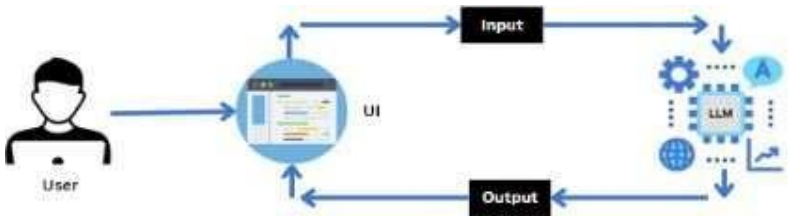
Project Design Phase
Solution Architecture

Date	11 February 2026
Team ID	LTVIP2026TMIDS78997
Project Name	Explore with AI: Custom Itineraries for Your Next Journey
Maximum Marks	2 Marks

Solution Architecture:



1. Overview

Explore with AI is a web and mobile-based platform that allows users to enter travel preferences (destination, duration, interests) and receive a **personalized, AI-generated travel itinerary**. The system is designed for simplicity, speed, and scalability.

2. High-Level Components

A. User Interface (Frontend)

- **Technology:** Streamlit (Python) or React.js for web/mobile interface
- **Functionality:**
  - Input fields for destination, trip duration, and preferences/interests
  - Submit button to generate itinerary
  - Display of AI-generated itinerary in a structured, day-wise format
  - Options to review, customize, or export itinerary (PDF/Text)
  - Display user-friendly error messages

B. API Layer / Backend

- **Technology:** Python (Flask/FastAPI)
- **Functionality:**
  - Receives user input from frontend

- Validates inputs (destination, dates, preferences)
- Handles requests to the AI model
- Returns structured itinerary results to frontend

C. AI Engine

- **Technology:** Gemini Pro LLM / OpenAI GPT / other generative AI model
- **Functionality:**
  - Processes input parameters (destination, duration, interests)
  - Generates detailed day-wise itinerary including:
    - Attractions and sightseeing
    - Local dining recommendations
    - Suggested activities and timing
    - Travel tips and optional hidden gems
  - Ensures structured output for easy rendering on frontend

D. Data Layer (Optional)

- **Technology:** Cloud database (MongoDB/PostgreSQL)
- **Functionality:**
  - Stores predefined destination data (optional)
  - Stores user-generated itineraries (if history/export feature is implemented)
  - Logs analytics for system monitoring

E. Export & Reporting Module

- **Functionality:**
  - Convert itinerary to PDF or downloadable formats
  - Copy/export to clipboard
  - Optional integration with email or messaging for sharing

3. Key Features of Architecture

- **Modular Design:** Frontend, backend, AI engine, and data layer are loosely coupled.
- **Scalable:** Can handle more destinations, multiple users, and AI requests simultaneously.
- **Extensible:** Future features can include multi-destination planning, travel booking integrations, or content generation for blogs.
- **Simple Workflow:** Focused on **input → AI processing → output**, minimizing user friction.