-- Library Management System Database

-- MySQL Database Schema

CREATE DATABASE IF NOT EXISTS library\_management;

USE library\_management;

-- User Table

CREATE TABLE User (

UserID INT AUTO\_INCREMENT PRIMARY KEY,

Name VARCHAR(100) NOT NULL,

Email VARCHAR(100) UNIQUE NOT NULL,

Password VARCHAR(255) NOT NULL,

Role ENUM('Admin', 'Student', 'Faculty') NOT NULL,

CreatedAt TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

-- Librarian Table

CREATE TABLE Librarian (

LibrarianID INT AUTO\_INCREMENT PRIMARY KEY,

Name VARCHAR(100) NOT NULL,

Email VARCHAR(100) UNIQUE NOT NULL,

Phone VARCHAR(15),

ShiftTime VARCHAR(50),

Password VARCHAR(255) NOT NULL,

CreatedAt TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

-- Book Table

CREATE TABLE Book (

BookID INT AUTO\_INCREMENT PRIMARY KEY,

Title VARCHAR(200) NOT NULL,

Author VARCHAR(100) NOT NULL,

ISBN VARCHAR(20) UNIQUE,

Category VARCHAR(50),

Status ENUM('Available', 'Issued') DEFAULT 'Available',

AddedAt TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

-- Transaction Table

CREATE TABLE Transaction (

TransactionID INT AUTO\_INCREMENT PRIMARY KEY,

UserID INT,

BookID INT,

LibrarianID INT,

IssueDate DATE NOT NULL,

DueDate DATE NOT NULL,

ReturnDate DATE NULL,

Fine DECIMAL(10,2) DEFAULT 0.00,

Status ENUM('Issued', 'Returned') DEFAULT 'Issued',

CreatedAt TIMESTAMP DEFAULT CURRENT\_TIMESTAMP,

FOREIGN KEY (UserID) REFERENCES User(UserID) ON DELETE CASCADE,

FOREIGN KEY (BookID) REFERENCES Book(BookID) ON DELETE CASCADE,

FOREIGN KEY (LibrarianID) REFERENCES Librarian(LibrarianID) ON DELETE SET NULL

);

-- Insert Sample Data

-- Insert Admin User

INSERT INTO User (Name, Email, Password, Role) VALUES

('Admin User', 'admin@library.com', MD5('admin123'), 'Admin');

-- Insert Sample Librarian

INSERT INTO Librarian (Name, Email, Phone, ShiftTime, Password) VALUES

('John Doe', 'librarian@library.com', '123-456-7890', 'Morning (9AM-5PM)', MD5('librarian123'));

-- Insert Sample Students

INSERT INTO User (Name, Email, Password, Role) VALUES

('Majid Khan', 'majid@student.com', MD5('student123'), 'Student'),

('Khuzaima Fariq', 'khuzaima@student.com', MD5('student123'), 'Student'),

('Waleed Babar', 'waleed@student.com', MD5('student123'), 'Student');

-- Insert Sample Books

INSERT INTO Book (Title, Author, ISBN, Category) VALUES

('Database Systems Concepts', 'Abraham Silberschatz', '978-0073523323', 'Computer Science'),

('Introduction to Algorithms', 'Thomas H. Cormen', '978-0262033848', 'Computer Science'),

('Clean Code', 'Robert C. Martin', '978-0132350884', 'Programming'),

('Design Patterns', 'Gang of Four', '978-0201633612', 'Software Engineering'),

('The Great Gatsby', 'F. Scott Fitzgerald', '978-0743273565', 'Literature');

-- Create indexes for better performance

CREATE INDEX idx\_user\_email ON User(Email);

CREATE INDEX idx\_book\_status ON Book(Status);

CREATE INDEX idx\_transaction\_status ON Transaction(Status);

CREATE INDEX idx\_transaction\_dates ON Transaction(IssueDate, DueDate, ReturnDate);