Data Manipulation Language (DML)

Contents

Overview

Data Manipulation Language (DML) is a subset of SQL that is used to manipulate the *content* of the database.

This is different to DDL, which is used to manipulate the schema rather than the data.

DML is arguably the most widely-used subtype of MySQL, and is integrated often into applications to read/write data to/from databases.

The most well-used CRUD operations we'd expect to use in DML are:

- Inserting data to, and deleting data from, table
- Reading data from tables based on various criteria
- Updating the existing records in a table

CRUD operations

You may see applications and operations being referred to as **CRUD** applications/operations. CRUD stands for:

- **Create**
- **Read**
- **Update**
- **Delete**

In MySQL syntax, there are a few ways that we can use CRUD functionality:

Operation	SQL
create	`INSERT INTO`
read	`SELECT`
update	`UPDATE`
delete	`DELETE`

Inserting Data

The syntax for inserting records into a table breaks down into the following:

- Specify the table and columns that we're inserting data into
- Specify the values that we want to enter, in the same order that we used to identify the columns

If we are inserting into specific fields in a table, we must specify them:

```
INSERT INTO table_name (column_1, column_4, column_5)
VALUES (value_1, value_2, value_3);
```

However, if we're inserting into all fields, there is no need to specify them:

```
INSERT INTO table_name
VALUES (value_1, value_2, value_3, value_4, value_5);
```

If we have a field that auto increments (such as the `PRIMARY KEY` field for a table), we need to specify the rest of the fields when inserting data:

```
INSERT INTO customers (forename, surname, age)
VALUES ('Jeff', 'Cyrus', 29);
```

Deleting Records

Deleting records from a table uses the `DELETE` keyword.

If you don't specify any criteria, MySQL will delete all records, so be very careful!

```
DELETE FROM customer_archive;
```

To delete a specific record, you should specify criteria; this is done with the `WHERE` keyword.

```
DELETE FROM orders WHERE status='Cancelled';
```

Updating Records

The syntax for updating records in a table breaks down into the following:

- Outline the table that the record exists in
- Specify the value for the changed field
- Outline any conditions

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

This becomes more difficult as the database has more relationships within records, as constraints may prevent certain fields from being edited (such as `PRIMARY KEY` fields).

Viewing records

We can view the records within a table with the `SELECT` keyword:

```
SELECT * FROM table_name;
```

`SELECT` is technically its own language - `Data Query Language` - and is covered in the Data Query Language module.

Tutorial

There is no tutorial for this module.

Exercises

Start by inserting at least 5 records per table. It's recommended you start with `customers` and `products`, followed by `orders`.

(*note: if you have not created a schema for the games shop database yet, refer back to the Data Definition module for context*)

▶ Solution