

GOOGLE CLOUD GENERATIVE AI

Date	28 January 2026
Team ID	LTVIP2026TMIDS73289
Project Name	Explore With Ai: Custom Itineraries For Your Next Journey
Maximum Marks	3 Marks

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.

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1.2 Purpose

- 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

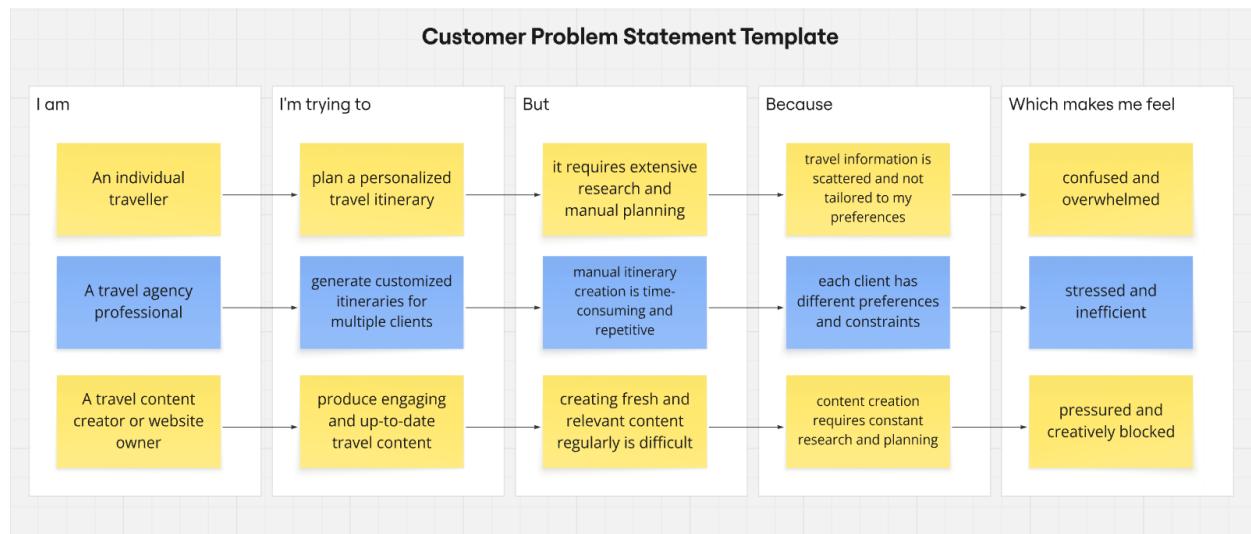
2.1. Problem Statements

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.

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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



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

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2.2. Empathy Map Canvas

Project Proposal (Proposed Solution) template

Explore with AI: Custom Itineraries For Your Next Journey is a web-based application that helps users plan their trips easily. The system uses generative AI to create personalized travel itineraries based on user inputs such as destination, number of days, and nights. The application is built using Streamlit and provides a simple interface for users to generate travel plans quickly.

Project Overview	
Objective	The main objective of this project is to develop an AI-based application that automatically generates customized travel itineraries, reducing the time and effort required for manual travel planning.
Scope	<p>The project focuses on:</p> <ul style="list-style-type: none">• Taking user inputs through a Streamlit web interface• Using a generative AI model to create travel itineraries• Displaying the generated itineraries to users <p>The project does not include booking services or payment features.</p>
Problem Statement	
Description	Creating personalized travel itineraries requires a lot of time and research. Travelers, travel agencies, and content creators often find it difficult to manually prepare customized and engaging travel plans.
Impact	An automated travel itinerary generator helps save time, improves efficiency, and makes travel planning easier for users by providing personalized results quickly.
Proposed Solution	
Approach	The system collects travel details from users through a Streamlit interface. These details are sent to a generative AI model, which creates a detailed travel itinerary. The generated itinerary is then displayed to the user.

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Key Features	<ul style="list-style-type: none">• Personalized travel itinerary generation using AI• Easy-to-use web interface• Fast and automated content generation• Input validation and error handling
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Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	Standard personal computer	Windows 11 Home Single Language
Memory	Minimum 4 GB	16 GB
Storage	Minimum 20 GB free space	256 GB SSD
Software		
Frameworks	Python, Streamlit frameworks	Streamlit
Libraries	google-generativeai, streamlit	google-generativeai, streamlit
Development Environment	IDE, version control	Visual Studio Code, Git
Data		
Data	Input Data: Destination, days, nights	User Input

2.3. Brainstorming

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

Use the below template to create a product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members	Sprint Start Date	Sprint End Date (Planned)
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Sprint-1	Project Setup	USN-1	As a developer, I want to set up the project environment and install required libraries so that development can start smoothly.	2	High	E. Vamsi	28 January 2026	31 January 2026
Sprint-1	Model Initialization	USN-2	As a developer, I want to generate and configure the Gemini API key to enable interaction with the generative AI model.	2	High	E. Sai Varshini	28 January 2026	31 January 2026
Sprint-2	AI Integration	USN-3	As a user, I want to generate a personalized travel itinerary by providing destination, days, and nights so that I can plan my trip easily.	3	High	G.Pavan Kalyan	02 February 2026	09 February 2026
Sprint-2	Prompt Handling	USN-4	As a system, I want to send structured prompts to the Gemini model to generate meaningful and detailed itineraries.	2	Medium	E. Vamsi	05 February 2026	09 February 2026
Sprint-3	User Interface	USN-5	As a user, I want a simple and interactive Streamlit interface to enter travel details and view generated itineraries.	2	High	E.Sai Varshini G.Pavan Kalyan	10 February 2026	12 February 2026

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Sprint-3	Error Handling	USN-6	As a user, I want the system to validate inputs and display error messages so that incorrect inputs are handled properly.	1	Medium	E. Vamsi E.Sai Varshini G. Pavan Kalyan	12 February 2026	18 February 2026
Sprint-4	Deployment	USN-7	As a developer, I want to deploy the application using Streamlit so that users can access it through a web interface.	2	High	E. Vamsi E.Sai Varshini G.Pavan Kalyan	14 February 2026	18 February 2026

3. REQUIREMENT ANALYSIS

3.1. Customer Journey Map

Data Collection Plan & Raw Data Sources Identification

This phase describes how data is collected and managed for the project. Since the application is based on a generative AI model, the data is collected dynamically from users rather than from static datasets.

Data Collection Plan

Section	Description
Project Overview	Explore with AI is a generative AI-based travel itinerary generation system. The project aims to generate personalized travel itineraries based on real-time user inputs such as destination, number of days, and number of nights using a pre-trained AI model.

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Data Collection Plan	The data for this project is collected directly from users through a Streamlit-based web interface. The inputs are provided in real time and are processed immediately to generate customized travel itineraries. No external datasets are downloaded or stored as part of this project.
Raw Data Sources Identified	The raw data used in the system consists of user-provided input data entered through the application interface. This data is temporary and session-based, used only for generating the itinerary and not stored permanently.

Raw Data Sources

Source Name	Description	Location / URL	Format	Size	Access Permissions
User Input – Destination	Travel destination entered by the user	Streamlit Web Interface	Text	Small (per request)	Public (User Provided)
User Input – Trip Duration	Number of days and nights entered by the user	Streamlit Web Interface	Numeric	Small (per request)	Public (User Provided)
AI Model Response	Generated travel itinerary content	Generated at runtime	Text	Variable	Public (User Generated)

3.2. Solution Requirement

Data Quality Report

The data used in this project is collected dynamically from users through a web-based interface. Since no static dataset is used, data quality is ensured by validating user inputs before sending them to the generative AI model.

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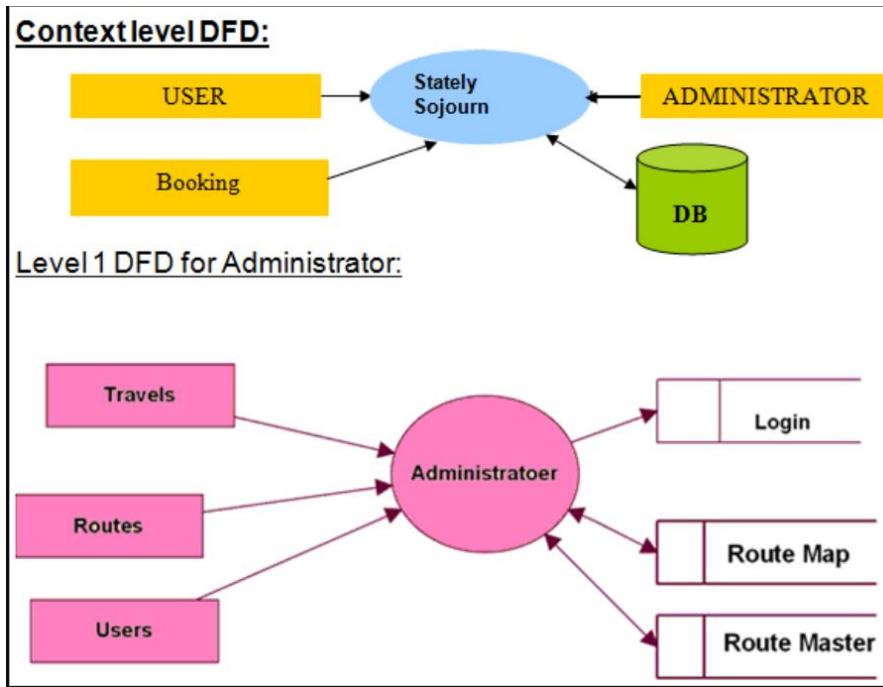
Data Source	Data Quality Issue	Severity	Resolution Plan
User Input (Destination)	Empty or unclear destination input	High	Input validation is applied to ensure the destination field is not empty before processing.
User Input (Days)	Invalid or zero number of days	High	Numeric validation ensures the number of days is greater than zero.
User Input (Nights)	Illogical or negative number of nights	Moderate	Input constraints ensure nights are zero or positive values.
Prompt Input	Incomplete or vague prompt generation	Moderate	Structured prompt formatting is used to ensure meaningful AI responses.
User Interaction	Repeated or incorrect submissions	Low	Error messages guide users to correct inputs before resubmission.

3.3. Data Flow Diagram

Preprocessing

In the Explore with AI project, data preprocessing focuses on **user-provided textual and numerical input** rather than traditional datasets. Since the application uses a **pre-trained generative AI model**, no external dataset collection or complex preprocessing is required. Instead, preprocessing ensures that user inputs such as destination, number of days, and number of nights are **clean, valid, and meaningful**, enabling the generation of accurate and personalized travel itineraries.

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3.4 Technology Stack

Section	Description
Data Overview	The data used in this project consists of real-time user inputs such as travel destination, number of days, and number of nights. No external dataset is used.
Text Cleaning	User input text (destination) is cleaned by removing unnecessary spaces and checking for empty or invalid entries.
Input Validation	Ensures that the destination field is not empty, the number of days is greater than zero, and the number of nights is a valid non-negative value.
Token Handling	The validated input is passed to the Gemini generative AI model, which internally handles tokenization and text processing.
Prompt Formatting	The user inputs are formatted into a structured prompt before being sent to the AI model for travel itinerary generation.
Error Handling	The system handles invalid inputs and API-related issues gracefully. If incorrect or missing inputs are detected, appropriate error messages are displayed to guide the user. Any runtime or API errors are also caught and reported without crashing the application.
Data Preprocessing Templates	

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Loading Data	User inputs are collected directly through Streamlit input fields, including text and numeric inputs.
Input Validation	Validation logic ensures that all required inputs are provided and fall within acceptable ranges before further processing.
Prompt Creation	The validated user inputs are combined into a structured prompt that clearly specifies the destination and trip duration.
Model Invocation	The formatted prompt is sent to the pre-trained generative AI model to generate a personalized travel itinerary.
Output Handling	The generated itinerary is received as text output and displayed on the Streamlit interface for user review.

4. PROJECT DESIGN

4.1. Problem Solution Fit

Problem–Solution Fit is a critical aspect of the Explore with AI: Custom Itineraries for Your Next Journey project because it demonstrates that the proposed system effectively addresses real-world travel planning challenges. Many travelers struggle with organizing trips due to the time-intensive research required, the difficulty of finding reliable information, and the lack of personalized recommendations. These issues often lead to stress, poor planning, and inefficient use of time and budget.

Identified Problem	Proposed Solution	Expected Benefit
Travel planning is time-consuming and requires extensive research across multiple platforms.	AI automates itinerary creation by generating travel plans instantly based on user inputs.	Saves time and reduces manual effort.
Lack of personalized travel recommendations.	The system analyzes preferences such as budget, interests, and trip duration to create customized itineraries.	Provides highly relevant and user-focused travel plans.
Information overload from websites, blogs, and travel guides.	A centralized platform delivers structured travel details in one place.	Simplifies decision-making and avoids confusion.
Difficulty in managing travel budget and schedule.	AI suggests optimized plans that balance cost, time, and activities.	Improves budget control and trip efficiency.

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Identified Problem	Proposed Solution	Expected Benefit
Uncertainty about choosing the best attractions and routes.	Integration with travel APIs provides reliable data on destinations and nearby attractions.	Enhances travel confidence and planning accuracy.
Stress and frustration during trip preparation.	A quick, intelligent planning tool reduces complexity and planning anxiety.	Creates a smoother and more enjoyable travel experience.

The AI-powered travel itinerary generator directly responds to these challenges by automating the planning process. By analyzing user preferences such as destination, budget, duration, and interests, the system generates customized travel plans within seconds. This eliminates the need to browse multiple platforms and ensures that travelers receive structured, relevant, and practical recommendations tailored to their needs.

4.2. Proposed Solution

The proposed solution for Explore with AI: Custom Itineraries for Your Next Journey is an intelligent travel planning system that leverages Artificial Intelligence to simplify and enhance the trip preparation process. The application is designed to automatically generate personalized travel itineraries based on user inputs such as destination, budget, travel duration, and individual interests. By replacing manual research with smart automation, the system minimizes planning time and effort while improving the overall travel experience.

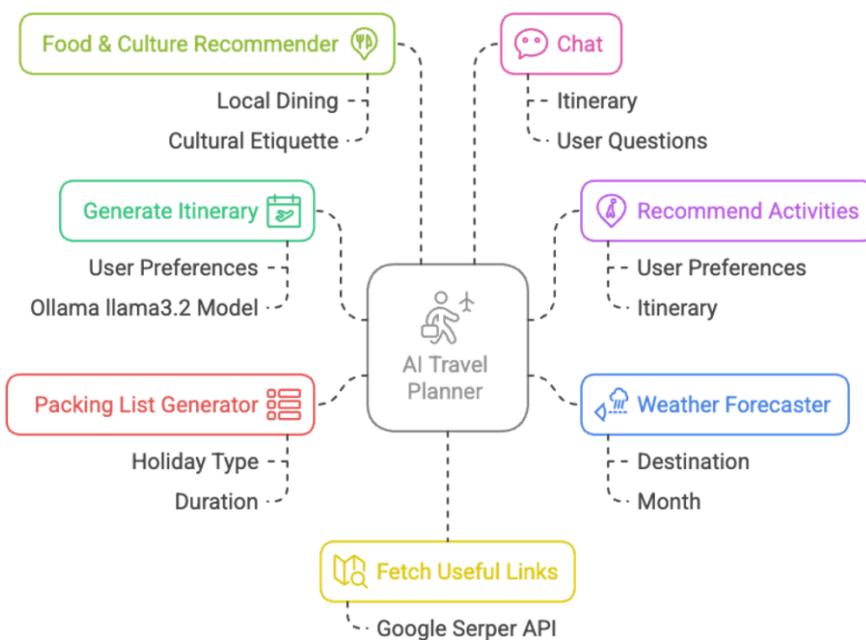
Component	Description	Purpose	User Benefit
Intelligent Travel Planner	An AI-based system that generates customized travel itineraries based on user preferences.	Automate the trip planning process.	Saves time and reduces manual research.
User Input Interface	Interactive platform where users enter details such as destination, budget, duration, and interests.	Collect accurate traveler requirements.	Easy and user-friendly experience.
AI Processing Engine	Uses Generative AI and Natural Language Processing to analyze inputs and create structured travel plans.	Deliver personalized recommendations.	Highly relevant and tailored itineraries.

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Component	Description	Purpose	User Benefit
Data Integration	Connects with travel data sources to gather information about attractions, routes, and travel details.	Ensure reliable and practical recommendations.	Improves planning accuracy and confidence.
Itinerary Generator	Organizes travel suggestions into a clear day-by-day schedule.	Provide a structured travel plan.	Helps users stay organized throughout the trip.
Centralized Platform	Combines all travel information into a single system.	Eliminate the need to search multiple websites.	Simplifies decision-making.

4.3 Solution Architecture

AI Travel Planner: Multi-Agent System Overview



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Layer	Component	Function
Presentation Layer	Web Interface (Streamlit)	Allows users to input travel details and view generated itineraries.
Application Layer	Backend Logic	Processes requests, manages workflows, and connects system components.
Intelligence Layer	AI Processing Engine	Analyzes user preferences and generates personalized travel recommendations.
Data Layer	External Travel APIs	Provides real-time data about destinations, routes, and attractions.
Output Layer	Itinerary Generator	Formats AI results into a structured, day-by-day travel plan.

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Project Planning is a crucial phase that establishes a clear roadmap for developing the AI-powered travel itinerary system. It involves defining project goals, identifying required technologies, organizing tasks, and setting timelines to ensure smooth execution. Effective planning helps minimize risks, optimize resources, and maintain focus throughout the development lifecycle.

Planning Aspect	Description	Outcome
Project Objective	Develop an AI-based system to generate customized travel itineraries.	Clear vision and direction.
Problem Identification	Recognize challenges such as time-consuming research and lack of personalization in travel planning.	Strong foundation for the solution.

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Planning Aspect	Description	Outcome
Technology Selection	Choose Python, Streamlit, and Generative AI for development.	Efficient and scalable system.
Requirement Analysis	Determine user needs including budget planning, destination suggestions, and schedule creation.	User-centered design.
Module Design	Divide the system into components like User Interface, AI Engine, and Data Integration.	Easier development and maintenance.
Resource Planning	Allocate tools, development environment, and testing methods.	Smooth workflow.
Timeline Creation	Define milestones for design, development, testing, and deployment.	On-time project completion.

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1. Performance Testing

Performance Testing evaluates how efficiently the system operates under different conditions. It ensures that the AI-powered travel planner delivers fast responses, handles multiple user requests smoothly, and maintains reliability without performance degradation. This testing phase is essential to guarantee a seamless user experience, especially when generating personalized itineraries in real time.

Testing Parameter	Description	Result / Expected Outcome
Response Time	Measures how quickly the system generates an itinerary after user input.	The system responds within a few seconds, ensuring minimal waiting time.

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Testing Parameter	Description	Result / Expected Outcome
Load Handling	Evaluates the system's ability to manage multiple users simultaneously.	Maintains stable performance without crashes.
Scalability	Tests whether the application can support increased user demand.	System can be expanded with cloud support when needed.
Accuracy Under Load	Checks if recommendation quality remains high during heavy usage.	Consistent and relevant itineraries generated.
System Stability	Monitors performance during prolonged operation.	No major failures or interruptions observed.
Resource Utilization	Analyzes CPU and memory usage during execution.	Optimized resource consumption.

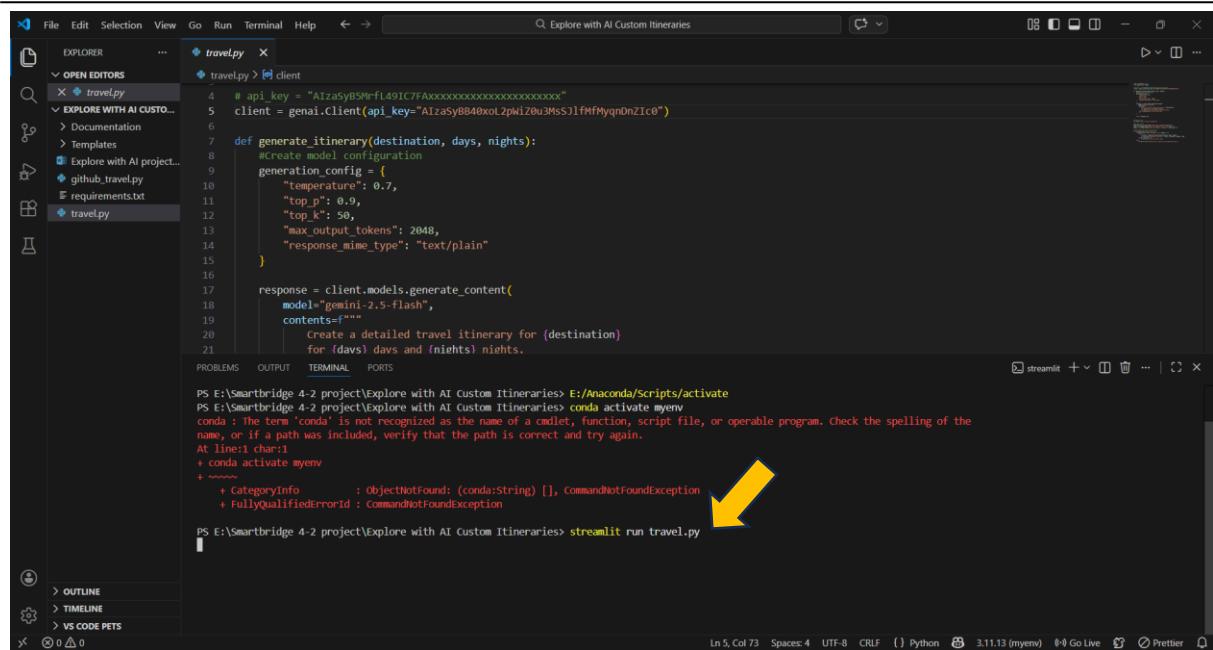
7. RESULTS

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.

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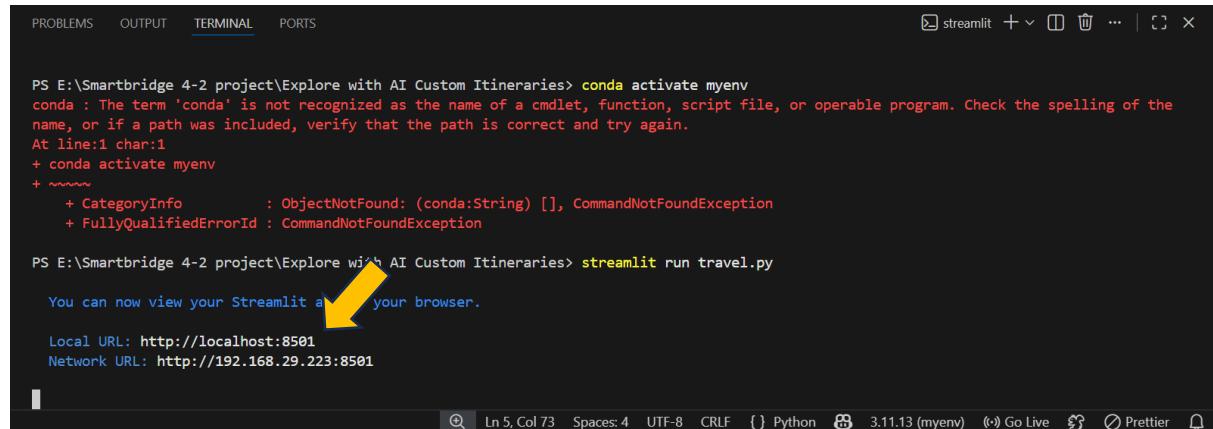
```
# api_key = "AIzaSyB5MrfI49IC7FAxxxxxxxxxxxxxx"
client = genai.Client(api_key="AIzaSyB5MrfI49IC7FAxxxxxxxxxxxxxx")

def generate_itinerary(destination, days, nights):
    # Create model configuration
    generation_config = {
        "temperature": 0.7,
        "top_p": 0.9,
        "top_k": 50,
        "max_output_tokens": 2048,
        "response_mime_type": "text/plain"
    }

    response = client.models.generate_content(
        model="gpt-3.5-turbo",
        contents=f"""
            Create a detailed travel itinerary for {destination}
            for {days} days and {nights} nights.
        """
    )
    return response.content
```

PS E:\Smartbridge 4-2 project\Explore with AI Custom Itineraries> streamlit run travel.py

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.



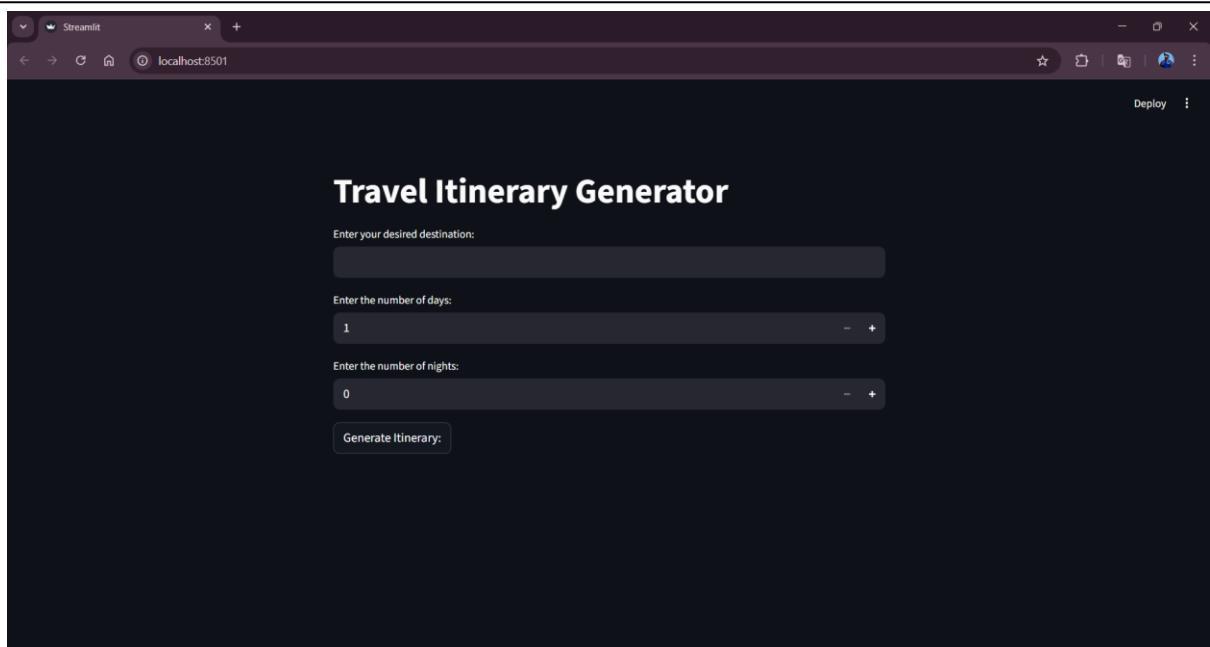
```
PS E:\Smartbridge 4-2 project\Explore with AI Custom Itineraries> conda activate myenv
conda : The term 'conda' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ conda activate myenv
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (conda:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

PS E:\Smartbridge 4-2 project\Explore with AI Custom Itineraries> streamlit run travel.py
You can now view your Streamlit app in your browser.

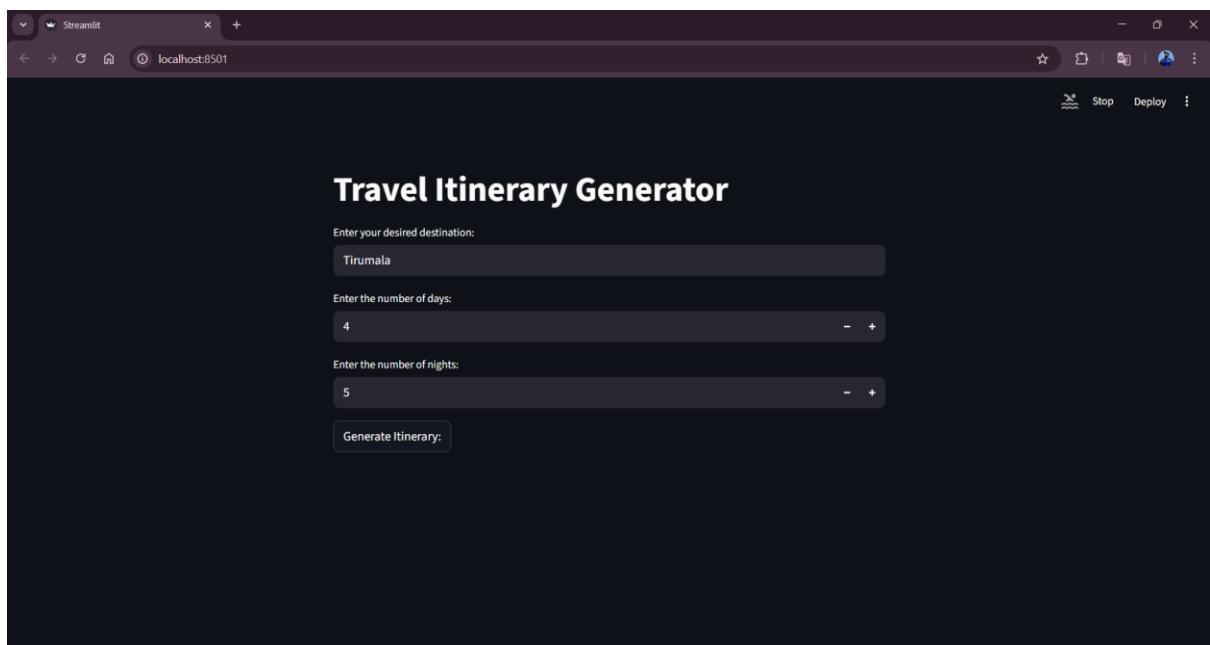
Local URL: http://localhost:8501
Network URL: http://192.168.29.223:8501
```

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.

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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.

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The screenshot shows a Streamlit application window titled "Travel Itinerary Generator". The user has entered "Tirumala" as the destination, "4" as the number of days, and "5" as the number of nights. A "Generate Itinerary" button is visible. Below the form, a "Generated Itinerary" section displays a welcome message for Tirumala, mentioning a 4-day, 5-night itinerary designed for spiritual exploration and local flavors. It also includes a note about Darshan booking being crucial and provides a link to the official TTD website for booking.

This screenshot shows the "Generated Itinerary" section expanded. It contains a heading "Important Pre-Trip Information" followed by a detailed list of travel tips. These include instructions for Darshan booking, accommodation (mentioning TTD Guest Houses and private hotels), dress code (strict traditional Indian attire), commuting (bus services from Tirupati), and other practical advice like what to wear (Men: Dhoti/Pyjama, Women: Saree or Half-saree) and what to bring (Salwar Kameez with dupatta). It also cautions against photography inside temples and emphasizes high security checks at the temple premises.

This screenshot shows the detailed itinerary for the 4-day, 5-night trip. It starts with a header "# Tirumala Itinerary: 4 Days & 5 Nights". The first day's itinerary begins with "Night 1: Arrival & Relaxed Evening in Tirupati", which includes arriving by flight or train, checking into a hotel, freshening up, and visiting the Sri Govindaraja Swamy Temple. It also recommends dinner at a local restaurant and getting a good night's rest. The next section, "Day 1: The Sacred Hills of Tirumala - Lord Venkateswara Darshan", outlines the morning routine (5:00 AM - 7:00 AM), activities like traveling to Tirumala via bus or taxi, and visiting the Mokku (Hair Offering) Center (Kalyanakatta) if vowed to offer hair. The itinerary concludes with a note about having a quick dip at the sacred pond (Swami Pushkarini) before the main darshan.

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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 - 1:00 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 Tigronda 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
```

```
...  
  
### 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)
```

```
...  
  
### 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 Shalams, 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 (6:00 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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```
Streamlit    +  
localhost:8501  
Deploy :  
  
Food Recommendations:  
* **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.
```

```
Streamlit    +  
localhost:8501  
Deploy :  
  
Generated Itinerary:  
  
Generated Itinerary:  
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.  
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.
```

```
Streamlit    +  
localhost:8501  
Deploy :  
  
...  
  
### Travel Tips:  
  
1. **Book Everything in Advance:** Darshan tickets, accommodation, and major travel (train/flight) are best booked weeks or months ahead.  
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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

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.

Code:

```
import streamlit as st

import os

from dotenv import load_dotenv

import google.generativeai as genai

# -----
# Load API Key from .env

# -----
load_dotenv()

API_KEY = os.getenv("GOOGLE_API_KEY")

if not API_KEY:
    st.error("✖ API Key not found. Please check your .env file.")

    st.stop()
```

GOOGLE CLOUD GENERATIVE AI

```
# -----  
# Configure Gemini  
# -----  
genai.configure(api_key=API_KEY)  
  
  
model = genai.GenerativeModel(  
    model_name="models/gemini-flash-latest",  
    generation_config={  
        "temperature": 0.4,  
        "top_p": 0.95,  
        "top_k": 64,  
        "max_output_tokens": 2048  
    }  
)  
  
  
# -----  
# Background Styling (CLEAN + SAFE)  
# -----  
def set_background():  
    st.markdown(  
        """  
        <style>  
        .stApp {  
            background: radial-gradient(circle at top left, #1f2933, #020617);  
        }  
        </style>  
    )
```

GOOGLE CLOUD GENERATIVE AI

```
color: #ffffff;  
}  
  
h1, h2, h3, label {  
    color: #e5e7eb !important;  
}  
  
input, textarea {  
    background-color: #020617 !important;  
    color: #ffffff !important;  
    border-radius: 10px !important;  
}  
  
button {  
    background: linear-gradient(135deg, #6366f1, #8b5cf6) !important;  
    color: white !important;  
    border-radius: 12px !important;  
    padding: 0.6rem 1.4rem !important;  
    font-weight: 600 !important;  
}  
  
/* 🔥 REMOVE "Press Enter to apply" (Streamlit caption/help text) */  
div[data-testid="stTextInput"] small,  
div[data-testid="stTextInput"] div[data-testid="stCaption"],
```

GOOGLE CLOUD GENERATIVE AI

```
div[data-testid="stNumberInput"] small,  
div[data-testid="stNumberInput"] div[data-testid="stCaption"] {  
    display: none !important;  
}  
</style>  
"""",  
unsafe_allow_html=True  
)  
  
# -----  
# Generate Travel Itinerary  
# -----  
def generate_itinerary(destination, days, nights,):  
    prompt = f"""\n        Create a detailed and clean travel itinerary.  
  
        Destination: {destination}\n        Duration: {days} days and {nights} nights\n        Include:\n            - Day-wise plan\n            - Attractions\n            - Food recommendations\n            - Travel tips\n        """
```

Destination: {destination}

Duration: {days} days and {nights} nights

Include:

- Day-wise plan
- Attractions
- Food recommendations
- Travel tips

"""

GOOGLE CLOUD GENERATIVE AI

```
response = model.generate_content(prompt)

return response.text

# -----

# Streamlit UI

# -----

st.set_page_config(
    page_title="Travel Itinerary Generator",
    page_icon="🌐",
    layout="centered"
)

set_background()

st.title("🌐 Travel Itinerary Generator")

st.divider()

destination = st.text_input("📍 Enter your destination")

days_input = st.text_input("📅 Number of days", value="1")

nights_input = st.text_input("🌙 Number of nights", value="0")

st.divider()

if st.button("✨ Generate Itinerary"):
```

GOOGLE CLOUD GENERATIVE AI

try:

```
days = int(days_input)
```

```
nights = int(nights_input)
```

```
if days <= 0 or nights < 0:
```

```
    st.warning("Days must be > 0 and nights ≥ 0.")
```

```
elif not destination.strip():
```

```
    st.warning("Please enter a destination.")
```

```
else:
```

```
    with st.spinner("🧠 Planning your journey..."):
```

```
        itinerary = generate_itinerary(destination, days, nights,)
```

```
        st.text_area(
```

```
            "📘 Generated Travel Itinerary",
```

```
            itinerary,
```

```
            height=300
```

```
)
```

```
except ValueError:
```

```
    st.error("Please enter valid numeric values for days and nights.")
```

GOOGLE CLOUD GENERATIVE AI

Github& Project Demo Link

❖ Demo Video Link:

https://drive.google.com/file/d/1nyrbCrYjuLKzrgCEq3VMfWrk_3KKTpHM/view?usp=drive_link

❖ Github Repository:

[Epperlavamsi03/Explore-with-AI-Custom-Itineraries-for-Your-Next-Journey: A Python-based AI Travel Assistant that leverages user input to generate smart travel recommendations and enhance trip planning experiences.](https://github.com/Epperlavamsi03/Explore-with-AI-Custom-Itineraries-for-Your-Next-Journey)