

# 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.

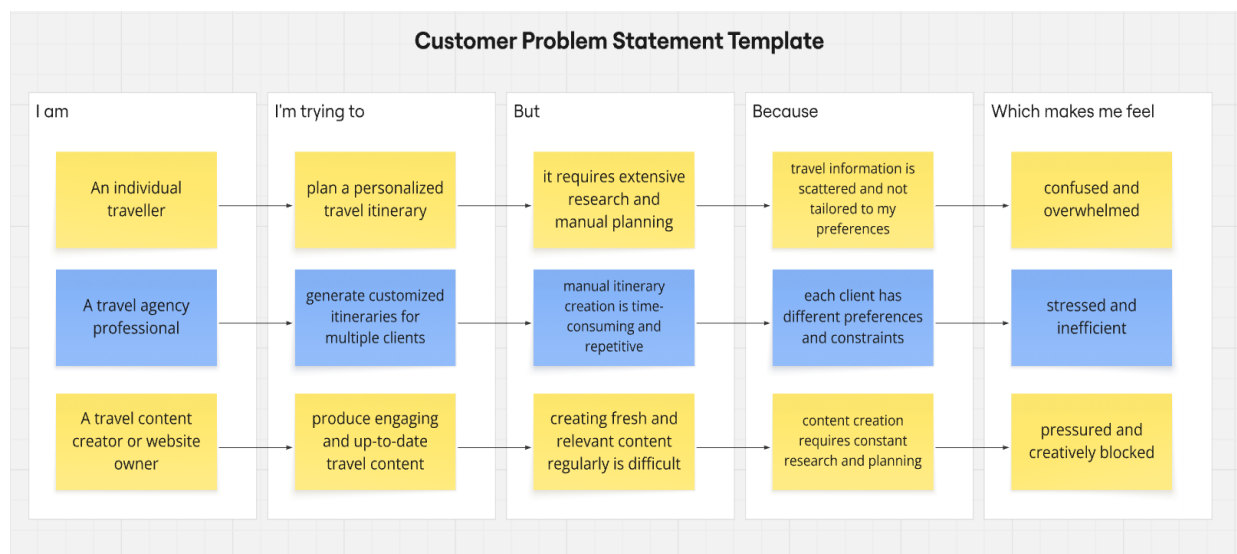
## 1.2 Objectives

- 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/>

<b>Problem Statement (PS)</b>	<b>I am (Customer)</b>	<b>I'm trying to</b>	<b>But</b>	<b>Because</b>	<b>Which makes me feel</b>
<b>PS-1</b>	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
<b>PS-2</b>	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
<b>PS-3</b>	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:

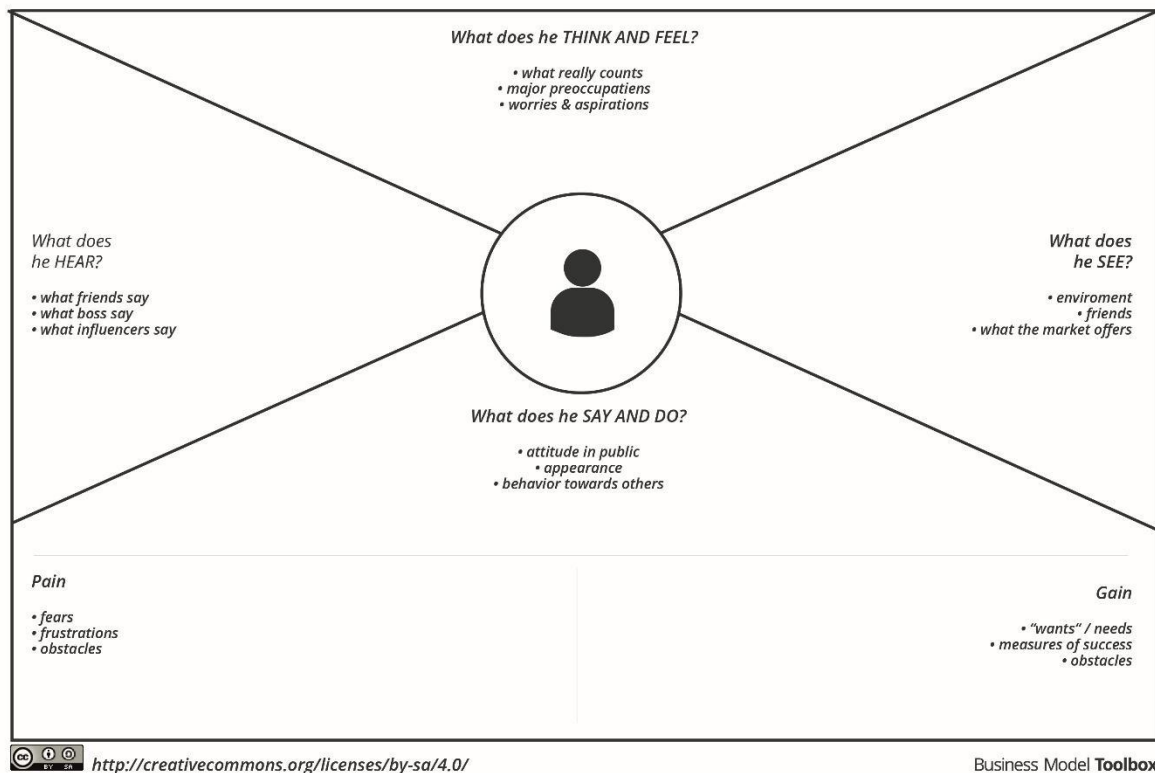
An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to help 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.

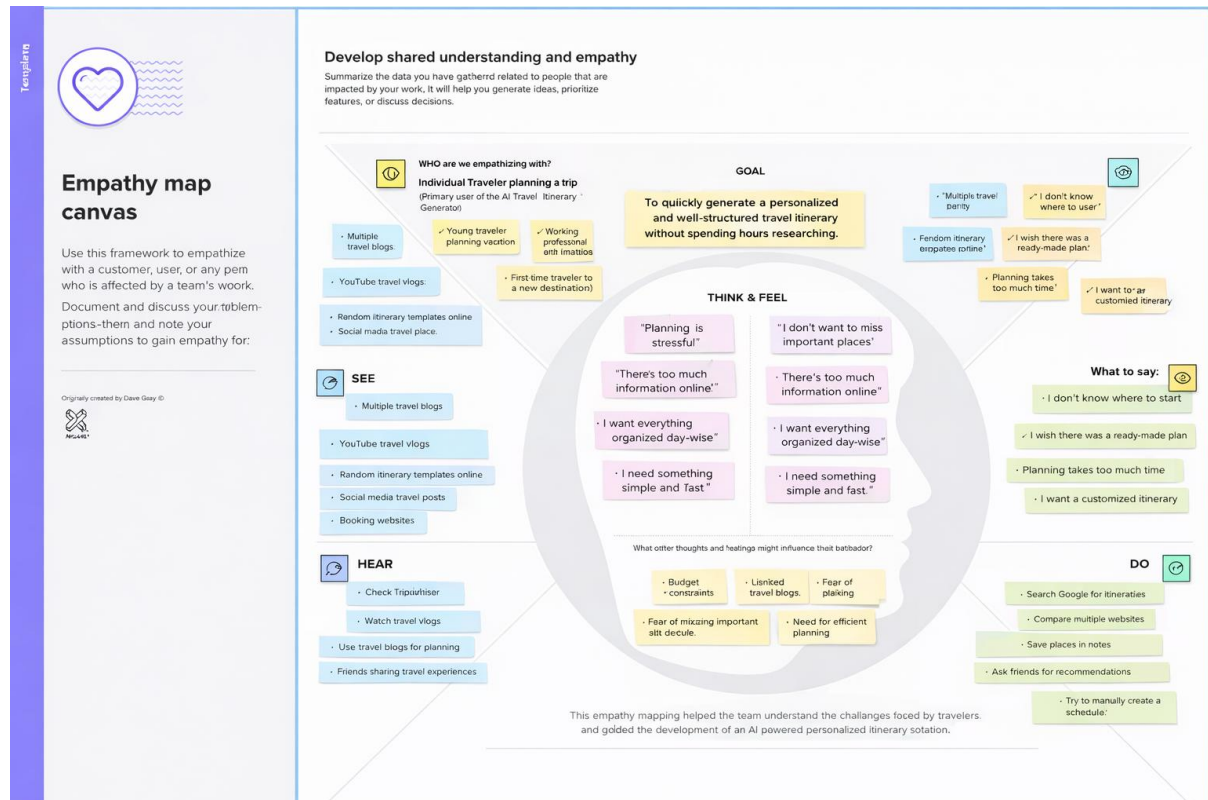
### Example:

## Empathy Map



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

Template



## Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare  
🕒 1 hour to collaborate  
👤 2-8 people recommended

**Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

**A Team gathering**  
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

**B Set the goal**  
To design an AI-based system that automatically generates personalized travel itineraries based on user input.

**C Learn how to use the facilitation tools**  
Selected tools include Python, Streamlit, and a pre-trained generative AI model (Gemini) for implementing the travel itinerary generator.

[Open article](#) →

**1 Define your problem statement**

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

**PROBLEM**

How might we use generative AI to automate personalized travel itinerary planning efficiently?

**Key rules of brainstorming**

To run a smooth and productive session

🗣️ Stay in topic.

💡 Encourage wild ideas.

👂 Defer judgment.

👂 Listen to others.

🗣️ Go for volume.

👁️ If possible, be visual.

### Step-2: Brainstorm, Idea Listing and Grouping

2

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

**TIP**  
You can reflect a sticky note and not the pencil. Make it work! (You do not know that!)

#### Person 1

- Integrate Gemini generative AI model using API
- Create structured prompt for itinerary generation
- Tune temperature and output token settings
- Handle AI response formatting

#### Person 2

- Design simple Streamlit interface
- Add input fields for destination, days, nights
- Add Generate Itinerary button
- Display output using text area

#### Person 3

- Validate destination input
- Ensure days > 0 and nights ≥ 0
- Clean unnecessary spaces in input
- Format prompt clearly before sending to model

#### Person 4

- Add budget-based itinerary customization
- Add PDF export feature
- Include travel tips in output
- Add multi-language support option

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

**TIP**  
Ask yourself: what is the most important idea to keep? What is the most important idea to discard? What is the most important idea to keep?

#### AI & Model Integration

- Integrate Gemini generative AI model using API
- Create structured prompt for itinerary generation
- Tune temperature and output token settings
- Handle AI response formatting

#### User Interface Design

- Design simple Streamlit interface
- Add input fields for destination, days, nights
- Add Generate Itinerary button
- Display output using text area

#### Data Validation & Processing

- Validate destination input
- Ensure days > 0 and nights ≥ 0
- Clean unnecessary spaces in input

#### Future Feature Expansion

- Add budget-based itinerary customization
- Add PDF export feature
- Add multi-language support option

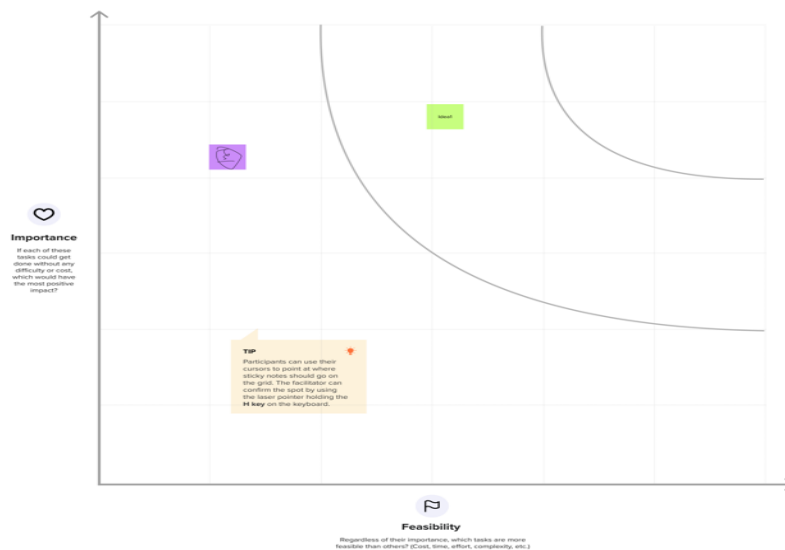
## Step-3: Idea Prioritization

4

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



### 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	<ul style="list-style-type: none"><li>User can enter destination.</li><li>User can enter number of days.</li><li>User can enter number of nights.</li><li>System generates personalized travel itinerary using AI.</li></ul>
FR-2	Input Validation	<ul style="list-style-type: none"><li>Validate that destination field is not empty.</li><li>Ensure number of days is greater than zero.</li><li>Ensure number of nights is zero or positive.</li><li>Display error message for invalid input.</li></ul>
FR-3	AI Model Integration	<ul style="list-style-type: none"><li>Create structured prompt using user input.</li><li>Send prompt to generative AI model.</li><li>Receive generated itinerary from AI.</li><li>Format AI response properly.</li></ul>
FR-4	Output Display	<ul style="list-style-type: none"><li>Display itinerary in readable format.</li><li>Allow user to review generated content.</li><li>Show appropriate error message if API fails.</li></ul>

#### Non-functional Requirements:

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

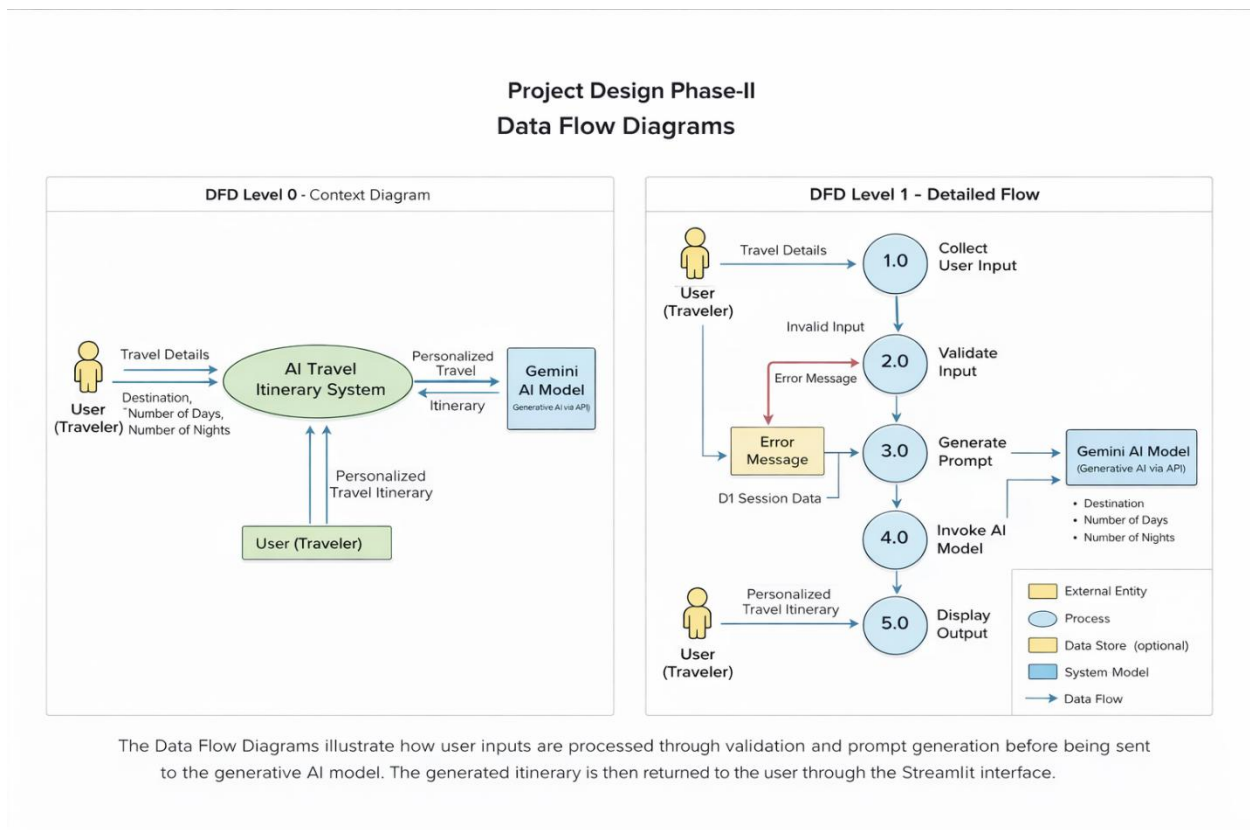
FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The application should provide a simple, intuitive, and user-friendly interface using Streamlit.
NFR-2	<b>Security</b>	The API key must be securely configured and not exposed publicly. User input should not be stored permanently.
NFR-3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

NFR-4	<b>Performance</b>	The application should generate travel itineraries within a reasonable response time.
NFR-5	<b>Availability</b>	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.



#### User Stories

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



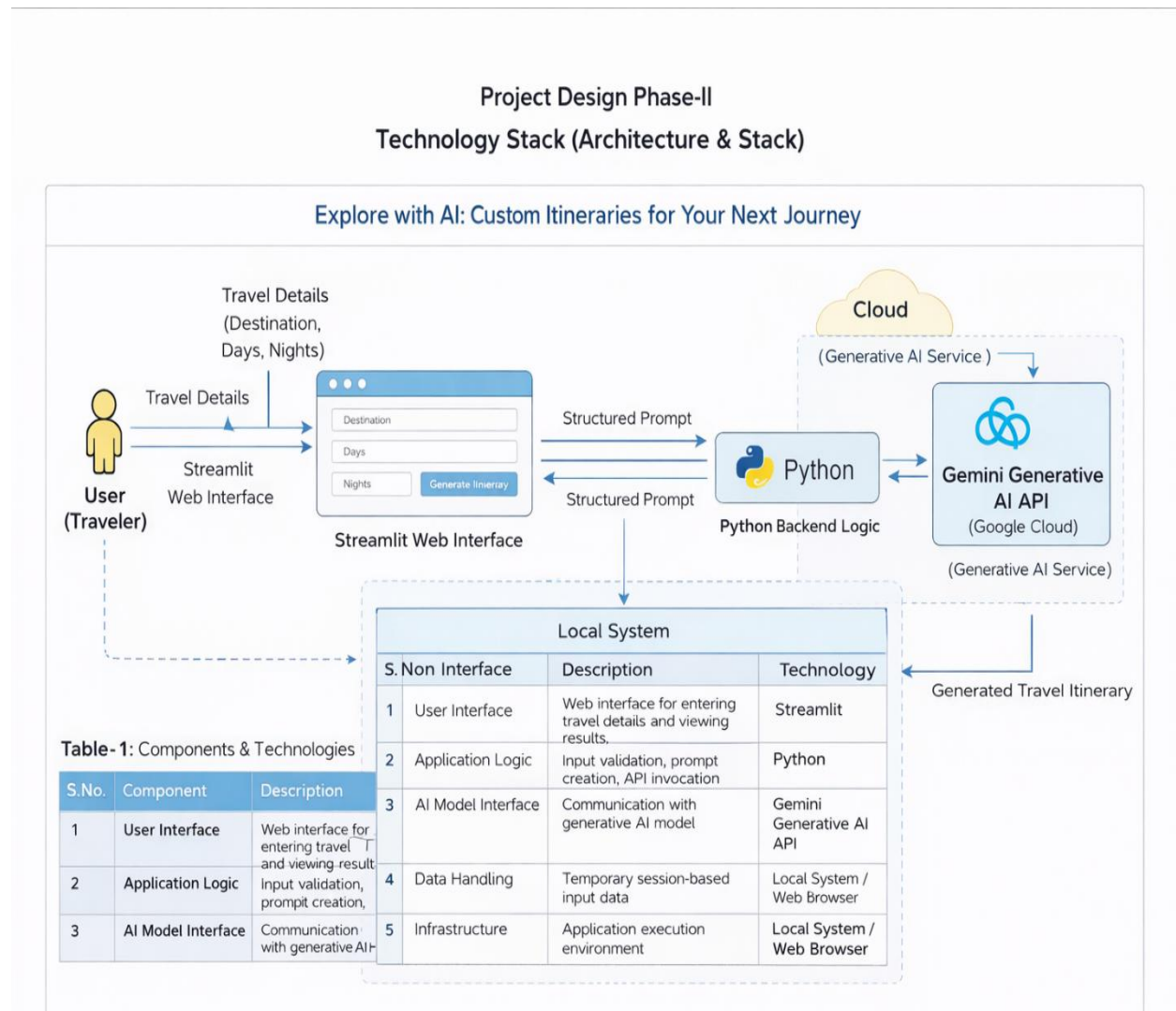
User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Travel Itinerary Generation	USN-1	As a user, I can enter my destination, number of days, and number of nights to generate a personalized travel itinerary.	The system generates 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:

Define CS, fit Intro CC	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> <ul style="list-style-type: none"> <li>Individual travelers</li> <li>Working professionals planning vacations</li> <li>First-time travelers</li> <li>Travel agencies needing quick itinerary creation</li> </ul>	<b>2. CUSTOMER CONSTRAINTS</b> <span>CC</span> <ul style="list-style-type: none"> <li>Limited time for research</li> <li>Scattered travel information online</li> <li>Lack of personalized travel plans</li> <li>Difficulty organizing day-wise schedule</li> <li>Repetitive manual planning</li> </ul>	<b>3. AVAILABLE SOLUTIONS</b> <span>AS</span> <ul style="list-style-type: none"> <li>Travel blogs and websites</li> <li>YouTube travel videos</li> <li>Manual itinerary templates</li> <li>Travel agency packages</li> <li>Online travel forums</li> </ul>
	<b>4. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> <ul style="list-style-type: none"> <li>Plan a structured trip itinerary</li> <li>Select key attractions for each day</li> <li>Organize trip efficiently within limited days</li> <li>Save time and effort in planning</li> </ul>	<b>5. PROBLEM ROOT CAUSE</b> <span>RC</span> <ul style="list-style-type: none"> <li>Overabundance of scattered travel content</li> <li>No automated personalization</li> <li>Manual effort required to filter relevant information</li> <li>Lack of centralized planning tool</li> </ul>	<b>6. BEHAVIOUR</b> <span>BE</span> <ul style="list-style-type: none"> <li>Search Google repeatedly</li> <li>Compare multiple blogs</li> <li>Ask friends for suggestions</li> <li>Save random places without structure</li> <li>Spend hours organizing plans</li> </ul>
Identify strong fit O EM	<b>7. TRIGGERS</b> <span>TR</span> <ul style="list-style-type: none"> <li>Upcoming vacation</li> <li>Festival holidays</li> <li>Business trips</li> <li>Travel offers or discounts</li> <li>Social media travel inspiration</li> </ul>	<b>8. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> <ul style="list-style-type: none"> <li>Overwhelmed</li> <li>Confused</li> <li>Stressed</li> <li>Time-pressured</li> </ul>	<b>9. YOUR SOLUTION</b> <span>CH</span> <ul style="list-style-type: none"> <li>Web application (Streamlit)</li> <li>Direct browser access</li> </ul>
	<b>7. TRIGGERS</b> <span>TR</span> <ul style="list-style-type: none"> <li>Upcoming vacation</li> <li>Festival holidays</li> </ul>	<b>9. YOUR SOLUTION</b> <span>SU</span> <ul style="list-style-type: none"> <li>AI powered travel itinerary generator</li> <li>Streamlit-based web interface</li> </ul>	<b>10. CHANNELS 8. BEHAVIOUR</b> <span>CH</span> <ul style="list-style-type: none"> <li>Web application (Streamlit): Direct browser access</li> <li>Enter destination and trip duration</li> <li>Click: Generate Itinerary</li> <li>Review personalized travel plan</li> </ul>

#### References:

- <https://www.ideahackers.network/problem-solution-fit-canvas/>
- <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	<b>Problem Statement (Problem to be solved)</b>	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	<b>Idea / Solution Description</b>	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	<b>Novelty / Uniqueness</b>	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	<b>Social Impact / Customer Satisfaction</b>	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	<b>Business Model (Revenue Model)</b>	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	<b>Scalability of the Solution</b>	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:

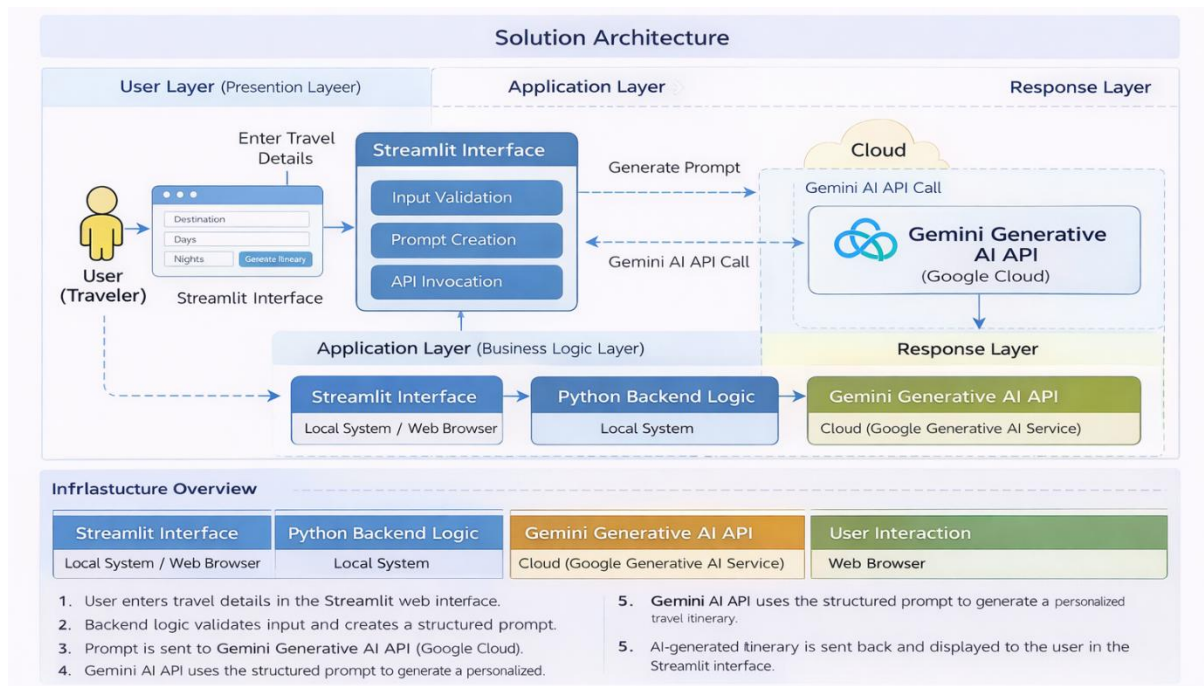


Figure 1: Architecture and data flow of travel itinerary application

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 2026	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

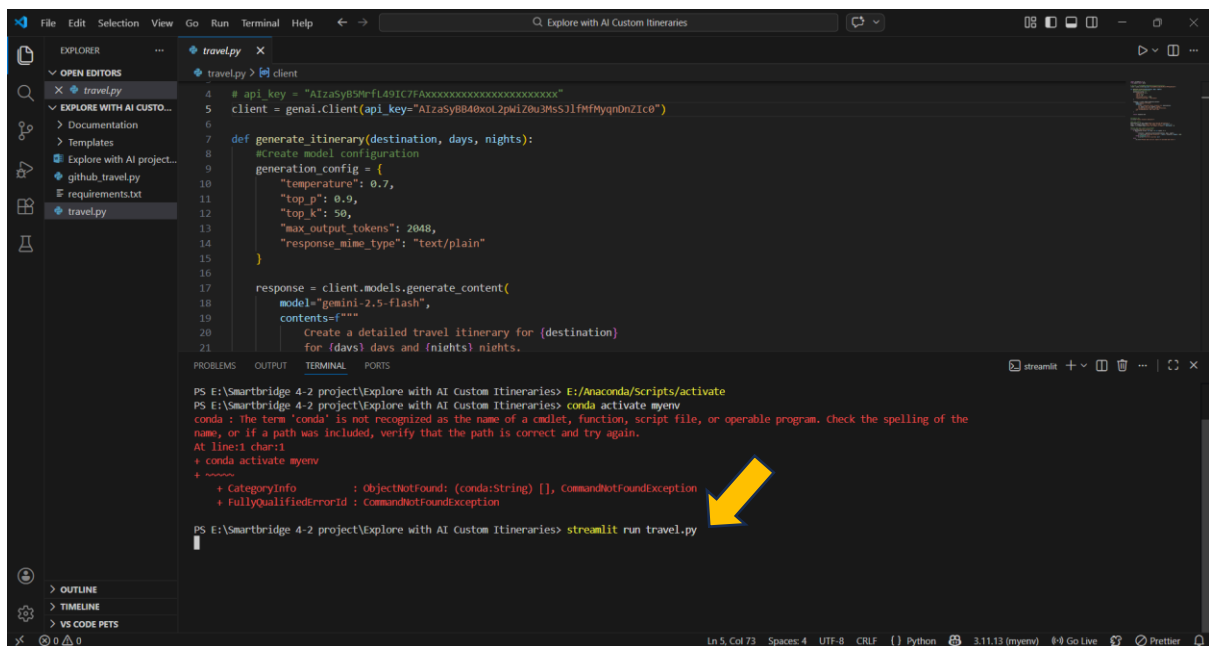
PT-01	Response Time Test	Generate itinerary and measure response time	Should respond within acceptable time (<5 seconds depending on API)	Response time within limit	Pass
PT-02	Multiple Request Handling	Generate itineraries consecutively	System should process without crashing	Handled smoothly	Pass
PT-03	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.



```
File Edit Selection View Go Run Terminal Help
Explore with AI Custom Itineraries

EXPLORER
OPEN EDITORS
travel.py
EXPLORE WITH AI CUSTO...
> Documentation
> Templates
Explore with AI project...
github_travel.py
requirements.txt
travel.py

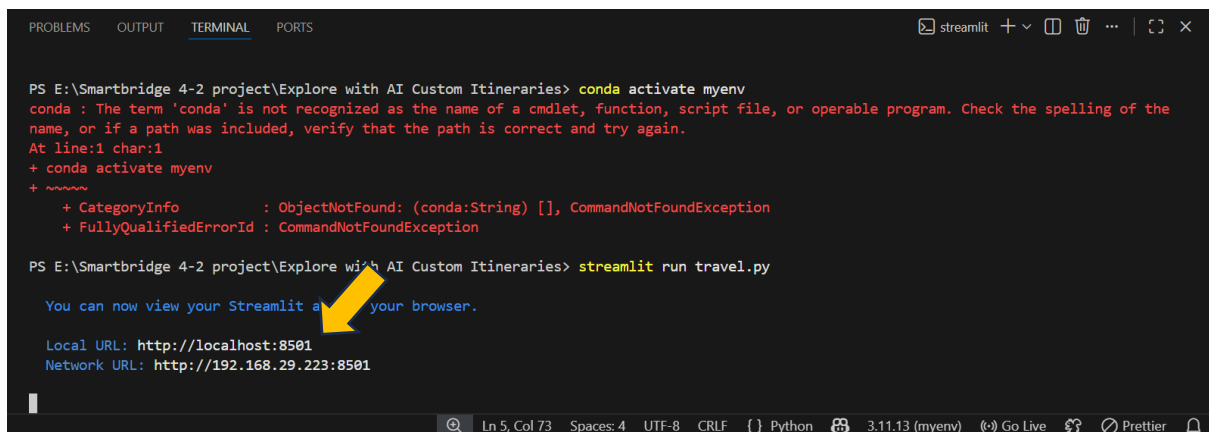
def generate_itinerary(destination, days, nights):
    #create model configuration
    generation_config = {
        "temperature": 0.7,
        "top_p": 0.9,
        "top_k": 50,
        "max_output_tokens": 2048,
        "response_mime_type": "text/plain"
    }

    response = client.models.generate_content(
        model="gemini-2.5-flash",
        contents="""
        Create a detailed travel itinerary for {destination}
        for {days} days and {nights} nights.
    """
    )

PROBLEMS OUTPUT TERMINAL PORTS
streamlit
PS E:\Smartridge 4-2 project\Explore with AI Custom Itineraries> E:\Anaconda\Scripts\activate
PS E:\Smartridge 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:\Smartridge 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.



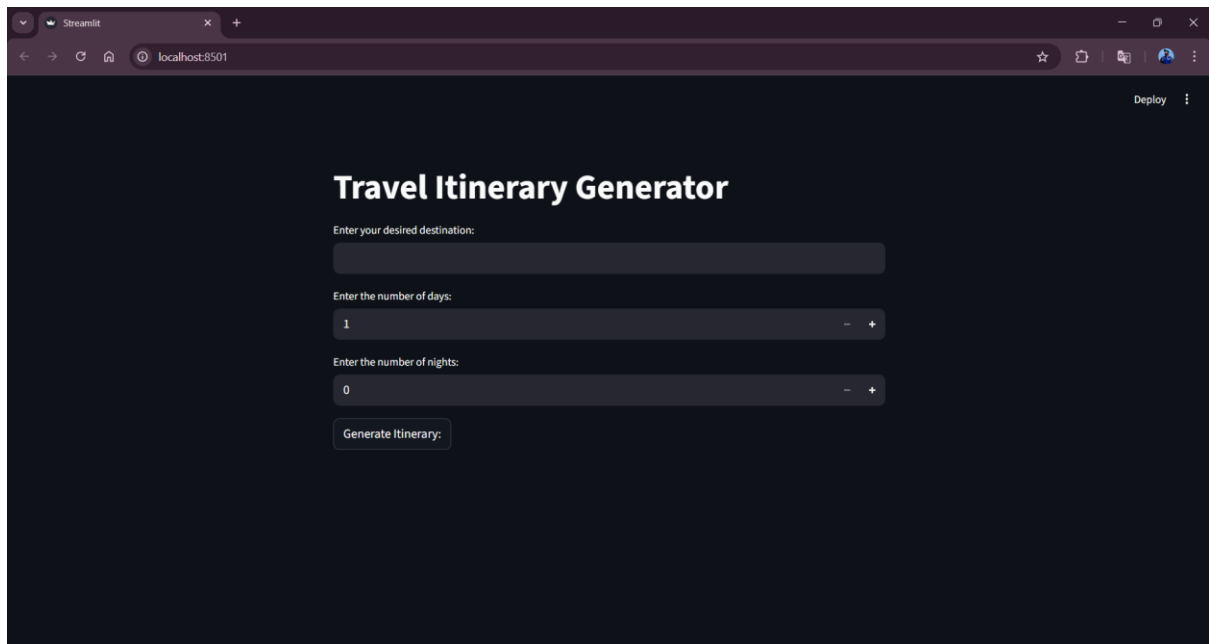
```
PROBLEMS OUTPUT TERMINAL PORTS
streamlit
PS E:\Smartridge 4-2 project\Explore with AI Custom Itineraries> conda activate myenv
conda : The term 'conda' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the
name, or if a path was included, 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:\Smartridge 4-2 project\Explore with AI Custom Itineraries> streamlit run travel.py

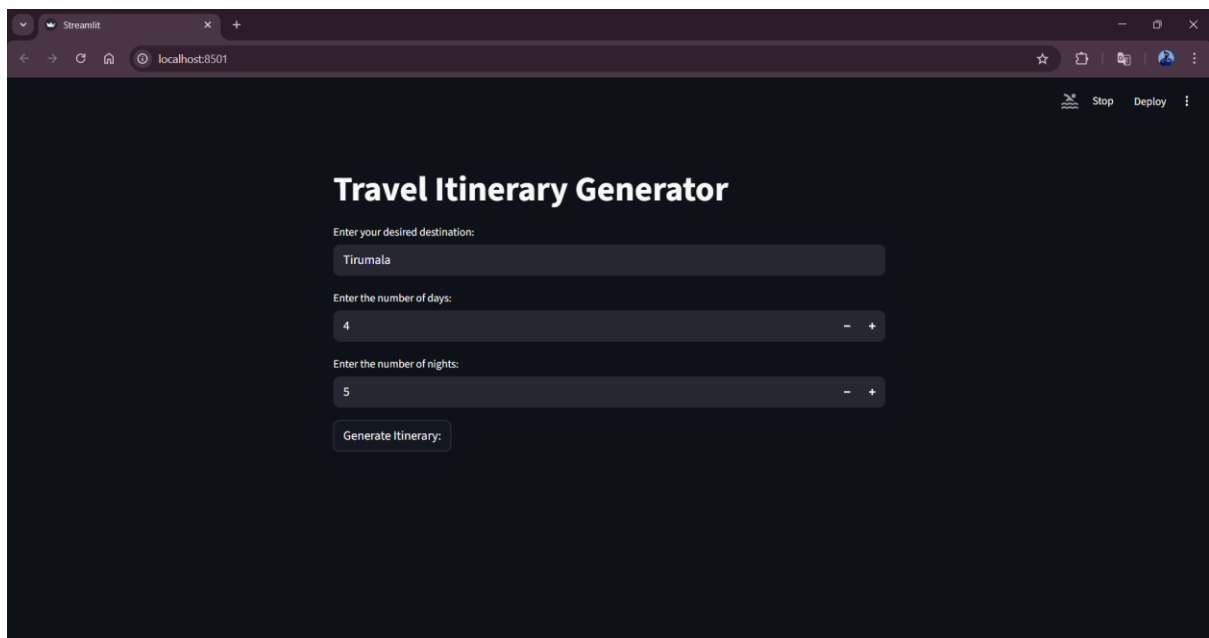
You can now view your Streamlit app in your browser.

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

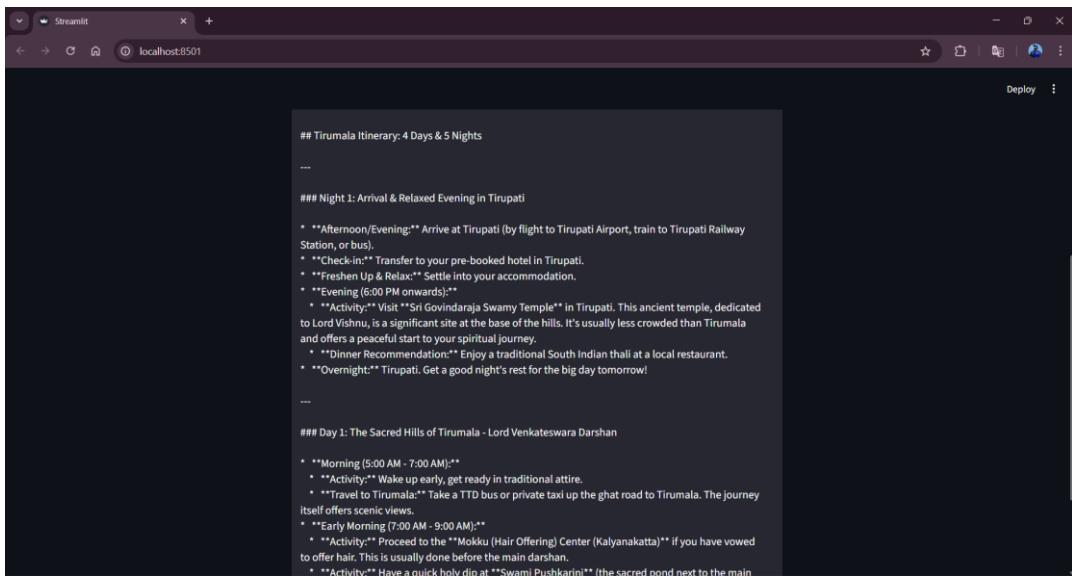
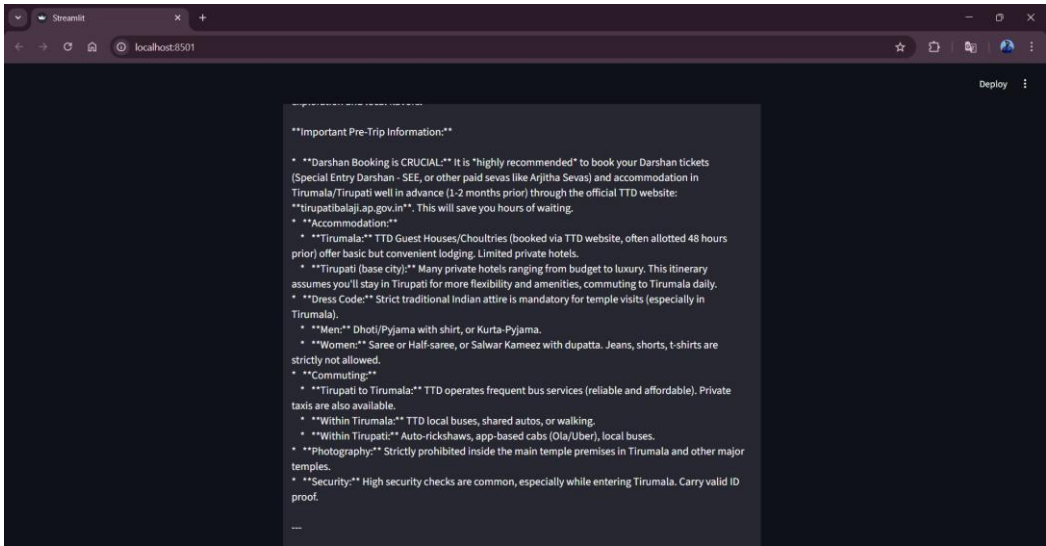
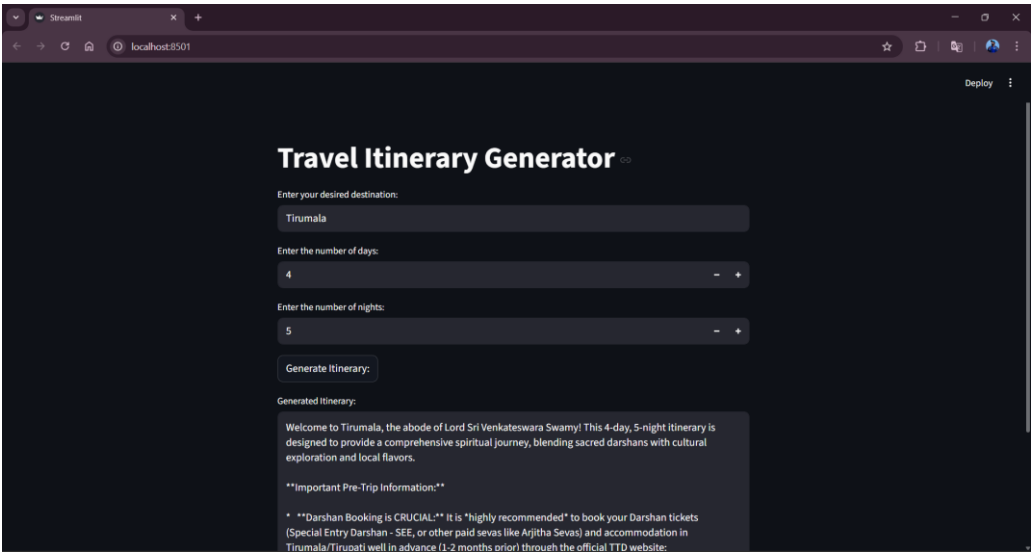
**Step 3:** The Streamlit webpage opens as shown in the figure given below. This is an automated webpage. No secondary HTML codes required to build this webpage. Python code itself consists the webpage building code.



**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

* **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 Annaprashadam** at Matrusri Tarigonda Vengamamba Annaprashadam Complex. It's a free, wholesome, and blessed meal.
  * **Afternoon (3:00 PM - 6:00 PM):**
    * **Activity:** Collect your **Laddoo Prashadam** (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
```

```
Streamlit
localhost:8501
Deploy

---

### 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)
```

```
Streamlit
localhost:8501
Deploy

---

### 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):
```

```

* **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.

```

```

Generated Itinerary:

### Food Recommendations:

* **Must-Try:**
  * **Tirupati Laddoo:** The famous Prasadam from the main temple.
  * **TTD Annaprashadam:** 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.

```

```

---

### Travel Tips:

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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.

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](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>