



**Clase 15.** Programación Backend

***SQL***



## **OBJETIVOS DE LA CLASE**

- Comprender el concepto de base de datos
- Instalar y configurar un servidor de base de datos SQL.
- Realizar CRUD hacia la base de datos mediante clientes GUI y CLI

# **CRONOGRAMA DEL CURSO**

Clase 14



**Webpack: Module  
Bundler**

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Clase 15



**SQL**

Clase 16



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# *Servidor de Base de Datos SQL*





# ¿Qué es una base de datos?



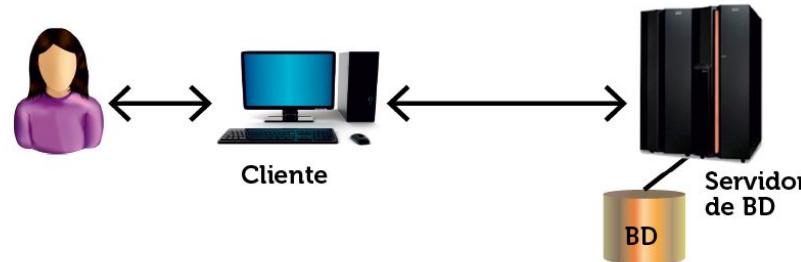
- La base de datos es un **repositorio persistente** que nos permite **almacenar** gran número de **información** de una **forma organizada** para su futura consulta, realización de búsquedas, nuevo ingreso de datos y muchas otras operaciones.
- Un **servidor de base de datos** es un **contenedor** que puede alojar un gran número de bases de datos y ofrece los servicios para conectarlas a los clientes.
- Mediante los **clientes** podemos interactuar con las bases de datos y estos pueden estar implementados en modo consola, en modo aplicación gráfica o desde nuestra aplicación de servidor.



# *Ci*entes de base de datos



- La arquitectura **cliente-servidor** es un modelo de diseño de software en el que las tareas se reparten entre los proveedores de recursos o servicios, llamados servidores, y los demandantes, llamados clientes
- **Un cliente** realiza peticiones a otro programa, el servidor, quien le da respuesta
- **Un cliente de base de datos** se conecta e interactúa con el servidor de base de datos

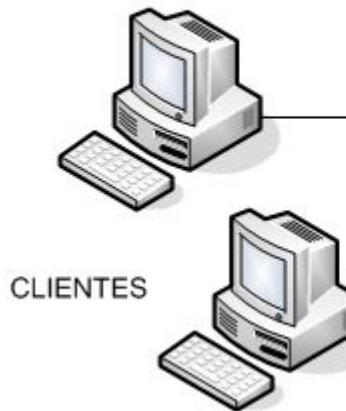




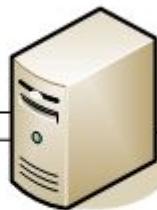
# Modelo Cliente Servidor



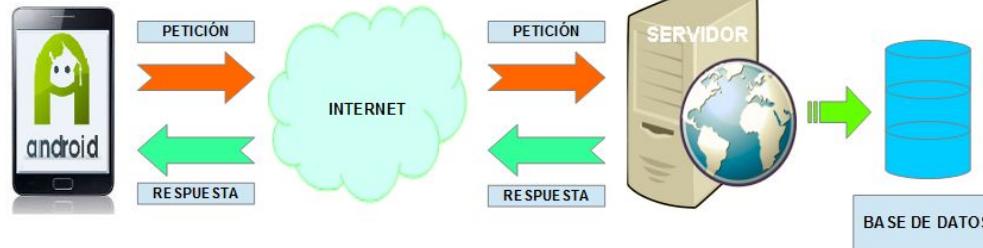
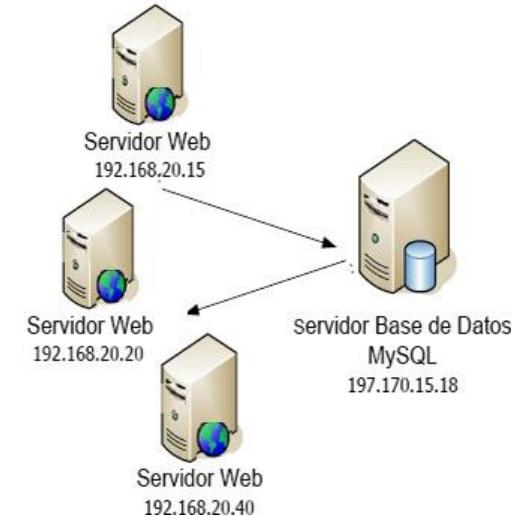
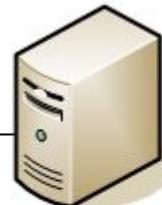
1. Capa de presentación



2. Capa de negocio



3. Capa de datos



# *Tipos de clientes de base de datos*



**Cliente CLI** (*Command Line Interface*): Es un cliente que interactúa con la base de datos **mediante** el uso de una **consola**.

```
MySQL 5.6 Command Line Client
r - Advanced Edition <Commercial>
Copyright (c) 2000, 2014, Oracle and/or its affiliates. All rights reserved.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use dvd_collection;
Database changed
mysql> SELECT * FROM movies;
+-----+-----+-----+
| movie_id | title           | release_date |
+-----+-----+-----+
|      1   | Gone with the Wind | 1939-04-17   |
|      2   | The Hound of the Baskervilles | 1939-03-31   |
|      3   | The Matrix        | 1999-06-11   |
|      4   | Above the Law     | 1988-04-08   |
|      5   | Iron Man 2        | 2010-05-07   |
+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

# Tipos de clientes de base de datos



**Cliente GUI (graphical user interface):** Es un cliente que interactúa con la base de datos **mediante** el uso de una **aplicación gráfica**.

The screenshot shows the MySQL Workbench interface. On the left, there's a sidebar with tabs for MySQL ModelX, EER Diagramx, localx, Migrationx, and localx. Below that are sections for MANAGEMENT (Server Status, Client Connections, Users and Privileges, Status and System Variables, Data Export, Data Import/Restore), INSTANCE (Startup / Shutdown, Server Logs, Options File), and SCHEMAS (sakila, tables: actor, address, category, city, country, customer, film, film\_actor). The main area has a 'Query 1 x' tab open with the following SQL code:

```
1 • SELECT `actor`.`actor_id`,  
2   `actor`.`first_name`,  
3   `actor`.`last_name`,  
4   `actor`.`last_update`  
5 FROM `sakila`.`actor`;  
6  
7 • SELECT `film`.`film_id`,  
8   `film`.`title`,  
9   `film`.`description`,  
10  `film`.`release_year`,  
11  `film`.`language_id`,  
12  `film`.`original_language_id`,  
13  `film`.`rental_duration`,  
14  `film`.`rental_rate`,  
15  `film`.`length`,  
16  `film`.`replacement_cost`,  
17  `film`.`rating`;
```

The results grid shows the following data:

#	film_id	title	description
1	1	ACADEMY DINOSAUR	A Epic Drama of a Feminist And a Mad Scientist who must Battle a Teacher in The Canadian Rockies
2	2	ACE GOLDFINGER	A Astounding Epistle of a Database Administrator And a Explorer who must Find a Car in Ancient China
3	3	ADAPTATION HOLES	A Astounding Reflection of a Lumberjack And a Car who must Sink a Lumberjack In A Balloon Factory
4	4	AFFAIR PREJUDICE	A Fanciful Documentary of a Frisbee And a Lumberjack who must Chase a Monkey In A Shark Tank

On the right side of the interface, there's a context help panel with the title 'SELECT' and a detailed description of the SELECT clause.

# Tipos de clientes de base de datos



**Cliente Web** : Es un cliente que interactúa con la base de datos a través de una página web **mediante** el uso de un **navegador**

The screenshot shows the phpMyAdmin interface running on a local host. The left sidebar lists databases: 'ejercicios', 'mibasemartes', 'mibasemartes2', 'mysql', 'performance\_schema', 'phpmyadmin', and 'test'. The main panel shows the 'ejercicios' database structure. It includes a 'Filtros' section with a search bar, a table listing three tables ('departamento', 'empleado', 'orden\_sueldos') with columns like 'Filas', 'Tipo', 'Cotejamiento', and 'Tamaño', and a 'Crear tabla' section for creating a new table with 4 columns.

Tabla	Acción	Filas	Tipo	Cotejamiento	Tamaño	Residuo a depurar
departamento	Examinar Estructura Buscar Insertar Vaciar Eliminar	12	InnoDB	utf8mb4_general_ci	16.0 KB	-
empleado	Examinar Estructura Buscar Insertar Vaciar Eliminar	25	InnoDB	utf8mb4_general_ci	16.0 KB	-
orden_sueldos	Examinar Estructura Buscar Insertar Editar Eliminar Visualizar	~37	InnoDB	utf8mb4_general_ci	32.0 KB	0 B

# *Tipos de clientes de base de datos*



**Cliente de aplicación:** Es un cliente que está implementado **dentro** de nuestra **aplicación** de **backend** y sirve para que nuestro programa se conecte e interactúe con la base de datos.

```
index.js  x
1  'use strict' // modo estricto para evitar sintaxis incorrecta
2
3  var mongoose = ...
4
5  mongoose.connect('mongodb://localhost:27017/dbTutorial', { useNewUrlParser: true }, (err, db) => {
6      if (err) throw err
7      console.log("conexión establecida a la base de datos " + db.name)
8      db.close()
9  })
```



C R U D

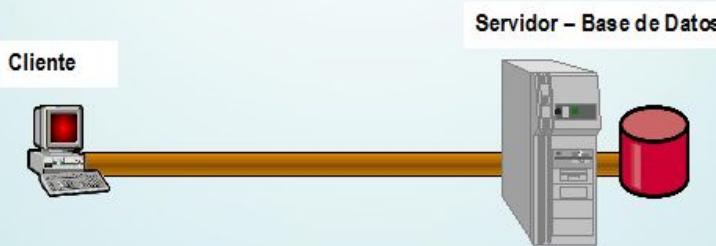
# ¿Qué es CRUD?



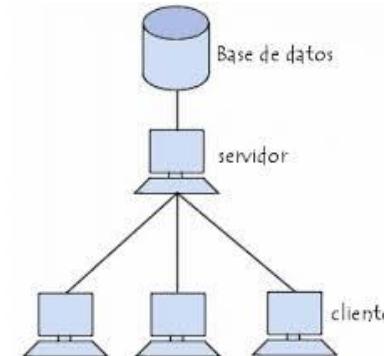
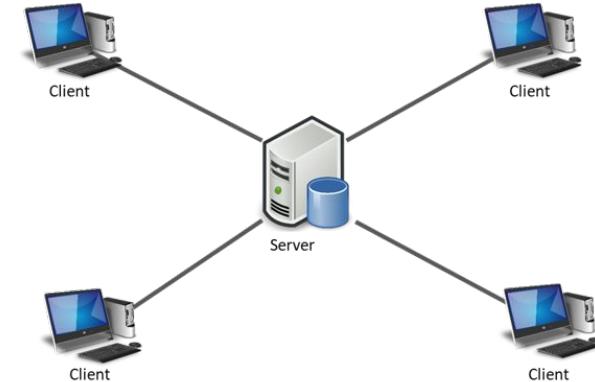
- En informática, **CRUD** es el acrónimo de "Crear, Leer, Actualizar y Borrar" (del original en inglés: *Create, Read, Update and Delete*), que se usa para referirse a las funciones básicas en bases de datos o la capa de persistencia en un software
- CRUD resume las **tareas** requeridas por un usuario **para crear y gestionar datos**, ya sea para el manejo de bases de datos o para el uso de aplicaciones.

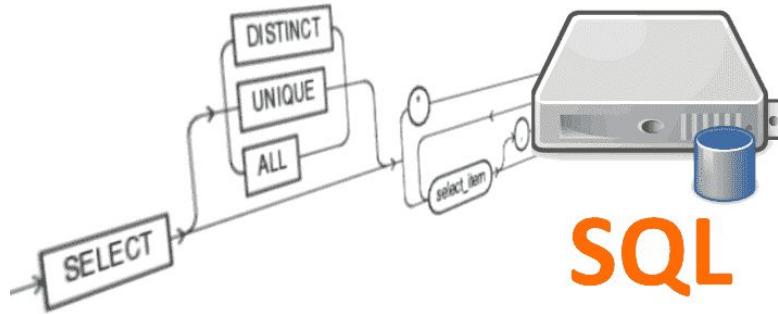
# Esquemas

## Arquitectura Cliente/Servidor

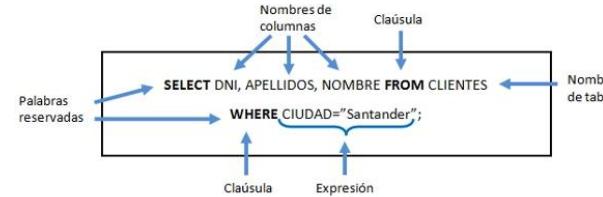


- **Cliente:** Demanda servicios
- **Servidor:** Provee servicios





# ¿Qué es SQL?



- La sigla que se conoce como **SQL** corresponde a la expresión inglesa ***Structured Query Language*** (en español “Lenguaje de Consulta Estructurado”)
- SQL es un **tipo de lenguaje** vinculado con la **gestión de bases de datos de carácter relacional**, que permite la especificación de distintas clases de operaciones entre éstas.
- Gracias a la utilización del álgebra y de cálculos relacionales, el SQL brinda la **posibilidad de realizar consultas** con el objetivo de recuperar información de las bases de datos de manera sencilla.



# ¿Qué podemos hacer con SQL?



# **MySQL Y MARIADB**

# Comandos SQL: Documentación MariaDB

## <https://mariadb.com/kb/es/comandos-sql/>

The screenshot shows a web browser window displaying the MariaDB Knowledge Base. The URL in the address bar is [mariadb.com/kb/es/comandos-sql/](https://mariadb.com/kb/es/comandos-sql/). The page title is "Comandos SQL - MariaDB Know". The main content area is titled "Comandos SQL" and includes sections for "ALTER, CREATE, INSERT, LOAD, SHOW, y etc...", "Comando HELP", "Comandos SQL Básicos", "CREATE USER", "DROP USER", "SHOW DATABASES", and "START TRANSACTION". Each section contains a brief description and syntax. On the left, there's a sidebar with links like "Inicio", "Open Questions", "MariaDB Server", "MariaDB MaxScale", "MariaDB ColumnStore", and "Connectors". Below this is a button for "Ask a question here" and another for "View 1 questions". At the bottom left, there are "Localized Versions" links for "SQL Statements [en]". A sidebar on the right lists categories such as "Usando MariaDB", "Comandos SQL", "Funciones y Operadores", "Sentencias Programadas y Compuestas", "SQL Estructura y Comandos", "Tipos de Datos", "Columnas Dinámicas", "Conectarse al servidor", "MariaDB desde un terminal linux", "CONNECT Table Types - MYSQL Table Type: Accessing MySQL/MariaDB Tables", and "MySQL/MariaDB Tables". The footer features the "CODER HOUSE" logo.

Comandos SQL

ALTER, CREATE, INSERT, LOAD, SHOW, y etc...

**Comando HELP**

Sintaxis HELP palabra\_busqueda Description El comando HELP puede ser utiliza...

**Comandos SQL Básicos**

Definiendo cómo es almacenada la información. CREATE DATABASE se utiliza pa...

**CREATE USER**

Sintaxis CREATE [OR REPLACE] USER [IF NOT EXISTS] user\_specification [user\_specification]

**DROP USER**

Sintaxis DROP USER [IF EXISTS] user [, user] ... Descripción La instrucción...

**SHOW DATABASES**

Syntax SHOW [DATABASES | SCHEMAS] [LIKE 'pattern' | WHERE expr] Descri...

**START TRANSACTION**

Syntax START TRANSACTION [transaction\_property [, transaction\_property]...] | BEGIN [WORK]

Ask a question here

View 1 questions

Localized Versions

SQL Statements [en]

Knowledge Base Contact Login Search

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Comandos SQL

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SQL Estructura y Comandos

Tipos de Datos

Columnas Dinámicas

Conectarse al servidor

MariaDB desde un terminal linux

CONNECT Table Types - MYSQL Table Type: Accessing MySQL/MariaDB Tables

There are 1 related questions.

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# *MySQL y MariaDB*



- **MySQL** es un sistema de gestión de bases de datos relacional desarrollado bajo licencia dual: Licencia pública general/Licencia comercial por Oracle Corporation y está considerada como la **base de datos de código abierto más popular del mundo**.
- **MariaDB** es un **sistema de gestión de bases de datos** derivado de MySQL con licencia GPL (General Public License).
- **MySQL y MariaDB** son **compatibles** entre sí a nivel funcional.

# *MySQL: Web Oficial*

## <https://www.mysql.com/>

The screenshot shows the official MySQL website (mysql.com) displayed in a web browser. The page features the MySQL logo with a blue dolphin icon. The main navigation menu includes links for MySQL.COM, DOWNLOADS, DOCUMENTATION, and DEVELOPER ZONE. A secondary navigation bar below the main menu offers links for Products, Cloud, Services, Partners, Customers, Why MySQL?, News & Events, and How to Buy. The central promotional area highlights the "New! MySQL Database Service with HeatWave for Real-time Analytics". It features a red and white racing McLaren sports car with the MySQL logo on its side. To the right of the car, a bulleted list details performance benefits: 400x MySQL Query Acceleration, 1100x Faster than Amazon Aurora, and 2.7x Faster than Amazon Redshift. A "LEARN MORE" button is located at the bottom right of this section. At the very bottom of the page, there are links for MySQL Database Service with HeatWave and MySQL Enterprise Edition.

MySQL

[mysql.com](https://www.mysql.com)

The world's most popular open source database

Contact MySQL | Login | Register

MySQL™

MYSQL.COM DOWNLOADS DOCUMENTATION DEVELOPER ZONE

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### New! MySQL Database Service

with HeatWave for Real-time Analytics

- 400x MySQL Query Acceleration
- 1100x Faster than Amazon Aurora
- 2.7x Faster than Amazon Redshift

LEARN MORE

MySQL Database Service with HeatWave

MySQL Enterprise Edition

# **MariaDB: Web Oficial**

## **<https://mariadb.org/>**

The screenshot shows the official website for MariaDB Foundation. The header features a large blue navigation bar with links for Download, Documentation, Contribute, Server Fest, Events, Sponsor, Blog, Planet MariaDB, and About. A search bar and social media icons are also present. The main banner has a background image of ocean waves and the text "MariaDB Server: The open source relational database". Below the banner are two blue buttons labeled "Download" and "Sponsor". The footer section includes a link to podcasts and webcasts, followed by four video thumbnail previews and the "CODER HOUSE" logo.

MariaDB Foundation - MariaDB.org

mariadb.org

Download Documentation Contribute Server Fest Events Sponsor Blog Planet MariaDB About

Latest releases: MariaDB 10.5.8, 10.4.17, 10.3.27, 10.2.36

Search ...

MariaDB Server: The open source relational database

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Databases beyond the tutorials

MariaDB Observability

Organising MariaDB

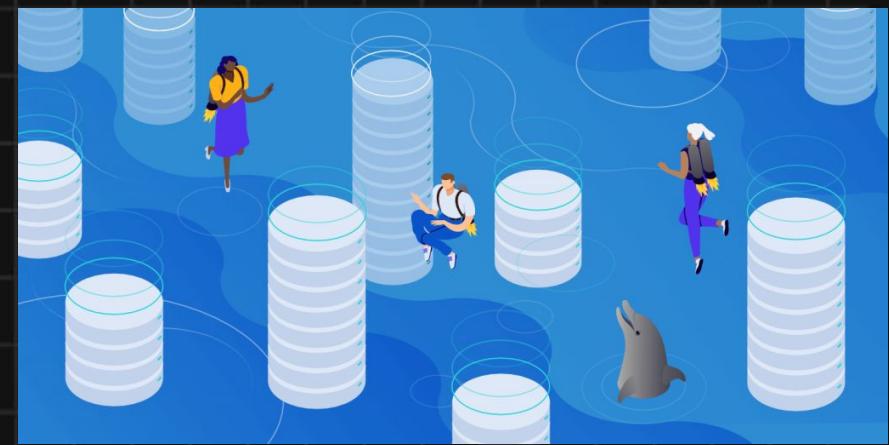
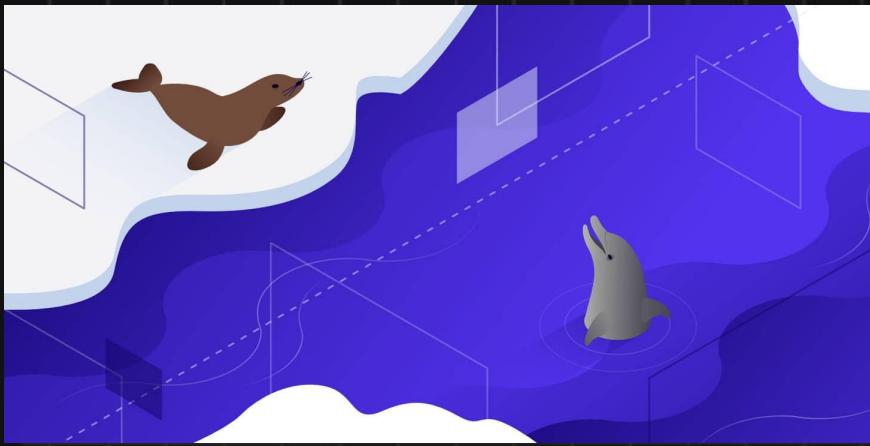
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# BREAK

¡5/10 MINUTOS Y VOLVEMOS!

# *Instalación del Servidor y Cliente de base de datos MySQL / MariaDB*



# **Servidor MariaDB > XAMPP: Web oficial**

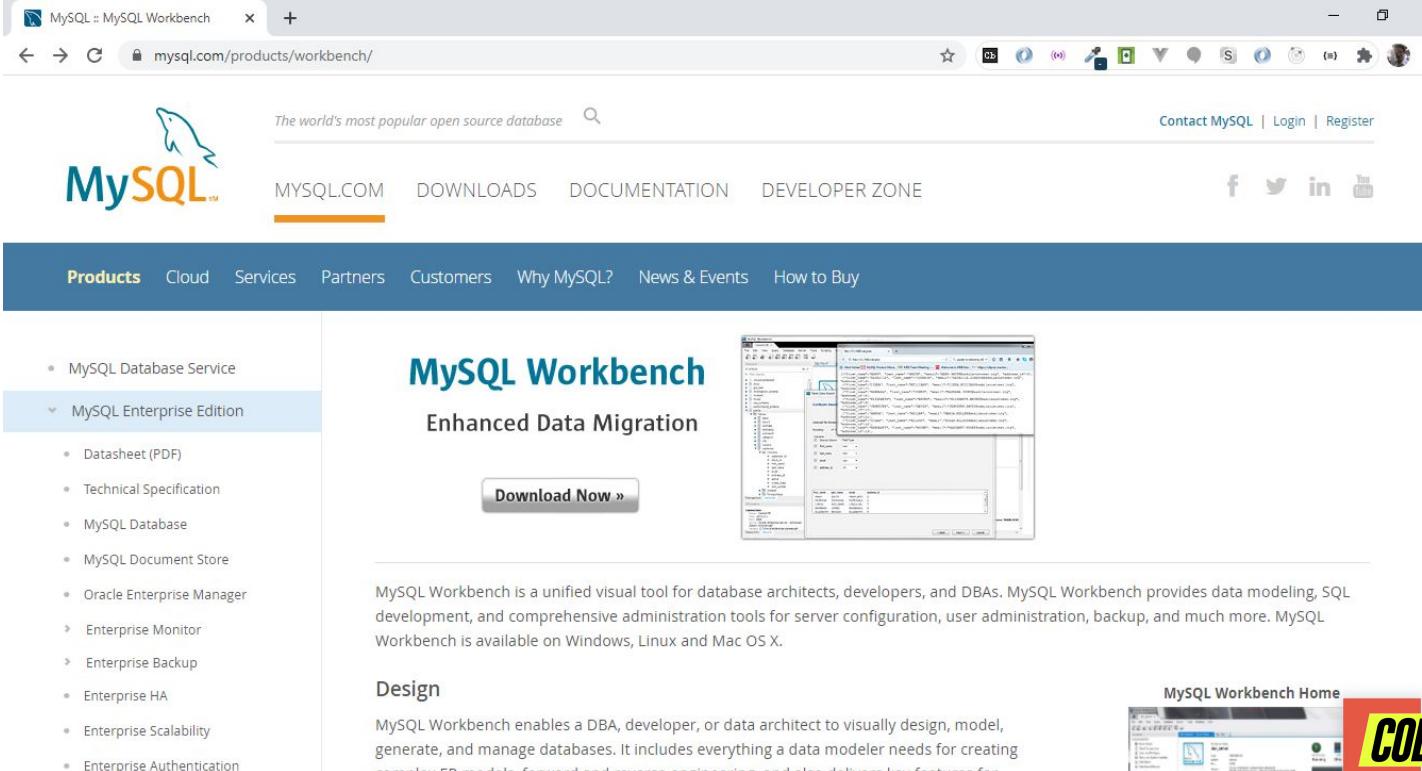
## **<https://www.apachefriends.org/es/>**



The screenshot shows a web browser window displaying the Apache Friends website at <https://www.apachefriends.org/es/index.html>. The page title is "Apache Friends". The main content features the XAMPP logo (an orange square with a white 'X' and three dots) followed by the text "XAMPP Apache + MariaDB + PHP + Perl". Below this, there's a section titled "¿Qué es XAMPP?" with a brief description: "XAMPP es el entorno más popular de desarrollo con PHP". To the right, there's a video thumbnail titled "Introduction to XAMPP" showing a large orange '83' with a play button icon. At the bottom, there are download links for XAMPP versions: "Descargar" (Windows 8.0.2, PHP 8.0.2), "XAMPP para Linux 8.0.2 (PHP 8.0.2)", and "XAMPP para OS X 8.0.2 (PHP 8.0.2)". A "CODER HOUSE" logo is visible in the bottom right corner.

# Cliente MariaDB > MySQL Workbench

<https://www.mysql.com/products/workbench/>



The screenshot shows the MySQL website at <https://www.mysql.com/products/workbench/>. The page features the MySQL logo and navigation links for MySQL.COM, DOWNLOADS, DOCUMENTATION, and DEVELOPER ZONE. A sidebar on the left lists various MySQL products, with 'MySQL Enterprise Edition' expanded to show options like Datasheet (PDF), Technical Specification, MySQL Database, MySQL Document Store, Oracle Enterprise Manager, Enterprise Monitor, Enterprise Backup, Enterprise HA, Enterprise Scalability, and Enterprise Authentication. The main content area highlights 'MySQL Workbench Enhanced Data Migration' with a 'Download Now' button and a screenshot of the software interface. Below this, a paragraph describes MySQL Workbench as a unified visual tool for database architects, developers, and DBAs, mentioning its capabilities in data modeling, SQL development, and administration. A 'Design' section is also present. At the bottom right, there's a link to 'MySQL Workbench Home' and the Coder House logo.

MySQL :: MySQL Workbench

mysql.com/products/workbench/

The world's most popular open source database

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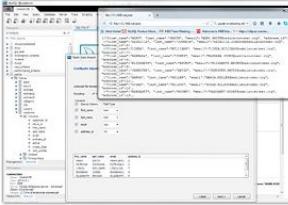
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- MySQL Enterprise Edition
  - Datasheet (PDF)
  - Technical Specification
  - MySQL Database
  - MySQL Document Store
  - Oracle Enterprise Manager
  - Enterprise Monitor
  - Enterprise Backup
  - Enterprise HA
  - Enterprise Scalability
  - Enterprise Authentication

## MySQL Workbench

### Enhanced Data Migration

[Download Now »](#)



MySQL Workbench is a unified visual tool for database architects, developers, and DBAs. MySQL Workbench provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more. MySQL Workbench is available on Windows, Linux and Mac OS X.

### Design

MySQL Workbench enables a DBA, developer, or data architect to visually design, model, generate, and manage databases. It includes everything a data modeler needs for creating complex ER models, forward and reverse engineering, and also delivers key features for

MySQL Workbench Home

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# **MySQL Workbench : instalación**

The world's most popular open source database [Search](#)

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MySQL Database Service

MySQL Enterprise Edition

Datasheet (PDF)

Technical Specification

MySQL Database

MySQL Document Store

Oracle Enterprise Manager

Enterprise Monitor

Enterprise Backup

Enterprise HA

Enterprise Scalability

Enterprise Authentication

## MySQL Workbench

Enhanced Data Migration

[Download Now »](#)

Workbench is a unified visual tool for database development, and comprehensive administrative tasks. Workbench is available on Windows, Linux and Mac OS X.

**Design**

MySQL Workbench enables a DBA, developer, or designer, to generate, and manage databases. It includes even complex ER models, forward and reverse engineering, and migration tools.

**Development**

MySQL Workbench is a unified visual tool for database development, and comprehensive administrative tasks. Workbench is available on Windows, Linux and Mac OS X.

**Administration**

MySQL Workbench provides DBAs and developers an integrated tools environment for:

- Database Design & Modeling
- SQL Development
- Database Administration
- Database Migration

The Community (OSS) Edition is available from this page under the [GPL](#).

Download source packages of LGPL libraries: [+]

MySQL Workbench Windows Prerequisites:

To be able to install and run MySQL Workbench on Windows, your system needs to have libraries listed below installed. The links provided as links to the corresponding download pages where you can download the necessary files.

- Microsoft .NET Framework 4.5
- Visual C++ Redistributable for Visual Studio 2019
- Visual C++ Redistributable for Visual Studio 2019 (for Japanese)
- Visual C++ Redistributable for Visual Studio 2019 (for Traditional Chinese)
- Visual C++ Redistributable for Visual Studio 2019 (for Korean)

All MySQL Products. For All Windows Platforms. In One Package.

Starting with MySQL 5.6 the MySQL Installer package replaces the standalone MSI packages.

Windows (x86, 32 & 64-bit), MySQL Installer MSI

[Go to Download Page >](#)

# Iniciando nuestro servidor de base de datos

The image shows two instances of the XAMPP Control Panel v3.2.4 interface. The left panel shows the MySQL service status as 'Running' with PID 9536. A yellow arrow points from the 'Start' button in the first panel to the 'Stop' button in the second panel, indicating the sequence of operations.

**XAMPP Control Panel v3.2.4 [ Compiled: Jun 5th 2019 ]**

Module	Service	Module	PID(s)	Port(s)	Actions
Apache	Apache				Start Admin
MySQL	MySQL				Start Admin
FileZilla					Start Admin
Mercury					Start Admin
Tomcat					Start Admin

Log output:

```
10:14:49 [main] All prerequisites found
10:14:49 [main] Initializing Modules
10:14:49 [main] Starting Check-Timer
10:14:49 [main] Control Panel Ready
10:14:53 [mysql] Attempting to start MySQL app...
10:14:53 [mysql] Status change detected: running
11:32:03 [mysql] Attempting to stop MySQL app...
11:32:04 [mysql] Status change detected: stopped
```

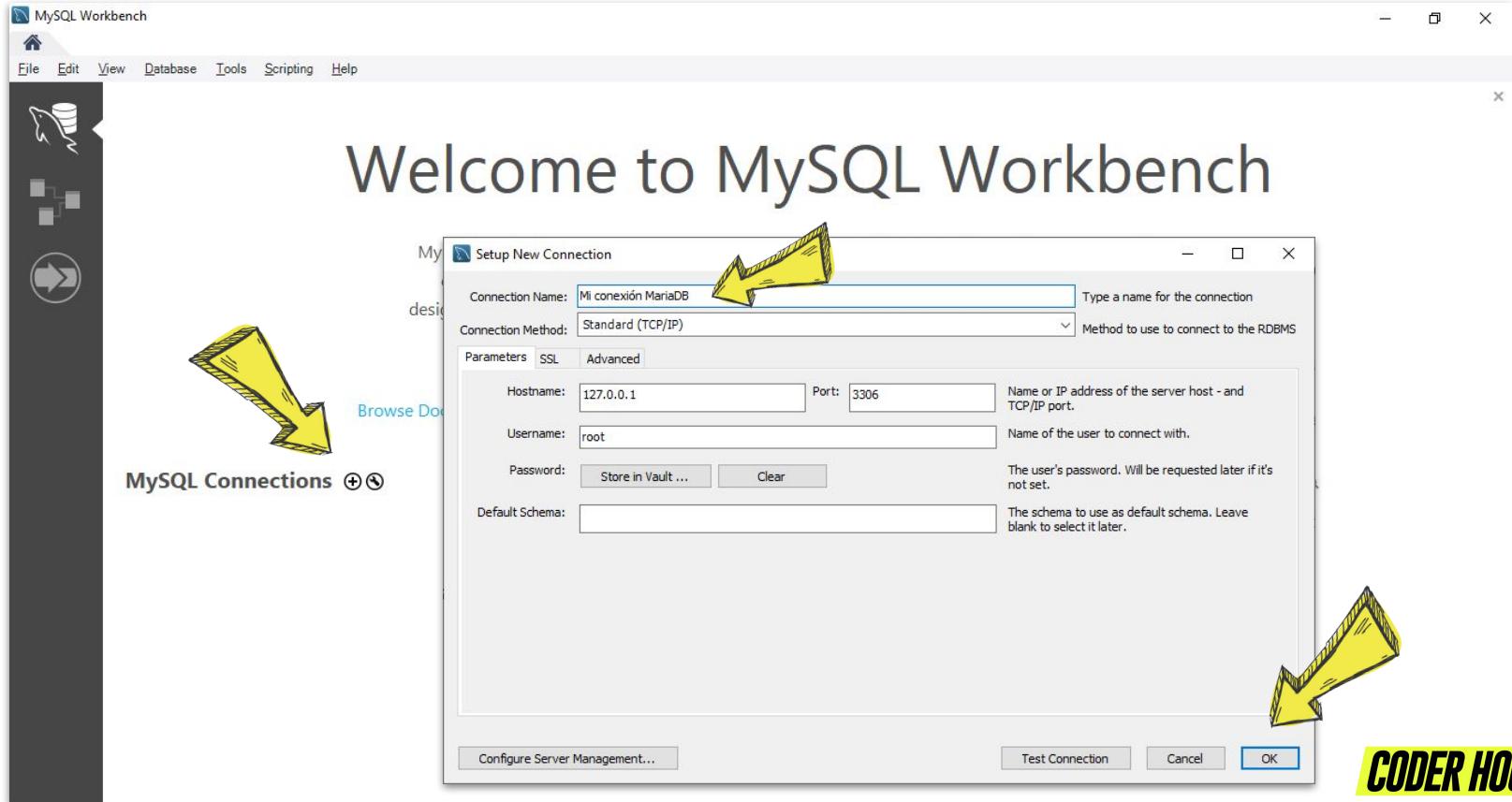
**XAMPP Control Panel v3.2.4 [ Compiled: Jun 5th 2019 ]**

Module	Service	Module	PID(s)	Port(s)	Actions
Apache	Apache				Start Admin Config Logs
MySQL	MySQL		9536	3306	Stop Admin Config Logs
FileZilla					Start Admin Config Logs
Mercury					Start Admin Config Logs
Tomcat					Start Admin Config Logs

Log output:

```
10:14:49 [main] Starting Check-Timer
10:14:49 [main] Control Panel Ready
10:14:53 [mysql] Attempting to start MySQL app...
10:14:53 [mysql] Status change detected: running
11:32:03 [mysql] Attempting to stop MySQL app...
11:32:04 [mysql] Status change detected: stopped
11:33:24 [mysql] Attempting to start MySQL app...
11:33:24 [mysql] Status change detected: running
```

# *Iniciando el cliente MySQL Workbench*



# Utilizando el cliente MySQL Workbench

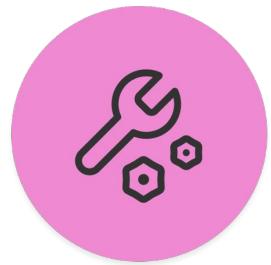
The screenshot shows the MySQL Workbench interface. The top menu bar includes File, Edit, View, Query, Database, Server, Tools, Scripting, and Help. The left sidebar displays the Navigator, Schemas (with ejercicios selected), and Administration tabs. The main area shows a query editor with the following code:

```
queryEjercicios
70 ('333.333.336', 'Carolina Ríos', 'F', '1992-02-15', '2000-10-01', 1250000, 500000, ^  
71 ('333.333.337', 'Edith Muñoz', 'F', '1992-03-31', '2000-10-01', 800000, 3600000, 'V  
72 ('1.130.555', 'Julian Mora', 'M', '1989-07-03', '2000-10-01', 800000, 3100000, 'Ven  
73  
74 -- 1. Obtener los datos completos de los empleados.  
75 • select * from Empleado;  
76
```

The Result Grid pane displays the following data:

nDEmp	nomEmp	sexEmp	fedNac	fecIncorporacion	salEmp	comisionE	cargoE	jefeID	codDept
1.130.222	José Giraldo	M	1985-01-20	2000-11-01	1200000	400000	Asesor	22.222.222	3500
1.130.333	Pedro Blanco	M	1987-10-28	2000-10-01	800000	3000000	Vendedor	31.178.144	2000
1.130.444	Jesús Alfonso	M	1988-03-14	2000-10-01	800000	3500000	Vendedor	31.178.144	2000
1.130.555	Julian Mora	M	1989-07-03	2000-10-01	800000	3100000	Vendedor	31.178.144	2200
1.130.777	Marcos Cortez	M	1986-06-23	2000-04-16	2550000	500000	Mecánico	333.333.333	4000
1.130.782	Antonio Gil	M	1980-01-23	2010-04-16	850000	1500000	Técnico	16.211.383	1500
1.751.219	Melissa Roa	F	1960-06-19	2001-03-16	2250000	2500000	Vendedor	31.178.144	2100

The bottom status bar shows the message "25 row(s) returned".



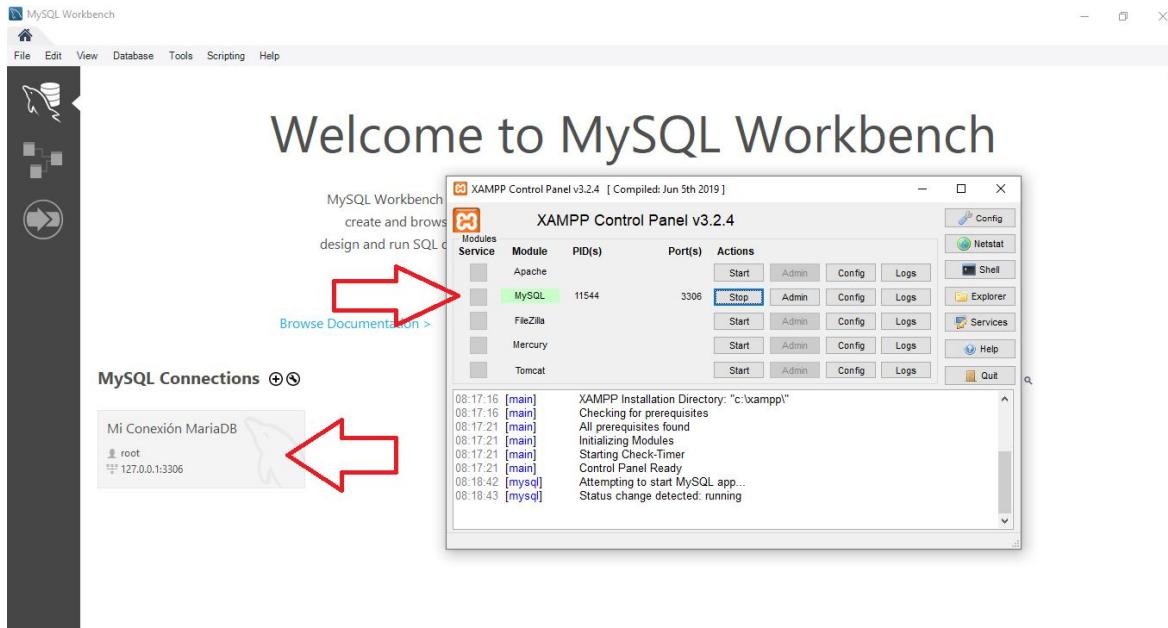
# ***INSTALACIÓN***

*Tiempo: 10 minutos*



Realizar las siguientes operaciones:

1. Instalar XAMPP e iniciar el motor de base de datos MySQL/MariaDB.
2. Instalar MySQL Workbench y crear una conexión de usuario administrador hacia la base de datos.



# MySQL Cheatsheet <https://devhints.io/mysql>

MySQL cheatsheet devhints.io/mysql

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## MySQL cheatsheet

### Browsing

```
SHOW DATABASES;  
SHOW TABLES;  
SHOW FIELDS FROM table / DESCRIBE table;  
SHOW CREATE TABLE table;  
SHOW PROCESSLIST;  
KILL process_number;
```

### Select

```
SELECT * FROM table;  
SELECT * FROM table1, table2;  
SELECT field1, field2 FROM table1, table2;  
SELECT ... FROM ... WHERE condition  
SELECT ... FROM ... WHERE condition GROUPBY field;  
SELECT ... FROM ... WHERE condition GROUPBY field HAVING condition2;  
SELECT ... FROM ... WHERE condition ORDER BY field1, field2;  
SELECT ... FROM ... WHERE condition ORDER BY field1, field2 DESC;  
SELECT ... FROM ... WHERE condition LIMIT 10;  
SELECT DISTINCT field1 FROM ...  
SELECT DISTINCT field1, field2 FROM ...
```

### Select - Join

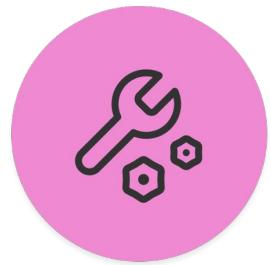
```
SELECT ... FROM t1 JOIN t2 ON t1.id1 = t2.id2 WHERE condition;  
SELECT ... FROM t1 LEFT JOIN t2 ON t1.id1 = t2.id2 WHERE condition;  
SELECT ... FROM t1 JOIN (t2 JOIN t3 ON ...) ON ...
```

### Create / Open / Delete Database

### Conditions

```
field1 = value1  
field1 <> value1  
field1 LIKE 'value %'
```

CODER HOUSE



# INICIALIZACIÓN

*Tiempo: 10 minutos*



Realizar la siguientes operaciones:

1. Iniciar el servicio de base de datos MySQL/MariaDB mediante el panel de control de XAMPP.
2. Listar las bases de datos presentes realizando la consulta SQL con MySQL Workbench.
3. Mediante la aplicación de consola mysql realizar la misma consulta anterior. La aplicación de consola mysql se encuentra en C:\xampp\mysql\bin y se ejecuta en modo administrador con 'mysql -u root' dentro de una consola CLI
4. Iniciar el servidor apache a través del panel de control de XAMPP y levantar en el navegador el cliente web de la base de datos mediante la url <http://localhost/phpmyadmin/> y comprobar las bases de datos existentes



The image shows a desktop setup with four open windows:

- phpMyAdmin**: A web-based interface for managing MySQL databases. A red box highlights the sidebar where several databases are listed: Nueva, information\_schema, mysql, performance\_schema, phpmyadmin, and test.
- MySQL Workbench**: A graphical tool for managing MySQL databases. It shows a similar list of databases in its sidebar. A red box highlights the "Schemas" tab and the list of databases.
- Cmder**: A terminal window running the MariaDB monitor. It displays the command `show databases;` and its results, which list the same six databases: information\_schema, mysql, performance\_schema, phpmyadmin, and test. A red box highlights the result grid.
- XAMPP Control Panel v3.2.4**: A system tray application for managing Apache and MySQL services. A large red arrow points to the MySQL service row, which is highlighted in green. The service is running, indicated by the green status bar.

# **MySQL: Crear base de datos, crear tablas**

base de datos



## Create / Open / Delete Database

```
CREATE DATABASE DatabaseName;  
CREATE DATABASE DatabaseName CHARACTER SET utf8;  
USE DatabaseName;  
DROP DATABASE DatabaseName;  
ALTER DATABASE DatabaseName CHARACTER SET utf8;
```

## Create / Delete / Modify Table

### Create

```
CREATE TABLE table (field1 type1, field2 type2);  
CREATE TABLE table (field1 type1, field2 type2, INDEX (field));  
CREATE TABLE table (field1 type1, field2 type2, PRIMARY KEY (field1));  
CREATE TABLE table (field1 type1, field2 type2, PRIMARY KEY (field1,field2))
```

ARTÍCULO	CANTIDAD
ZAPATILLAS	1.500
GORRAS	12.200
PANTALONES	3.800
CAMISETAS	7.100



# MySQL CRUD: Select, Insert, Update, Delete

CREATE READ UPDATE DELETE

CREATE READ UPDATE DELETE

## Select

```
SELECT * FROM table;  
SELECT * FROM table1, table2;  
SELECT field1, field2 FROM table1, table2;  
SELECT ... FROM ... WHERE condition  
SELECT ... FROM ... WHERE condition GROUPBY field;  
SELECT ... FROM ... WHERE condition GROUPBY field HAVING condition2;  
SELECT ... FROM ... WHERE condition ORDER BY field1, field2;  
SELECT ... FROM ... WHERE condition ORDER BY field1, field2 DESC;  
SELECT ... FROM ... WHERE condition LIMIT 10;  
SELECT DISTINCT field1 FROM ...  
SELECT DISTINCT field1, field2 FROM ...
```

## Conditions

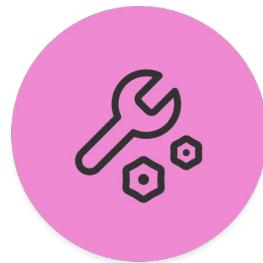
```
field1 = value1  
field1 <> value1  
field1 LIKE 'value _ %'  
field1 IS NULL  
field1 IS NOT NULL  
field1 IS IN (value1, value2)  
field1 IS NOT IN (value1, value2)  
condition1 AND condition2  
condition1 OR condition2
```

## Insert

```
INSERT INTO table1 (field1, field2) VALUES (value1, value2);
```

## Delete

```
DELETE FROM table1 / TRUNCATE table1  
DELETE FROM table1 WHERE condition  
DELETE FROM table1, table2 FROM table1, table2 WHERE table1.id1 =  
table2.id2 AND condition
```



# **GESTIONANDO UNA BASE DE DATOS**

*Tiempo: 10 minutos*



Mediante el uso del cliente MySQL Workbench realizar las siguientes tareas:

- 1) Crear una base de datos llamada 'mibase'
- 2) Crear una tabla dentro de esa base con el nombre 'usuarios' que contenga los siguientes campos:
  - 'nombre' del tipo varchar no nulo
  - 'apellido' del tipo varchar no nulo
  - 'edad' del tipo entero sin signo
  - 'email' del tipo varchar no nulo
  - 'id' clave primaria autoincremental no nula



3) Insertar estos 3 usuarios en esa tabla:

- Juan Perez, edad 23, jp@gmail.com
- Pedro Mei, edad 21, pm@gmail.com
- Juana Suarez, edad 25, js@gmail.com

4) Listar los usuarios agregados

5) Borrar el usuario con id = 2

6) Actualizar la edad del usuario con id = 1 a 24 años

7) Listar los registros comprobando que los datos estén actualizados según las acciones realizadas.

*¿*PREGUNTAS?



# ***MUCHAS GRACIAS!***

Resumen de lo visto en clase hoy:

- Bases de datos.
- Lenguaje SQL.
  - MySQL.
  - MariaDB.
  - SQLite3.



***OPINA Y VALORA ESTA CLASE***

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