

## Laboratory Activity 4:

**Laboratory Title:** SQL - JOIN Operation  
**Chapter No. and Topic:** Chapter 2 - Structured Query Language (SQL)  
**Discussions:**

This activity introduces students to SQL JOIN operations for combining data from multiple tables.

**Activity Description:**  
Learn how to use INNER JOIN, LEFT JOIN, and RIGHT JOIN to combine tables.

- Objectives:**
- Write SQL JOIN queries to retrieve data from multiple tables.
  - Use INNER JOIN, LEFT JOIN, and RIGHT JOIN.

- Materials:**
- MySQL Workbench or SQL client

- Procedure:**
1. Retrieve a list of all transactions, including book title and member name:

```
sql
Copy code
SELECT Books.Title, Members.FirstName, Members.LastName
FROM Transactions
INNER JOIN Books ON Transactions.BookID = Books.BookID
INNER JOIN Members ON Transactions.MemberID = Members.MemberID;
```

1. Retrieve a list of all books with transaction details, even those without transactions (LEFT JOIN):

```
sql
Copy code
SELECT Books.Title, Members.FirstName, Members.LastName
FROM Books
LEFT JOIN Transactions ON Books.BookID = Transactions.BookID
LEFT JOIN Members ON Transactions.MemberID = Members.MemberID;
```

Result:  
JOIN operations linking tables to retrieve combined data.

Connection > Consoles > Database\_mngt

DB Browser

Connection

Project

Structure

Bookmarks

Database\_mngt

public

Main

Auto-Commit OFF - connected

SELECT Books.Title, Members.FirstName, Members.LastName

FROM Transactions

INNER JOIN Books ON Transactions.BookID = Books.BookID

INNER JOIN Members ON Transactions.MemberID = Members.MemberID;

DB Execution Console

	title	firstname	lastname
1	The Great Gatsby	John	Doe
2	To Kill a Mockingbird	Jane	Smith
3	1984	Michael	Johnson
4	Pride and Prejudice	Emily	Davis
5	Moby Dick	David	Brown
6	War and Peace	Sarah	Williams
7	The Odyssey	James	Jones
8	The Catcher in the Rye	Patricia	Garcia
9	The Lord of the Rings	Robert	Miller
10	Brave New World	Mary	Wilson
11	Frankenstein	William	Moore
12	Dracula	Linda	Taylor
13	The Picture of Dorian Gray	Thomas	Anderson
14	Crime and Punishment	Jessica	Thomas
15	The Hobbit	Christopher	Jackson
16	The Great Alone	Amanda	White
17	The Shining	Joshua	Harris

Connection (main): 45 records - executed in 690 ms. / fetched in 1 ms.

13

Result 14

Result 17

Result 19

Result 21

Result 26

Result 32

Result 38

Result 40

Result 41

Result 42

Result 43

Result 44

Version Control

Python Packages

TODO

Python Console

Problems

Terminal

Services

DB Execution Console

DB Navigator - SESSION: Connected to database "Connection (Main... (today 9:17 am)

1:1

LF

UTF-8

4 spaces

Python 3.11 (DATABASE)

Connection > Consoles > Database\_mngt

DB Browser

Connection

Project

Structure

Bookmarks

Database\_mngt

public

Main

Auto-Commit OFF - connected

SELECT Books.Title, Members.FirstName, Members.LastName

FROM Books

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LEFT JOIN Members ON Transactions.MemberID = Members.MemberID;

DB Execution Console

	title	firstname	lastname
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12	Dracula	Linda	Taylor
13	The Picture of Dorian Gray	Thomas	Anderson
14	Crime and Punishment	Jessica	Thomas
15	The Hobbit	Christopher	Jackson
16	The Great Alone	Amanda	White
17	The Shining	Joshua	Harris

Connection (main): 73 records - executed in 61 ms. / fetched in 1 ms.

4

Result 17

Result 19

Result 21

Result 26

Result 32

Result 38

Result 40

Result 41

Result 42

Result 43

Result 44

Result 45

Version Control

Python Packages

TODO

Python Console

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Terminal

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DB Execution Console

DB Navigator - SESSION: Connected to database "Connection (Main... (today 9:17 am)

9:1

LF

UTF-8

4 spaces

Python 3.11 (DATABASE)

### Additional Questions/Discussions:

- How does the LEFT JOIN differ from the INNER JOIN?
  - **LEFT JOIN** returns all records from the left table and the matching records from the right table; if no match is found, NULL values are returned for columns from the right table. In contrast, **INNER JOIN** only returns records where there is a match in both tables, excluding unmatched rows. This means **LEFT JOIN** retains all left table data, while **INNER JOIN** focuses only on common records.
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### Conclusions:

**LEFT JOIN** ensures that all records from the left table are included, even if there is no match in the right table, making it useful for retrieving complete datasets. **INNER JOIN** is more restrictive, returning only records with matches in both tables, which is ideal for filtering relevant data. Choosing between them depends on whether you need all records from one table or only matching records from both.