Tutorial: Building a Library Management System in Microsoft Access

You will see a link to a LinkedIn Learning course in the Assessments area of the module. This is worth 5% of the module and will help you with your coursework. The deadline for this is the same as the coursework, which will be near the end of the module. This will be confirmed when the coursework is released in Week 4.

It will also be of assistance for this tutorial.

Some of the later tasks are not straightforward and will require research. I will be doing this example in its entirety in the Week 3 lecture.

I have also provided you with a worked solution `Library.accdb` **to use as a reference as you implement your solution.**

Introduction

In this tutorial, you will create a database for a small library using Microsoft Access. The database will manage books, copies, members, and loans, and will include forms for data entry.

Scenario

You are tasked with creating a database for a small library. The library has a collection of books, each book can have multiple copies, and each copy can be borrowed by library members. Each member can borrow multiple books.

Entities, Tasks and Sample Data are found on the following pages:

Entities

1. Books

   - BookID
   - Title
   - Author
   - Genre
   - PublicationYear

2. Copies

   - CopyID
   - BookID
   - Condition
   - Borrowed (Yes, No)

3. Members

   - MemberID
   - Name
   - Email
   - PhoneNumber
   - Address

4. Loans

   - LoanID
   - CopyID
   - MemberID
   - BorrowDate
   - ReturnDate

Tasks

1. **Identify Relationships**

   - Identify and define primary and foreign keys for each table.
   - What are the relationships between the tables? (one-to-one, one-to-many, many-to-many).

2. **Entity Relationship Diagram**

   - Draw an Entity Relationship Diagram based on these relationships and use the correct lines (or notation)

3. **Create Tables:**

   - Create tables for Books, Copies, Members, and Loans with appropriate fields and relations between these tables.

4. **Populate Tables:**

   - Using the sample data provided below, populate the Books, Copies, Loans and Members tables.

5. **Create Forms:**

   - Design forms for entering new Books, Copies, Members, and Loans.
   - Include appropriate data validation in forms. (Optional)
   - Creating forms for Loans is quite difficult and will be the subject of the next lecture.

6. **Test Functionality:**

   - Test the database by entering new records through the forms.
   - Ensure that all relationships between tables are working correctly.

7. **Extend**

   - Add in a Genres table and amend the Books table appropriately so that a book has a given Genre from the Genres table.
   - What sort of relationship is this?

8. **Additional Features (Optional):**

   - Implement search functionality.
   - Create reports.

Sample Data

Books

BookID	Title	Author	Genre	Publication Year
1	To Kill a Mockingbird	Harper Lee	Fiction	1960
2	1984	George Orwell	Dystopian	1949
3	Pride and Prejudice	Jane Austen	Romance	1813
4	The Great Gatsby	F. Scott	Fiction	1925
5	The Catcher in the Rye	J.D. Salinger	Fiction	1951

Copies

CopyID	BookID	Condition	Borrowed
1	1	Good	No
2	1	Fair	No
3	2	Good	No
4	3	Good	Yes
5	4	Fair	No
6	4	Fair	Yes
7	5	Good	No

Members

MemberID	Name	Email	Phone Number	Address
1	John Doe	john.doe@example.com	1234567890	123 Main St, Anytown
2	Jane Smith	jane.smith@example.com	9876543210	456 Elm St, Otherville
3	Alice Johnson	alice.j@example.com	5551234567	789 Oak St, AnotherCity

Loans

LoanID	CopyID	MemberID	Borrow Date	Return Date
1	4	1	2023-01-15	2023-02-10
2	6	2	2023-02-01	2023-03-01
3	7	3	2023-03-15	