

NAME: Gabriel Q. Escobido

C/Y/S: BSCpE – 2 B2

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.

The screenshot shows the MySQL Workbench interface. The SQL Editor contains the following query:

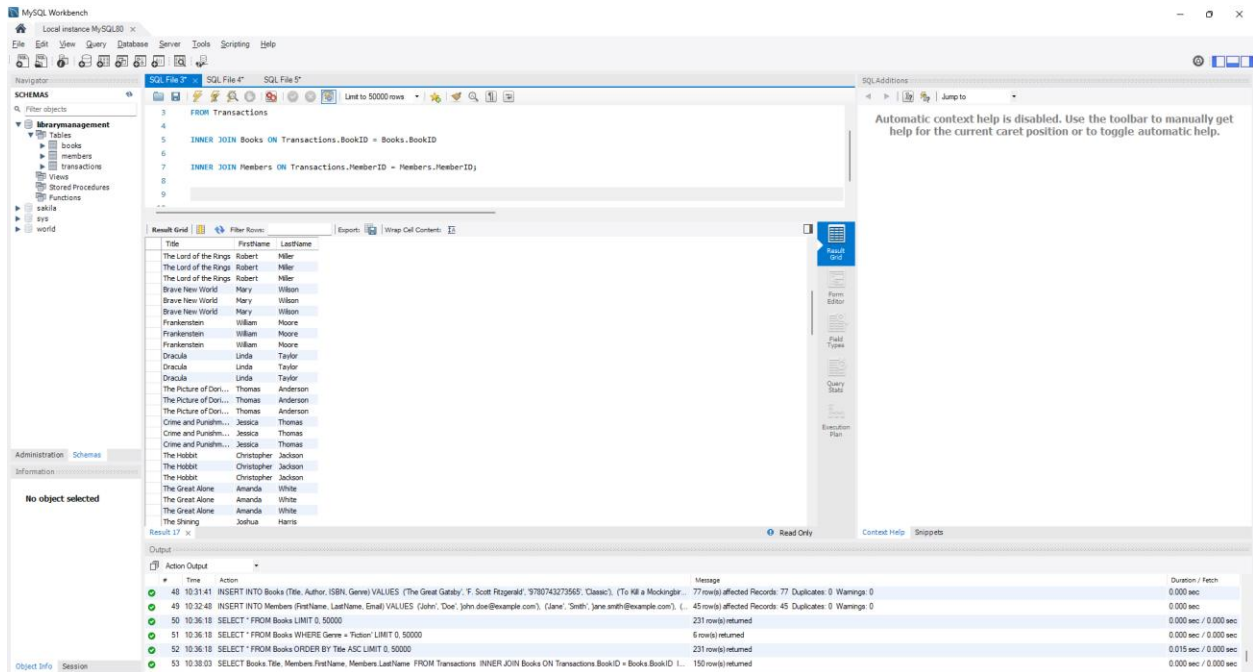
```
4 FROM Transactions
5 INNER JOIN Books ON Transactions.BookID = Books.BookID
6
7 INNER JOIN Members ON Transactions.MemberID = Members.MemberID
8
9
```

The Results tab displays the following data:

Title	FirstName	LastName
The Great Gatsby	John	Doe
The Great Gatsby	John	Doe
The Great Gatsby	John	Doe
To Kill a Mockingbird	Jane	Smith
To Kill a Mockingbird	Jane	Smith
To Kill a Mockingbird	Jane	Smith
1984	Michael	Johnson
1984	Michael	Johnson
1984	Michael	Johnson
Pride and Prejudice	Emily	Davis
Pride and Prejudice	Emily	Davis
Pride and Prejudice	Emily	Davis
Moby Dick	David	Brown
Moby Dick	David	Brown
Moby Dick	David	Brown
War and Peace	Sarah	Williams
War and Peace	Sarah	Williams
The Odyssey	James	Jones
The Odyssey	James	Jones
The Odyssey	James	Jones
The Catcher in the ...	Patricia	Garcia
The Catcher in the ...	Patricia	Garcia
The Lord of the Rings	Robert	Miller

The Output tab shows the following log entries:

Time	Action	Message	Duration / Fetch
49 10:32:48	INSERT INTO Members (FirstName, LastName, Email) VALUES ('John', 'Doe', 'john.doe@example.com'), ('Jane', 'Smith', 'jane.smith@example.com'), ...	45 row(s) affected Records: 45 Duplicates: 0 Warnings: 0	0.000 sec
50 10:36:18	SELECT * FROM Books LIMIT 0, 50000	231 row(s) returned	0.000 sec / 0.000 sec
51 10:36:18	SELECT * FROM Books WHERE Genre = 'Fiction' LIMIT 0, 50000	6 row(s) returned	0.000 sec / 0.000 sec
52 10:36:18	SELECT * FROM Books ORDER BY Title ASC LIMIT 0, 50000	231 row(s) returned	0.015 sec / 0.000 sec
53 10:38:03	SELECT Books.Title, Members.FirstName, Members.LastName FROM Transactions INNER JOIN Books ON Transactions.BookID = Books.BookID ...	150 row(s) returned	0.000 sec / 0.000 sec
54 10:38:57	SELECT Books.Title, Members.FirstName, Members.LastName FROM Transactions INNER JOIN Books ON Transactions.BookID = Books.BookID ...	150 row(s) returned	0.000 sec / 0.000 sec



Additional Questions/Discussions:

- How does the LEFT JOIN differ from the INNER JOIN?

Ans: The main difference between an **INNER JOIN** and a **LEFT JOIN** is as follows:

INNER JOIN only returns matched rows.

LEFT JOIN returns all rows from the left table and matched rows from the right table. It also returns NULL values for unmatched rows from the right table

Conclusions:

SQL **joins** are the foundation of **database management systems**, enabling the combination of data from multiple tables based on relationships between columns. Joins allow **efficient data retrieval**, which is essential for generating meaningful observations and solving **complex business queries**.