

University of Exeter

College of Engineering, Mathematics and Physical Sciences

ECM2419 - Database Theory and Design

Course Work

Library Database Design & Implementation

Hand-in Date: Friday 24 November 2017 by 12.00noon
Submission: Electronic

This course work comprises 20% of the overall module assessment. This is an **individual** exercise, and your attention is drawn to Taught Faculty's guidelines on Cheating and Plagiarism¹.

¹ <http://as.exeter.ac.uk/support/admin/taught/studying-rulesandregulations/academicmisconduct/>

PROBLEM STATEMENT

This coursework is about designing and implementing a Library Database. Your designed database should at least cover the queries listed in the table below. Beside them, you may add any reasonable assumptions which you think is appropriate for a Library database.

WHAT YOU SHOULD SUBMIT

Please submit your coursework in both electronic version to empslocal.ex.ac.uk/submit and paper (BART) format.

- In the paper version, please print the report, together with the three SQL files as appendixes.
- In the electronic version, choose 2017-11-24~ECM2419~Hongping Cai~Database when submitting. Please put the files into one folder with name 'ECM2419/', and compress it into a zip file for submission. Inside the folder, four (or five) files should be included.

File name	Requirement	Marks
Library_design.pdf	<p>Write a report explaining both the requirements and your design of the Library database system. It mainly consists of three parts.</p> <p>A. User requirement specification*. You should analyse the database requirements (the basic requirement stated below and any other requirement from your reasonable assumption).</p> <p>B. Conceptual model design. The Entity-Relationship Diagram should comply fully with the requirements you derived during the analysis stage. Add attributes to each entity or relationship, according to your understanding of Library database. State any assumptions necessary to support your design.</p> <p>C. Logical model design. Transform the above ER diagram into a relational model.</p> <p>The report should fully justify your choice of entities, relationships and entity attributes, primary keys, the cardinality of relationships in your design.</p> <p>Writing skills such as language, spelling, grammar and presentation will also be assessed.</p>	50 A – 15 B – 20 C – 15
Library_init.sql	<p>Write an SQL file that will create all of the tables in the database, and populate it with sufficient data to demonstrate your solutions to the queries below. You may make up any data that you see fit for this purpose.</p> <p>At the beginning of each SQL file, use a comment <code>/* */</code> to tell which RDBMS (e.g., Oracle, MySQL, SQL Lite, ...) you use to run the codes.</p>	15

Library_query.sql	<p>Write an SQL file that will do the following queries:</p> <ul style="list-style-type: none"> A. How many copies of the books from author George Orwell are owned by each library branch? B. How many copies of the book titled <i>The Lost Tribe</i> are available by the branch St Tomas Library? C. Retrieve the names of all borrowers who haven't borrowed any book since 01-Jan-2017. D. For each book that is loaned out from the St Tomas Library branch and whose due date is today, retrieve the book title, the borrower's name and the borrower's email address. E. Which loaned books of Mr. Ian Cooper are overdue? List the book title, borrowed date, due date. How much fine does Mr. Ian Cooper owe in total? 	20
Library_update.sql	<p>Write an SQL file that will do the following:</p> <ul style="list-style-type: none"> A. Mr. Ian Cooper returned one book titled <i>Pride and Prejudice</i> today. B. Mr Ian Cooper borrowed the novel <i>Animal Farm</i> from St Tomas Library today. C. Add a new book, with 2 copies, one stored in St Tomas Library, one stored in Exeter Library. D. As one copy of the book <i>The Lost Tribe</i> in St Tomas Library is damaged, remove its record from the system. E. As Mr. Ian Cooper has paid for his fine, update his fine to 0. 	15
Library_run_sql.avi (Optional)	<p>You are free to choose any DBMS to implement the above coding. To avoid the situation that your codes are not able to run on my computer (with Oracle) during marking, you may (or may not) capture a screen video** to demonstrate how the three SQL files have been run on your own computer (with your choice of DBMS).</p>	0

* User requirement specification is the preliminary stage to database design. You may self-read Chapter 10 'Fact-Finding Techniques' to learn techniques for gathering information, though this coursework is a much simpler case. And in Appendix A, Appendix B, there list a few good examples of documenting user requirements for your reference.

** You may search online 'screen recording software'. There are many choices for it.

End of Assignment