

CSC3170 Introduction to Database Systems

Project: Library Inquiry System

Deadline: midnight of 1 Dec. 2008

1. Introduction

The goal of the project is to implement a *library inquiry system* using JAVA and ORACLE. This is a group project with at most 4 members per group.

2. Data specifications

A sample dataset will be provided on the course homepage. The dataset has four parts: (1) the category list, (2) user list, (3) book list, and (4) check-out list. Each list has a number of lines, each called an *entry*. An entry has several *items* delimited by a comma ','. A blank line indicates the end of the list. The details of entries and items are as follows.

Category list. Library users are divided into categories. Each entry in the category list has the following items.

Item	Type	Description
category_id	One char	The unique identifier of a category
max_books	Integer	The maximum number of books that a user can borrow simultaneously
loan_period	Integer	The number of days the user can keep a book

User list. Each entry has the following items.

Item	Type	Description
user_id	10 chars	The unique identifier of a user
name	At most 25 chars	Name of the user
address_1	At most 30 chars	The first part of the user's address.
address_2	At most 30 chars	The second part
address_3	At most 30 chars	The third
category ID	One char	Which category the user belongs to

Book list.

Item	Type	Description
call_num	8 chars	The unique identifier of a book
copy_num	Integer	How many copies of the book the library has
title	At most 30 chars	Book title
author_list	Each author name has at most 25 chars. Different names are separated by a comma.	The authors of the book.

Check-out list. The list stores information on the books currently borrowed.

Item	Type	Description
------	------	-------------

call_num	8 chars	The call_num of the book borrowed
copy_num	Integer	Which copy of the book is borrowed
user_id	10 chars	Which user borrowed the book
date	DD/MM/YYYY	The check out date

Example.

A,7,5
 B,14,10
 C,30,30

S1234567,Chan Tai Man,College Road,Shatin,Hong Kong,A
 U2233445,Tinom Cheung,1248 Holister,Wong Tai Sin,Kowloon,B
 ZE987654,C.Y. Kong,718 Central Street,Central,Hong Kong,C

JS163.17,2,Introduction to Business,Peter Chan
 MA472.22,1,Music of Hong Kong,Tinom Cheung
 QA113.84,3,Database Management Systems,Raghu Ramakrishnan,Johannes Gehrke

QA113.84,3,S1234567,27/09/2008
 QA113.84,1,U2233445,06/10/2008
 MA472.22,1,U2233445,06/10/2008

3. The system

Your system must allow the following operations.

Data loading. As mentioned earlier, you will be given a data file. Your system must be able to read it correctly, and fill the tables in ORACLE with the correct tuples.

Book inquiry. Allow inquiry of books in three ways: by (i) call number (exact matching), (ii) title (partial matching), or (iii) author (partial matching). The query result should include the following information for each book:

1. Call number
2. Title
3. Authors
4. Number of available copies
5. All the borrowed copies. And for each such copy, display:
 - i. Name of the user currently keeping the book
 - ii. Check-out date
 - iii. Due date

User inquiry. Allow inquiry of users in two different ways: by (i) user-id (exact matching) or (ii) name (partial matching). The query result should include the following for each user:

1. ID
2. Name
3. Full address
4. All books currently borrowed by the user. For each book, display:
 - i. Call number
 - ii. Title

- iii. Check-out date
- iv. Due date

Book overdue inquiry. Your system needs to provide the following functionality. Given a date, return all books overdue on or before the date, listed in ascending order of their due dates. For each such book, display:

- 1. Name of the borrower
- 2. Call_num
- 3. Copy_num
- 4. Title
- 5. Check-out date
- 6. Due date

4. Tables

Implement your system based on these tables in ORACLE:

CATEGORY (CID, MAX_BOOKS, LOAN_PERIOD)
USER (UID, UNAME, ADDR_1, ADDR_2, ADDR_3, CID)
BOOK (CALL_NUM, TITLE)
BOOK_COPY (CALL_NUM, COPY_NUM)
CHECK_OUT (UID, CALL_NUM, COPY_NUM, CHECK_OUT_DATE)
AUTHORSHIP (A_NAME, CALL_NUM)
AUTHOR (A_NAME)