**JDBC Exercises**

1. List books application
   b. If there is no book in the database that matches, print out a suitable message.

2. SQL Injection
   **Warning**
   Hacking into or causing damage to computers or systems that do not belong to you is a serious criminal offense. Any attempt to submit SQL injection attack arguments to systems or web sites other than your own is unethical and can lead to your criminal prosecution. The purpose of this exercise is purely educational so that you learn how to avoid building such vulnerabilities into code that you write.
   a. Modify your previous program so that it is susceptible to SQL Injection attacks (use `String` concatenation, without any filtering, and `Statement` instead of `PreparedStatement` to construct the query).
   b. Add a dummy table to your database: e.g. execute the SQL command

```
CREATE TABLE inject (col integer);
```

Construct an argument to your program that will cause the `inject` table to be dropped and test the program with that argument.

c. Recreate the `inject` table, modify the program to use `PreparedStatement` instead of `Statement` and check that now the SQL injection attack fails.

3. Test exceptions
   a. Write a console application that, inside a single transaction, creates a new book, adds it to the database, queries the database and prints out a list of all the books, then adds a second new book and again queries the database and prints out the list of all the books.
   b. Test your program by checking the contents of the database, running your program, and checking the database contents again.
   c. Now modify your program to throw an exception **after** the first book has been added to the database and the first list of books has been printed but **before** the second book has been added.
   d. Check, when you run the program, that it prints out that the first book was added. Check also, that after the program has completed, neither the first nor the second book appears in the database.

4. Add books to an order application
a. Write a console application that takes two String arguments from the command line: a customer email address to identify a Customer, and a book ISBN to identify a Book.
b. It should check that the customer exists in the database and that a book with the given ISBN exists in the database and exit with an error message otherwise.
c. If there is no open order for that customer (i.e. an order for that customer where the orderStatus is 'open') then a new open order is created and the book that matches the book ISBN should be added to the open order with a quantity of 1 and a NULL charge (charge is only set when the order is closed).
d. If there is an open order for that customer but the order does not contain any copies of this book, then the book that matches the book ISBN should be added to the open order with a quantity of 1 and a NULL charge.
e. If there was an open order for that customer which already contains any copies of this book, then the quantity for this book should be incremented by 1.
f. Print to System.out a listing of the customer's details and the customer's open order.