**Assignment 4**: Write SQL statements to CREATE a new database and tables that

reflect the library schema you designed earlier. Use ALTER statements to modify the

table structures and DROP statements to remove a redundant table.

let's assume a simple library schema with tables for **'Books', 'Authors', 'Members'**, and **'Loans'**. Here's how you can create these tables using SQL:

-- Create a new database

CREATE DATABASE LibraryDatabase;

-- Use the newly created database

USE LibraryDatabase;

-- Create Authors table

CREATE TABLE Authors (

AuthorID INT PRIMARY KEY AUTO\_INCREMENT,

AuthorName VARCHAR(100) NOT NULL

);

-- Create Books table

CREATE TABLE Books (

BookID INT PRIMARY KEY AUTO\_INCREMENT,

Title VARCHAR(255) NOT NULL,

AuthorID INT,

ISBN VARCHAR(20),

PublishedDate DATE,

FOREIGN KEY (AuthorID) REFERENCES Authors(AuthorID)

);

-- Create Members table

CREATE TABLE Members (

MemberID INT PRIMARY KEY AUTO\_INCREMENT,

FirstName VARCHAR(100) NOT NULL,

LastName VARCHAR(100) NOT NULL,

Email VARCHAR(100),

Address VARCHAR(255)

);

-- Create Loans table

CREATE TABLE Loans (

LoanID INT PRIMARY KEY AUTO\_INCREMENT,

BookID INT,

MemberID INT,

LoanDate DATE,

DueDate DATE,

ReturnedDate DATE,

FOREIGN KEY (BookID) REFERENCES Books(BookID),

FOREIGN KEY (MemberID) REFERENCES Members(MemberID)

);

Now, let's assume you want to modify one of the tables, for example, add a new column:

-- Alter table to add a new column

ALTER TABLE Books

ADD QuantityAvailable INT DEFAULT 0;

Next, let's say you want to drop a table that is no longer needed, for instance, if you decide to remove the Authors table (assuming all books are linked directly to Books table and not through Authors):

-- Drop Authors table

DROP TABLE Authors;

Sure, let's assume a simple library schema with tables for **`Books`, `Authors`, `Members`**, and **`Loans`**. Here's how you can create these tables using SQL:

-- Create a new database

CREATE DATABASE LibraryDatabase;

-- Use the newly created database

USE LibraryDatabase;

-- Create Authors table

CREATE TABLE Authors (

AuthorID INT PRIMARY KEY AUTO\_INCREMENT,

AuthorName VARCHAR(100) NOT NULL

);

-- Create Books table

CREATE TABLE Books (

BookID INT PRIMARY KEY AUTO\_INCREMENT,

Title VARCHAR(255) NOT NULL,

AuthorID INT,

ISBN VARCHAR(20),

PublishedDate DATE,

FOREIGN KEY (AuthorID) REFERENCES Authors(AuthorID)

);

-- Create Members table

CREATE TABLE Members (

MemberID INT PRIMARY KEY AUTO\_INCREMENT,

FirstName VARCHAR(100) NOT NULL,

LastName VARCHAR(100) NOT NULL,

Email VARCHAR(100),

Address VARCHAR(255)

);

-- Create Loans table

CREATE TABLE Loans (

LoanID INT PRIMARY KEY AUTO\_INCREMENT,

BookID INT,

MemberID INT,

LoanDate DATE,

DueDate DATE,

ReturnedDate DATE,

FOREIGN KEY (BookID) REFERENCES Books(BookID),

FOREIGN KEY (MemberID) REFERENCES Members(MemberID)

);

Now, let's assume you want to modify one of the tables, for example, add a new column:

-- Alter table to add a new column

ALTER TABLE Books

ADD QuantityAvailable INT DEFAULT 0;

Next, let's say you want to drop a table that is no longer needed, for instance, if you decide to remove the `Authors` table (assuming all books are linked directly to `Books` table and not through `Authors`):

-- Drop Authors table

DROP TABLE Authors;

Remember, altering or dropping tables should be done carefully, especially in production environments, to avoid data loss or disruption of services. Always make sure to have backups and proper testing procedures in place before making structural changes to databases.