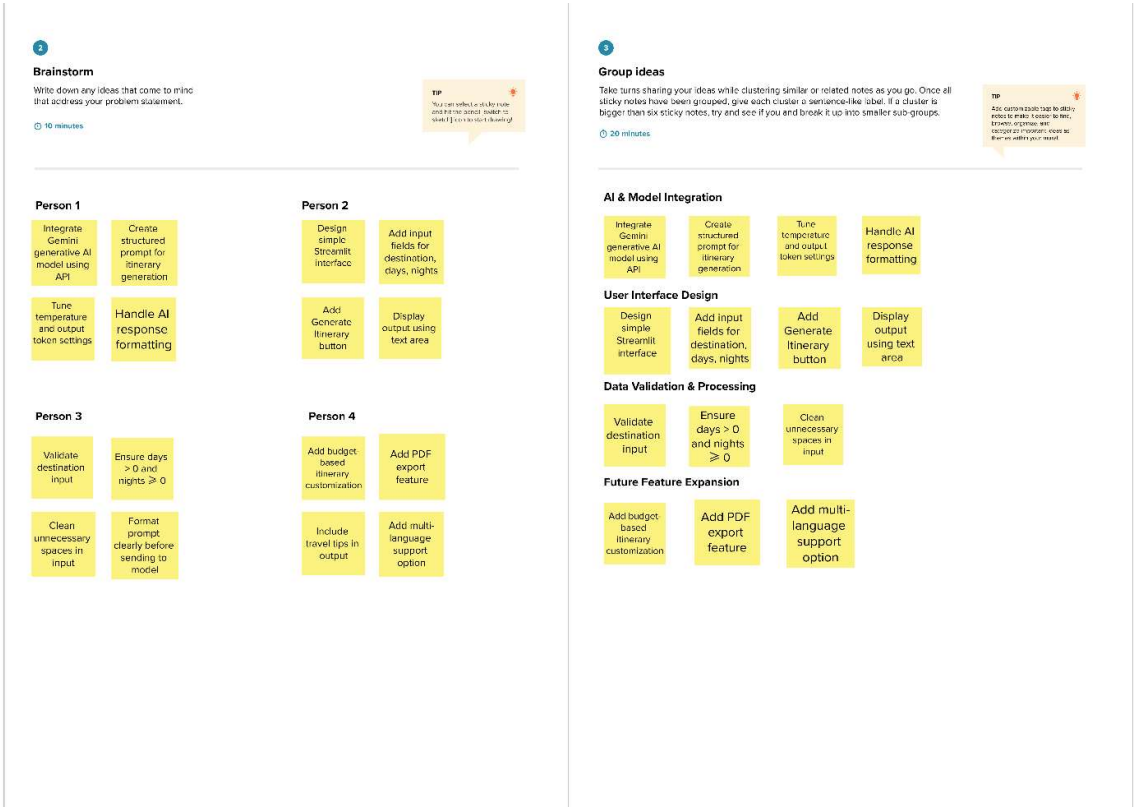
Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Reference: https://www.mural.co/templates/brainstorm-and-idea-prioritization

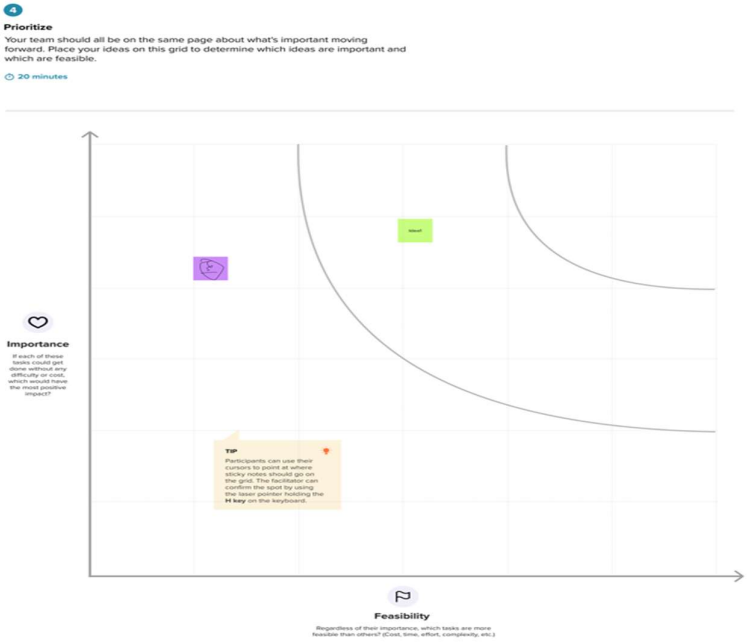
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



Step-3: Idea Prioritization



3. Requirement Analysis

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Travel Itinerary Generation	• User can enter destination. • User can enter number of days. • User can enter number of nights. • System generates personalized travel itinerary using AI.
FR-2	Input Validation	• Validate that destination field is not empty. • Ensure number of days is greater than zero. • Ensure number of nights is zero or positive. • Display error message for invalid input.
FR-3	AI Model Integration	• Create structured prompt using user input. • Send prompt to generative AI model. • Receive generated itinerary from AI. • Format AI response properly.
FR-4	Output Display	• Display itinerary in readable format. • Allow user to review generated content. • Show appropriate error message if API fails.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

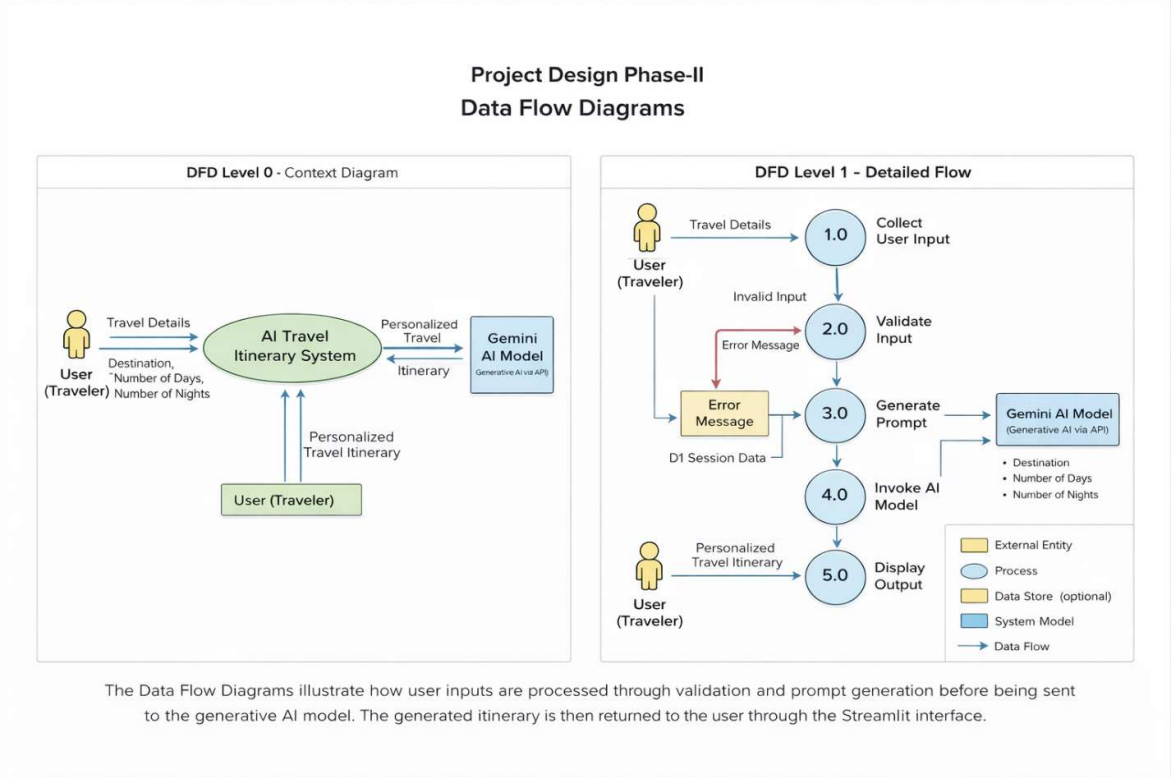
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The application should provide a simple, intuitive, and user-friendly interface using Streamlit.
NFR-2	**Security**	The API key must be securely configured and not exposed publicly. User input should not be stored permanently.
NFR-3	**Reliability**	The system should handle invalid inputs and API errors gracefully without crashing.

NFR-4	**Performance**	The application should generate travel itineraries within a reasonable response time.
NFR-5	**Availability**	The system should be accessible whenever the Streamlit server is running and internet connectivity is available.

3.2 Data Flow Diagram & User Stories

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



The Data Flow Diagrams illustrate how user inputs are processed through validation and prompt generation before being sent to the generative AI model. The generated itinerary is then returned to the user through the Streamlit interface.

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Travel Itinerary Generation	USN-1	As a user, I can enter my destination, number of days, and number of nights to generate a personalized travel itinerary.	The system generates a structured travel itinerary based on the entered details.	High	Sprint-1
Customer (Web user)	Input Validation	USN-2	As a user, I want the system to validate my input details before generating the itinerary.	If inputs are invalid, the system displays an appropriate error message.	High	Sprint-1
Customer (Web user)	AI Integration	USN-3	As a user, I want the system to use generative AI to create a detailed travel itinerary automatically.	The AI generates a day-wise itinerary including activities and travel tips.	High	Sprint-2
Customer (Web user)	Output Display	USN-4	As a user, I want to view the generated itinerary clearly on the web interface.	The itinerary is displayed in a readable format in the application.	Medium	Sprint-2
Customer (Web user)	Error Handling	USN-5	As a user, I want the system to handle API or runtime errors gracefully.	If an error occurs, the system displays a user-friendly error message without crashing.	Medium	Sprint-3

3.3. Technology Stack

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

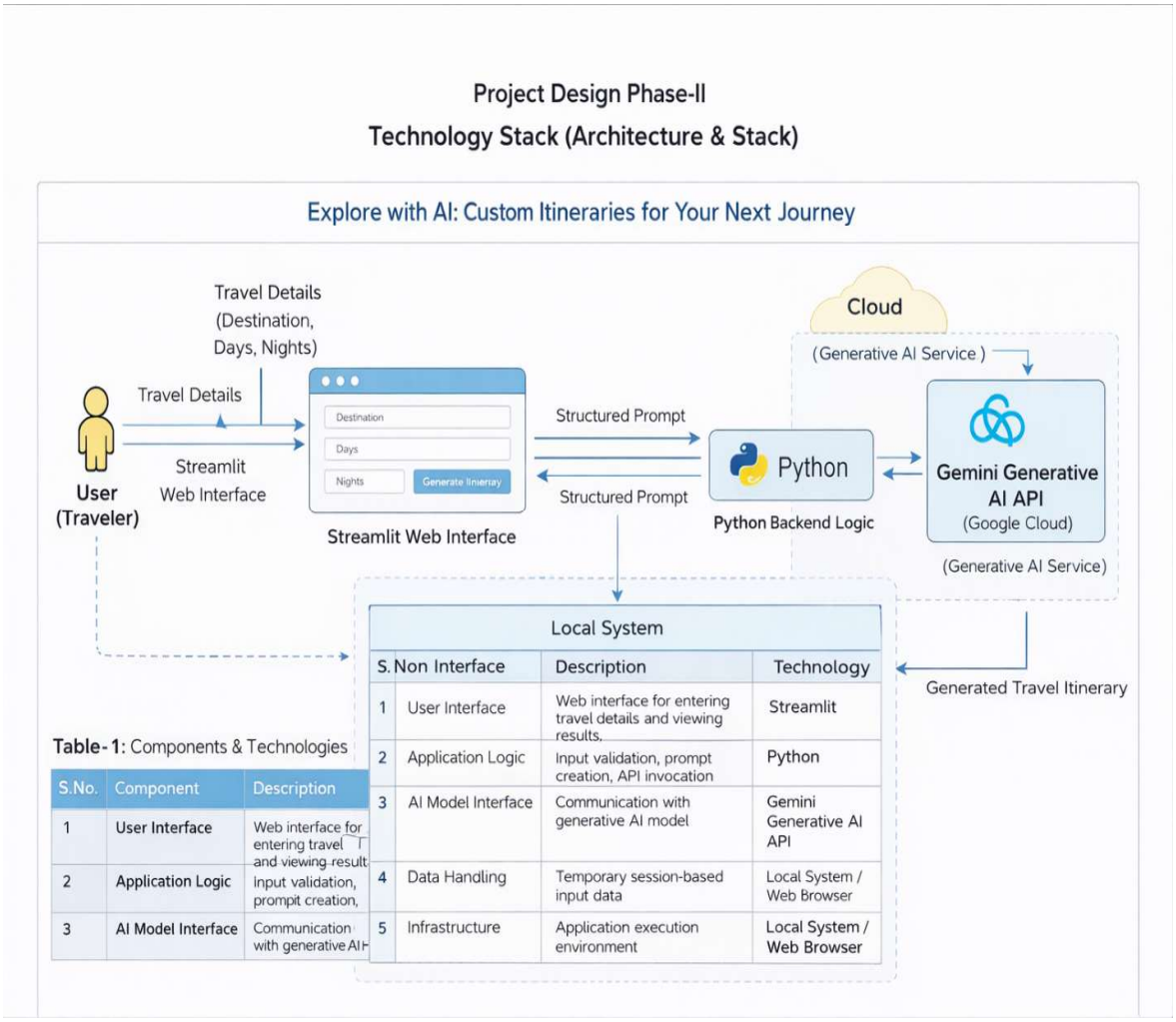


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Web interface for entering travel details and viewing results	Streamlit
2	Application Logic	Input validation, prompt creation, API invocation	Python
3	AI Model Interface	Communication with generative AI model	Google Generative AI API (Gemini)

4	Data Handling	Temporary session-based input data	Streamlit session handling
5	External API	Generative AI service for itinerary creation	Gemini Flash Model
6	Infrastructure	Application execution environment	Local System / Web Browser

Table-2: Application Characteristics:

S.No	Characteristic	Description	Technology
1	Open-Source Frameworks	Used for UI and backend development	Python, Streamlit
2	Security Implementations	API key protection and input validation	Secure API configuration, Input Validation
3	Scalable Architecture	Easily extendable to include new features	Modular Python Architecture
4	Availability	Accessible when application server is running	Streamlit Server
5	Performance	Real-time AI response generation	Optimized API call handling

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d

4. PROJECT DESIGN

4.1. Problem Solution Fit

The **Problem–Solution Fit** for *Explore with AI* focuses on addressing the common challenges faced by travelers in planning personalized trips efficiently and without stress.

Purpose:

❑ To solve the problem of time-consuming and manual travel planning by providing an AI-powered automated solution.

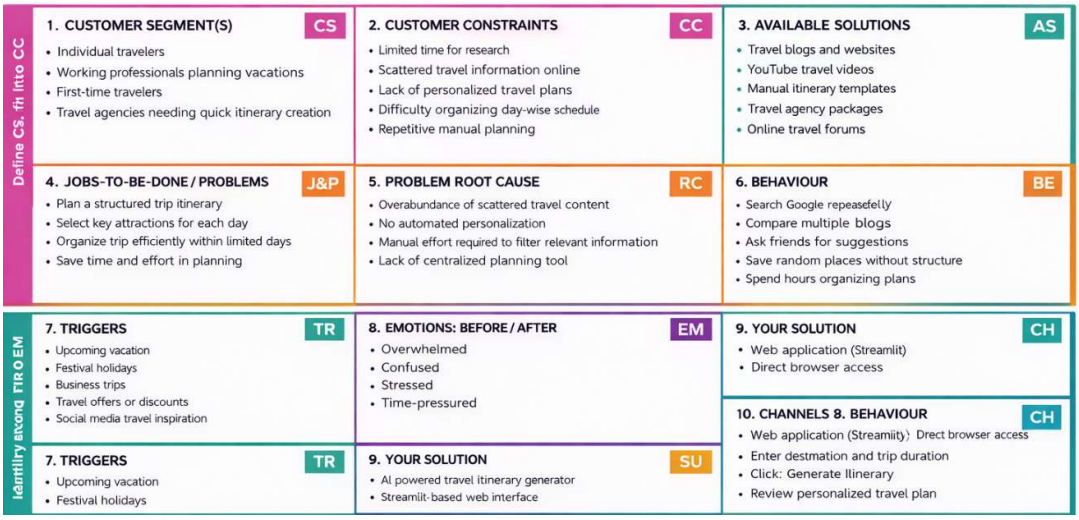
❑ To improve solution adoption by aligning with modern user behavior, where users prefer quick, web-based, and personalized digital tools.

❑ To clearly communicate the value of AI-driven itinerary generation as a faster and more efficient alternative to traditional travel planning methods.

❑ To reduce frequent user frustrations such as scattered travel information, lack of personalization, and repetitive research efforts.

❑ To understand traveler needs and improve the planning experience by delivering structured, day-wise, and customized travel itineraries.

Template:



References:

1. https://www.ideahackers.network/problem-solution-fit-canvas/
2. https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe

4.2. Proposed Solution

Project team shall fill the following information in the proposed solution template.

S.No	Parameter	Description
1	**Problem Statement (Problem to be solved)**	Travelers face difficulty in planning personalized trips due to scattered information, time constraints, and manual research efforts. Organizing a structured day-wise itinerary requires significant effort and lacks automation.
2	**Idea / Solution Description**	Develop an AI-powered web application that generates personalized travel itineraries based on user inputs such as destination, number of days, and number of nights. The system uses a pre-trained generative AI model to create structured and detailed travel plans instantly.
3	**Novelty / Uniqueness**	The solution integrates generative AI to automate itinerary creation, providing personalized and structured travel plans instantly. Unlike traditional blogs or templates, the system dynamically generates customized itineraries based on user-specific inputs.
4	**Social Impact / Customer Satisfaction**	The solution reduces stress and saves time for travelers by simplifying trip planning. It improves user experience by offering organized and personalized travel plans, enhancing overall travel satisfaction.
5	**Business Model (Revenue Model)**	The platform can adopt a freemium model, offering basic itinerary generation for free and premium features such as advanced customization, downloadable PDF export, and travel recommendations through subscription plans or advertisements.
6	**Scalability of the Solution**	The system can be scaled by deploying it on cloud platforms, integrating additional APIs (weather, hotel booking), adding multi-language support, and handling increased user traffic through cloud infrastructure.

4.3 Solution Architecture

The solution architecture of *Explore with AI* bridges the gap between the problem of manual travel planning and the implementation of an AI-powered automated system.

The architecture is designed to be lightweight, modular, and scalable. It integrates a web-based user interface with backend application logic and a cloud-based generative AI service.

Solution Architecture Diagram:

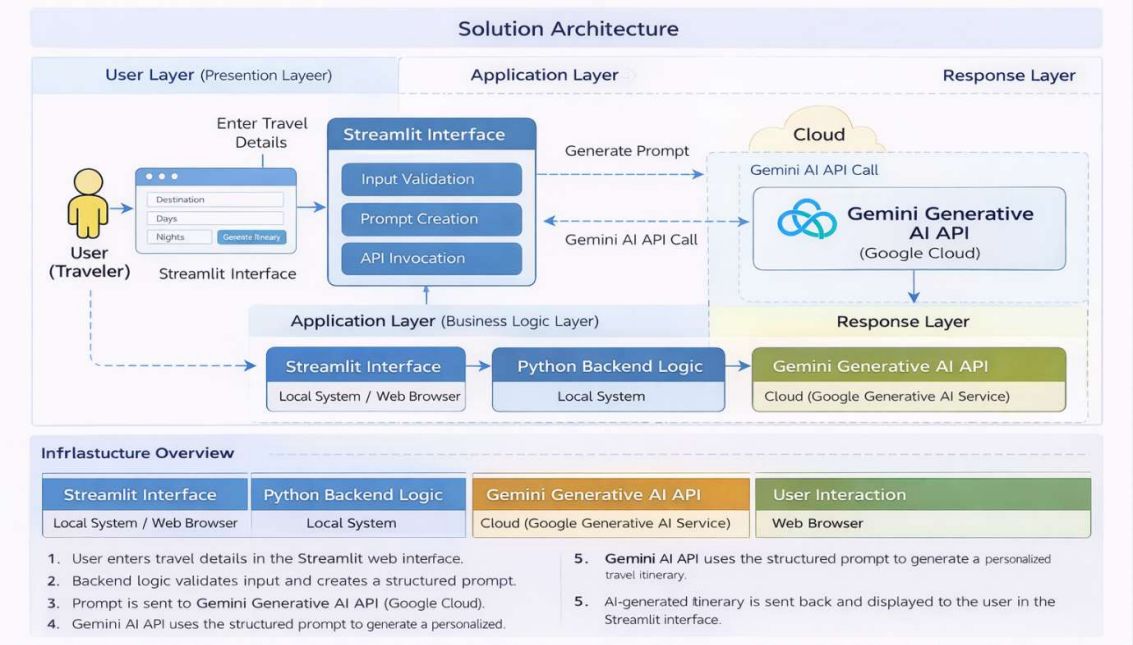


Figure 1: Architecture and data flow of travel itinerary application

Reference: https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Project Setup	USN-1	Set up Python environment and install required libraries	2	High	M. Yuvaraj
Sprint-1	Project Setup	USN-2	Configure Gemini API securely	3	High	P. Anjali
Sprint-1	UI Development	USN-3	Design Streamlit interface for travel details input	3	High	K. Sree Vidya Lakshmi
Sprint-1	UI Development	USN-4	Create input fields (destination, days, nights)	2	High	R. Sindhu
Sprint-1	UI Development	USN-5	Add “Generate Itinerary” button	2	High	M. Yuvaraj
Sprint-2	Input Validation	USN-6	Validate destination input	2	High	P. Anjali
Sprint-2	Input Validation	USN-7	Validate number of days and nights	2	High	R. Sindhu
Sprint-2	Prompt Engineering	USN-8	Create structured prompt for AI model	3	High	K. Sree Vidya Lakshmi

Sprint-2	AI Integration	USN-9	Integrate Gemini Generative AI API	5	High	M. Yuvaraj, K. Sree Vidya Lakshmi
Sprint-2	Output Handling	USN-10	Display generated itinerary in readable format	3	Medium	R. Sindhu
Sprint-2	Error Handling	USN-11	Implement try-except for API errors	2	Medium	P. Anjali

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed	Sprint Release Date
Sprint-1	12	7 Days	01 Feb 2026	07 Feb 2025	12	07 Feb 2026
Sprint-2	19	7 Days	08 Feb 2026	14 Feb 2026	19	14 Feb 2026

- **Velocity Calculation**

  Total Story Points = 12 + 19 = 31

  Number of Sprints = 2

  Velocity = 31 / 2

  = 15.5 ≈ 16 Story Points per Sprint

- **Average Velocity per Day**

  If sprint duration = 7 days

  Velocity per sprint = 16 story points

Average Velocity per day = 16 / 7

≈ 2.3 Story Points per Day

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

https://www.visual-paradigm.com/scrum/scrum-burndown-chart/

https://www.atlassian.com/agile/tutorials/burndown-charts

Reference:

https://www.atlassian.com/agile/project-management

https://www.atlassian.com/agile/tutorials/how-to-do-scrum-with-jira-software

https://www.atlassian.com/agile/tutorials/epics

https://www.atlassian.com/agile/tutorials/sprints

https://www.atlassian.com/agile/project-management/estimation

https://www.atlassian.com/agile/tutorials/burndown-charts

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Test Scenarios & Results

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-01	Destination Input Validation	Leave destination empty and click “Generate”	System should show validation error	Error message displayed correctly	Pass
FT-02	Days Input Validation	Enter 0 or negative number of days	System should reject invalid input	Validation message shown	Pass

FT-03	Nights Input Validation	Enter negative value for nights	System should reject invalid input	Validation message shown	Pass
FT-04	AI Content Generation	Enter valid destination, days, nights and click Generate	System generates structured travel itinerary	Itinerary generated correctly	Pass
FT-05	API Connection Check	Verify API key configuration and trigger generation	API should respond successfully	API response received	Pass
FT-06	Error Handling	Temporarily disconnect internet and test generation	System should show user-friendly error	Error handled gracefully	Pass

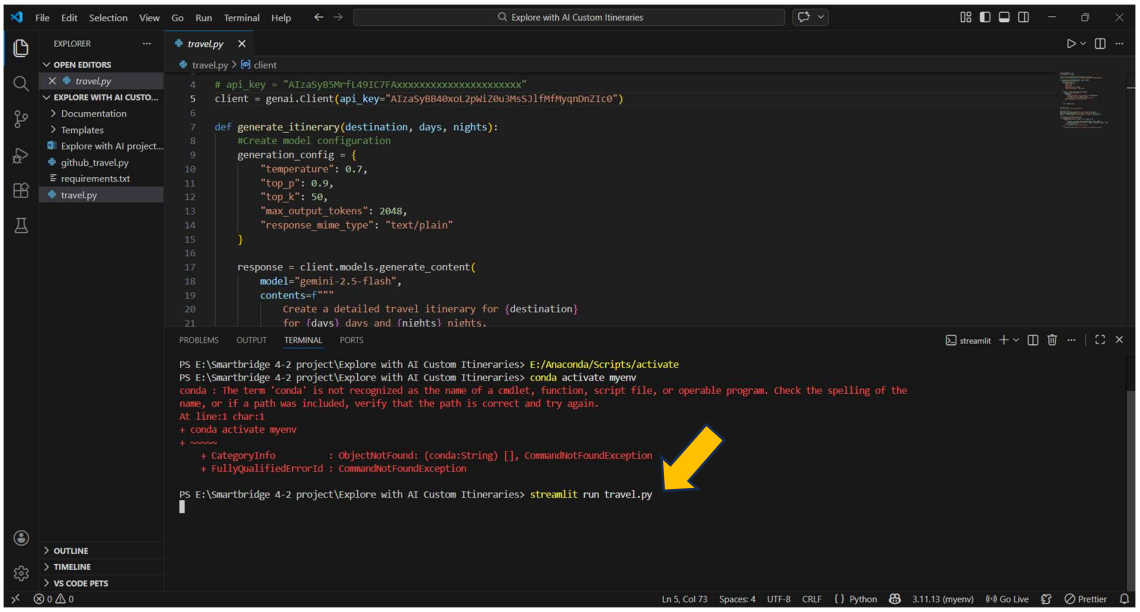
PT-01	Response Time Test	Generate itinerary and measure response time	Should respond within acceptable time (<5 seconds depending on API)	Response time within limit	Pass
PT-02	Multiple Request Handling	Generate itineraries consecutively	System should process without crashing	Handled smoothly	Pass
PT-03	Large Input Handling	Enter long destination name and maximum days	System should still generate itinerary properly	Output generated correctly	Pass

7. RESULTS

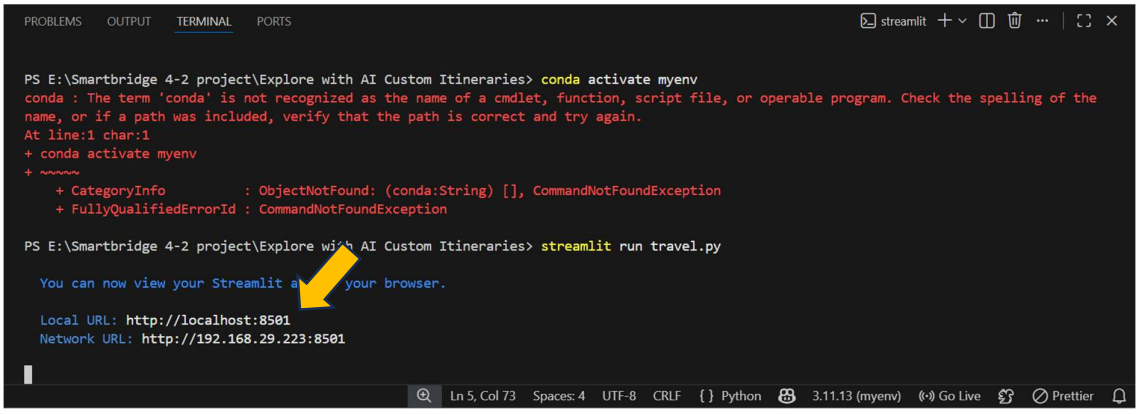
7.1. Output Screenshots

The complete execution of Explore with AI: Custom Itineraries for Your Next Journey application is represented step by step in the following screenshots.

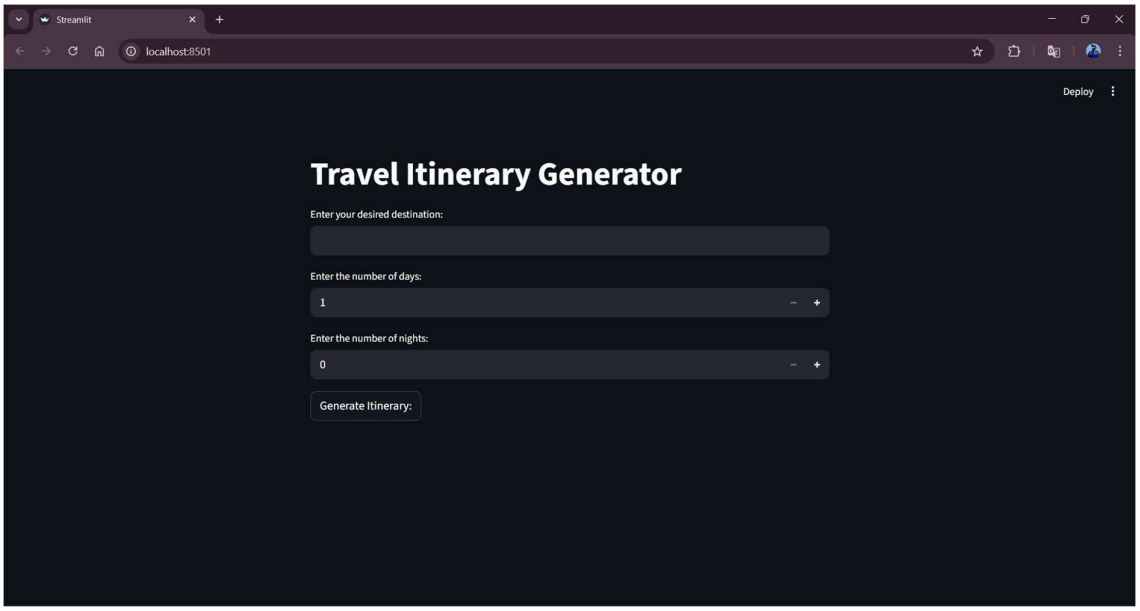
Step 1: To run the Streamlit Application we have to use the command streamlit run travel.py in the terminal in path where the travel.py file is located.



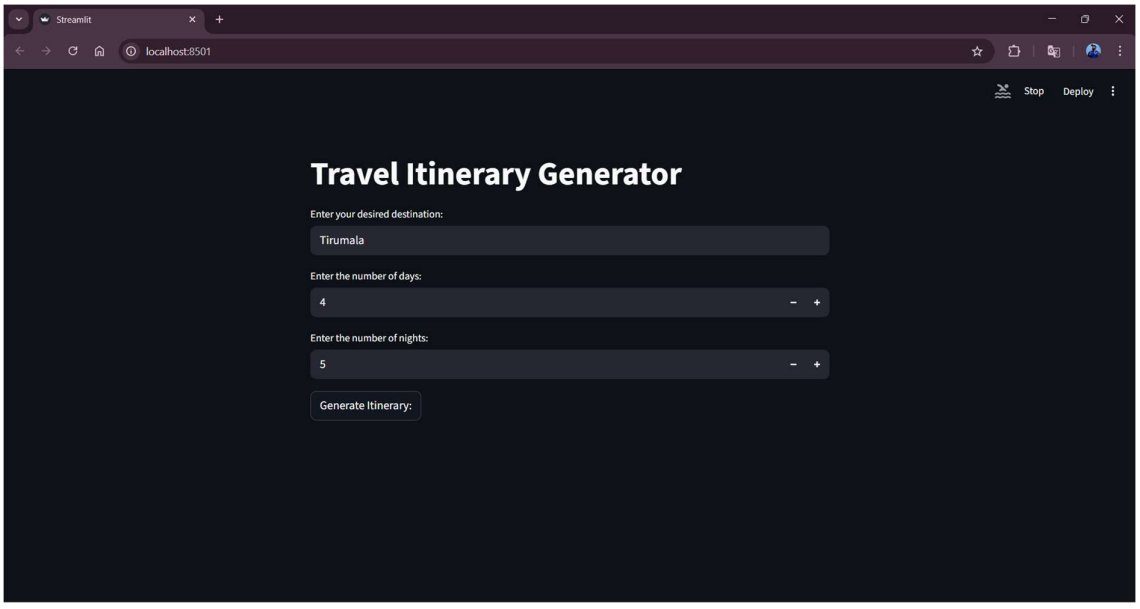
Step 2: After running the command in terminal, the code will get executed and the webpage will open directly. Another way to open webpage is that a localhost link will get generated in the terminal, we can access the webpage using that link.



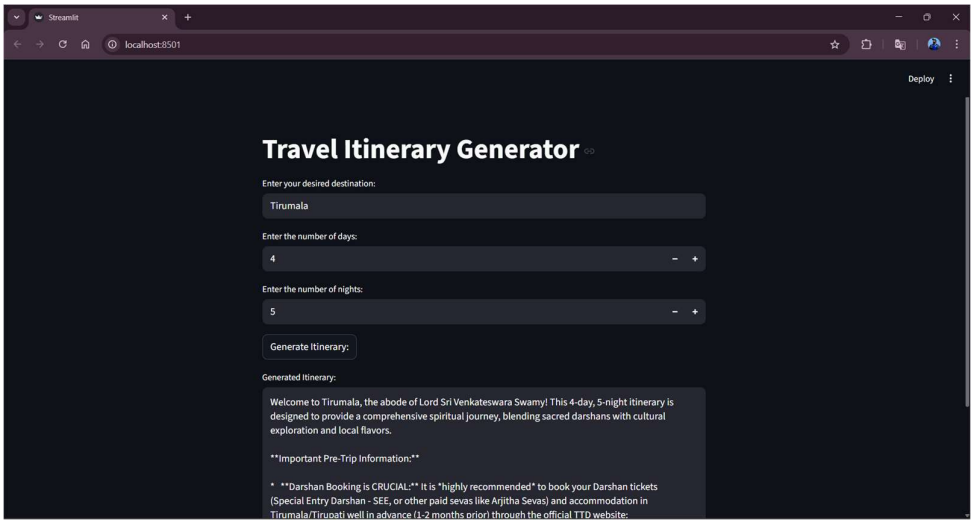
Step 3: The Streamlit webpage opens as shown in the figure given below. This is an automated webpage. No secondary HTML codes required to build this webpage. Python code itself consists the webpage building code.

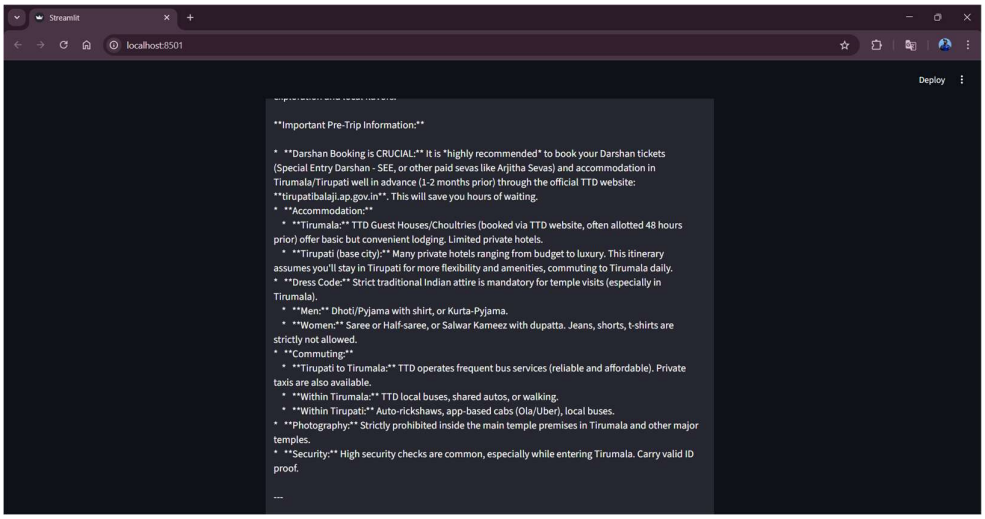


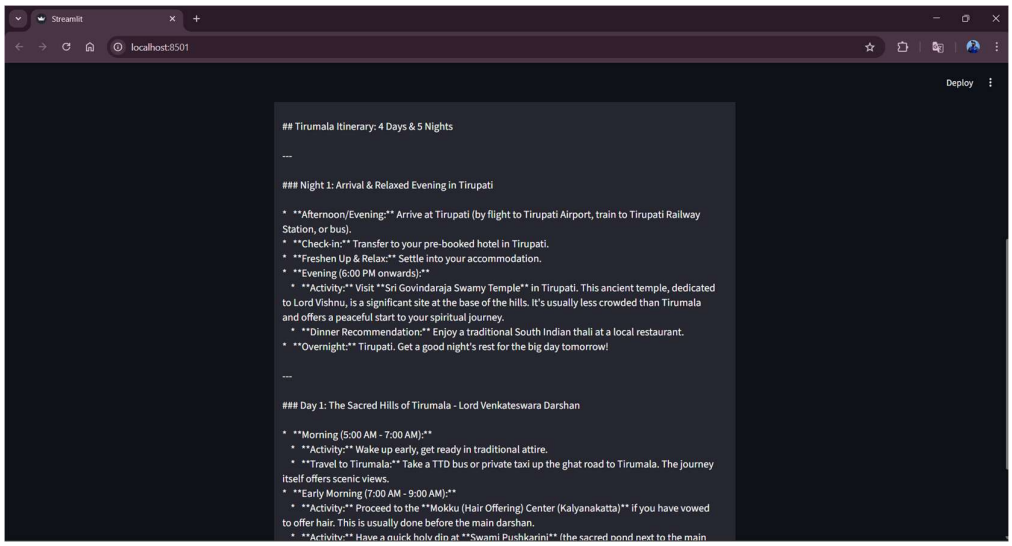
Step 3: The user has to give inputs in the website such as desired Destination Name, Number of Days and Number of Nights. The Number of Days and Nights mean in how many days and nights, the user wants their travel planning to be made. After entering the required details, the user should click on Generate Itinerary button to generate the travel plan. Here I chose the destination as Tirumala, days as 4 and nights as 5.



Step 4: After clicking the Generate Itinerary button, in fraction of seconds the itinerary will be generated based on the user input as shown in the following images.

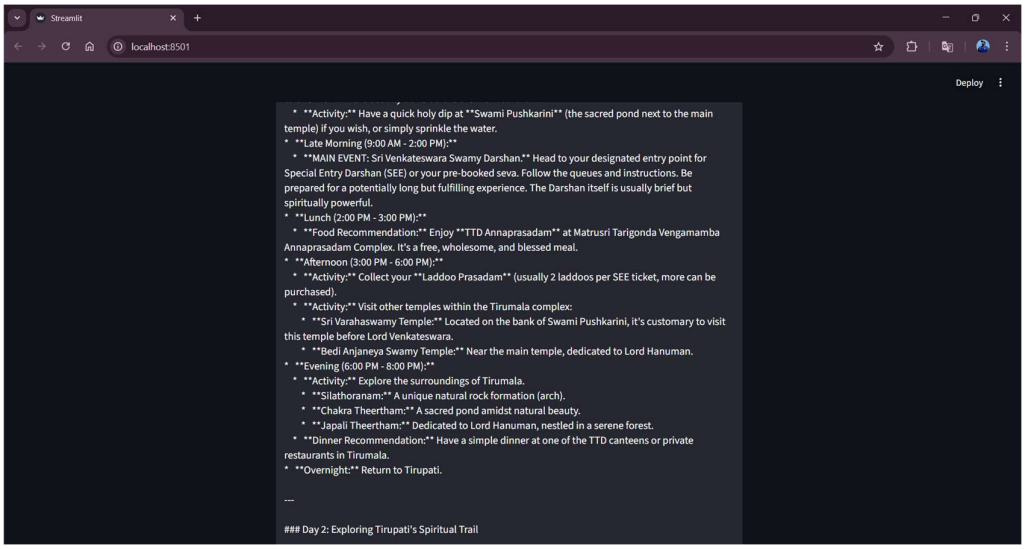

Streamlit
localhost:8501
Deploy
Travel Itinerary Generator
Enter your desired destination:
Tirumala
Enter the number of days:
4
Enter the number of nights:
5
Generate Itinerary:
Generated Itinerary:
Welcome to Tirumala, the abode of Lord Sri Venkateswara Swamy! This 4-day, 5-night itinerary is designed to provide a comprehensive spiritual journey, blending sacred darshans with cultural exploration and local flavors.
Important Pre-Trip Information:
* **Darshan Booking is CRUCIAL:** It is *highly recommended* to book your Darshan tickets (Special Entry Darshan - SEE, or other paid sevas like Arjitha Sevas) and accommodation in Tirumala/Tirupati well in advance (1-2 months prior) through the official TTD website:


Streamlit
localhost:8501
Deploy
Important Pre-Trip Information:
* **Darshan Booking is CRUCIAL:** It is *highly recommended* to book your Darshan tickets (Special Entry Darshan - SEE, or other paid sevas like Arjitha Sevas) and accommodation in Tirumala/Tirupati well in advance (1-2 months prior) through the official TTD website: **tirupatibalaji.ap.gov.in**. This will save you hours of waiting.
* **Accommodation:**
* **Tirumala:** TTD Guest Houses/Choultries (booked via TTD website, often allotted 48 hours prior) offer basic but convenient lodging. Limited private hotels.
* **Tirupati (base city):** Many private hotels ranging from budget to luxury. This itinerary assumes you'll stay in Tirupati for more flexibility and amenities, commuting to Tirumala daily.
* **Dress Code:** Strict traditional Indian attire is mandatory for temple visits (especially in Tirumala).
* **Men:** Dhoti/Pyjama with shirt, or Kurta-Pyjama.
* **Women:** Saree or Half-saree, or Salwar Kameez with dupatta. Jeans, shorts, t-shirts are strictly not allowed.
* **Commuting:**
* **Tirupati to Tirumala:** TTD operates frequent bus services (reliable and affordable). Private taxis are also available.
* **Within Tirumala:** TTD local buses, shared autos, or walking.
* **Within Tirupati:** Auto-rickshaws, app-based cabs (Ola/Uber), local buses.
* **Photography:** Strictly prohibited inside the main temple premises in Tirumala and other major temples.
* **Security:** High security checks are common, especially while entering Tirumala. Carry valid ID proof.


Streamlit
localhost:8501
Deploy
Tirumala Itinerary: 4 Days & 5 Nights

Night 1: Arrival & Relaxed Evening in Tirupati
* **Afternoon/Evening:** Arrive at Tirupati (by flight to Tirupati Airport, train to Tirupati Railway Station, or bus).
* **Check-in:** Transfer to your pre-booked hotel in Tirupati.
* **Freshen Up & Relax:** Settle into your accommodation.
* **Evening (6:00 PM onwards):**
* **Activity:** Visit **Sri Govindaraja Swamy Temple** in Tirupati. This ancient temple, dedicated to Lord Vishnu, is a significant site at the base of the hills. It's usually less crowded than Tirumala and offers a peaceful start to your spiritual journey.
* **Dinner Recommendation:** Enjoy a traditional South Indian thali at a local restaurant.
* **Overnight:** Tirupati. Get a good night's rest for the big day tomorrow!

Day 1: The Sacred Hills of Tirumala - Lord Venkateswara Darshan
* **Morning (5:00 AM - 7:00 AM):**
* **Activity:** Wake up early, get ready in traditional attire.
* **Travel to Tirumala:** Take a TTD bus or private taxi up the ghat road to Tirumala. The journey itself offers scenic views.
* **Early Morning (7:00 AM - 9:00 AM):**
* **Activity:** Proceed to the **Mokku (Hair Offering) Center (Kalyanakatta)** if you have vowed to offer hair. This is usually done before the main darshan.
* **Activity:** Have a quick holy dip at **Swami Pushkarini** (the sacred pond next to the main


Streamlit
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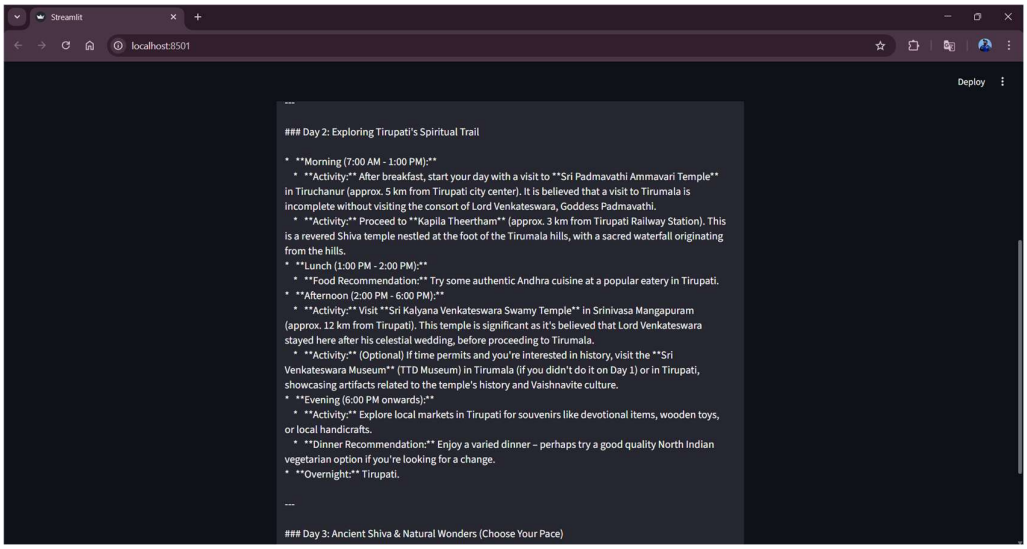
* **Activity:** Have a quick holy dip at **Swami Pushkarini** (the sacred pond next to the main temple) if you wish, or simply sprinkle the water.
* **Late Morning (9:00 AM - 2:00 PM):**
* **MAIN EVENT: Sri Venkateswara Swamy Darshan.** Head to your designated entry point for Special Entry Darshan (SEE) or your pre-booked seva. Follow the queues and instructions. Be prepared for a potentially long but fulfilling experience. The Darshan itself is usually brief but spiritually powerful.
* **Lunch (2:00 PM - 3:00 PM):**
* **Food Recommendation:** Enjoy **TTD Annaprasadam** at Matrusri Tarigonda Vengamamba Annaprasadam Complex. It's a free, wholesome, and blessed meal.
* **Afternoon (3:00 PM - 6:00 PM):**
* **Activity:** Collect your **Laddoo Prasadam** (usually 2 laddoos per SEE ticket, more can be purchased).
* **Activity:** Visit other temples within the Tirumala complex:
* **Sri Varahaswamy Temple:** Located on the bank of Swami Pushkarini, it's customary to visit this temple before Lord Venkateswara.
* **Bedi Anjaneya Swamy Temple:** Near the main temple, dedicated to Lord Hanuman.
* **Evening (6:00 PM - 8:00 PM):**
* **Activity:** Explore the surroundings of Tirumala.
* **Silathoranam:** A unique natural rock formation (arch).
* **Chakra Theertham:** A sacred pond amidst natural beauty.
* **Japali Theertham:** Dedicated to Lord Hanuman, nestled in a serene forest.
* **Dinner Recommendation:** Have a simple dinner at one of the TTD canteens or private restaurants in Tirumala.
* **Overnight:** Return to Tirupati.

Day 2: Exploring Tirupati's Spiritual Trail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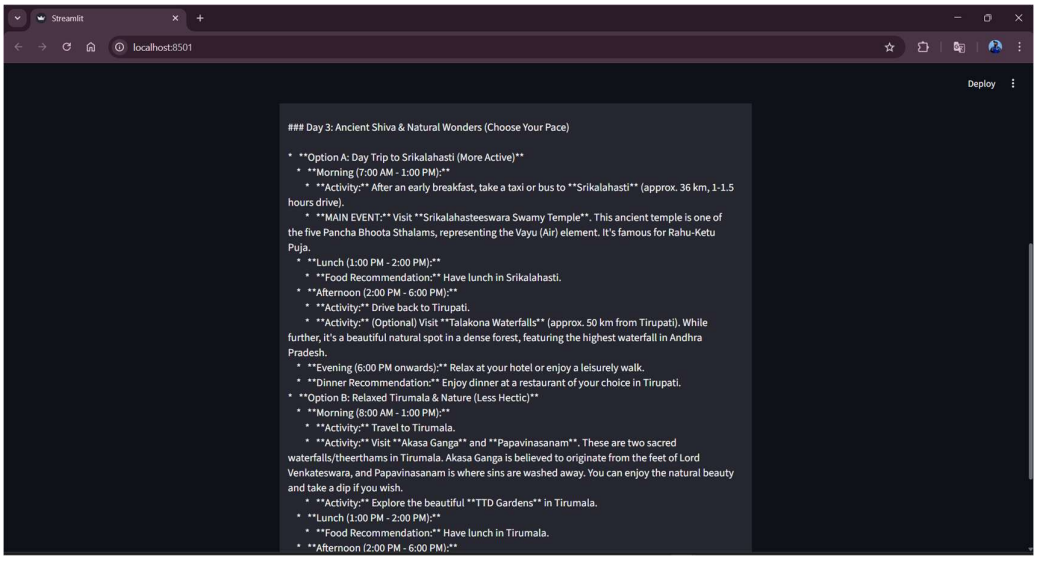
Day 2: Exploring Tirupati's Spiritual Trail
* **Morning (7:00 AM - 1:00 PM):**
* **Activity:** After breakfast, start your day with a visit to **Sri Padmavathi Ammavari Temple** in Tiruchanur (approx. 5 km from Tirupati city center). It is believed that a visit to Tirumala is incomplete without visiting the consort of Lord Venkateswara, Goddess Padmavathi.
* **Activity:** Proceed to **Kapila Theertham** (approx. 3 km from Tirupati Railway Station). This is a revered Shiva temple nestled at the foot of the Tirumala hills, with a sacred waterfall originating from the hills.
* **Lunch (1:00 PM - 2:00 PM):**
* **Food Recommendation:** Try some authentic Andhra cuisine at a popular eatery in Tirupati.
* **Afternoon (2:00 PM - 6:00 PM):**
* **Activity:** Visit **Sri Kalyana Venkateswara Swamy Temple** in Srinivasa Mangapuram (approx. 12 km from Tirupati). This temple is significant as it's believed that Lord Venkateswara stayed here after his celestial wedding, before proceeding to Tirumala.
* **Activity:** (Optional) If time permits and you're interested in history, visit the **Sri Venkateswara Museum** (TTD Museum) in Tirumala (if you didn't do it on Day 1) or in Tirupati, showcasing artifacts related to the temple's history and Vaishnavite culture.
* **Evening (6:00 PM onwards):**
* **Activity:** Explore local markets in Tirupati for souvenirs like devotional items, wooden toys, or local handicrafts.
* **Dinner Recommendation:** Enjoy a varied dinner – perhaps try a good quality North Indian vegetarian option if you're looking for a change.
* **Overnight:** Tirupati.

Day 3: Ancient Shiva & Natural Wonders (Choose Your Pace)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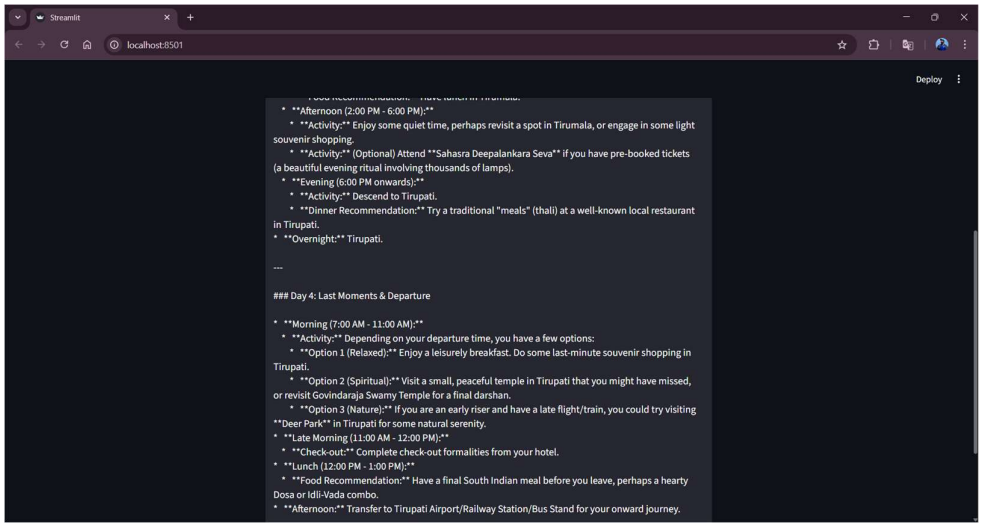
Day 3: Ancient Shiva & Natural Wonders (Choose Your Pace)
* **Option A: Day Trip to Srikalahasti (More Active)**
* **Morning (7:00 AM - 1:00 PM):**
* **Activity:** After an early breakfast, take a taxi or bus to **Srikalahasti** (approx. 36 km, 1-1.5 hours drive).
* **MAIN EVENT:** Visit **Srikalahasteeswara Swamy Temple**. This ancient temple is one of the five Pancha Bhoota Sthalams, representing the Vayu (Air) element. It's famous for Rahu-Ketu Puja.
* **Lunch (1:00 PM - 2:00 PM):**
* **Food Recommendation:** Have lunch in Srikalahasti.
* **Afternoon (2:00 PM - 6:00 PM):**
* **Activity:** Drive back to Tirupati.
* **Activity:** (Optional) Visit **Talakona Waterfalls** (approx. 50 km from Tirupati). While further, it's a beautiful natural spot in a dense forest, featuring the highest waterfall in Andhra Pradesh.
* **Evening (6:00 PM onwards):** Relax at your hotel or enjoy a leisurely walk.
* **Dinner Recommendation:** Enjoy dinner at a restaurant of your choice in Tirupati.
* **Option B: Relaxed Tirumala & Nature (Less Hectic)**
* **Morning (8:00 AM - 1:00 PM):**
* **Activity:** Travel to Tirumala.
* **Activity:** Visit **Akasa Ganga** and **Papavinasanam**. These are two sacred waterfalls/theerthams in Tirumala. Akasa Ganga is believed to originate from the feet of Lord Venkateswara, and Papavinasanam is where sins are washed away. You can enjoy the natural beauty and take a dip if you wish.
* **Activity:** Explore the beautiful **TTD Gardens** in Tirumala.
* **Lunch (1:00 PM - 2:00 PM):**
* **Food Recommendation:** Have lunch in Tirumala.
* **Afternoon (2:00 PM - 6:00 PM):**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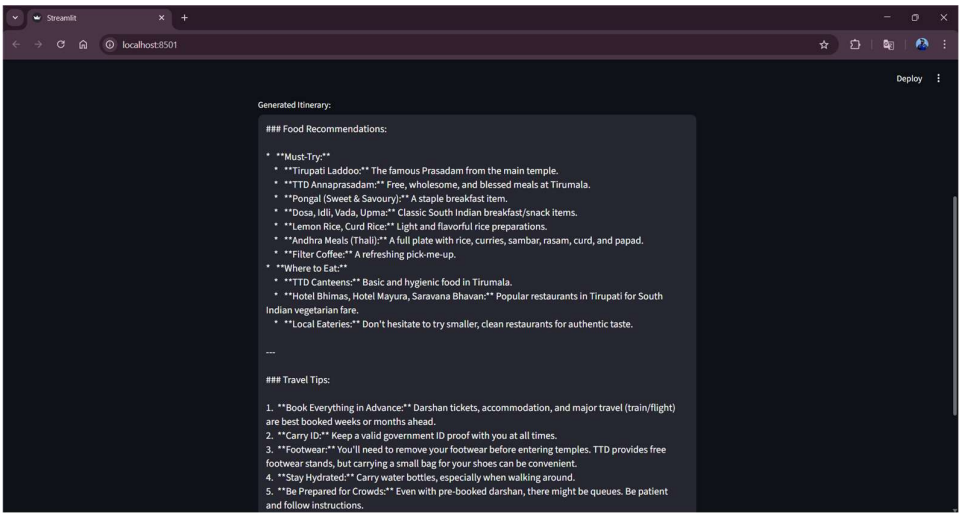
* **Afternoon (2:00 PM - 6:00 PM):**
* **Activity:** Enjoy some quiet time, perhaps revisit a spot in Tirumala, or engage in some light souvenir shopping.
* **Activity:** (Optional) Attend **Sahasra Deepalankara Seva** if you have pre-booked tickets (a beautiful evening ritual involving thousands of lamps).
* **Evening (6:00 PM onwards):**
* **Activity:** Descend to Tirupati.
* **Dinner Recommendation:** Try a traditional "meals" (thali) at a well-known local restaurant in Tirupati.
* **Overnight:** Tirupati.

Day 4: Last Moments & Departure
* **Morning (7:00 AM - 11:00 AM):**
* **Activity:** Depending on your departure time, you have a few options:
* **Option 1 (Relaxed):** Enjoy a leisurely breakfast. Do some last-minute souvenir shopping in Tirupati.
* **Option 2 (Spiritual):** Visit a small, peaceful temple in Tirupati that you might have missed, or revisit Govindaraja Swamy Temple for a final darshan.
* **Option 3 (Nature):** If you are an early riser and have a late flight/train, you could try visiting **Deer Park** in Tirupati for some natural serenity.
* **Late Morning (11:00 AM - 12:00 PM):**
* **Check-out:** Complete check-out formalities from your hotel.
* **Lunch (12:00 PM - 1:00 PM):**
* **Food Recommendation:** Have a final South Indian meal before you leave, perhaps a hearty Dosa or Idli-Vada combo.
* **Afternoon:** Transfer to Tirupati Airport/Railway Station/Bus Stand for your onward journey.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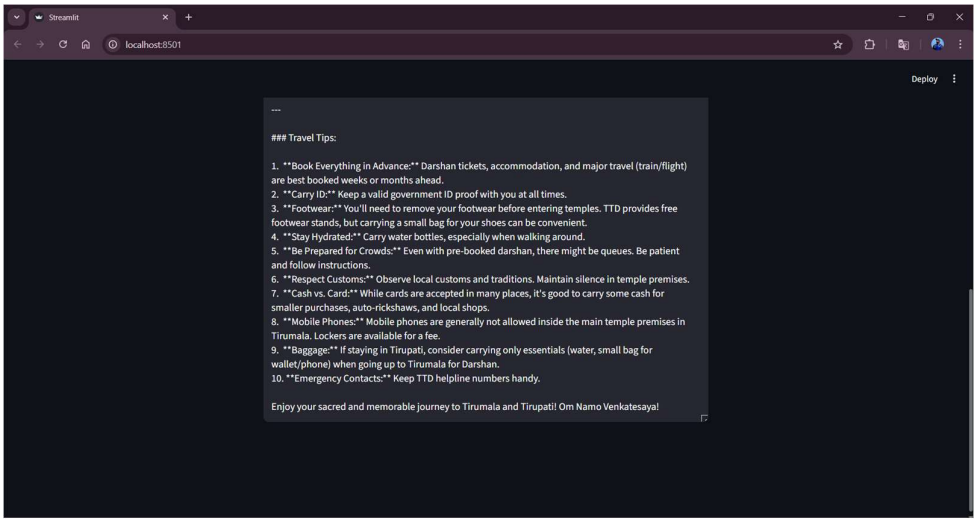
Generated Itinerary:
Food Recommendations:
* **Must-Try:**
* **Tirupati Laddoo:** The famous Prasadam from the main temple.
* **TTD Annaprasadam:** Free, wholesome, and blessed meals at Tirumala.
* **Pongal (Sweet & Savoury):** A staple breakfast item.
* **Dosa, Idli, Vada, Upma:** Classic South Indian breakfast/snack items.
* **Lemon Rice, Curd Rice:** Light and flavorful rice preparations.
* **Andhra Meals (Thali):** A full plate with rice, curries, sambar, rasam, curd, and papad.
* **Filter Coffee:** A refreshing pick-me-up.
* **Where to Eat:**
* **TTD Canteens:** Basic and hygienic food in Tirumala.
* **Hotel Bhimas, Hotel Mayura, Saravana Bhavan:** Popular restaurants in Tirupati for South Indian vegetarian fare.
* **Local Eateries:** Don't hesitate to try smaller, clean restaurants for authentic taste.

Travel Tips:
1. **Book Everything in Advance:** Darshan tickets, accommodation, and major travel (train/flight) are best booked weeks or months ahead.
2. **Carry ID:** Keep a valid government ID proof with you at all times.
3. **Footwear:** You'll need to remove your footwear before entering temples. TTD provides free footwear stands, but carrying a small bag for your shoes can be convenient.
4. **Stay Hydrated:** Carry water bottles, especially when walking around.
5. **Be Prepared for Crowds:** Even with pre-booked darshan, there might be queues. Be patient and follow instructions.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4. **Stay Hydrated:** Carry water bottles, especially when walking around.
5. **Be Prepared for Crowds:** Even with pre-booked darshan, there might be queues. Be patient and follow instructions.
6. **Respect Customs:** Observe local customs and traditions. Maintain silence in temple premises.
7. **Cash vs. Card:** While cards are accepted in many places, it's good to carry some cash for smaller purchases, auto-rickshaws, and local shops.
8. **Mobile Phones:** Mobile phones are generally not allowed inside the main temple premises in Tirumala. Lockers are available for a fee.
9. **Baggage:** If staying in Tirupati, consider carrying only essentials (water, small bag for wallet/phone) when going up to Tirumala for Darshan.
10. **Emergency Contacts:** Keep TTD helpline numbers handy.
Enjoy your sacred and memorable journey to Tirumala and Tirupati! Om Namo Venkatesaya!

8. ADVANTAGES AND DISADVANTAGES

Advantages

- Automates travel itinerary creation, saving time and effort for users.
- Generates personalized travel plans based on user preferences and trip duration.
- Easy-to-use interface built with Streamlit, suitable for non-technical users.
- Uses a pre-trained generative AI model, eliminating the need for model training.
- Can be extended to support travel agencies and content creators.

Disadvantages

- Depends on internet connectivity and availability of the AI API.
- Generated itineraries may not always reflect real-time travel conditions.
- Limited customization options in the current version of the application.
- Does not include booking, cost estimation, or real-time availability features.
- API usage may incur cost limitations based on usage quotas.

9. CONCLUSION

The *Explore with AI* project demonstrates how generative AI can be used to simplify travel planning by automatically generating personalized travel itineraries. The application integrates a pre-trained AI model with a Streamlit interface to provide quick and user-friendly itinerary generation. This project highlights the practical use of AI in real-world applications and serves as a foundation for future enhancements in intelligent travel planning. The developed application serves as a functional prototype that can be further expanded with additional features, making it a valuable tool for travelers, travel agencies, and content creators.

10. FUTURE SCOPE

The application can be enhanced by allowing users to specify additional preferences such as budget, travel style, and accommodation type. Real-time data such as weather updates, local events, and travel advisories can be integrated for more accurate itineraries. Booking features for hotels, transportation, and tourist attractions can be added to make the system more comprehensive. Multi-language support can be introduced to serve users from different regions. The system can be deployed on cloud platforms and scaled to support a larger number of users.

11. APPENDIX

11.1. Source Code

The source code for the Explore with AI: Custom Itineraries for Your Next Journey project includes the implementation of the Streamlit user interface, integration of the Gemini Flash model using the Google Generative AI API, travel plan/ itinerary generation logic, and plan upgrading based on the number of days and nights given by the user feature. The code is written in Python and follows a modular and readable structure.

11.2. Github & Project Demo Link

- **Demo Video Link:**
  https://drive.google.com/file/d/1nyrbCrYjuLKzrgCEq3VMfWrk_3KKTpHM/view?usp=drive_link

- **Github Repository:**
  https://github.com/Sree-Vidya-Lakshmi-Kuravi/Explore-with-AI-Custom-Itineraries-For-Your-Next-Journey