**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.**

**Create the Database**

CREATE DATABASE LibrarySystem;

USE LibrarySystem;

**Create the Books table**

CREATE TABLE Books (

book\_id INT PRIMARY KEY AUTO\_INCREMENT,

title VARCHAR(255) NOT NULL,

isbn VARCHAR(13) UNIQUE NOT NULL,

publish\_year INT CHECK (publish\_year > 0),

genre VARCHAR(100),

available\_copies INT NOT NULL CHECK (available\_copies >= 0));

**Create the Authors table**

CREATE TABLE Authors (

author\_id INT PRIMARY KEY AUTO\_INCREMENT,

first\_name VARCHAR(100) NOT NULL,

last\_name VARCHAR(100) NOT NULL,

birth\_date DATE,

UNIQUE (first\_name, last\_name));

**Create the Members table**

CREATE TABLE Members (

member\_id INT PRIMARY KEY AUTO\_INCREMENT,

first\_name VARCHAR(100) NOT NULL,

last\_name VARCHAR(100) NOT NULL,

email VARCHAR(255) UNIQUE NOT NULL,

join\_date DATE NOT NULL,

CHECK (email LIKE '**%@%**'));

**Create the BorrowRecords table**

CREATE TABLE BorrowRecords (

borrow\_id INT PRIMARY KEY AUTO\_INCREMENT,

member\_id INT NOT NULL,

book\_id INT NOT NULL,

borrow\_date DATE NOT NULL,

return\_date DATE,

FOREIGN KEY (member\_id) REFERENCES Members(member\_id),

FOREIGN KEY (book\_id) REFERENCES Books(book\_id),

CHECK (borrow\_date <= return\_date OR return\_date IS NULL));

**Create the BookAuthors table**

CREATE TABLE BookAuthors (

book\_id INT NOT NULL,

author\_id INT NOT NULL,

PRIMARY KEY (book\_id, author\_id),

FOREIGN KEY (book\_id) REFERENCES Books(book\_id),

FOREIGN KEY (author\_id) REFERENCES Authors(author\_id));

**Alter the Books table to add a new column**

ALTER TABLE Books

ADD COLUMN publisher VARCHAR(255);

**Alter the Books table to modify the data type of publish\_year**

ALTER TABLE Books

MODIFY COLUMN publish\_year SMALLINT CHECK (publish\_year > 0);

**Drop a redundant table if it exists**

DROP TABLE IF EXISTS Publishers;

This script creates the necessary tables with constraints and relationships, alters the Books table to add and modify columns, and drops a redundant table.