

**Department of Electrical and Computer Engineering**

| Course Number | CPS510 |
| --- | --- |
| Course Title | Database Systems I |
| Semester/Year | F2022 |
| Instructor | Dr. S. B. Tajali |
| Lab Section | 7 |

| Assignment No. | 1 |
| --- | --- |
| Assignment Title | Start of Logical Database Design/Phase I |

| Submission Date: | September 12, 2022 |
| --- | --- |
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| Signature |  |  |  |

Database Management System for Library Management and Book Catalog

Libraries provide a large repository of novels and books for the general public to borrow with a system designed for use by both the librarian and clientele. General users are able to search for various books under their titles, author or category or language and the system is able to return the specific shelf ID and floor location of the specified book. Alternatively, they can search based on category and find the general floor location of the specified genre. A librarian’s main application is to add, remove and alter both client information and books as well as have access to the same functionality as the general users. They are also able to search for outstanding books and issue fees for late returns. System Administrators have the added ability to delegate staff roles, identify which staff issues which book and manage all other parts of the system.

Each BOOK record contains a unique ISBN identifier and corresponds to a specific CLIENT record, SHELF record and CATEGORY record. Thus, the value for Category, Borrower ID, and Shelf ID must also exist in their respective records. The CLIENT record is related to a STAFF record. The SHELF record is related to a unique CATEGORY record and gives details on where to find the corresponding book. Overall, the DBMS we created below can support many users and every entity is related to one another.

BOOK

| ISBN | Book Title | Author Last Name | Author First Name | Category | Language | ~~Shelf ID~~ | ~~Borrower ID~~ |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 9780747532743 | Harry Potter and the Philosopher’s Stone | Rowling | Joanne | FA | English | ~~FA1~~ | ~~02~~ |
| 9788499928333 | Leonardo Da Vinci | Isaacson | Walter | NF | English | ~~NF1~~ | ~~01~~ |
| 9780099523994 | Persepolis | Satrapi | Marjane | GN | English | ~~GN1~~ | ~~05~~ |
| 9780333791035 | The Great Gatsby | Fitzgerald | Francis Scott | HF | English | ~~HF1~~ | ~~05~~ |
| 9780143415862 | The Kite Runner | Hosseini | Khaled | HF | English | ~~HF2~~ | ~~04~~ |
| 9780007136599 | The Fellowship of the Ring | Tolkien | John | FA | English | ~~FA1~~ | ~~03~~ |
| 9780743264730 | Einstein: His Life and Universe | Isaacson | Walter | NF | English | ~~NF1~~ | ~~02~~ |
| 9783502507871 | Der Tod auf dem Nil | Christie | Agatha | MY | German | ~~MY1~~ | ~~10~~ |
| 9780006137122 | Murder on the Orient Express | Christie | Agatha | MY | English | ~~MY1~~ | ~~01~~ |
| 9780140621501 | Julius Caesar | Shakespeare | Wiliam | HF | English | ~~HF1~~ | ~~03~~ |
| 9780613824224 | Ender’s Game | Orson Scott | Card | SF | English | ~~SF1~~ |  |
| 9780763625085 | Dracula | Stoker | Bram | HR | English | ~~HR1~~ | ~~06~~ |
| 9780307352149 | Quiet | Cain | Susan | SH | English | ~~SH1~~ | ~~09~~ |
| 9781401284770 | The Sandman Vol.1: Preludes & Nocturnes | Gaiman | Neil | GN | English | ~~GN1~~ | ~~12~~ |
| 9780062896261 | American Gods | Gaiman | Neil | FA | English | ~~FA1~~ |  |
| 9780141381473 | The Lightning Thief | Riordan | Rick | FA | English | ~~FA1~~ | ~~07~~ |
| 9780340341483 | Pet Sematary | King | Stephen | HR | English | ~~HR1~~ | ~~08~~ |
| 9780060173227 | To Kill a Mockingbird | Lee | Harper | HF | English | ~~HF2~~ | ~~08~~ |
| 9781974700301 | Kaguya-sama: Love Is War Vol.1 | Akasaka | Aka | MG | English | ~~MG1~~ | ~~13~~ |
| 9783551794628 | My Hero Academia Vol. 1 | Horikoshi | Kohei | MG | English | ~~MG1~~ | ~~14~~ |
| 9781974715466 | Spy x Family | Tatsuya | Endo | MG | English | ~~MG1~~ | ~~15~~ |
| 9781975915466 | Meow Squad | James | Lebron | MY | English | ~~MY1~~ | ~~11~~ |
| 9781900915069 | TYE Legends | Fins | Johnny | FA | English | ~~FA1~~ | ~~08~~ |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

CLIENT

| Client ID | Last Name | First Name | ~~Borrowed Date~~ | ~~Due Date~~ | ~~Return Date~~ | ~~Issued By~~ |
| --- | --- | --- | --- | --- | --- | --- |
| 01 | Moo-Young | Ethan | ~~9/9/2022~~ | ~~30/9/2022~~ | ~~12/9/2022~~ | ~~L1~~ |
| 02 | Thomas | Abel | ~~12/9/2022~~ | ~~3/10/2022~~ | ~~22/9/2022~~ | ~~L1~~ |
| 03 | Cherry | Angelo | ~~10/10/2022~~ | ~~31/10/2022~~ |  | ~~L2~~ |
| 04 | Jean | Mabel | ~~2/10/2022~~ | ~~23/10/2022~~ |  | ~~L2~~ |
| 05 | Seann | Glen | ~~12/9/2022~~ | ~~3/10/2022~~ | ~~2/10/2022~~ | ~~L3~~ |
| 06 | Simons | Nick | ~~27/9/2022~~ | ~~24/10/2022~~ | ~~24/10/2022~~ | ~~L3~~ |
| 07 | Martins | Steve | ~~25/9/2022~~ | ~~22/10/2022~~ | ~~24/10/2022~~ | ~~L2~~ |
| 08 | Little | Axel | ~~10/10/2022~~ | ~~31/10/2022~~ | ~~25/10/2022~~ | ~~L1~~ |
| 09 | Lucifer | Morningstar | ~~9/10/2022~~ | ~~30/10/2022~~ | ~~25/10/2022~~ | ~~L2~~ |
| 10 | Chloe | Decker | ~~2/9/2022~~ | ~~23/9/2022~~ | ~~19/10/2022~~ | ~~L3~~ |
| 11 | Lopez | Ella | ~~3/9/2022~~ | ~~24/9/2022~~ | ~~21/9/2022~~ | ~~L2~~ |
| 12 | Martin | Linda | ~~4/9/2022~~ | ~~25/10/2022~~ | ~~15/10/2022~~ | ~~L1~~ |
| 13 | Butcher | Billy | ~~11/9/2022~~ | ~~2/10/2022~~ | ~~15/11/2022~~ | ~~L1~~ |
| 14 | Campbell | Hughie | ~~22/10/2022~~ | ~~12/11/2022~~ |  | ~~L2~~ |
| 15 | Jan | Kimiko | ~~5/10/2022~~ | ~~26/10/2022~~ | ~~20/10/2022~~ | ~~L3~~ |

SHELF

| Shelf ID | Category ID | Floor |
| --- | --- | --- |
| FA1 | FA | 1 |
| NF1 | NF | 1 |
| GN1 | GN | 1 |
| HF1 | HF | 1 |
| HF2 | HF | 2 |
| MY1 | MY | 1 |
| SF1 | SF | 1 |
| SH1 | SH | 1 |
| HR1 | HR | 1 |
| MG1 | MG | 1 |

CATEGORY

| Category ID | Category Name |
| --- | --- |
| FA | Fantasy |
| NF | Non-Fiction |
| GN | Graphic Novel |
| HF | Historical Fiction |
| MY | Mystery |
| SF | Science Fiction |
| SH | Self Help |
| HR | Horror |
| MG | Manga |

STAFF

| Last Name | First Name | Staff ID | Admin | Designation |
| --- | --- | --- | --- | --- |
| Ho | Ernestine | L1 | Yes | Librarian |
| Le | Ryan | L2 | No | Librarian |
| Ramis | Harold | T1 | No | Technician |
| Peters | Gary | L3 | No | Librarian |
| Apples | Robert | T2 | No | Technician |

BORROWEDBOOKS

| ReceiptId | IssuedBy | ISBN | BorrowerId | BorrowerDate | DueDate | ReturnDate |
| --- | --- | --- | --- | --- | --- | --- |
| R01 | L1 | 9788499928333 | 01 | 9/9/2022 | 30/9/2022 | 12/9/2022 |
| R02 | L1 | 9780006137122 | 01 | 9/9/2022 | 30/9/2022 |  |
| R03 | L1 | 9780747532743 | 02 | 12/9/2022 | 3/10/2022 | 22/9/2022 |
| R04 | L2 | 9780007136599 | 03 | 10/10/2022 | 31/10/2022 | 22/10/2022 |
| R05 | L2 | 9780140621501 | 03 | 10/10/2022 | 31/10/2022 | 22/10/2022 |
| R06 | L2 | 9780143415862 | 04 | 2/10/2022 | 23/10/2022 |  |
| R07 | L3 | 9780099523994 | 05 | 12/9/2022 | 3/10/2022 | 2/10/2022 |
| R08 | L3 | 9780333791035 | 05 | 13/9/2022 | 4/10/2022 |  |
| R09 | L3 | 9780763625085 | 06 | 27/9/2022 | 24/10/2022 | 24/10/2022 |
| R10 | L2 | 9780141381473 | 07 | 25/9/2022 | 22/10/2022 | 24/10/2022 |
| R11 | L1 | 9781900915069 | 08 | 10/10/2022 | 31/10/2022 | 25/10/2022 |
| R12 | L1 | 9780060173227 | 08 | 10/10/2022 | 31/10/2022 | 24/10/2022 |
| R13 | L2 | 9780340341483 | 08 | 11/10/2022 | 31/10/2022 | 24/10/2022 |
| R14 | L2 | 9780307352149 | 09 | 9/10/2022 | 30/10/2022 | 25/10/2022 |
| R15 | L3 | 9783502507871 | 10 | 2/9/2022 | 23/9/2022 | 19/10/2022 |
| R16 | L2 | 9781975915466 | 11 | 3/9/2022 | 24/9/2022 | 21/9/2022 |
| R17 | L1 | 9781401284770 | 12 | 4/9/2022 | 25/10/2022 | 15/10/2022 |
| R18 | L1 | 9781974700301 | 13 | 11/9/2022 | 2/10/2022 | 15/11/2022 |
| R19 | L2 | 9783551794628 | 14 | 22/10/2022 | 12/11/2022 |  |
| R20 | L3 | 9781974715466 | 15 | 5/10/2022 | 26/10/2022 | 20/10/2022 |

Book - Weak

Shelf - Weak

Category - Strong

Client - Strong

Staff - Strong

Staff Manages Client

Category

Clients who borrowed books in the month of September AND returned it

The books borrowed by Glen Seann

Books currently not borrowed

Books borrowed from clients who have not returned their books

SELECT booktitle, isbn, clientname, duedate

FROM book b, client c

WHERE returndate = NULL,

c.clientid = b.borrowerid;

Books from shelves located on the first floor

SELECT isbn, booktitle, b.shelfid, floor

FROM shelf s, book b

WHERE floor = ‘1’,

S.shelfid = b.shelfid;

Categories located on the third floor

SELECT c.categoryid, floor

FROM category c, shelf s

WHERE floor = ‘3’

C.categoryid = s.categoryid;