CT4009

Introduction to SQL and MySQL

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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

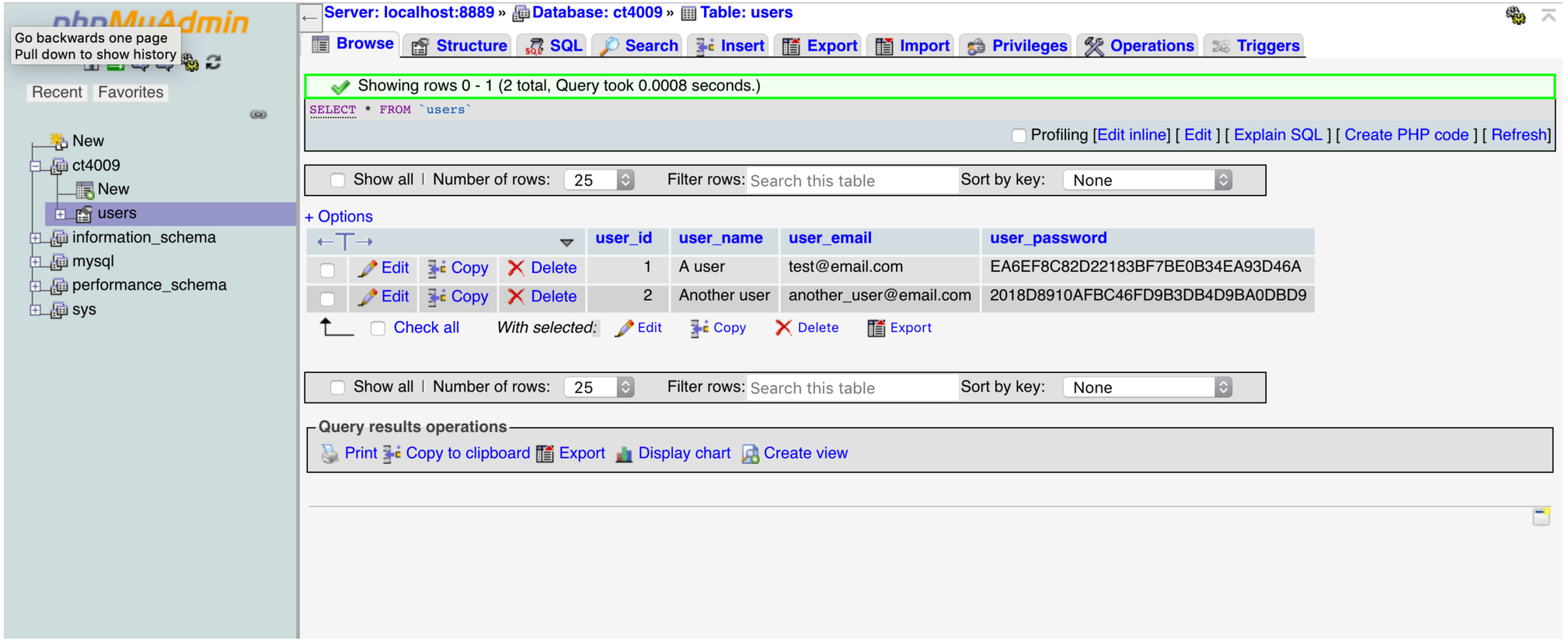
More about MySQL

- 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



We create a table like this

```sql
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?

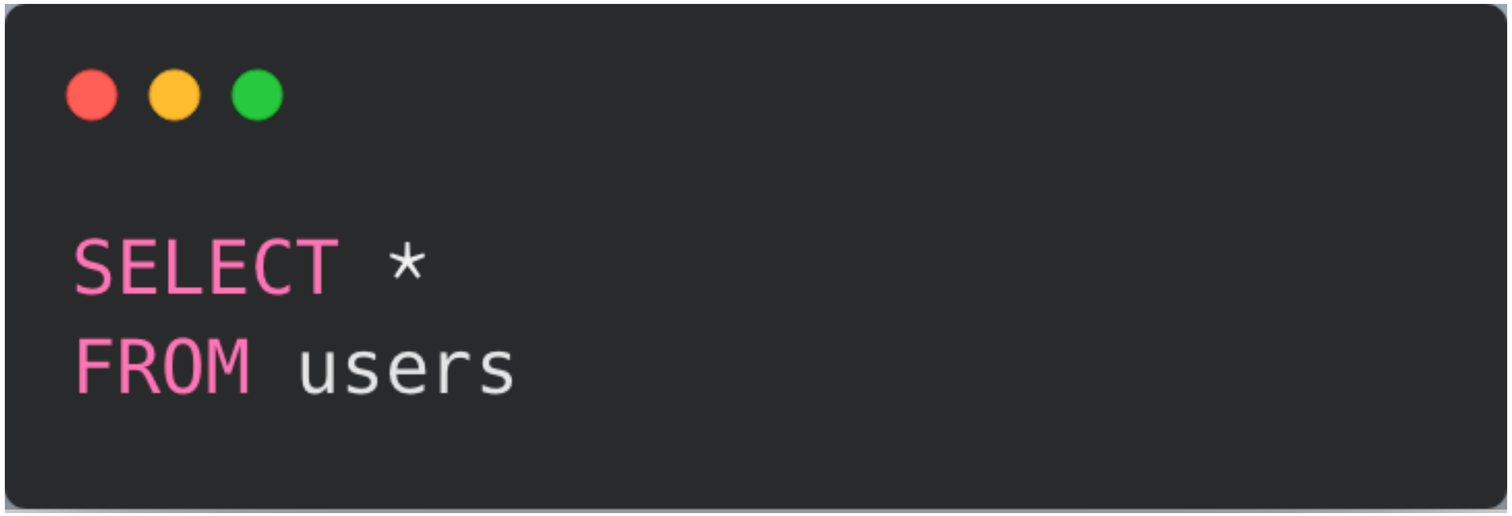
- It allows us to link tables together with **keys**
- Every table should have a **primary key** which is an auto-incrementing, unique identifier
- We can link tables together with **foreign keys** which link two table's **primary key** together for you, amongst other things like protect data from being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

Relational database

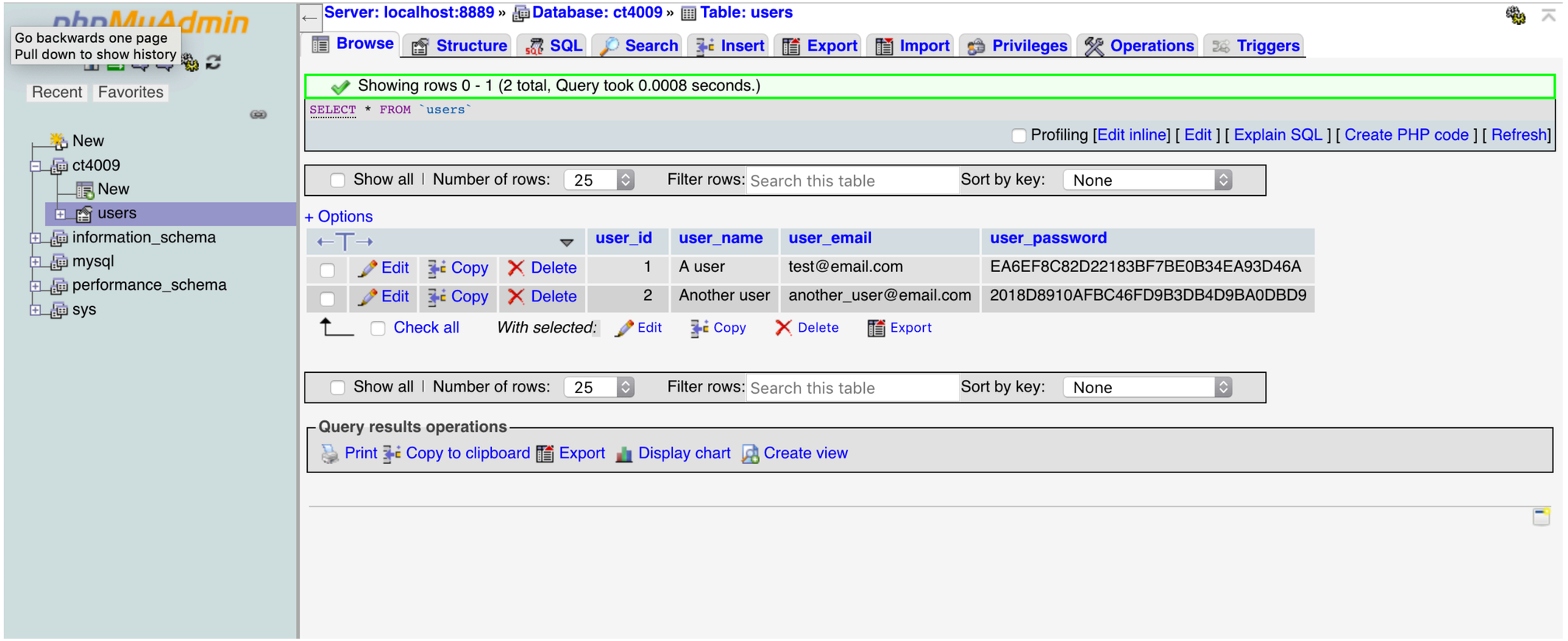
What is SQL?

- 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**

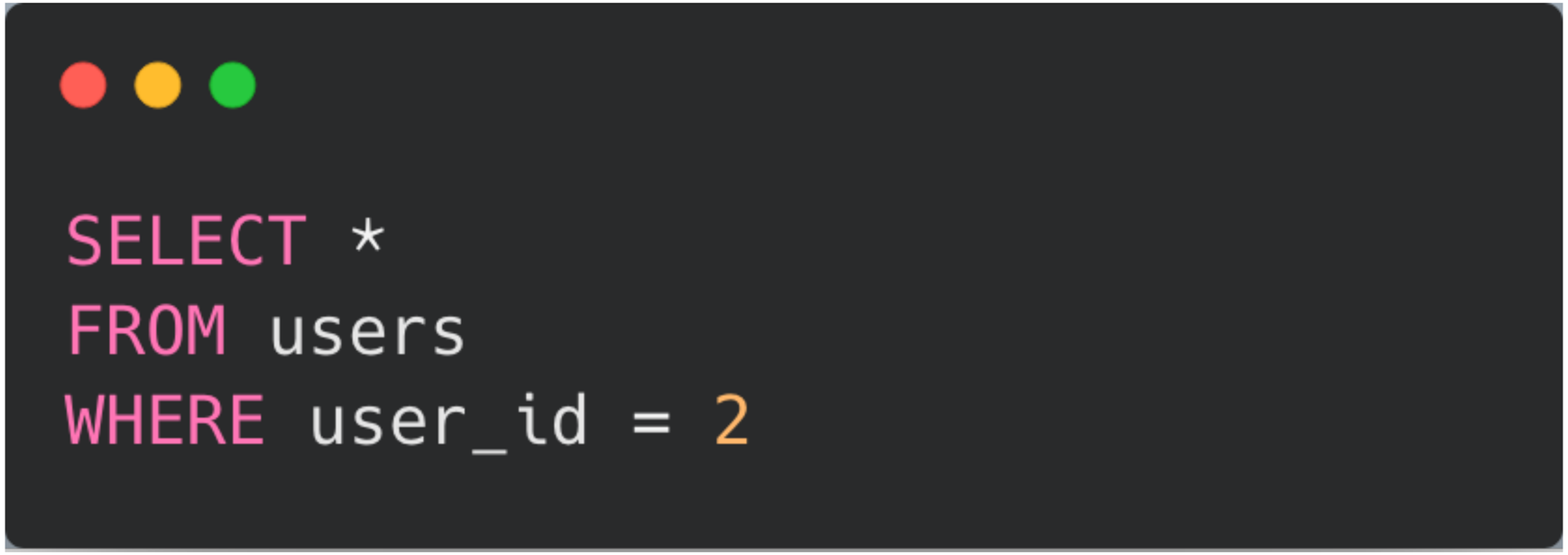
An SQL Statement



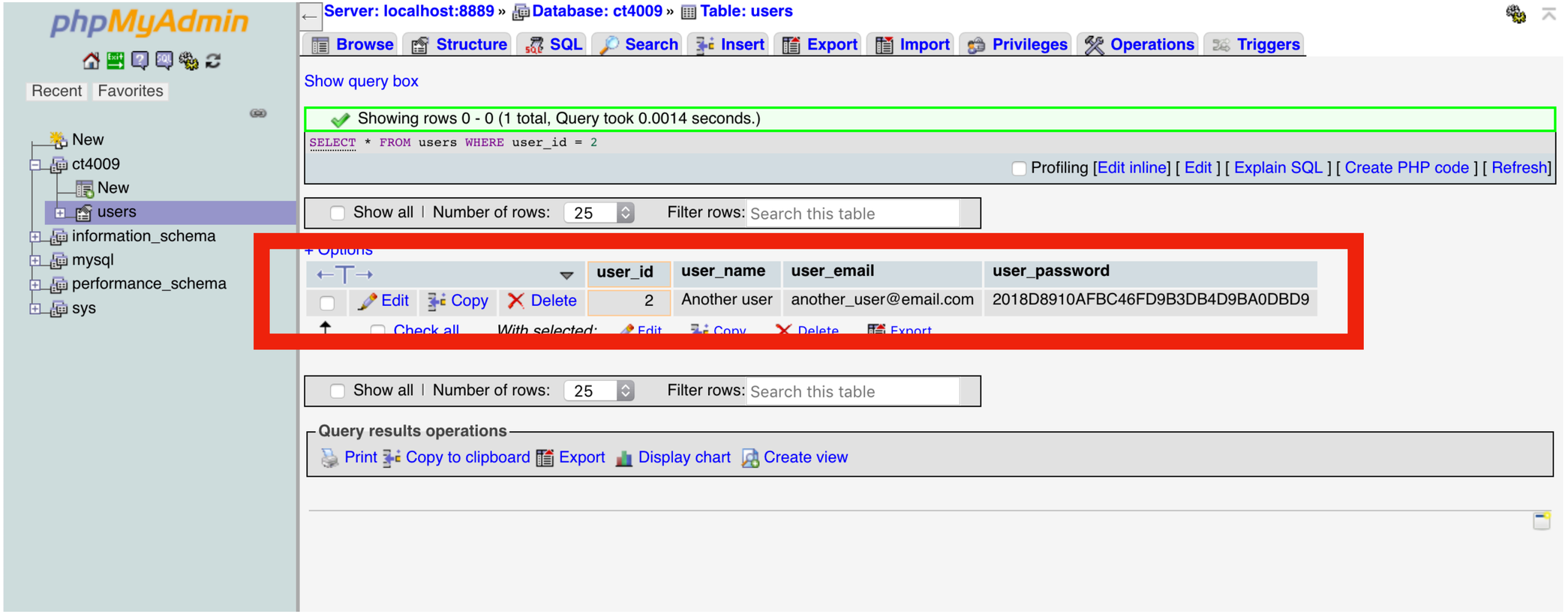
Query would return both these users



A WHERE clause

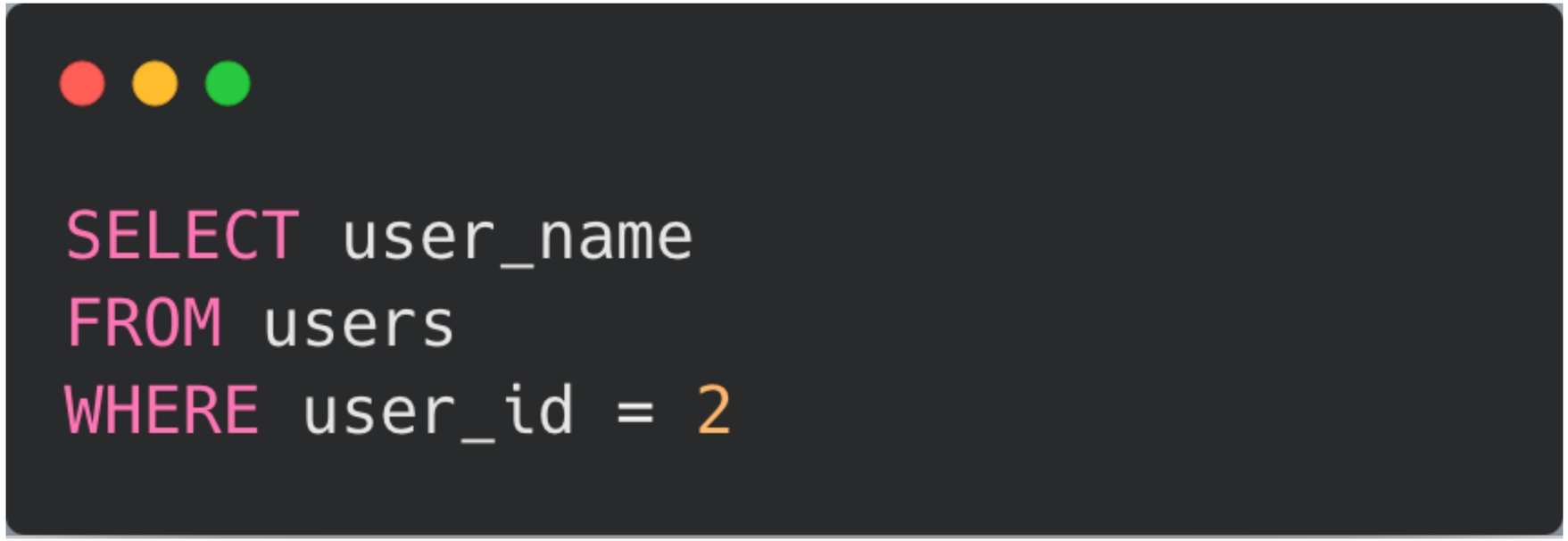


Returns one user that matches query



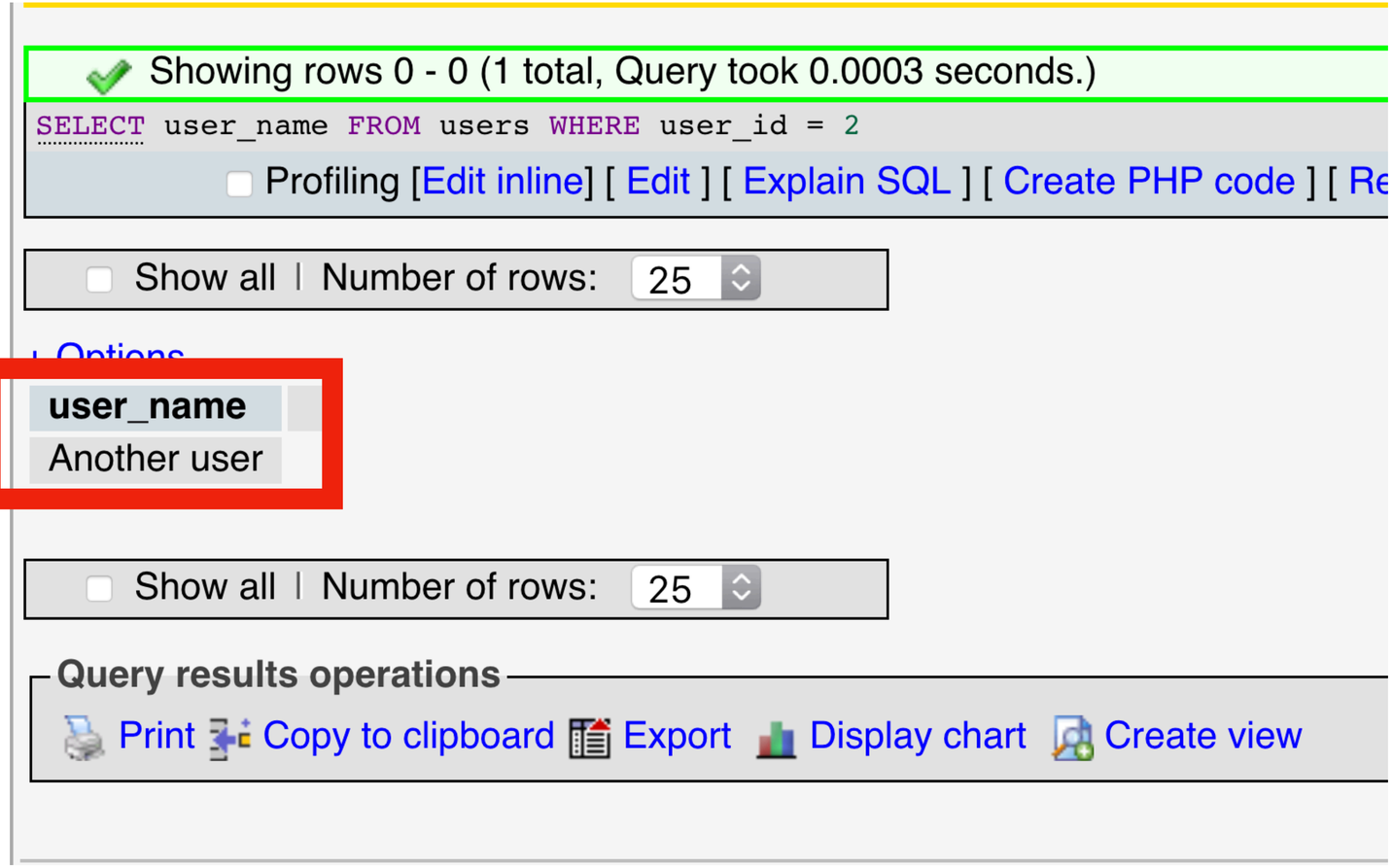
We can also just select that user's name

A WHERE clause



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

Returns one user that matches query



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