Library System - SQL Assessment Use Case

Objective:

You are assigned the role of a Database Developer for a small library system. The objective of this task is to test your knowledge of SQL concepts, including table creation, CRUD operations, joins, functions, clauses, and stored procedures.

Instructions:

You are required to perform the following activities:

Step 1: Create Database and Tables

Create a database named `LibraryDB` and within it create the following tables:

1. **Members**:
   - MemberID (INT, Auto Increment, Primary Key)
   - FullName (VARCHAR 100)
   - Email (VARCHAR 100)
   - JoinDate (DATE)

2. **Books**:
   - BookID (INT, Auto Increment, Primary Key)
   - Title (VARCHAR 150)
   - Author (VARCHAR 100)
   - Genre (VARCHAR 50)
   - PublishedYear (INT)

3. **BorrowTransactions**:
   - TransactionID (INT, Auto Increment, Primary Key)
   - MemberID (INT, Foreign Key referencing Members.MemberID)
   - BookID (INT, Foreign Key referencing Books.BookID)
   - BorrowDate (DATE)
   - ReturnDate (DATE)

Step 2: Insert Sample Data

Insert the following records into the respective tables:

Members:
- ('Alice Johnson', 'alice@example.com', '2023-01-10')

- ('Bob Smith', 'bob@example.com', '2023-02-15')

Books:
- ('The Great Gatsby', 'F. Scott Fitzgerald', 'Fiction', 1925)
- ('Clean Code', 'Robert C. Martin', 'Programming', 2008)

BorrowTransactions:
- (1, 1, '2023-03-01', '2023-03-15')
- (2, 2, '2023-03-05', NULL)

Step 3: Create Stored Procedure for the Following Activities

1. **sp_AggregateStats**
   - Count total number of books.
   - Get the most recent member join date.
   - Find the oldest book publication year.

Step 4: Validation & Submission

• Test the stored procedure manually using SQL commands to verify expected outputs.

Launching MySQL Console:

1. **To open the command terminal the test takers need to go to the Application menu**
2. **(Three horizontal lines at left top) -> Terminal -> New Terminal.**
3. **To login to mysql instance: Open new terminal and use following command:**

   a. **sudo systemctl enable mysql**
   b. **sudo systemctl start mysql**

NOTE: After typing any of the above commands you might encounter any warnings. >> Please note that this warning is expected and can be disregarded. Proceed to the next step.

c. **mysql -u root -p**
The last command will ask for password which is 'pass@word1'

Running Test Cases:

1. Launch another instance of Terminal
2. Run command: **mvn test**
3. You can run this command any number of times to test the status of your activities.
4. Make sure before final submission, you must run test and then submit