

Assignment Prompt: Multi-Domain RAG Assistant with Router Chain

Scenario

You are building a **Concierge AI Assistant** for a luxury hotel. This assistant must answer guest questions about:

- **Dining:** Restaurants, menus, opening hours, cuisine
- **Rooms:** Room types, amenities, check-in/out, housekeeping
- **Wellness:** Spa, gym, pool, yoga classes, wellness packages

Your goal is to create a **RAG (Retrieval-Augmented Generation) Application** that can route user questions to the correct domain-specific retriever using a router chain (MultiPromptChain) and respond with an accurate, contextually grounded answer.

Tasks

1. **Prepare Data:**
 - You will create three text files (`dining.txt` , `rooms.txt` , `wellness.txt`) each containing information for the three domains above.
2. **Load and Split Documents:**
 - Load and split each domain’s data using `TextLoader` and `RecursiveCharacterTextSplitter` .
3. **Create Embeddings & Vector Stores:**
 - Generate a FAISS vector store for each domain.
4. **Build Domain-Specific Retrievers:**
 - Set up one retriever per domain.
5. **Implement a Router Chain:**
 - Route questions to the right retriever using a router chain (e.g., `MultiPromptChain`).
6. **Query the System:**
 - Test with at least 2 queries per domain. Print responses.