

## (i) ReadMore Community Library Catalogue Search Output:

Sample A:

<b>Call No:</b>	005.74 C822D 2023
<b>Title:</b>	Database systems : design, implementation, and management
<b>Authors</b>	<ul style="list-style-type: none"> <li>• <b>ID:</b> 2036 <b>Name:</b> Coronel, Carlos</li> <li>• <b>ID:</b> 4809 <b>Name:</b> Morris, Steven</li> </ul>
<b>Subjects:</b>	<ul style="list-style-type: none"> <li>• <b>ID:</b> 1045 <b>Description:</b> Database design</li> <li>• <b>ID:</b> 1044 <b>Description:</b> Database management</li> <li>• <b>ID:</b> 1040 <b>Description:</b> Databases</li> </ul>
<b>Contents:</b>	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.
<b>Publisher:</b>	<b>ID:</b> 1230 <b>Name:</b> Cengage Learning
<b>Date Published:</b>	2023
<b>Edition</b>	14th Edition
<b>No pages:</b>	816
<b>Language:</b>	English
<b>Note:</b>	Includes bibliographical references and index.
<b>Identifiers:</b>	<ul style="list-style-type: none"> <li>• <b>ISBN:</b> 9780357673034 <b>Type:</b> Hardcover</li> <li>• <b>ISBN:</b> 9780357673072 <b>Type:</b> Loose Leaf</li> </ul>

**UNF:**

CATALOGUE (ctlg\_call\_no, ctlg\_title, ctlg\_description, publisher\_id, publisher\_name, ctlg\_publication\_year, ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note

(isbn\_no, isbn\_book\_type), (author\_id, author\_fname, author\_lname), ( subject\_id, subject\_desc))

**1NF:**

CATALOGUE (ctlg\_call\_no, ctlg\_title, ctlg\_description, publisher\_id, publisher\_name, ctlg\_publication\_year, ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note)

CK: ctlg\_call\_no

ISBN(isbn\_no, isbn\_book\_type, ctlg\_call\_no)

CK: isbn\_no

CAT\_AUTHOR(author\_id, ctlg\_call\_no, author\_fname, author\_lname)

CK: author\_id, ctlg\_call\_no

CAT\_SUBJECT(subject\_id, ctlg\_call\_no, subject\_desc)

**CK: subject\_id, ctlg\_call\_no**

**Partial Dependency:**

author\_id -> author\_fname, author\_lname

subject\_id -> subject\_desc

**2NF:**

CATALOGUE (ctlg\_call\_no, ctlg\_title, ctlg\_description, publisher\_id, publisher\_name, ctlg\_publication\_year, ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note)

ISBN(isbn\_no, isbn\_book\_type, ctlg\_call\_no)

CAT\_AUTHOR(author\_id, ctlg\_call\_no)

AUTHOR(author\_id, author\_fname, author\_lname)

CAT\_SUBJECT(subject\_id, ctlg\_call\_no)

SUBJECT(subject\_id, subject\_desc)

**Transitive Dependency:**

publisher\_id -> publisher\_name

**3NF:**

CATALOGUE (ctlg\_call\_no, ctlg\_title, ctlg\_description, publisher\_id, ctlg\_publication\_year, ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note)

PUBLISHER(publisher\_id, publisher\_name)

ISBN(isbn\_no, isbn\_book\_type, ctlg\_call\_no)

CAT\_AUTHOR(author\_id, ctlg\_call\_no)

AUTHOR(author\_id, author\_fname, author\_lname)

CAT\_SUBJECT(subject\_id, ctlg\_call\_no)

SUBJECT(subject\_id, subject\_desc)

**Full Dependency:**

ctlg\_call\_no -> ctlg\_title, ctlg\_description, publisher\_id, ctlg\_publication\_year, ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note

publisher\_id -> publisher\_name

isbn\_no -> isbn\_book\_type, ctlg\_call\_no

author\_id -> author\_fname, author\_lname

subject\_id -> subject\_desc

## (ii) ReadMore Community Library Borrowers Quarterly Report:

## QUARTERLY BORROWER LOAN REPORT

Borrower No 1234

Report Date: 30 Jun 2024

Borrower

First Name: Mary

Last Name: Greenwood

Borrower Class Adult

Borrowing Status Permitted ☐  
Banned ☒

Branch Code	Book Copy ID	Branch Name	Borrowed	Due Back	Returned	Fine Amnt	Date Fine Paid
100	2373	Clayton Central	02 Apr 2024 09:10	09 Apr 2024	07 Apr 2024 09:15		
100	4455	Clayton Central	15 Apr 2024 14:00	18 Apr 2024	20 Apr 2024 12:34	\$4	20 Apr 2024
100	4901	Clayton Central	28 Apr 2024 10:00	4 May 2024	4 May 2024 10:21		
100	4455	Clayton Central	28 Apr 2024 11:10	4 May 2024	4 May 2024 11:06		
100	4216	Clayton Central	28 Apr 2024 10:15	4 May 2024	4 May 2024 10:09		
100	7536	Clayton Central	4 May 2024 10:00	11 May 2024	11 May 2024 10:20		
100	2373	Clayton Central	4 May 2024 12:30	11 May 2024	11 May 2024 09:10		
102	0372	West Riding	11 May 2024 13:00	18 May 2024	11 May 2024 09:16		
102	4455	West Riding	11 May 2024 13:05	18 May 2024	18 May 2024 12:15		
... multiple rows omitted ...							
100	0876	Clayton Central	15 Jun 2024 13:15	16 Jun 2024	16 Jun 2024 16:10		
102	2354	West Riding	20 Jun 2024 16:00	27 Jun 2024			

Note overdue loans are flagged in this report with:

## UNF:

BORROWER(borrower\_no, borrower\_fname, borrower\_lname, borrower\_class,  
borrower\_status, ( branch\_code, book\_copy\_id, branch\_name, loan\_borrow\_datetime,  
loan\_due\_date, loan\_returndatetime, fine\_amnt, fine\_paiddate))

## 1NF:

BORROWER(borrower\_no, borrower\_fname, borrower\_lname, borrower\_class,  
borrower\_status)

CK: borrower\_no

LOAN(branch\_code, book\_copy\_id, loan\_borrow\_datetime, branch\_name, loan\_due\_date, loan\_returndatetime, fine\_amnt, fine\_paiddatetime, borrower\_no)

CK: branch\_code, book\_copy\_id, loan\_borrow\_datetime

### **Partial Dependency:**

branch\_code -> branch\_name

### **2NF:**

BORROWER(borrower\_no, borrower\_fname, borrower\_lname, borrower\_class, borrower\_status)

LOAN(branch\_code, book\_copy\_id, loan\_borrow\_datetime, loan\_due\_date, loan\_returndatetime, fine\_amnt, fine\_paiddatetime, borrower\_no)

BRANCH(branch\_code, branch\_name)

### **Transitive Dependency:**

No transitive dependencies present.

### **3NF:**

BORROWER(borrower\_no, borrower\_fname, borrower\_lname, borrower\_class, borrower\_status)

LOAN(branch\_code, book\_copy\_id, loan\_borrow\_datetime, loan\_due\_date, loan\_returndatetime, fine\_amnt, fine\_paiddatetime, borrower\_no)

BRANCH(branch\_code, branch\_name)

### **Full Dependencies:**

borrower\_no -> borrower\_fname, borrower\_lname, borrower\_class, borrower\_status

branch\_code, book\_copy\_id, loan\_borrow\_datetime -> loan\_due\_date,  
 loan\_returndatetime, fine\_amnt, fine\_paiddate, borrower\_no  
 branch\_code -> branch\_name

### Attribute Synthesis:

There are no identical relations

### FINAL 3NF RELATIONS:

CATALOGUE(ctlg\_call\_no, ctlg\_title, ctlg\_description, publisher\_id, ctlg\_publication\_year,  
 ctlg\_edition, ctlg\_no\_of\_pages, ctlg\_lang, ctlg\_note)

PUBLISHER(publisher\_id, publisher\_name)

ISBN(isbn\_no, isbn\_book\_type, ctlg\_call\_no)

CAT\_AUTHOR(author\_id, ctlg\_call\_no)

AUTHOR(author\_id, author\_fname, author\_lname)

CAT\_SUBJECT(subject\_id, ctlg\_call\_no)

SUBJECT(subject\_id, subject\_desc)

BORROWER(borrower\_no, borrower\_fname, borrower\_lname, borrower\_class,  
 borrower\_status)

LOAN(branch\_code, book\_copy\_id, loan\_borrow\_datetime, loan\_due\_date,  
 loan\_returndatetime, fine\_amnt, fine\_paiddate, borrower\_no)

BRANCH(branch\_code, branch\_name)