SQL Project1: Online Bookstore Database

Objective

Create and manage a simple **online bookstore database**, covering database structure (DDL), data entry and modification (DML), and writing meaningful queries to extract information.

Part 1: DDL

Create a database called Bookstore with the following tables:

- **Authors** (author_id , name, nationality)
- **Books** (book_id , title, genre, price, author_id FK)
- **Customers** (customer_id , name, email, city)
- **Orders** (order_id , customer_id FK, order_date)
- **OrderDetails** (order_id FK, book_id FK, quantity)

Add constraints: appropriate data types, primary keys, foreign keys, and a **check constraint** to ensure quantity in OrderDetails is always greater than 0.

Part 2: Data Manipulation (DML)

A. Insert Data

Insert sample data:

- At least 3 authors
- At least 5 books
- At least 3 customers
- At least 4 orders with matching OrderDetails.

B. Query Data

Solve the following SQL queries:

- Find the number of different Books available in BookStore.
- List books written by authors from a specific nationality (choose any nationality that is in your sample data).
- Display authors who have written more than 1 book.
- List all books along with the total quantity sold for each book, sorted in descending order of quantity.
    - **Follow up:** can you find the best-selling book (based on quantity) ‘optional’
- Show the total number of books each customer has ordered.

C. Modify Data

- Update the price of a specific book (choose any book).
- Change any customer's city.
- Update the quantity of a book in an order.

D. Delete Data

- Delete a book that hasn’t been ordered by any customer.
- Remove a customer who has no orders.
- Try deleting any author that has already written a book (i.e., author_id is referenced in Books table).
    - Observe what happens.
    - Investigate why the deletion fails (hint: foreign key constraint).
    - Search for possible solutions to this problem.

SQL Project2: Online Grocery Store Database

Objective

Create and manage a simple **Online Grocery Store** database, covering database structure (DDL), data entry and modification (DML), and writing meaningful queries to extract information.

Part 1: Database Design (DDL)

Create a database called GroceryStore with the following tables:

- **Suppliers** (supplier_id , name, contact_email, phone_number)
- **Products** (product_id , name, category, price, supplier_id FK)
- **Customers** (customer_id , name, email, phone_number, address)
- **Orders** (order_id , customer_id FK, order_date)
- **OrderDetails** (order_id FK, product_id FK, quantity)

Add constraints: appropriate data types, primary keys, foreign keys, and a **check constraint** to ensure quantity in OrderDetails is always greater than 0.

Part 2: Data Manipulation (DML)

A. Insert Data

Insert sample data:

- At least 3 suppliers
- At least 5 products
- At least 3 customers
- At least 4 orders with matching OrderDetails

B. Query Data

Solve the following SQL queries:

- Find the number of different Products available in GroceryStore.
- List products supplied by a specific supplier (choose any supplier from your sample data).
- Display suppliers who supply more than 1 product.
- List all products along with the total quantity sold for each product, sorted in descending order of quantity.
    - **Follow up**: can you find the best-selling product (based on quantity)‘optional’
- Show the total number of products each customer has ordered.

C. Modify Data

- Update the price of a specific product (choose any product).
- Change any customer's address (choose any customer).
- Update the quantity of a product in an order.

D. Delete Data

- Delete a product that hasn’t been ordered by any customer.
- Remove a customer who has no orders.
- Try deleting any supplier who still supplies products (i.e., supplier_id is referenced in Products).
    - Observe what happens.
    - Investigate why the deletion fails (hint: foreign key constraint).
    - Search for possible solutions to this problem.