

Assignment 04

Last updated by | Hashim Javed | Aug 7, 2025 at 6:34 PM GMT+5

SQL Assignment: Library Management

Make a branch by the name "assignment-04" and commit a single file by the name *assignment-04.sql*

Note: Please create a database on Server: CMDLHRDB01 as [name]_[code] e.g., hashim_3174

Entities & Attributes

- Author:
 - AuthorID: primary key
 - AuthorName: max length (100), should not be null
 - DateOfBirth
- Publisher:
 - PublisherID: primary key
 - PublisherName: max length (100), should not be null
 - Address: max length (200)
- Book:
 - BookID: primary key
 - Title: max length (200), should not be null
 - AuthorID: foreign key → Authors(AuthorID)
 - PublisherID: foreign key → Publishers(PublisherID)
 - PublicationDate
 - Price: default should be 0, floating number up to 2 significant figures
 - Genre: max length (500), can be null
 - ISBN CHAR(13), should be unique
- Borrower:
 - BorrowerID: primary key
 - BorrowerName: max length (100), should not be null
 - Email: max length (100), should be unique
 - Phone CHAR(10)
- Loan:
 - LoanID
 - BookID → Books(BookID)
 - BorrowerID → Borrowers(BorrowerID)
 - LoanDate: default value should be current date
 - ReturnDate

Assignment Tasks

1. Write DDL statements to create all tables listed above with their specified constraints.
2. Alter the Borrowers table to enforce that BorrowerName cannot be NULL.
3. Alter the Books table to enforce uniqueness on the ISBN column.

4. Alter the Books table to add a CHECK constraint ensuring Price > 0.
5. Insert three sample records into the Authors table.
6. Insert two sample records into the Publishers table.
7. Insert five sample records into the Books table, ensuring each reference existing authors and publishers.
8. Insert two sample records into the Borrowers table.
9. Insert three sample records into the Loans table, with at least one record having ReturnDate = NULL.
10. Retrieve all books with a price greater than 20.
11. Retrieve the title of each book currently on loan and the name of the borrower.
12. Count the number of books written by each author; display only authors with more than two books.
13. List every book alongside its current borrower's name, showing NULL for books not on loan.
14. List every publisher alongside any books they publish, showing NULL where there is no match.
15. List all unique genres found in the Books table.
16. Retrieve all books with titles starting with "The" or containing "SQL".
17. Retrieve the five most recent loan records, ordered by LoanDate descending.
18. Update the Loans table to set the ReturnDate to the current date for a specific LoanID of your choice.
19. Increase the price of all books published before January 1, 2010 by 10%.
20. Delete all borrowers who have never made a loan.
21. Delete all books priced less than 5.
22. Remove the Address column from the Publishers table.
23. Drop the entire Loans table.
24. Insert a new loan record without specifying LoanDate so that the default value is used.
25. Create a new table named BookCategories with columns BookID and Category; use a composite primary key (BookID, Category) and a foreign key referencing Books.
26. For each borrower, count how many loans they have made and order the results by that count descending.
27. Update any book records with a NULL genre to set the genre to "Unknown".
28. Delete all loan records where LoanDate is more than one year old.
29. Given a table LoanInfo(LoanID, BookTitle, BorrowerName, BorrowerAddress, LoanDate): identify violations of 1NF, 2NF, and 3NF, then decompose it into tables that satisfy 3NF with appropriate keys.