

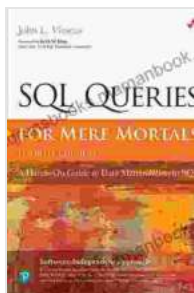
# Hands-On Guide to Data Manipulation in SQL

SQL (Structured Query Language) is a powerful language designed for managing and manipulating data stored in relational database management systems (RDBMS). Data manipulation involves operations that modify, insert, update, or delete data in a database. This guide provides a comprehensive hands-on approach to data manipulation in SQL, covering essential concepts and practical examples.

Data manipulation is performed using DML (Data Manipulation Language) statements, which include:

- **INSERT:** Adds new rows to a table.
- **UPDATE:** Modifies existing rows in a table.
- **DELETE:** Removes rows from a table.
- **MERGE:** Combines INSERT, UPDATE, and DELETE operations into a single statement.

To insert data into a table, use the INSERT statement. The syntax is:



## SQL Queries for Mere Mortals: A Hands-On Guide to Data Manipulation in SQL by John L. Viescas

★★★★☆ 4.5 out of 5

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Text-to-Speech : Enabled  
Screen Reader : Supported  
Enhanced typesetting : Enabled  
Print length : 960 pages



```
INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2, ...);
```

**Example:**

```
INSERT INTO customers (name, email) VALUES ('John Doe', 'johndoe@example.com');
```

To update existing data in a table, use the UPDATE statement. The syntax is:

```
UPDATE table_name SET column1 = new_value1, column2 = new_value2, ... WHERE condition;
```

**Example:**

```
UPDATE customers SET email = 'john.doe@example.com' WHERE name = 'John Doe';
```

To delete rows from a table, use the DELETE statement. The syntax is:

```
DELETE FROM table_name WHERE condition;
```

**Example:**

```
DELETE FROM customers WHERE email = 'johndoe@example.com';
```

The MERGE statement combines the functionality of INSERT, UPDATE, and DELETE into a single operation. The syntax is:

```
MERGE INTO table_name AS target USING source ON (target.id = source.id) WHEN MATCHED THEN UPDATE SET target.column1 = source.column1, ... WHEN NOT MATCHED THEN INSERT (column1, column2, ...) VALUES (source.column1, source.column2, ...);
```

**Example:**

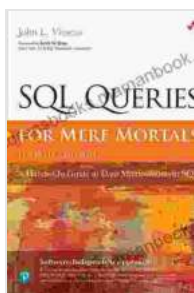
```
MERGE INTO customers AS target USING (SELECT * FROM temp_customers) AS source ON (target.id = source.id) WHEN MATCHED THEN UPDATE SET target.name = source.name, target.email = source.email WHEN NOT MATCHED THEN INSERT (id, name, email) VALUES (source.id, source.name, source.email);
```

Conditions in DML statements specify which rows are affected by the operation. Conditions can be based on any column in the table and can include operators such as:

- = (equal to)
- < (not equal to)
- > (greater than)
- >= (greater than or equal to)
- Data Manipulation Best Practices

- Use DML statements with caution, as they can permanently modify data.
- Always test DML operations on a copy of the production database before applying them to the live data.
- Use appropriate conditions to avoid unintentional data modifications.
- Use transactions to maintain data integrity during complex operations involving multiple DML statements.
- Optimize DML statements using indexes and appropriate data types to improve performance.

Data manipulation is an essential aspect of working with databases. SQL provides a powerful set of DML statements for inserting, updating, deleting, and merging data. By understanding the concepts and syntax outlined in this guide, you can effectively manage and manipulate data in your databases. Remember to follow best practices to ensure data integrity and performance.



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