Assignment 2: Design a database schema for a library system, including tables, fields, and constraints like NOT NULL, UNIQUE, and CHECK. Include primary and foreign keys to establish relationships between tables.

Solution:-

Tables:

Authors:

Fields: AuthorID (Primary Key), Name, Nationality.
Constraints: NOT NULL for Name, Nationality. UNIQUE for AuthorID.

Books:

Fields: BookID (Primary Key), Title, AuthorID (Foreign Key), ISBN, PublicationYear.
Constraints: NOT NULL for Title, AuthorID, ISBN, PublicationYear. UNIQUE for BookID, ISBN.

Students:

Fields: StudentID (Primary Key), Name, Email, Address.
Constraints: NOT NULL for Name, Email, Address. UNIQUE for StudentID, Email.

Borrowings:

Fields: BorrowingID (Primary Key), BookID (Foreign Key), StudentID (Foreign Key), BorrowDate, DueDate.
Constraints: NOT NULL for BookID, StudentID, BorrowDate, DueDate.

Foreign Key Relationships:

Books.AuthorID references Authors.AuthorID.
Borrowings.BookID references Books.BookID.
Borrowings.StudentID references Students.StudentID.

-- Create Authors table

CREATE TABLE Authors (
    AuthorID INT PRIMARY KEY,
    Name VARCHAR(100) NOT NULL,
    Nationality VARCHAR(100) NOT NULL);

-- Create Books table

CREATE TABLE Books (
    BookID INT PRIMARY KEY,
    Title VARCHAR(255) NOT NULL,
    AuthorID INT NOT NULL,

```sql
    ISBN VARCHAR(13) NOT NULL UNIQUE,
    PublicationYear INT NOT NULL,
    FOREIGN KEY (AuthorID) REFERENCES Authors(AuthorID));

-- Create Students table

CREATE TABLE Students (
    StudentID INT PRIMARY KEY,
    Name VARCHAR(100) NOT NULL,
    Email VARCHAR(100) NOT NULL UNIQUE,
    Address VARCHAR(255) NOT NULL);

-- Create Borrowings table

CREATE TABLE Borrowings (
    BorrowingID INT PRIMARY KEY,
    BookID INT NOT NULL,
    StudentID INT NOT NULL,
    BorrowDate DATE NOT NULL,
    DueDate DATE NOT NULL,
    FOREIGN KEY (BookID) REFERENCES Books(BookID),
    FOREIGN KEY (StudentID) REFERENCES Students(StudentID));
```

This schema allows for managing authors, books, students, and borrowings in a library system. Each borrowing entry contains information about the book, the student who borrowed it, and the borrowing and due dates.