LU07a - SQL-DML: Basics

Sources

1. W3Schools | INSERT INTO
2. W3Schools | UPDATE
3. W3Schools | DELETE

Learning Objectives

1. Understand and Apply Data Insertion Concepts
2. Master the Use of UPDATE Statements with Filters
3. Safely Delete Records Using SQL DELETE Statements:
4. Demonstrate Practical Usage of SQL DML in Real-world Scenarios

Introduction to DML

To beginn with, the acronym DML stands for **Data Manipulation Language** and refers to how table contents are to be handled according to the rules of a relational database system such as MySQL.

Overview of MySQL DML

MySQL DML is used to manage the data in tables, as opposed to the structure of the tables themselves. The three main operations are:

1. INSERT: Used to add new records to a table.
2. UPDATE: Modifies existing data within a table.
3. DELETE: Removes data from a table.

Each of these commands can be executed **with or without filtering conditions**, affecting either specific rows or all rows within a table.

1. INSERT Statement

The INSERT command is used to add new records to a table. When using INSERT, it is essential to specify the table and columns where the data will be added.

Syntax

```
INSERT INTO table_name (column1, column2, column3)
VALUES (value1, value2, value3);
```

Example

```
INSERT INTO employees (employee_id, first_name, last_name, hire_date,
salary)
VALUES (1, 'John', 'Doe', '2023-09-18', 55000);
```

2. UPDATE Statement

The UPDATE command is used to modify existing data in a table. It can be executed with or without a WHERE clause, depending on whether you want to update specific rows or all rows.

2.1 UPDATE with Filter (WHERE Clause)

Using a WHERE clause allows you to target specific rows to update. This ensures that only rows meeting a certain condition are modified.

Syntax

```
UPDATE table_name
SET column1 = value1, column2 = value2
WHERE condition;
```

Example

```
UPDATE employees
SET salary = 60000
WHERE employee_id = 1;
```

2.2 UPDATE without Filter

If you omit the WHERE clause, the UPDATE command will modify every row in the table, which can lead to unintended changes, so it must be used with caution.

Syntax

```
UPDATE table_name
SET column1 = value1;
```

Example

```
UPDATE employees
SET salary = 70000;
```

3. DELETE Statement

The DELETE command is used to remove records from a table. Like UPDATE, it can be run with or

without a filter, making it vital to define the condition to avoid unintended data removal.

3.1 DELETE with Filter (WHERE Clause)

Using a WHERE clause ensures that only specific rows matching the condition will be deleted.

Syntax:

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

Example

```
DELETE FROM employees
WHERE employee_id = 1;
```

3.2 DELETE without Filter

Omitting the WHERE clause removes all data from the table, so it must be used cautiously. This operation doesn't remove the table structure, just the rows.

Syntax:

```
DELETE FROM table_name;
```

Example:

```
DELETE FROM employees;
```

Conclusion

MySQL DML commands provide robust mechanisms for managing data in relational databases. The INSERT, UPDATE, and DELETE commands can all be customized with filters to ensure that specific data is targeted for modification or removal. Careful use of these commands, particularly when filtering conditions are omitted, is critical for maintaining data integrity within a database.

Vocabulary

English	Deutsch
to refer to	beziehen auf
according	gemäss
opposed to	im Gegensatz zu
to omit	auslassen
to customize	(bedarfsgerecht) anpassen

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