Task 1: Database Setup and Schema Design

Objective & Tools

Objective:

Learn to create databases, tables, and define relationships.

Tools: MySQL Workbench / pgAdmin / SQLiteStudio

Project Overview

Sample Project: Library Management System

Entities (Tables):

1. Books
2. Authors
3. Members
4. Loans

SQL Script

SQL Script:

```
CREATE DATABASE LibraryDB;
USE LibraryDB;

-- Table: Authors
CREATE TABLE Authors (
    AuthorID INT PRIMARY KEY AUTO_INCREMENT,
    Name VARCHAR(100) NOT NULL,
    Bio TEXT
);

-- Table: Books
```

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```
CREATE TABLE Books (
    BookID INT PRIMARY KEY AUTO_INCREMENT,
    Title VARCHAR(150) NOT NULL,
    Genre VARCHAR(50),
    AuthorID INT,
    PublishedYear YEAR,
    FOREIGN KEY (AuthorID) REFERENCES Authors(AuthorID)
);

-- Table: Members
CREATE TABLE Members (
    MemberID INT PRIMARY KEY AUTO_INCREMENT,
    FullName VARCHAR(100) NOT NULL,
    Email VARCHAR(100) UNIQUE NOT NULL,
    MembershipDate DATE DEFAULT CURRENT_DATE
);

-- Table: Loans
CREATE TABLE Loans (
    LoanID INT PRIMARY KEY AUTO_INCREMENT,
    BookID INT,
    MemberID INT,
    LoanDate DATE NOT NULL,
    ReturnDate DATE,
    FOREIGN KEY (BookID) REFERENCES Books(BookID),
    FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
);
```

ER Diagram Overview

ER Diagram (Textual Description):

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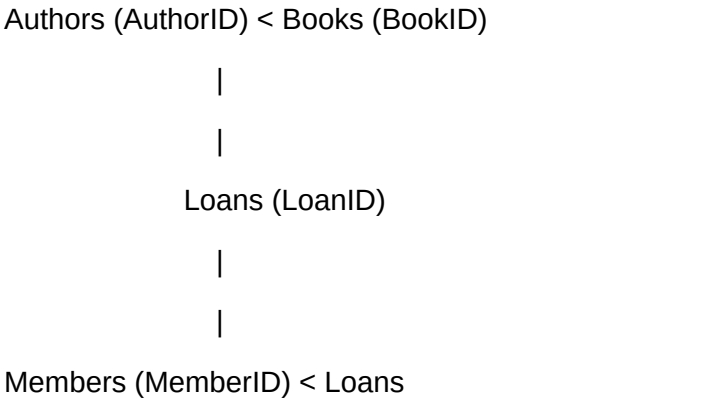

Relationships:

- Authors < Books (One-to-Many)
- Books < Loans > Members (Many-to-Many via Loans)