

Diploma in Web Development – Part II



Servers & Databases - Week 2 Advanced SQL

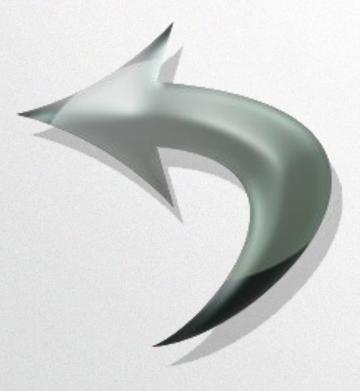
Presented by:
Julian Quirke
Web Development Educator



Week 1 Recap

Relational Database Management Systems

- How Relational Databases Work
- Field & Multifield Keys
- Creating a Relational Database (with phpMyAdmin)
- > Summary
- > Q&A



Today's Lesson

Advanced SQL

- Reintroducing SQL
 - > Introducing CRUD
- > Filtered SQL Queries
- > SQL Functions
- > Summary
- > Q&A



Let's Begin!





Structured Query Language



Structured Query Language

is the language used to communicate with a relational database

Review

- > Sequence of instructions
- >Knowns as a query or statement
- >Instructions consist of:
 - > Keywords
 - > Column Names
 - > Values



Review

- > Sequence of instructions
- >Knowns as a query or statement
- >Instructions consist of:
 - > Keywords
 - > Column Names
 - > Values
- ➤ Queries are executed by the database (subject to constraints)



Basic SQL Instructions

Retrieve information

Add information

```
INSERT INTO table_name
VALUES (value1, value2, value3)
```

Introducing CRUD



Create Read Update Delete

Introducing CRUD



Create Read Update Delete

are the four basic functions of persistent storage



In SQL

➤ Create: INSERT

➤ Read: SELECT

➤ Update: UPDATE

➤ Delete: DELETE





Filtered SQL Queries



Filtered SQL Queries

are SQL queries executed subject to any number of conditions, filters, or sorting as defined in the statement

Filtered Queries in SQL

Allow us to ask for specific portions of a table or set of tables

Databases are designed to very efficiently perform these tasks (even with many records)

Searching using an indexed field speeds up the search process







The WHERE clause



The WHERE clause

allows us to filter result sets based on conditions separated by AND, OR

The WHERE clause

General:

```
SELECT * FROM <table_name>
WHERE <column_name1> <operator1> <value1> AND
<column_name2> <operator2> <value2> OR
<column_name3> <operator3> <value3>;
```

The WHERE clause

Example:

```
SELECT id, name, stock FROM products
WHERE stock > 5 AND discount < 0.2;</pre>
```

WHERE clause operators

Operator	Meaning
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
=	Equal to
!= or <>	Not equal to

WHERE clause operators

BETWEEN:

SELECT id, name, stock FROM products WHERE stock BETWEEN 5 AND 10;

WHERE clause operators

IN or NOT IN:

```
SELECT id, name, stock FROM products WHERE discount IN (0.1, 0.2, 0.3);
```

WHERE clause operators

LIKE:

```
SELECT id, name, stock FROM products
WHERE name LIKE "C%";
```



ORDER BY clause



ORDER BY clause

allows us to sort result sets based on columns in a specific order

ORDER BY clause

General:

```
SELECT * FROM <table_name>
ORDER BY <column_name1> ASC/DESC;
```

ORDER BY clause

Example:

SELECT id, name, stock FROM products
ORDER BY name DESC;



LIMIT clause



LIMIT clause

allow us to filter results sets based on a maximum number of queries, and to offset the start point of the result set using OFFSET

LIMIT clause

General:

```
SELECT * FROM <table_name>
LIMIT <value1> OFFSET <value2>;
```

LIMIT clause

Example:

```
SELECT id, name, stock FROM products LIMIT 6 OFFSET 12;
```

SQL Functions



SQL Functions

SQL Functions



SQL Functions

are functins built into an SQL relational database that can be used to manipulate and analyse database records



Summary

Advanced SQL

- Reintroducing SQL
 - > Introducing CRUD
- > Filtered SQL Queries
- > SQL Functions

- > Summary
- > Q&A

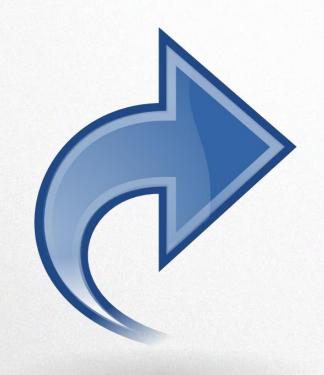


Next Week



Servers & Databases Semester

- > The next session is "Databases & Security"
 - What is SQL Injection?
 - PHP Primer: MySQLi
 - Prepared SQL Statements
- Recordings are available within 24 hours after the live webinar
 - **➢** Go to <u>www.shawacademy.com</u> and then the Top Right Corner − Members Area



Next Lesson is

Databases & Security

- ➤ Learn about one of the most common security issues surrounding web application databases
- You will understand how SQL Injection works and how to set up your web application to defend against these attacks
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