

CT4009

Introduction to SQL and MySQL

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CT4009

Introduction to SQL and MySQL

What we'll cover today

- What MySQL is
- What SQL is
- How we use them both
- Basic examples

What is MySQL?

- A relational database system/engine much like PostgreSQL, MongoDB and Microsoft SQL server
- MySQL is free, but not open source. It's owned by Oracle
- Maria DB is a fork of MySQL which is both free **and** open source

More about MySQL

- It's the second most popular database system/engine (<https://db-engines.com/en/ranking>)
- It's used by the most popular CMS, WordPress
- Companies such as Facebook, Wikipedia and Youtube use MySQL databases

What is a database?

- Software for storing, selecting and querying data
- Like a collection of Excel spreadsheets, but with a lot more power
- Allows multiple tables, functions and relationships for powerful data management
- A common way of powering a dynamic website

A database table

phpMyAdmin

Go backwards one page
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- performance_schema
- sys

Server: localhost:8889 » Database: ct4009 » Table: users

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Showing rows 0 - 1 (2 total, Query took 0.0008 seconds.)

```
SELECT * FROM `users`
```

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☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

				user_id	user_name	user_email	user_password
<input type="checkbox"/>	Edit	Copy	Delete	1	A user	test@email.com	EA6EF8C82D22183BF7BE0B34EA93D46A
<input type="checkbox"/>	Edit	Copy	Delete	2	Another user	another_user@email.com	2018D8910AFBC46FD9B3DB4D9BA0DBD9

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Query results operations

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We create a table like this



```
CREATE TABLE `users` (  
  `id` INT NOT NULL AUTO_INCREMENT PRIMARY KEY,  
  `name` varchar(255) NOT NULL,  
  `email` varchar(100) NOT NULL,  
  `password` varchar(150) NOT NULL  
);
```

We add data like this

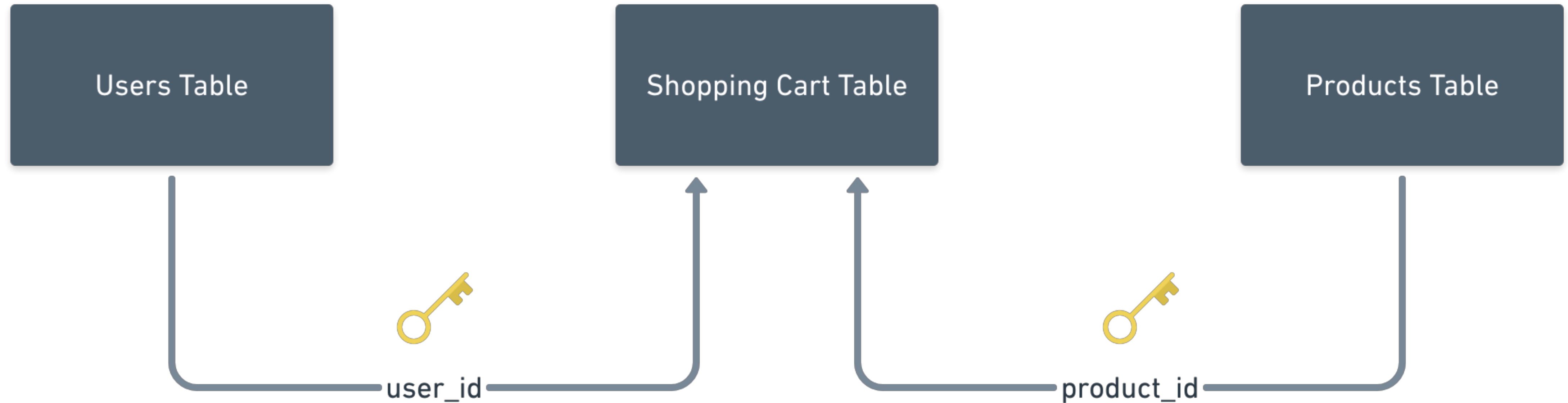


```
INSERT INTO `users`  
(`name`, `email`, `password`)  
VALUES  
( 'Andy', 'andy@email.com', MD5( 'a password' ) )
```


What is a relational database?

- It allows us to link tables together with **keys**
- Every table should have a **primary key** which is an auto-incrementing, unique identifier
- We can link tables together with **foreign keys** which link two table's **primary key** together for you, amongst other things like protect data from being deleted
- This is useful for creating healthy datasets with minimal duplication and efficient queries

Relational database



What is SQL?

- SQL stands for **Structured Query Language**
- It's used to communicate with a database, like a MySQL database
- We use mostly use SQL to **create, retrieve, update** and **delete** data
- This is known as **CRUD**

An SQL Statement



```
SELECT *  
FROM users
```

Query would return both these users

phpMyAdmin

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`SELECT * FROM `users``

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Query results operations

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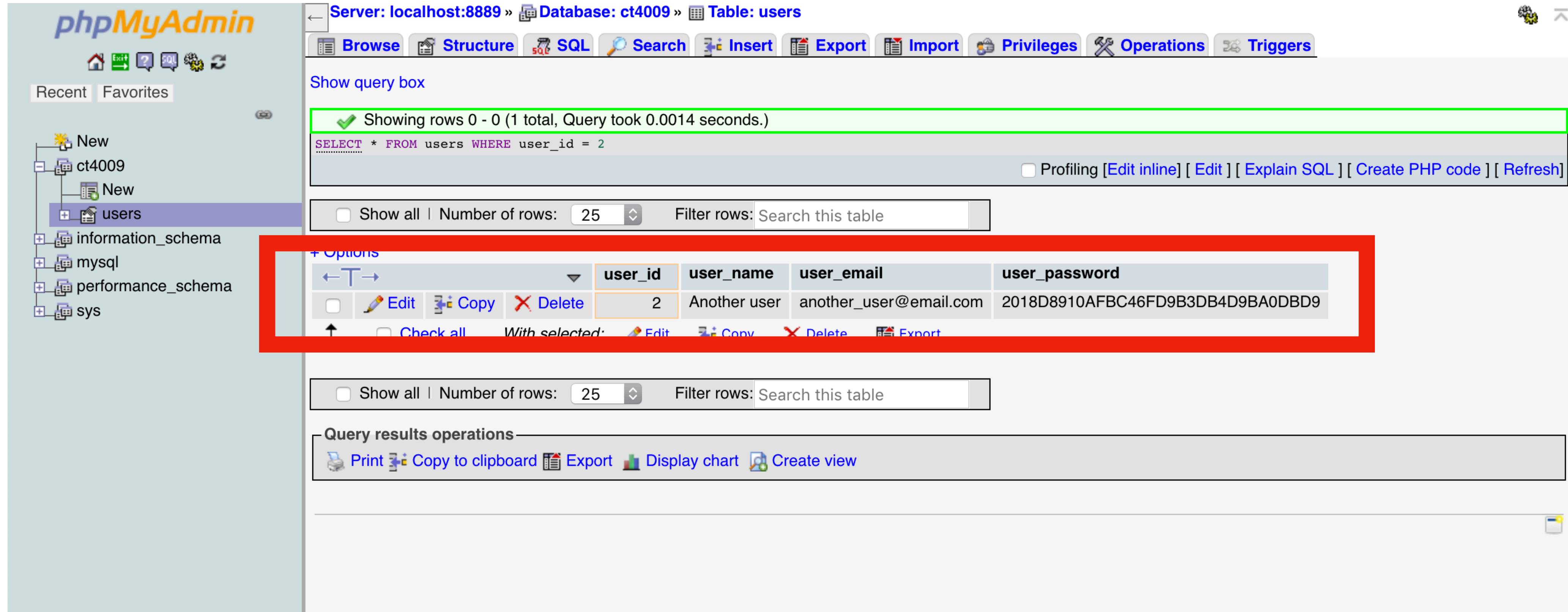
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A WHERE clause



```
SELECT *  
FROM users  
WHERE user_id = 2
```

Returns one user that matches query



Server: localhost:8889 » Database: ct4009 » Table: users

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Show query box

Showing rows 0 - 0 (1 total, Query took 0.0014 seconds.)

```
SELECT * FROM users WHERE user_id = 2
```

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Show all | Number of rows: 25 | Filter rows: Search this table

	user_id	user_name	user_email	user_password
<input type="checkbox"/> Edit Copy Delete	2	Another user	another_user@email.com	2018D8910AFBC46FD9B3DB4D9BA0DBD9

Check all With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table

Query results operations

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We can also just select that user's name

A WHERE clause



```
SELECT user_name  
FROM users  
WHERE user_id = 2
```

Returns one user that matches query

✓ Showing rows 0 - 0 (1 total, Query took 0.0003 seconds.)

```
SELECT user_name FROM users WHERE user_id = 2
```

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☐ Show all | Number of rows: 25

Options

user_name
Another user

☐ Show all | Number of rows: 25

Query results operations

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Further learning

It's recommended that you run through this SQL tutorial on W3 Schools:

<https://www.w3schools.com/sql/>

Recap

- We learned what MySQL is
- We learned what SQL is
- We learned how we use them both