BUCKMAN

Data Science Interview Test: LLMs & Generative AI in Freight Optimization:

Problem Statement:

You are tasked with designing a Generative AI assistant that supports the logistics team in optimizing freight operations. The assistant should be capable of:

1. Understanding natural language queries from logistics managers (e.g., "Why did shipment 2345 cost $2,000 more than expected?").
2. Generating summaries of weekly freight performance reports.
3. Suggesting optimal routes or carriers based on historical data.
4. Triggering autonomous workflows (e.g., rebooking a shipment, flagging compliance issues) using agentic AI principles.

Expected Deliverables:

1. LLM Use Case Design Document

- Describe the assistant's capabilities.
- Define the types of queries it should handle.
- Outline the architecture (LLM + tools + data sources).
- Discuss prompt engineering strategies.

2. Prototype or Pseudocode

- Show how the assistant would respond to 2–3 sample queries.
- Include example prompts and expected outputs.
- Optionally, use LangChain, OpenAI, or HuggingFace libraries.

3. Agentic Workflow Design

- Define agents (e.g., Cost Analyzer, Route Planner, Compliance Checker).
- Describe how they interact and make decisions.
- Include a flowchart or pseudocode of the orchestration.

4. Evaluation Strategy

- How would you measure the assistant's performance?
- What metrics (e.g., accuracy, latency, user satisfaction) would you track?

Bonus Challenge (Optional):

Build a simple Streamlit or Gradio app that simulates the assistant's interface. Include a few hardcoded responses to demonstrate functionality.

Evaluation Criteria:

Area	What to Look For
LLM Understanding	Clarity in use case design, prompt engineering
Generative Thinking	Creativity in assistant capabilities
Agentic AI Design	Logical agent orchestration and autonomy
Technical Depth	Use of tools, libraries, and architecture
Communication	Clear documentation and presentation