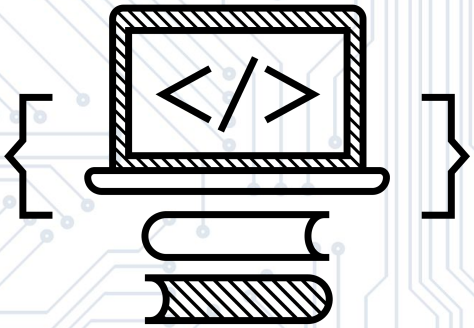


MySQL

Web Development Boot Camp

Lesson 11.1

MySQL is a
Relational
Data**B**ase
Management
System

MySQL: what is it?

A **R**elational **Data**b**ase** **M**anagement **S**ystem (**RDBMS**)

`mysqld` (the server application aka daemon)

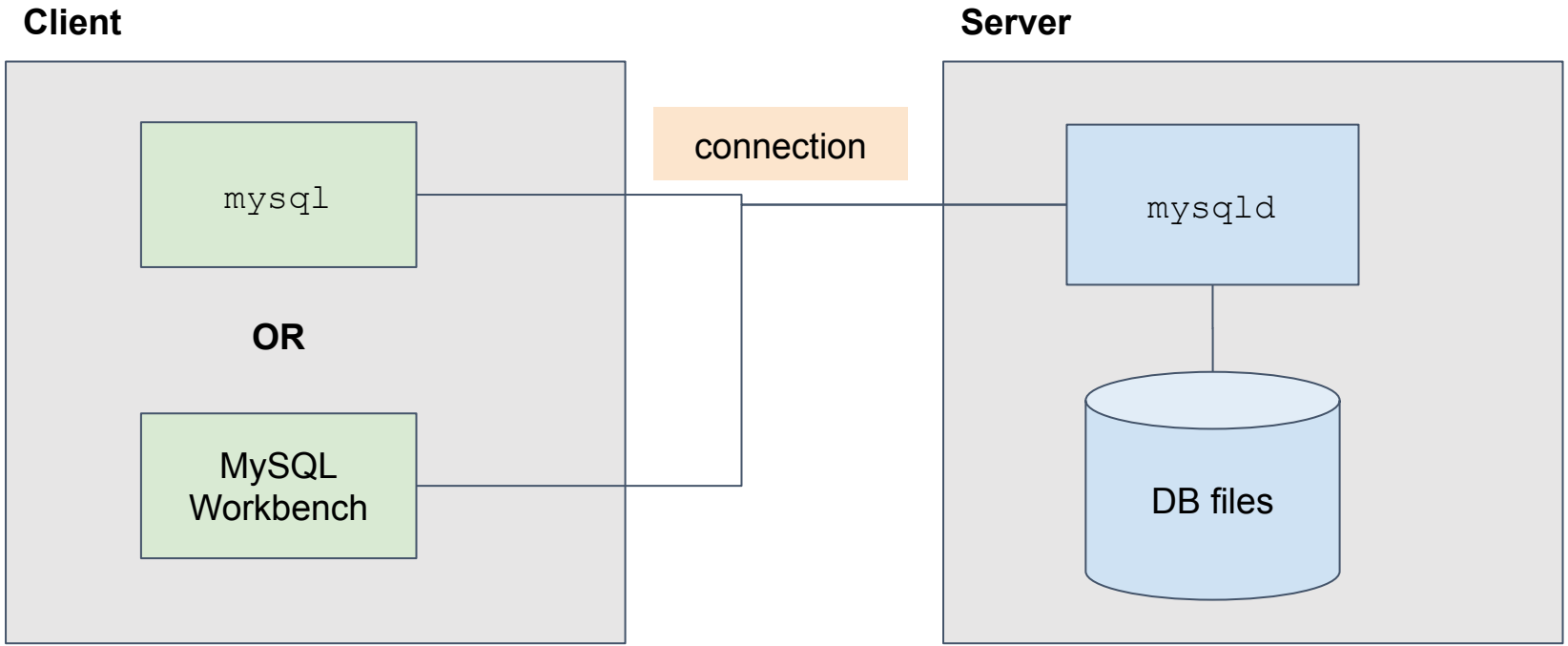
`mysql` (the command line client)

SQL (**S**tructured **Q**uery **L**anguage)

MySQL Workbench (A GUI for accessing a database)

TCP port 3306

The system


Client
Server
mysql
OR
MySQL
Workbench
connection
mysqld
DB files

SQL - Structured Query Language

Used for two purposes

01 Data Definition

Defines a “schema”, aka “database”

- A set of tables
  - Rows (aka “records”)
  - Columns (aka “fields”)
- The fields in that table
  - Type (e.g., `INT`, `VARCHAR`)
  - Size

02 Data Manipulation

- Create a record (`INSERT`)
- Retrieve a record (`SELECT`)
- Update a record (`UPDATE`)
- Delete a record (`DELETE`)

Data

Data are things. We **model** data, represented either as a **table** or as a **column** in a table

Table or column?

Rules of thumb

01 Column

- explicitly helps describe another thing
- can be adequately expressed as a single variable (e.g., a string, number, blob, boolean)
- An **Attribute**

02 Table

- Needs to be described by many aspects (like an **Object**)
- Has many instances that **relate** to other things
- An **Entity**

Data models a real world problem

Example: Bootcamp Class

BootcampClass	
`id`	`int`
`instructor`	`varchar(64)`
`title`	`varchar(256)`

Q. What are the “things” that define a school class?

Data modelling: Bootcamp Class

Identify the “things” in your model

BootcampClass	
`id`	`int`
`instructor`	`varchar(64)`
`title`	`varchar(256)`

- Subject
- Students
- TA’s
- Live instruction class times (aka Sessions)
- Assignments
- Grades

  (and more…)

Q. How do we model students? Table or row?

Data modelling: Bootcamp Class

Students would have their own table

BootcampClass	
`id`	`int`
`instructor`	`varchar(64)`
`title`	`varchar(256)`

BootcampClassStudent	
`id`	`int`
`fname`	`varchar(64)`
`lname`	`varchar(64)`

There are **many** students to **one** class.

Data modelling: Bootcamp Class

Here is some data

BootcampClass		
id	instructor	title
1	John Young	Full Stack
2	Joey Joseph	Data Science

BootcampClassStudent		
id	fname	lname
1	Sally	Kellerman
2	Rodney	Dangerfield

Q. How do I know which students are in what class?

Tables can have relationships to other tables

Data modelling: Bootcamp Class

Relationships are denoted by **foreign keys**.

BootcampClass	
id	int
instructor	varchar(64)
title	varchar(256)

1..1

0..*

BootcampClassStudent	
id	int
fname	varchar(64)
lname	varchar(64)
classId	int

This how we model a **one-to-many** relationship.

Data modelling: Bootcamp Class

Here is some data with foreign keys

BootcampClass		
id	instructor	title
1	John Young	Full Stack
2	Joey Joseph	Data Science

BootcampClassStudent			
id	fname	lname	classId
1	Sally	Kellerman	2
2	Rodney	Dangerfield	1
3	Barney	Rubble	1

Activity 5: Books

Review books.sql with your groups

What is a **JOIN**?

Suggested Time: