Unit: Advanced databases
Level: M1
Lab: 02

Scenario: TechGadget Global Empire: A Manufacturing Maverick

TechGadget isn't just a leading retailer in the tech world; it's a multifaceted electronics giant. Boasting a thriving online marketplace, TechGadget also showcases physical retail stores in major cities worldwide, from the skyscrapers of New York to the bustling streets of Tokyo. These aren't just stores; they're tech sanctuaries. They provide immersive experiences with the newest gadgets, tech workshops, and direct expertise consultations.

Each TechGadget store is a unique blend of global brand ethos and local sensibilities. While global bestsellers are consistently available, the inventory is tailored to local tech trends and demands. Localized promotions in collaboration with regional tech brands further enhance their community appeal.

To harmonize the online and in-store shopping experiences, TechGadget launched the "Reserve & Collect" service. Customers can explore products online, reserve their selections, and then collect them at a local physical store. This is especially beneficial when previewing online exclusives at select experience centers before purchase.

The TechGadget Cafe, present within each store, is more than just a cafe. It's a meeting point for tech aficionados to converse over artisanal coffee, partake in monthly tech discussions, or enjoy live product unboxing sessions.

However, TechGadget's reach doesn't stop at retail. They've recently forayed into manufacturing, fueled by the ambition to meet the evolving needs of their vast customer base. Recognizing patterns in customer demands, TechGadget established a cutting-edge factory to produce high-demand products under their brand. This state-of-the-art facility harnesses advanced automation and AI-driven quality checks to ensure products that are not only popular but also benchmarked for quality. From concept to prototype to final product, TechGadget now manages the entire product lifecycle, further establishing its footprint in the tech industry.

The global loyalty program encompasses all facets of TechGadget's offerings. Whether you're buying a freshly manufactured TechGadget exclusive phone online, attending an in-store workshop in Paris, or simply sipping coffee at the TechGadget Cafe in Sydney, you're always adding to your loyalty points, ready for global redemption.

Given TechGadget's expansive operations—retail, experiential stores, cafes, and now manufacturing—the intricacies of its underlying database system are vast. It captures diverse product listings, both retail and manufactured, global and regional promotions, user profiles, sales metrics across platforms, manufacturing data like production schedules and quality checks, event calendars for global stores, and the complex layers of their unified loyalty program.

Tasks:
1. **Analyzing the Requirements**:
    a. Identify the main entities in the system.
    b. Determine the attributes for each entity.
    c. Understand the relationships between these entities.
2. **Designing the Database**:
    a. Create the necessary tables based on identified entities.
    b. Define the attributes for each table.
    c. Establish relationships between tables.
3. **Implementing and Testing:**
    a. Insert sample data into the tables.
    b. Run sample queries to test the functionality.