

# DBI Lab 003 - ER Diagrams and SQL

COMP1048 - Databases and Interfaces

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## Lab Overview

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Today we will practice generating ER diagrams from a written problem description. You will then realise you ER diagram in SQLite using SQL.

Review the problem description below.

## Problem Description

A film house wants to create a database to store the details of its collections. Information to be stored about each movie includes their price, title, year and genre. Each movie will have a leading actor, and each leading actor may appear in several movies. Actors have names associated with them, and it should be possible to search the database with the actor's name.

## Exercise 1

1. Identify the entities, attributes, relationships and cardinality ratios from the problem description above.
2. Complete the E/R diagram with the additional information you have identified from the problem description.

**Note** - A specific software or approach to develop your ER diagrams has not been specified. Find a free software tool you like or, alternatively, use pen and paper.

## Exercise 2

1. Create tables to represent your whole database design. You should have a table for every entity, and a foreign key for every relationship.

**Note** - You do not need to worry about referential integrity for this exercise.

## Submission

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Please submit a PDF document containing your solutions to the above tasks. For Exercise 1, include the ER diagram you generated. For Exercise 2, include all the SQL code used to represent your tables in the database.

Submitting this assignment will contribute 2% to your overall Module grade. Your submission should demonstrate reasonable effort and fulfil the specified requirements set out in this lab sheet in order to receive the full marks.

There is no granularity to the marking, the marking is on a pass-or-fail basis.

This assignment will also serve as a part of your attendance registration for this week. Registration is reported to Faculty office on a weekly basis. The submission point is available on Moodle.

**Submission Deadline** - Friday, 29 October 2021 @ 17:00

## Tip

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### Creating SQL Tables

We're going to be using **SQLite** as our DBMS. If you have completed lab 1, this should be installed and running on your personal computer.

To start SQLite, type the following in your terminal:

```
sqlite3 FilmHouse.sqlite
```

This will create a file name **FilmHouse.sqlite** in the directory where you ran the **sqlite3** command. All future commands run during this sqlite session will take effect on the data stored in **FilmHouse.sqlite**.

Alternatively, if you are already running the **sqlite3** executable, you can use the **.open** dot command built into **sqlite3**:

```
sqlite> .open MyDBFile.db
```

**Do not type **sqlite>**** when entering your command. This simply indicates that you are currently executing the command within **sqlite3**.

For a complete list of the available dot commands in **sqlite3**, use the **.help** command:

```
sqlite> .help
.auth ON|OFF          Show authorizer callbacks
.backup ?DB? FILE     Backup DB (default "main") to FILE
.bail on|off          Stop after hitting an error. Default OFF
.binary on|off        Turn binary output on or off. Default OFF
.cd DIRECTORY         Change the working directory to DIRECTORY
.changes on|off       Show number of rows changed by SQL
.check GLOB           Fail if output since .testcase does not match
.clone NEWDB          Clone data into NEWDB from the existing database
.databases            List names and files of attached databases
.dbconfig ?op? ?val?  List or change sqlite3_db_config() options
.dbinfo ?DB?         Show status information about the database
.dump ?TABLE?        Render database content as SQL
```

```
.echo on|off          Turn command echo on or off
.eqp on|off|full|...  Enable or disable automatic EXPLAIN QUERY PLAN

.... Truncated Output - Many more commands ....
```