Order Processing System

This project requires the analysis, design, and implementation of a simplified online bookstore system that supports two types of users: Administrators and Customers. The system manages books, publishers, stock levels, orders, sales transactions, shopping carts, and user accounts.

Part 1 (Core System Requirements)

I. Database Relations

The system shall store and manage the following information:

- For each book in the store, the system keeps the book's ISBN number, title, author(s) (a book may have one or more authors), publisher, publication year, selling price, and category.
- The book's category can be one of the following: "Science", "Art", "Religion", "History" and "Geography".
- The system must keep track of the names of publishers, their addresses and telephone numbers.
- Information about book orders (From Publishers) is also maintained.

II. System Operations

Assume that the user of the system (Both **Admins** and **Customers**) can do the following operations. They share some general functionalities; however, admin users have special privileges.

1. **Add New Books (Admin Only)**
   - **a)** To add a new book, the admin enters the properties of the new book along with a threshold (the minimum quantity in stock to be maintained for that book).
   - **b)** New book records must be added with full integrity validation.

2. **Modify Existing Books (Admin Only)**
    a) For updating an existing book, the admin first searches for the book then he does the required update.
    b) For a given book, the admin can update the quantity in stock when a copy or more of the book is sold.
    c) The admin cannot update the quantity of a book if this update will cause the quantity of a book in stock to be negative.
    (hint: trigger before update).

3. **Place orders on books**
    a) The admin can place orders with constant quantity from publishers when the quantity of a book drops from above a given threshold (the minimum quantity in stock) to below the given threshold
    (hint: trigger after update on the books table).
    b) The order quantity is constant (predefined or fixed in the trigger logic).

4. **Confirm Orders (Admin Only)**
    a) The admin can confirm an order when receiving the ordered quantity from the book's publisher.
    b) Upon confirmation, the quantity ordered is automatically added to the book's stock. (Hint: Order status changes to *Confirmed)*.

5. **Search for Books**
    a) The user of the system (Admin or Customer) can search for a book by ISBN, and title.
    b) The user can search for books of a specific Category, author or publisher.
    c) Search should return book details and availability.

6. **System Reports (Admin Only)**
   The admin can generate the following reports:
   a) **The total sales for books in the previous month:** Summarizes all sales that occurred in the month before the current date.
   b) **The total sales for books on a certain day:** The admin inputs a date; the system returns total sales for that date.
   c) **Top 5 Customers (For the Last 3 Months):** Customers ranked by total purchase amount in descending order.
   d) **Top 10 Selling Books (For the Last 3 Months):** Books ranked by the total number of copies sold.
   e) **Total Number of Times a Specific Book Has Been Ordered:** Shows how many times the admin placed orders (replenishment orders) for a particular book.

PART 2 (Customer Account & Online Shopping Features)

Only previously registered users can log in to the system. New customers can sign up for a new customer account by providing the necessary information: username, password, last name, first name, e-mail address, phone number, and shipping address. A registered customer can do the following activities.

1. Edit his personal information including his password.
2. Search for books by any of the book's attributes (Customers may search books using the same criteria available to admin users).
3. Manage his shopping cart. This includes the following:
   - Add books to a shopping cart.
   - View the items in the cart.
   - View the individual and total prices of the books in the cart.
   - Remove items from the cart.

4. Check out a shopping cart:
    - The customer is then required to provide a credit card number and its expiry date. This transaction is completed successfully if the credit card information is appropriate (If the credit card information is valid, the checkout succeeds).
    - The book's quantities in the store are updated according to this transaction (The system should deduct purchased quantities from stock).
5. View past orders:
    - The customer can view all his past orders in detail (order no, order date, books ISBN, books names, total price of the order, etc.)
6. Logout of the system:
    - Doing this will remove all the items in the current cart.

Additional Notes

- All integrity constraints must be preserved using database constraints and triggers.
- The system must be populated with sufficient sample data to fully demonstrate all features (for testing all components and complete system demo). Assume that the system stores book sales and other related data.
- Your project report must include:
    - Implemented features.
    - The ERD diagram.
    - Relational schema.
    - Description of the logic of each user interface screen.
- The project must be developed by groups of **four students**, and each member must clearly identify their contributions (show his role in the project).
- **No late submissions are allowed.**