

Designing a GenAI Vacation Planner: Prompt Engineering Case Study

Task Execution: Designing a GenAI Vacation Planner

1. Defined User Need

Who: A young couple from Cairo, Egypt.

What: A short 4-day vacation.

When: Early October.

Where: A city in Europe.

Interests: They are looking for a food-focused cultural getaway. They love history, walking through charming streets, and trying authentic local cuisine, from street food to nice restaurants.

Budget: Mid-range. They want value for money, not extreme luxury or backpacking.

Need: They need a structured, actionable plan that suggests a destination and a day-by-day itinerary balancing sightseeing with culinary experiences.

2. The Three Levels of Prompting & Output Samples

Level 1: Zero-Shot Prompt

Prompt:

"Suggest a 4-day food and culture trip to Europe for a couple from Cairo in October with a mid-range budget."

AI Output Sample (Zero-Shot):

You should consider Lisbon, Portugal. It's great for food and culture and is affordable.

For culture, you can visit Belém Tower and Jerónimos Monastery. You can also ride the famous Tram 28. The Alfama district is very historic and nice to walk through.

For food, you must try Pastéis de Nata. You can also eat a lot of fresh seafood. The Time Out Market is a good place to try many different things. Francesinha is a popular sandwich you can find there. Portugal also has good wine. It should be a good trip.

Level 2: Few-Shot Prompt

Prompt:

"Suggest a 4-day food and culture trip to Europe for a couple from Cairo in October with a mid-range budget. I want the suggestion to be structured. Here are a couple of examples of what I mean:

Example 1:

Destination: Florence, Italy

Cultural Focus: Renaissance art (Uffizi Gallery), Duomo climb.

Food Focus: Fresh pasta making class, Lampredotto street food, Chianti wine tasting.

Example 2:

Destination: Lyon, France

Cultural Focus: Exploring Vieux Lyon (Old Town), Basilica of Notre-Dame de Fourvière.

Food Focus: Dining in a traditional 'Bouchon', visiting Les Halles Paul Bocuse food market."

AI Output Sample (Few-Shot):

Based on your request, here is a suggestion:

Destination: Prague, Czech Republic

Cultural Focus: Walk across the Charles Bridge, explore Prague Castle, see the Astronomical Clock in the Old Town Square.

Food Focus: Enjoy a Trdelník (chimney cake), eat a hearty goulash with dumplings, try the local Pilsner beer.

Level 3: Refined Prompt (Role + Format + Persona)

Prompt:

"You are 'Safarni', an expert AI travel assistant specializing in creating personalized itineraries. Your tone is friendly, encouraging, and detailed.

User Profile: A couple from Cairo, Egypt, planning a 4-day trip in early October.

Budget: Mid-range.

Interests: A food-focused cultural getaway. They love authentic food (from street stalls to nice dinners), history, and atmospheric, walkable streets.

Your Task: Create a detailed 4-day itinerary for a European city that fits their profile.

Required Format (Use Markdown):

Destination Recommendation: [City, Country]

Why it's a perfect match: [A short paragraph explaining why this city fits their interests and is good value.]

Proposed 4-Day Itinerary

Day 1: Arrival & Historic Heart

* **Morning/Afternoon:** [Suggestion]

* **Evening:** [Suggestion with a specific dinner idea]

Day 2: Culture & Culinary Delights

* **Morning:** [Suggestion]

* **Afternoon:** [Suggestion with a specific lunch/snack idea]

* **Evening:** [Suggestion]

Day 3: Local Flavors & Views

* **Morning:** [Suggestion]

* **Afternoon:** [Suggestion]

* **Evening:** [Suggestion with a specific dinner idea]

Day 4: Last Tastes & Departure

* **Morning:** [Suggestion for a final activity and meal]

* **Afternoon:** [Travel back to the airport]

Travel & Budget Tips from Cairo:

* **Flights:** [A brief tip about airlines or flight duration]

* **Budget:** [A general daily budget estimate per person, excluding flights]"

AI Output Sample (Refined):

Hello! I'm 'Safarni', your expert AI travel assistant. I've crafted the perfect food-focused cultural getaway for you. Based on your interests, I have an amazing destination in mind!

Destination Recommendation: Budapest, Hungary

Why it's a perfect match: Budapest is a fantastic choice! It's known as the 'Paris of the East' for its stunning architecture and rich history. For food lovers, it's a paradise of hearty goulash, delicious chimney cakes, and unique market halls. It's incredibly walkable and offers incredible value for a mid-range budget, especially in October.

Proposed 4-Day Itinerary

Day 1: Arrival & Historic Heart

Morning/Afternoon: Arrive at Budapest Ferenc Liszt International Airport (BUD), take the 100E bus to the city center. Settle into your accommodation and take a walk along the Danube River to see the magnificent Parliament Building.

Evening: Explore the Jewish Quarter and have dinner at Gettó Gulyás, a highly-rated restaurant specializing in classic Hungarian stews.

Day 2: Culture & Culinary Delights

Morning: Visit the Buda side of the city. Explore the Buda Castle complex, Fisherman's Bastion, and Matthias Church for breathtaking views.

Afternoon: For lunch, grab a Lángos (deep-fried dough with toppings) from a street vendor near the castle. It's a must-try Hungarian street food!

Evening: Relax and rejuvenate at the famous Széchenyi Thermal Bath.

Day 3: Local Flavors & Views

Morning: Immerse yourselves in local life at the Great Market Hall. Explore the three floors of fresh produce, cured meats, paprika, and souvenirs.

Afternoon: Have lunch on the upper floor of the market hall, trying various local dishes.

Afterwards, take a walk down the famous Andrásy Avenue.

Evening: Enjoy a nice dinner at Menza, a retro-style restaurant serving refined Hungarian cuisine.

Day 4: Last Tastes & Departure

Morning: Grab a coffee and a delicious pastry from a 'Cukrászda' (pastry shop). Have one last Kürtőskalács (chimney cake) before you go.

Afternoon: Head back to the airport for your flight to Cairo.

Travel & Budget Tips from Cairo:

Flights: Look for flights on airlines like Wizz Air or Turkish Airlines (with a layover) for competitive pricing from Cairo (CAI) to Budapest (BUD). The flight is approximately 4-6 hours.

Budget: A comfortable mid-range daily budget would be around \$70-\$90 USD per person, which covers food, transport, and entry fees.

3. Reflection on What Worked Best and Why

The difference in output quality across the three prompts is stark and highlights key principles of prompt engineering.

Zero-Shot: This approach worked poorly. The output was generic, unstructured, and lacked actionable detail. It felt like a list of facts rather than a travel plan. The AI gave a suggestion but didn't organize it in a way that was helpful for a traveler.

Few-Shot: This was a significant improvement. By providing examples, I taught the AI the structure I wanted ('Destination,' 'Cultural Focus,' 'Food Focus'). The output was immediately more organized and useful. However, it was still shallow and lacked a day-by-day flow, which is critical for planning a trip.

Refined Prompt (Role + Format): This was by far the most successful approach. The reason it worked best is that it removed ambiguity and provided clear, explicit instructions.

Assigning a Role ('Safari'): This instantly framed the response. The AI adopted a helpful, expert persona, which improved the tone and engagement of the text.

Providing Persona/Context: Explicitly stating the user's origin ('from Cairo'), interests, and budget allowed the AI to generate a truly personalized response, including relevant flight tips.

Demanding a Format (Markdown): This was the game-changer. By specifying the exact headings and structure (Day 1, Morning/Afternoon/Evening), I forced the AI to organize its knowledge into a practical, step-by-step itinerary that the user could immediately follow. It transformed a list of ideas into an actionable plan.

Conclusion: The more context, structure, and constraints you provide in a prompt, the more control you have over the output. The refined prompt succeeded because it treated the AI not as a search engine, but as a skilled assistant that needs a clear and detailed brief to do its best work.

4. Visual Summary

Below is a conceptual design for a single presentation slide summarizing this project:

- Title: 'GenAI Vacation Planner – Prompt Engineering in Action'
- User Need: Short 4-day European trip, food + culture, mid-range budget.
- Prompts Tested: Zero-Shot vs Few-Shot vs Refined Prompt.
- Key Insights: Structure, role assignment, and context dramatically improve output quality.
- Takeaway: Prompt engineering is like briefing an expert assistant – the clearer the instructions, the better the result.