Since we have already discussed several core concepts of building agents:

* **How to form a chain**
* **How to use tools dynamically** (covered in react\_design\_pattern\_agent\_tool\_selector and article\_writer\_langchain\_llm\_calls\_tools)
* **How to write docstrings for tools**
* **How to use conversational memory in LangChain** (explored in react\_design\_pattern\_agent\_with\_buffer\_memory)
* **How to use RAG and vector databases in different scenarios**:
  + Using a vector DB as a retriever
  + Using Confluence as a retriever
  + Using a vector DB as a knowledge base (instead of calling the LLM every time, we can reuse context from the knowledge base).  
    Examples include: vectordb\_search\_with\_images, react\_pattern\_with\_knowledgebase, rag\_confluence\_example, and rag\_pinecone\_pdf\_demo.

**Homework Task 🎯**

**Design a chat agent** that mimics a simplified version of IRCTC with the following features:

1. **Train booking tool**
   * Fetches train details (source → destination, fares, timings).
2. **Refund policy knowledge base**
   * Store ticket refund FAQs in Pinecone or Chroma.
3. **Tourism guide knowledge base**
   * Store IRCTC tourism documents explaining tourist attractions in different cities in a separate vector DB.
4. **Budget-friendly packages tool**
   * Suggests affordable travel/tourism packages.

**Example Conversations**

**User:** Book a train from Hyderabad to Chennai and also find some budget-friendly attractions in Chennai.  
**Agent Output:** Train details with fares **+** best tourism package for Chennai.

**User (follow-up):** Do you have any better tourism package that covers more sightseeing in that place?  
*(The agent should understand that “that place” = Chennai, because of conversational memory.)*  
**Agent Output:** Suggests an upgraded tourism package with more sightseeing options.

This way, you’ll combine **tools**, **vector DB knowledge bases**, and **conversational buffer memory** into a single agent optimized for real-world travel assistance.