The Lending Library's Database

pluralsight
hardcore developer training

Lesson Objectives

In this lesson we will:

- Design a simple database schema for our lending library
- Create the database
- Populate with sample data
- Develop and run some useful SQL queries

A Reminder of the Requirements

- **Our lending library needs a web site so that:**
  - Users ('borrowers") can browse the available books
  - Librarians can perform administrative tasks:
    - Check a book out to a borrower
    - Check a book back in
    - Add a new book
    - Add a new borrower

- **A database is needed to store information on the books and the borrowers**

Database Schema

books table

bookid	title	author	onloan	duedate	borrowerid
1	Harry Potter and the Goblet of Fire	J. K. Rowling	0	NULL	NULL
2	Harry Potter and the Half-Blood Prince	J.K. Rowling	0	NULL	NULL
3	Wind in the Willows	Kenneth Grahame	0	NULL	NULL
4	Great Expectations	Charles Dickens	0	NULL	NULL
5	A Christmas Carol	Charles Dickens	1	2013-10-22	102
6	Knots and Crosses	Ian Rankin	1	2013-10-26	103
7	The Hanging Garden	Ian Rankin	0	NULL	NULL
8	Othello	William Shakespeare	0	NULL	NULL
9	Twelfth Night	Willliam Shakespeare	0	NULL	NULL
10	Macbeth	William Shakespeare	1	2013-10-28	100

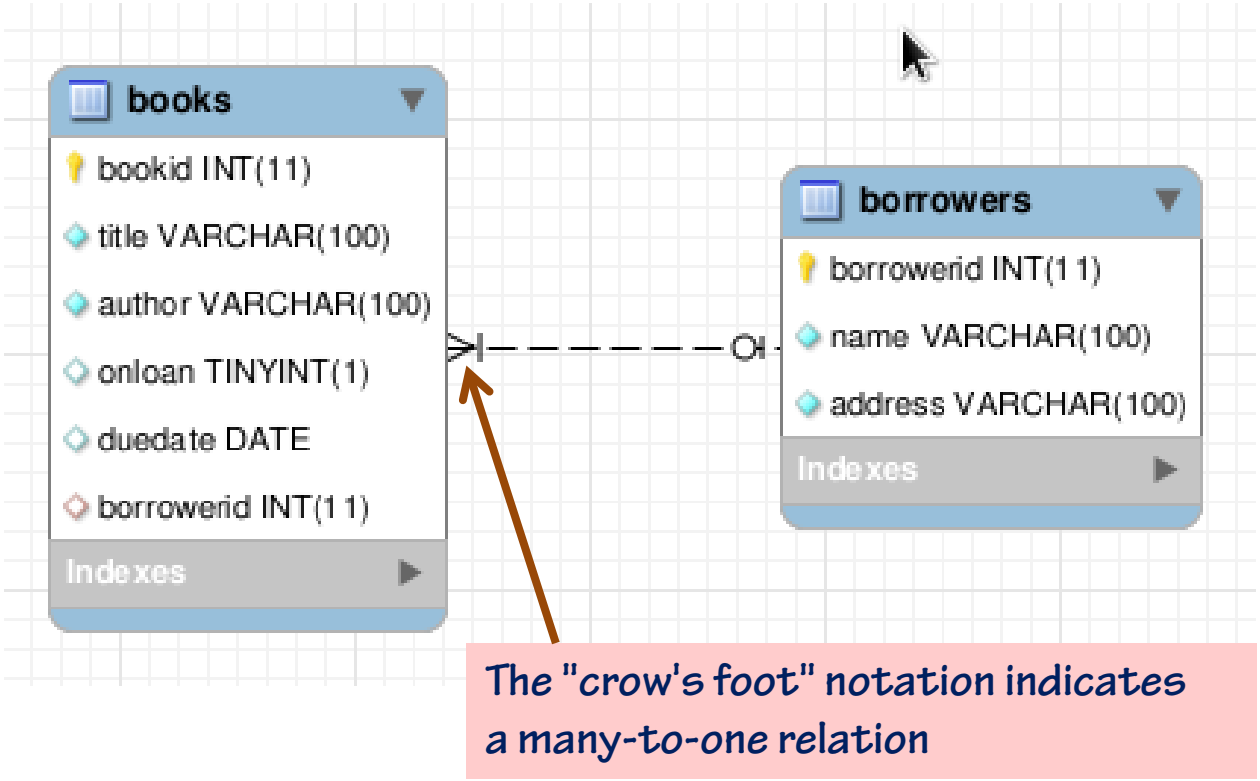
Primary key

borrowerid	name	address
100	Homer Simpson	742 Evergreen Terrace, Springfield
101	John Doe	54 High Street, Bagshot
102	Jane Smith	5 Church Lane, Hambridge
103	Henry Higgins	14 Mayfair

borrowers table

Viewing the Schema

- Here, we see the result of using MySQL Workbench to "reverse engineer" the database schema to produce an Entity Relationship Diagram:



Creating the Books Table

- Here's the SQL command to create the books table

```
create table books
(  bookid int not null primary key auto_increment,
   title varchar(100) not null,
   author varchar(100) not null,
   onloan boolean,
   duedate date,
   borrowerid int,
   foreign key (borrowerid) references borrowers(borrowerid)
) engine = innodb;
```

Creating the Borrowers Table

- Here's the SQL command to create the `borrowers` table

```
create table borrowers
(  borrowerid int not null primary key auto_increment,
   name varchar(100) not null,
   address varchar(100) not null
) engine = innodb;
```

Populating the database

Populating the Borrowers Table

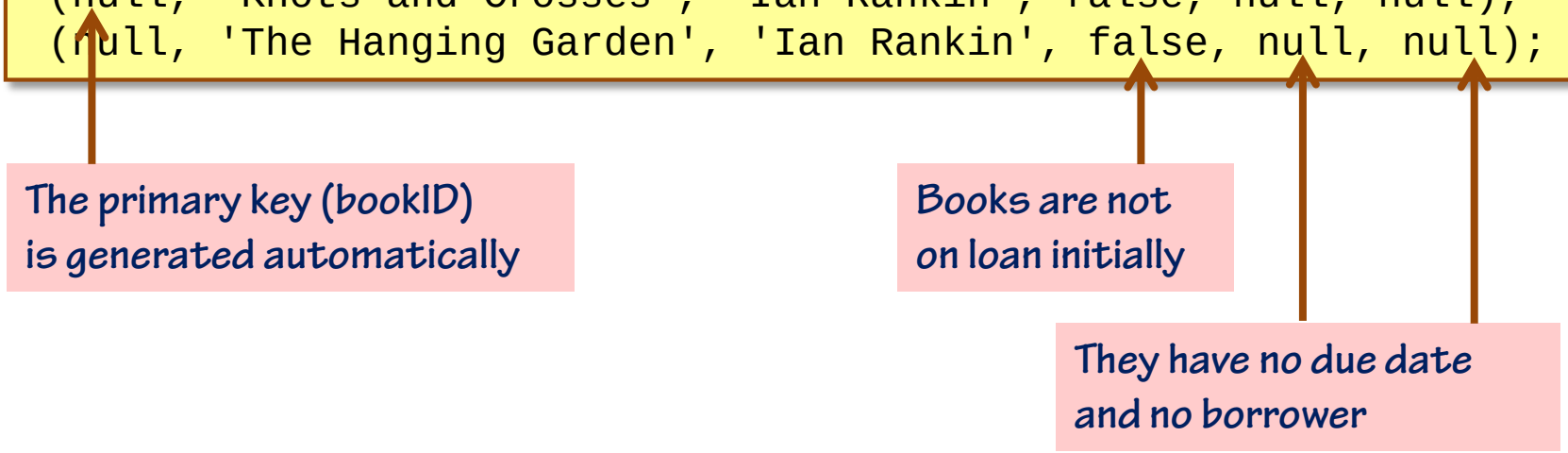
- To demonstrate the database we'll populate it with some sample data

```
insert into borrowers values
  (100, 'Homer Simpson', '742 Evergreen Terrace, Springfield'),
  (101, 'John Doe', '54 High Street, Bagshot'),
  (102, 'Jane Smith', '5 Church Lane, Hambridge'),
  (103, 'Henry Higgins', '14 Mayfair');
```


Here, we have specified the borrower ID explicitly

Populating the Books Table

```
insert into books values
 (null, 'Dodger', 'Terry Pratchett', false, null, null),
 (null, 'Dune', 'Frank Herbert', false, null, null);
 (null, 'The Lost Continent', 'Bill Bryson', false, null, null),
 (null, 'Knots and Crosses', 'Ian Rankin', false, null, null),
 (null, 'The Hanging Garden', 'Ian Rankin', false, null, null);
```



Demonstration:
Creating and Populating the Database

Demonstration:
Querying and updating the database

Lesson Summary

- **We have designed and implemented a simple database for our library**
- **Using a pre-prepared script, we've created the database and populated it with some sample data**
- **We have developed and run some sample SQL queries and updates on the database**

Coming up in Lesson 5:

Accessing the Database from PHP