MONASH University

FACULTY OF INFORMATION TECHNOLOGY

FIT3171 Databases

Assignment 1 - Conceptual

ReadMore Community Library (RCL)

Purpose	**Given the provided case study, students are asked to transform the information provided in the case study into a full conceptual model as the first step towards a database design. This task covers learning outcomes:** **1. Apply the theories of the relational database model.** **2. Develop a sound relational database design.**
Your task	**This is an open-book group task (students will work in groups of two or three, with members selected randomly). The final output for this task will be a PDF document of a conceptual model as the first step towards a relational database design in Assignment 1 - Logical.**
Value	**10** % of your total marks for the unit
Due Dates	**Task Submission: Week 5 - Wed, 21st August 2024, 4:30 pm** **Self and Group Evaluation (Feedback Fruit): Wed, 28th August 2024, 4:30 pm** **Note:** **1. Short extension is unavailable for group assessment** **2. Staff support is unavailable after business hours**
Submission	● Via Moodle Assignment Submission. ● **FIT GitLab check-ins will be used to assess the history of development**
Assessment Criteria	● **Identification of the entities that support the case study.** ● **Identification and placement of attributes to support the case study.** ● **Determination of relationships that support the case study.** ● **Consistent use of industry-standard notation and convention**
Late Penalties	● 5% of the marks available for the task (-4 marks) deduction per calendar day or part thereof for up to one week ● Submissions over 7 calendar days after the due date will receive a mark of zero (0), and no assessment feedback will be provided. ● 0 marks for the peer evaluation component (see marking guide) if the Self and Group Evaluation is not completed by the due date (**no late submission permitted**)
Support Resources	See Moodle Assessment page
Feedback	Feedback will be provided on student work via: ● general cohort performance ● specific student feedback ten working days post-submission ● ***a sample solution following Assignment 1 - Logical marking***

INSTRUCTIONS

ReadMore Community Library (RCL) provides library services to Local Government Agencies (LGAs). When RCL offers services to an agency, it opens branches across the agency's service area. Your task is to design a database that RCL can use to manage its activities.

RCL records a unique identifying numeric LGA code for each LGA that is served. They also record the LGA's name, for example, 'Clayton City', its size (in hectares), the LGA Service Contact's name (the name of the person to contact about library issues), and the LGA's contact phone number.

For each branch that RCL opens in an LGA, RCL assigns a branch code (a unique branch identifier across all branches in all LGA's). The LGA to which this branch belongs, the branch name, address and contact phone number are also recorded. Each branch is assigned a manager. Due to the small size of some branches, a particular manager may manage several branches. Each manager is assigned a manager id. ReadMore Community Library records a manager’s first name, last name and contact phone number. All managers are assigned one particular branch as their home branch.

RCL maintains a catalogue containing the bibliographic details of its collection. Each catalogue entry is a digital record that includes the Dewey Decimal call number - this call number is used to identify a particular entry in the catalogue. The title, author's name/s (first and last), a description of the contents, the publisher's name and publication year and 13-digit International Standard Book Numbers (ISBN-13) are also recorded for each catalogue entry. ISBNs are unique identifiers for a specific edition or version of a book, each representing a specific catalogue entry—no ISBN is shared between different entries. A single catalogue entry can have multiple ISBN-13s; for instance, a hardcover edition will have a different ISBN-13 than a loose-leaf or paperback edition of the same book. Within the database each ISBN-13 must also have recorded the type of book it represents, for example, 'PaperBack'. The primary purpose of the RCL catalogue is to allow users to locate and access items in the collection.

A sample partial catalogue entry is shown below:

Call No:	005.74 C822D 2023
Title:	Database systems : design, implementation, and management
Authors:	● Coronel, Carlos ● Morris, Steven
Contents:	Part I: Database Concepts-- 1. Database Systems -- 2. Data Models -- Part II: Design Concepts-- 3. The Relational Database Model -- 4. Entity Relationship (ER) Modeling -- 5. Advanced Data Modeling -- 6. Normalization of Database Tables -- Part III: Advanced Design and Implementation -- 7. Introduction to Structured Query Language (SQL) -- 8. Advanced SQL -- 9. Database Design -- Part IV: Advanced Database Concepts -- 10. Transaction Management and Concurrency Control -- 11. Database Performance Tuning and Query Optimization -- 12. Distributed Database Management Systems -- 13. Business Intelligence and Data Warehouses -- 14. Big

	Data Analytics and NoSQL -- Part V: Databases and the Internet -- 15. Database Connectivity and Web Technologies -- Part VI: Database Administration -- 16. Database Administration and Security.
Publisher:	Cengage Learning
Date Published:	2023
Identifiers:	● ISBN: 9780357673034 Hardcover ● ISBN: 9780357673072 Loose Leaf

A given catalogue entry may be written by several different authors; however, the library regards it as only being published by a single publisher. The library assigns unique in-house numerical codes to identify authors and publishers.

In addition, the catalogue entry's classification as Reference or Fiction and the number of pages are also recorded. For a Fiction entry, a reading level is recorded as an integer from 1 (Easy) to 30 (Very Difficult).

Each digital catalogue entry is physically represented by one or more copies of a book located in a library branch, from which the copy may be borrowed. For example, RCL may hold several copies of the entry above (005.74 C822D 2023)—some in hardcover and some in loose leaf across its various branches. A book copy is identified by the branch code where the book is held and a unique book copy ID. Book copy IDs are repeated across branches, so for example, branch 4 will hold a book copy with an ID of 101, and so also may branch 6 (book copy IDs are not unique across the RCL system).

Some book copies are placed on counter reserve and are not available for loan—they may only be used in the library. A flag is added to a book copy to indicate whether it is on counter reserve or not. There may also be other copies of the same catalogue entry that are available for normal loan. Each book copy has a single ISBN-13. The book purchase price is also recorded for each copy of a book.

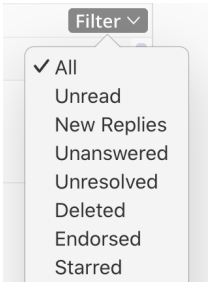
Each borrower is identified by a borrower number. When a borrower first registers to borrow books, the branch where they register is recorded as their home branch. The first name, last name, and address of each borrower are held so that communications, such as overdue loan reminders, can be sent when necessary. A registered borrower may borrow from any RCL branch.

A record of all loans that take place is maintained. When a book copy is borrowed (goes out on loan) the due date (date only) is automatically recorded based on the current date. To help the library track busy periods during the day, the time a loan is taken out is also recorded. When a book is returned from a loan, its actual return date and time are recorded. A given book copy may be borrowed and returned on the same day. This may be immediately followed by a new loan on the same day as the return. All books must be returned to the branch from which the book was borrowed.

REMEMBER to keep up to date with the Moodle Ed Assignment 1 Conceptual forum, where further clarifications may be posted (this forum is to be treated as your client).

To view Assignment 1 Conceptual only posts, select the Assignment and then the Assignment 1 Conceptual forum from the Categories list in the left panel.

Once selected, you can Filter the posts via the Filter option at the top of the list of posts:



Please be careful to ensure you do not publicly post anything that includes your reasoning, logic, or any part of your work to this forum. Doing so violates Monash plagiarism/ collusion rules and carries significant academic penalties. Use private posts to raise questions that may reveal part of your reasoning or solution.

You are free to make assumptions if needed however they must align with the details here and in the assignment forums and must be clearly documented (see the required submission files). **Normally such assumptions would only relate to minimum cardinality where not expressed in the case study**.

Group Communication

Your group **MUST use your private group channel in MS Teams for all group communication during this assignment which is not face-to-face**. Microsoft Teams provides facilities to support group interaction, including chat, group email, shared desktop, meetings, video/audio calling**,** and shared files.

Activity in your private group channel is only visible to your group members and the teaching staff. It is important that you use Microsoft Teams and your group's private channel for your group activities, as your tutor/marker may need to check the group members' contributions to the task and attendance at meetings—**such a decision will be based ONLY on the activity recorded in your private group channel**. *Any use of WeChat, Chat in MS Teams or any other medium outside your Group Private Channel* ***will not be accepted or considered.***

TASKS to be Completed

Please **ensure you include your full group name on every page of any document you submit.** If the document is multipage, please also include page numbers on every page.

GIT STORAGE

Your work for these tasks **MUST** be saved in your **group** working directory in the Assignment 1 Conceptual folder and ***regularly pushed to the FIT GitLab server*** to build a clear history of the development of your model. Your development history must clearly show the steps you have been taught:

- Step 1: entities and keys
- Step 2: relationships, and
- Step 3: non-key attributes

Please refer to the marking guide for details about the required actions for using FIT GitLab by the group. Your group's PDF file of your model **must have at least six pushes (remember all pushes must be of a file with the same name—rcl_conceptual.pdf)**. Please note that six pushes are a minimum; in practice, we would expect more. **This number of pushes must be evenly distributed amongst group members**.

Groups must regularly check that their pushes have been successful by logging in to the FIT GitLab server's web interface; you must not simply assume they are working. Before submission via Moodle, you must log in to the GitLab server's web interface and ensure your submission files are present there.

GIT automatically maintains a history of all files pushed to the server. You do not need to, and MUST not, add a version name to your various versions. Please ensure you use the same name for all versions of a particular file.

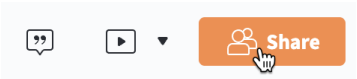
The tasks to complete:

(i) Using LucidChart, prepare a **FULL conceptual model** (Entity Relationship Diagram) using crow's foot notation for ReadMore Community Library (RCL) as described above.

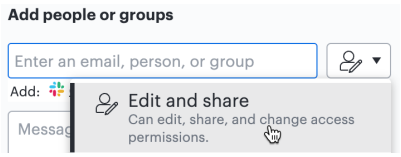
- For this FULL conceptual model (ERD), include:
  - identifiers (**keys**) for each entity
  - all required attributes, and
  - all relationships. Cardinality (min and max) and connectivity for all relationships must be shown on the diagram.
- **Surrogate keys must not be added to this model**.

Your model must conform to the unit ERD standards listed in the Applied 3: Conceptual Modelling (A3-2) lesson on ed.

Note that you can share your LucidChart working model between group members via the Share button



in the top right of an open LucidChart document - one student in the group should set up the initial model in a new empty tab and then share this with fellow group members, giving the other group members edit access:



(ii) Maintain a Group Diary that records when the group met/communicated to discuss/work on the task, including the date, who was present and a brief statement of what occurred. This Group Diary must be maintained in Microsoft Teams as a shared document in your private group channel.

As part of submitting your assignment, each group member will be required to provide confidential feedback on the group members' performance/interactions. The final mark awarded for each member of the group may differ based on the member's contributions to

the task. Please see the marking guide below for further details under the criteria "Peer Evaluation."

Use of Generative AI tools

In this assessment, you can use generative artificial intelligence (AI) in order to assist with design decisions only. Any use of generative AI must be appropriately acknowledged (see Learn HQ)

Submission Requirements

The following files are to be submitted and **must exist** in your Group FITGitLab server repo:

- A **single-page pdf file** containing your full final conceptual model. Name the file **rcl_conceptual.pdf**. This file must be created via File - Export (or Download As) - PDF from LucidChart (**do not use screen capture**) and must be able to be accessed with a development history via GIT. You can create this development history by downloading your PDFs (**don't forget to use the same name rcl_conceptual.pdf - DO NOT use version 1 etc**) and committing/pushing to GIT as you work on your model. In exporting from LucidChart, please select a page size of A4.
- A PDF document containing any assumptions you wish to make your marker aware of. Name the file **rcl_assumptions.pdf**. If you have made no assumptions, submit the document with a single statement saying, "No assumptions made". The source document, as an MS Word document must be available in your MS Teams private group channel. This PDF only needs to be pushed to GitLab once, when you are ready to submit to Moodle (the history is maintained in MS Teams).
- A PDF document of your Group Diary named **rcl_####_diary.pdf** (replace #### with your full group name, e.g. rcl_G001_diary.pdf). The source document, as an MS Word document must be available in your MS Teams private group channel. A template is available in ed to provide a suggested structure for your group diary. This PDF only needs to be pushed to GitLab once, when you are ready to submit to Moodle (the history is maintained in MS Teams).

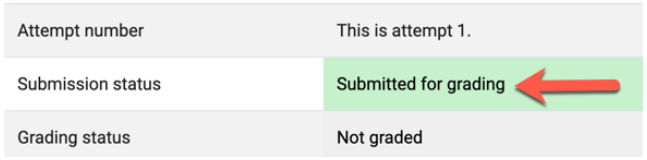
These **three PDF files must be submitted via Moodle before the due date/time** (times are expressed in Aust/Melbourne local time). **Do not zip these files into one zip archive**; submit three independent PDF files. One member of the group only needs to submit the files **after the group has agreed that the submission is complete and ready to be graded**. **This agreement by the group must be certified by a post in your private MS Teams channel which all members agree to.**

Late submission will incur penalties as outlined in the unit guide (5% or 4 marks deduction per 24 hours or part thereof).

Please note we **cannot mark any work on the Git Server**, you need to ensure that you submit correctly via Moodle since it is only in this process that you complete the required student declaration without which work **cannot be assessed**. **Email submission in any form is NOT ACCEPTABLE**. It is your responsibility to **ensure that the files you submit are the correct files. We strongly recommend that you download a submission and double-check its contents after uploading it and prior to actually submitting it in Moodle**.

Your assignment **MUST** show a status of "Submitted for grading" before it will be marked.

Submission status



If your submission shows a status of "Draft (not submitted)", it will not be assessed and ***will incur late penalties after the due date/time***.

Academic Integrity

Students are expected to be familiar with the University Academic Integrity Policy and are particularly reminded of the following:
Section 1.9:
Students are responsible for their own good academic practice and must:
• undertake their studies and research responsibly and with honesty and integrity;
• credit the work of others and seek permission to use that work where required;
• not plagiarise, cheat or falsify their work;
• ensure that their work is not falsified;
• not resubmit any assessment they have previously submitted, without the permission of the chief examiner; appropriately acknowledge the work of others;
• take reasonable steps to ensure that other students are unable to copy or misuse their work; and
• be aware of and comply with University regulations, policies and procedures relating to academic integrity.
and
Section 2.9:
Unauthorised distribution of course-related materials: Students are not permitted to share, sell or pass on to another person or entity external to Monash:

2.9.1 any course material produced by Monash University (such as lecture slides, lecture recordings, class handouts, assessment requirements, examination questions; excluding Handbook entries) as this is a breach of the Copyright Compliance Policy and such conduct may be a copyright law infringement subject to legal action; or

2.9.2 any course-related material produced by students themselves or other students (such as class notes, past assignments), nor to receive such material, without the permission of the chief examiner.

The penalties for breaches of academic misconduct, include:

- a zero mark for the assessment task
- a zero mark for the unit
- suspension from the course
- exclusion from the University.

Where a penalty or disciplinary action is applied, the outcome is recorded and kept for seven years, or for 15 years if the penalty was exclusion.

Marking Guide

Submitted models will be assessed against the optimal solution for this modelling task. After the Assignment 1 Logical task has been graded, this optimal solution will be available as a sample solution.

Assignment 1 Conceptual Group submission content graded out of 80 marks as shown below:

Marking Criteria	Items assessed
Identification of the entities that support the case study (20 marks).	**Maximum 10 marks - Entities:** ● Marks awarded for each correct entity identified ● Mark penalty for unnecessary entities included **Maximum 10 marks - Keys:** ● Marks awarded for each correct key selected ● Mark penalty for surrogate or foreign keys added
Identification and placement of attributes to support the case study (15 marks).	**Maximum 15 marks - Attributes:** ● Marks awarded for each necessary attribute identified ● Mark penalty for extra attributes included ● Marks penalty for placement of attribute in incorrect entity
Determination of relationships that support the case study (30 marks).	**Maximum 10 marks - Relationships:** ● Marks awarded for each correct relationship identified ● Mark penalty for unnecessary relationships included ● Mark penalty for redundant relationships included **Maximum 20 marks - Cardinality:** ● Marks awarded for correct minimum and maximum cardinality for every correct relationship
Consistent use of industry-standard notation and convention (5 marks).	**Maximum 5 marks - Modelling standards:** ● Marks awarded for application of Unit ERD notation convention ● Mark penalty for use of PK/FK labels ● Mark penalty for incorrectly depicted identifying/non-identifying relationships based on determined keys

Correct use of Git by group (10 marks).	**Maximum 10 marks - Git used appropriately:** ● Marks awarded for six pushes showing a clear development history ● Marks awarded for even distribution of pushes amongst all group members ● Marks awarded for correct Git author details used in pushes (see Applied 2-1) ● Marks awarded for the use of meaningful commit messages (ie. not blank or of the form "Push1")

Assignment 1 Conceptual Individual Group Evaluation graded out of 20 marks as shown below:

Peer Evaluation ***Note: No Late Submissions accepted for this component***	**Maximum 20 marks - Contribution and Participation in your group:** ● Communication ● Project Management ● Quality of contribution ● Quantity of contribution ● Use of MS Teams within the group private channel ● Support for the group's working environment as assessed by self-evaluation and group members (peer) evaluation via Feedback Fruits ● This component will be moderated, if necessary, by your tutor based on any group issues/concerns which are not addressed

Final Assignment Mark Calculation

- 80 marks from the content of the group submission
  PLUS
- 20 marks from the individual members group evaluation (self-review, peer review and tutor moderation)
- Total:100 marks, recorded as a grade out of 10