

**Department of**

**Artificial Intelligence & Machine Learning**

AML23403

# Database Management System Laboratory

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# Exercise-1

**Consider the following schema for a Library Database:**

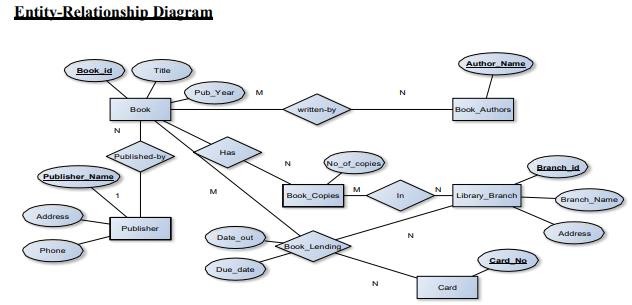
**BOOK(Book\_id, Title, Publisher\_Name, Pub\_Year) BOOK\_AUTHORS(Book\_id, Author\_Name) PUBLISHER(Name, Address, Phone) BOOK\_COPIES(Book\_id, Branch\_id, No-of\_Copies)**

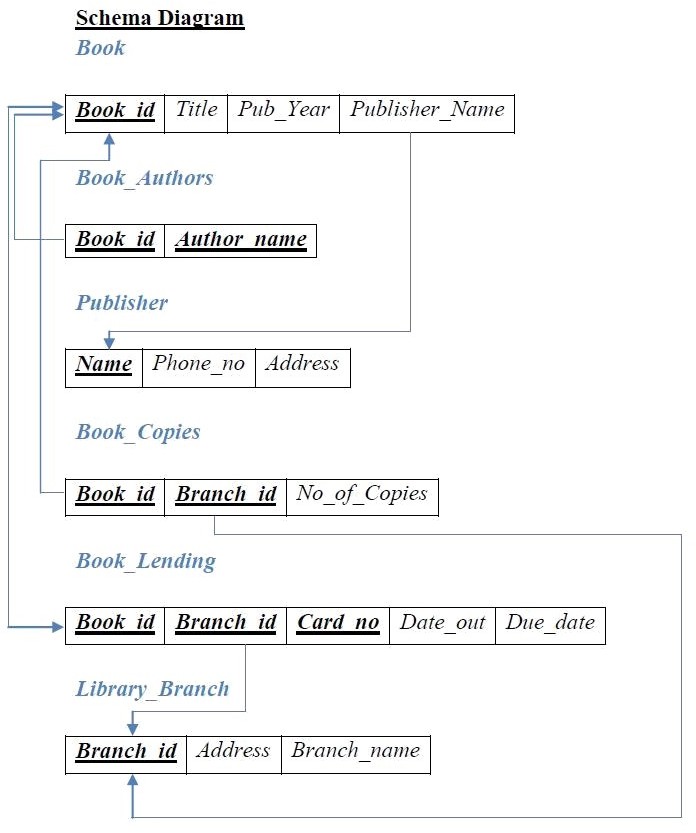
**BOOK\_LENDING(Book\_id, Branch\_id, Card\_No, Date\_Out, Due\_Date)**

**LIBRARY\_BRANCH(Branch\_id, Branch\_Name, Address)**

# Write SQL queries to

1. **Retrieve details of all books in the library – id, title, name of publisher, authors, number of copies in each branch, etc.**
2. **Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2021 to Aug 2021.**
3. **Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.**
4. **Partition the BOOK table based on year of publication. Demonstrate its working with a simple query.**
5. **Create a view of all books and the number of copies that are currently available in the Library.**



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1. CREATE TABLE PUBLISHER (NAME VARCHAR (20) PRIMARY KEY, PHONE VARCHAR(15), ADDRESS VARCHAR (20));
2. CREATE TABLE BOOK (BOOK\_ID INTEGER PRIMARY KEY, TITLE VARCHAR (20), PUB\_YEAR VARCHAR (20), PUBLISHER\_NAME VARCHAR(20), FOREIGN KEY (PUBLISHER\_NAME) REFERENCES PUBLISHER(NAME) ON DELETE CASCADE);
3. CREATE TABLE BOOK\_AUTHORS (AUTHOR\_NAME VARCHAR (20), BOOK\_ID INTEGER, FOREIGN KEY(BOOK\_ID) REFERENCES BOOK (BOOK\_ID) ON DELETE CASCADE,

PRIMARY KEY (BOOK\_ID, AUTHOR\_NAME));

1. CREATE TABLE LIBRARY\_BRANCH (BRANCH\_ID INTEGER PRIMARY KEY, BRANCH\_NAME VARCHAR (50), ADDRESS VARCHAR (50));
2. CREATE TABLE BOOK\_COPIES (NO\_OF\_COPIES INTEGER,

BOOK\_ID INTEGER, FOREIGN KEY(BOOK\_ID) REFERENCES BOOK (BOOK\_ID) ON DELETE CASCADE,

BRANCH\_ID INTEGER, FOREIGN KEY(BRANCH\_ID) REFERENCES LIBRARY\_BRANCH (BRANCH\_ID) ON DELETE CASCADE,

PRIMARY KEY (BOOK\_ID, BRANCH\_ID));

1. CREATE TABLE CARD (CARD\_NO INTEGER PRIMARY KEY);
2. CREATE TABLE BOOK\_LENDING (DATE\_OUT DATE, DUE\_DATE DATE, BOOK\_ID INTEGER, FOREIGN KEY(BOOK\_ID) REFERENCES BOOK (BOOK\_ID) ON DELETE CASCADE,

BRANCH\_ID INTEGER, FOREIGN KEY(BRANCH\_ID) REFERENCES LIBRARY\_BRANCH (BRANCH\_ID) ON DELETE CASCADE,

CARD\_NO INTEGER, FOREIGN KEY(CARD\_NO) REFERENCES CARD (CARD\_NO) ON DELETE CASCADE,

PRIMARY KEY (BOOK\_ID, BRANCH\_ID, CARD\_NO));

# Table Description

* + DESC PUBLISHER;
  + DESC BOOK;
  + DESC BOOK\_AUTHORS;
  + DESC LIBRARY\_BRANCH;
  + DESC BOOK\_COPIES;
  + DESC CARD;
  + DESC BOOK\_LENDING;

1. *INSERT INTO PUBLISHER TABLE:*
   * INSERT INTO PUBLISHER VALUES('MCGRAWHILL',9191919191,'BANGALORE');
   * INSERT INTO PUBLISHER VALUES('PEARSON',8181818181,'NEWDELHI');
   * INSERT INTO PUBLISHER VALUES('RANDOMHOUSE',7171717171,'HYDERABAD');
   * INSERT INTO PUBLISHER VALUES('LIVRE',6161616161,'CHENNAI');
   * INSERT INTO PUBLISHER VALUES('PLANETA',5151515151,'BANGALORE');
   * SELECT \* FROM PUBLISHER;
2. *INSERT INTO BOOK TABLE:*
   * INSERT INTO BOOK VALUES(1,'DBMS','JAN-2017','MCGRAWHILL');
   * INSERT INTO BOOK VALUES(2,'ADBMS','JUN-2016','MCGRAWHILL');
   * INSERT INTO BOOK VALUES(3,'CN','SEP-2016','PEARSON');
   * INSERT INTO BOOK VALUES(4,'CG','SEP-2015','PLANETA');
   * INSERT INTO BOOK VALUES(5,'OS','MAY-2016','PEARSON');
   * SELECT \* FROM BOOK;
3. *INSERT INTO BOOK\_AUTHORS TABLE:*
   * INSERT INTO BOOK\_AUTHORS VALUES ('NAVATHE', 1);
   * INSERT INTO BOOK\_AUTHORS VALUES ('NAVATHE', 2);
   * INSERT INTO BOOK\_AUTHORS VALUES ('TANENBAUM', 3);
   * INSERT INTO BOOK\_AUTHORS VALUES ('EDWARD ANGEL', 4);
   * INSERT INTO BOOK\_AUTHORS VALUES ('GALVIN', 5);
   * SELECT \* FROM BOOK\_AUTHORS;
4. *INSERT INTO LIBRARY\_BRANCH TABLE:*
   * INSERT INTO LIBRARY\_BRANCH VALUES (10, 'RR NAGAR', 'BANGALORE');
   * INSERT INTO LIBRARY\_BRANCH VALUES (11, 'KENGERI', 'BANGALORE');
   * INSERT INTO LIBRARY\_BRANCH VALUES (12, 'RAJAJI NAGAR', 'BANGALORE');
   * INSERT INTO LIBRARY\_BRANCH VALUES (13, 'NITTE', 'MANGALORE');
   * INSERT INTO LIBRARY\_BRANCH VALUES (14, 'MANIPAL', 'UDUPI');
   * SELECT \*FROM LIBRARY\_BRANCH;
5. *INSERT INTO BOOK\_COPIES TABLE:*
   * INSERT INTO BOOK\_COPIES VALUES (10, 1, 10);
   * INSERT INTO BOOK\_COPIES VALUES (5, 1, 11);
   * INSERT INTO BOOK\_COPIES VALUES (2, 2, 12);
   * INSERT INTO BOOK\_COPIES VALUES (5, 2, 13);
   * INSERT INTO BOOK\_COPIES VALUES (7, 3, 14);
   * INSERT INTO BOOK\_COPIES VALUES (1, 5, 10);
   * INSERT INTO BOOK\_COPIES VALUES (3, 4, 11);
   * SELECT \*FROM BOOK\_COPIES;
6. *INSERT INTO CARD TABLE:*
   * INSERT INTO CARD VALUES (100);
   * INSERT INTO CARD VALUES (101);
   * INSERT INTO CARD VALUES (102);
   * INSERT INTO CARD VALUES (103);
   * INSERT INTO CARD VALUES (104);
   * SELECT \*FROM CARD ;
7. *INSERT INTO BOOK\_LENDING TABLE*:
   * INSERT INTO BOOK\_LENDING VALUES ('2021-06-01', '2021-07-01', 1, 10, 101);
   * INSERT INTO BOOK\_LENDING VALUES ('2021-01-05', '2021-02-05', 3, 14, 101);
   * INSERT INTO BOOK\_LENDING VALUES ('2021-07-03', '2021-08-03', 2, 13, 101);
   * INSERT INTO BOOK\_LENDING VALUES ('2021-12-11', '2022-01-11', 4, 11, 101);
   * INSERT INTO BOOK\_LENDING VALUES ('2021-10-01', '2021-11-01', 1, 11, 104);
   * SELECT \*FROM BOOK\_LENDING;

## Retrieve details of all books in the library – id, title, name of publisher, authors, number of copies in each branch, etc.

SELECT B.BOOK\_ID, B.TITLE, B.PUBLISHER\_NAME, A.AUTHOR\_NAME, C.NO\_OF\_COPIES, L.BRANCH\_ID

FROM BOOK B, BOOK\_AUTHORS A, BOOK\_COPIES C, LIBRARY\_BRANCH L WHERE

B.BOOK\_ID=A.BOOK\_ID AND B.BOOK\_ID=C.BOOK\_ID AND L.BRANCH\_ID=C.BRANCH\_ID;

## Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2021 to Aug 2021

SELECT CARD\_NO FROM BOOK\_LENDING

WHERE DATE\_OUT BETWEEN '2021-01-01' AND '2021-08-01' GROUP BY CARD\_NO

HAVING COUNT(\*)>3;

## Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.

* DELETE FROM BOOK WHERE BOOK\_ID=3;

*(Note: Check BOOK\_COPIES and BOOK\_LENDING tables to see whether the deletion of record with BOOK\_ID = 3, has been reflected)*

## Partition the BOOK table based on year of publication. Demonstrate its working with a simple query

* CREATE VIEW V\_PUBLICATION AS SELECT PUB\_YEAR

FROM BOOK;

* SELECT \* FROM V\_PUBLICATION;

## Create a view of all books and its number of copies that are currently available in the Library

CREATE VIEW V\_BOOKS AS

SELECT B.BOOK\_ID, B.TITLE, C.NO\_OF\_COPIES

FROM BOOK B, BOOK\_COPIES C, LIBRARY\_BRANCH L

WHERE B.BOOK\_ID=C.BOOK\_ID AND C.BRANCH\_ID=L.BRANCH\_ID;