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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.

Result:

JOIN operations linking tables to retrieve combined data.

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

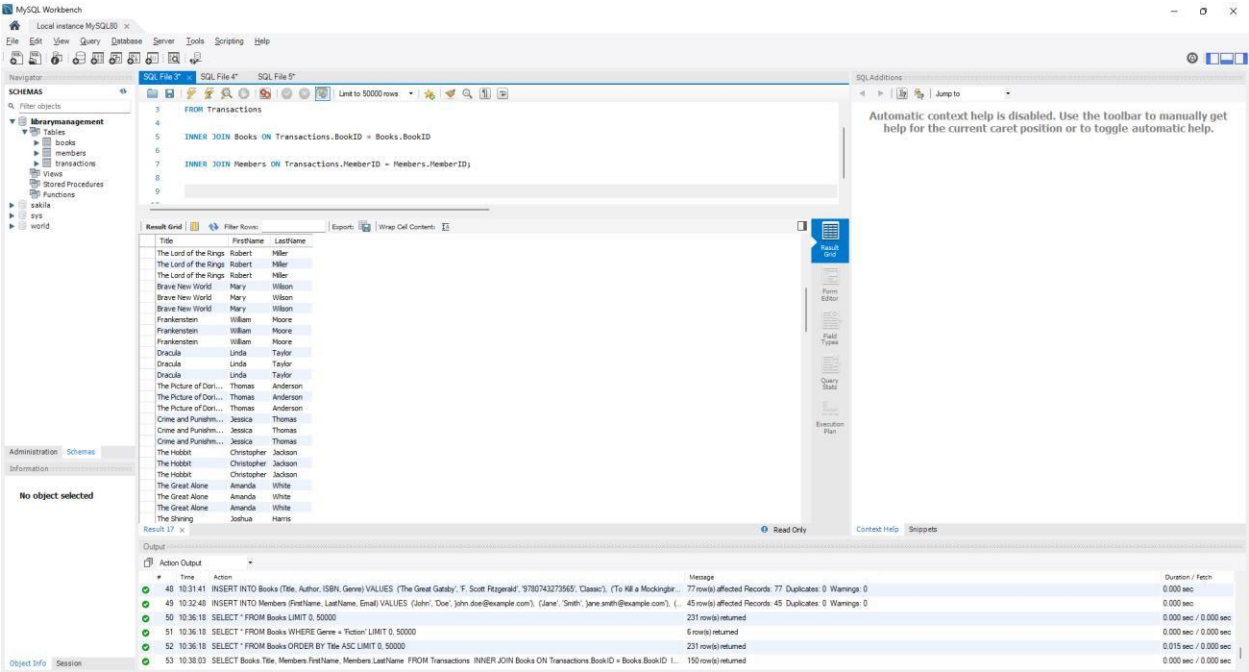
```
3 FROM Transactions
4
5 INNER JOIN Books ON Transactions.BookID = Books.BookID
6
7 INNER JOIN Members ON Transactions.MemberID = Members.MemberID
8
9
```

The Results window shows the output of the query, displaying columns: Title, Firstname, and Lastname. The data is as follows:

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
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 Catcher in the ...	Patricia	Garcia
The Lord of the Rings	Robert	Miller

The Output window shows the execution of the query, including the following messages:

- 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
- 50 10:36:18 SELECT * FROM Books WHERE Genre = 'Fiction' LIMIT 0, 50000 221 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
- 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 0.015 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?

The INNER JOIN retrieves only the records that have matching values in both tables being joined. If there’s no match, the row is excluded from the result. In contrast, the LEFT JOIN (or LEFT OUTER JOIN) returns all records from the left table and the matching records from the right table. If there’s no match, the result will include NULL values for columns from the right table, ensuring that no data from the left table is omitted.

Conclusions:

Laboratory Activity 4 focused on SQL JOIN operations, providing hands-on experience with combining data from multiple tables. Students learned how to use different types of JOINS, including INNER JOIN and LEFT JOIN, to retrieve related data based on matching keys. This activity reinforced the importance of relational database concepts and demonstrated how to effectively extract and manipulate data across multiple tables, a crucial skill for efficient data analysis and reporting in real-world scenarios.