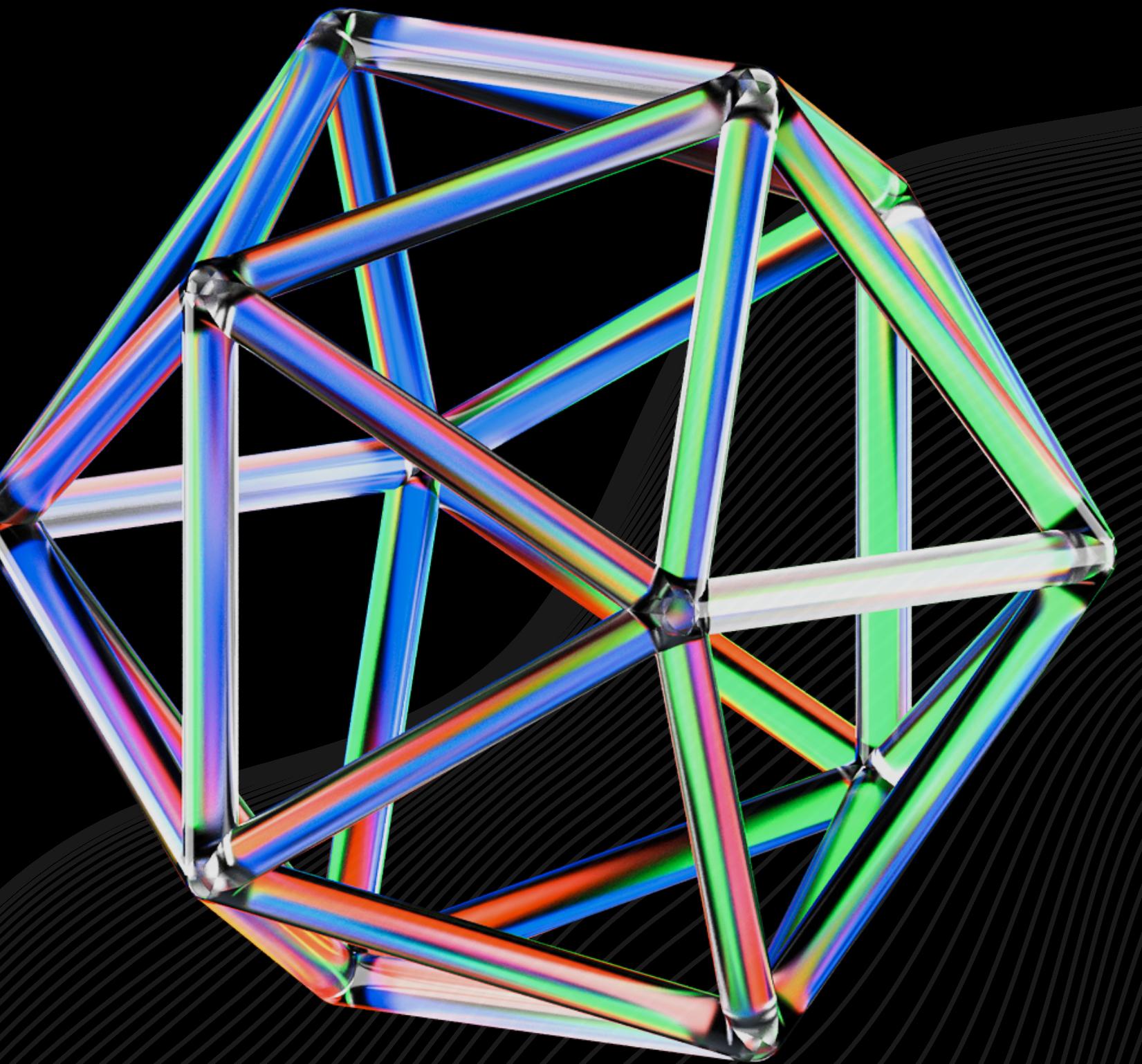
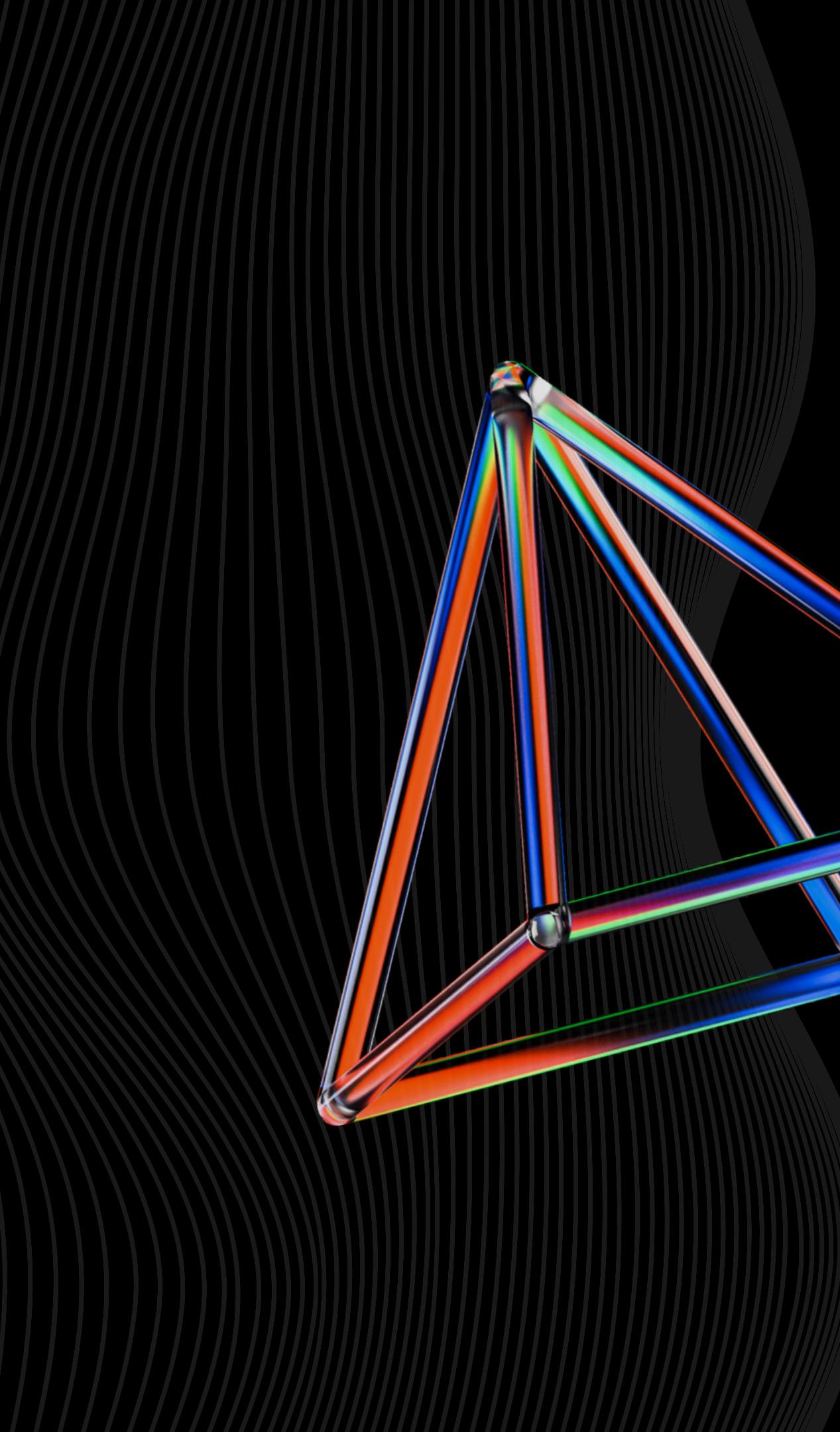


TRABAJAR CON BASES DE DATOS **SQL - PYTHON**

2023 - SERGIO OCTAVIO MANCEBO
PARADIGMAS DE LA PROGRAMACIÓN



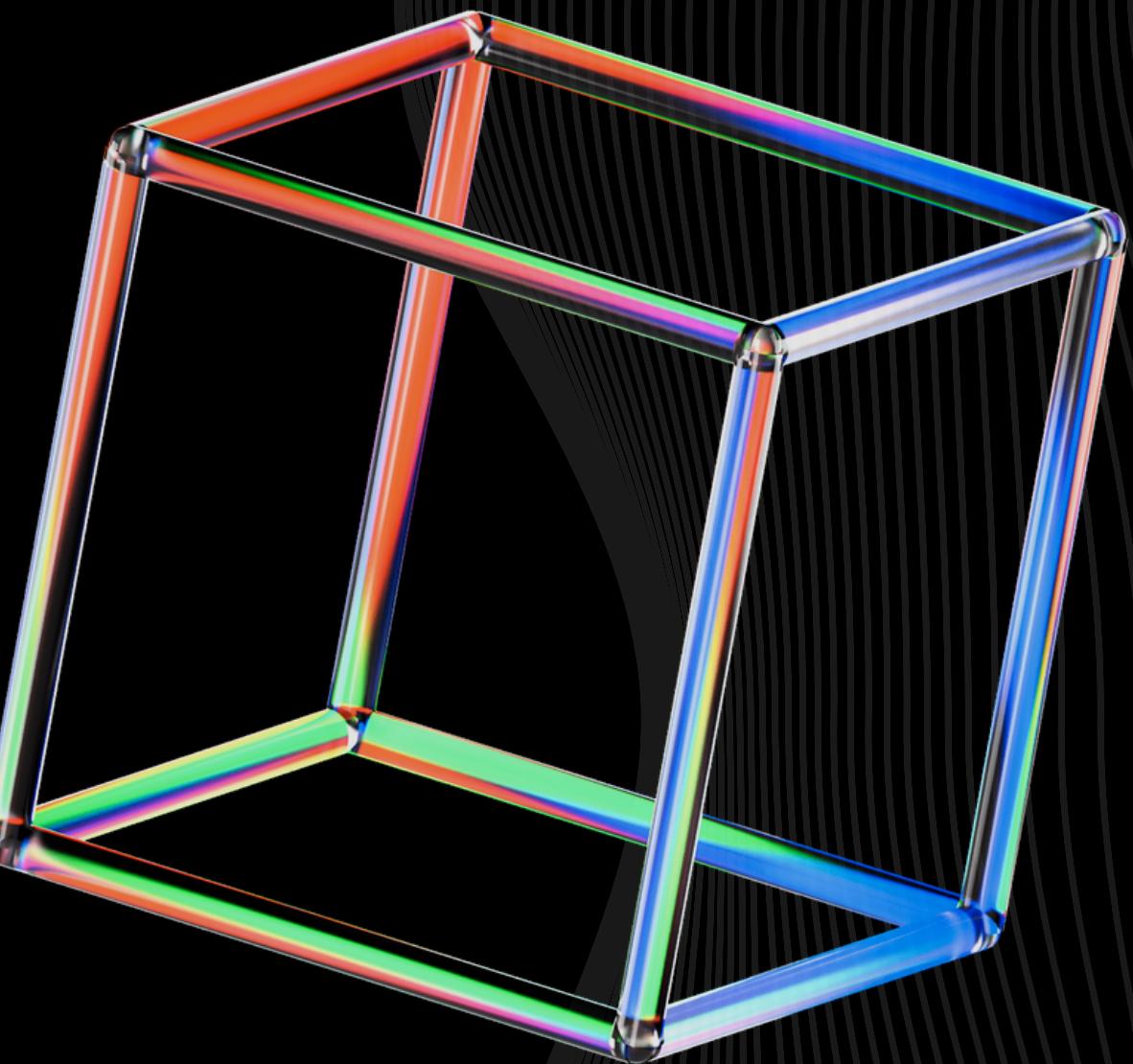


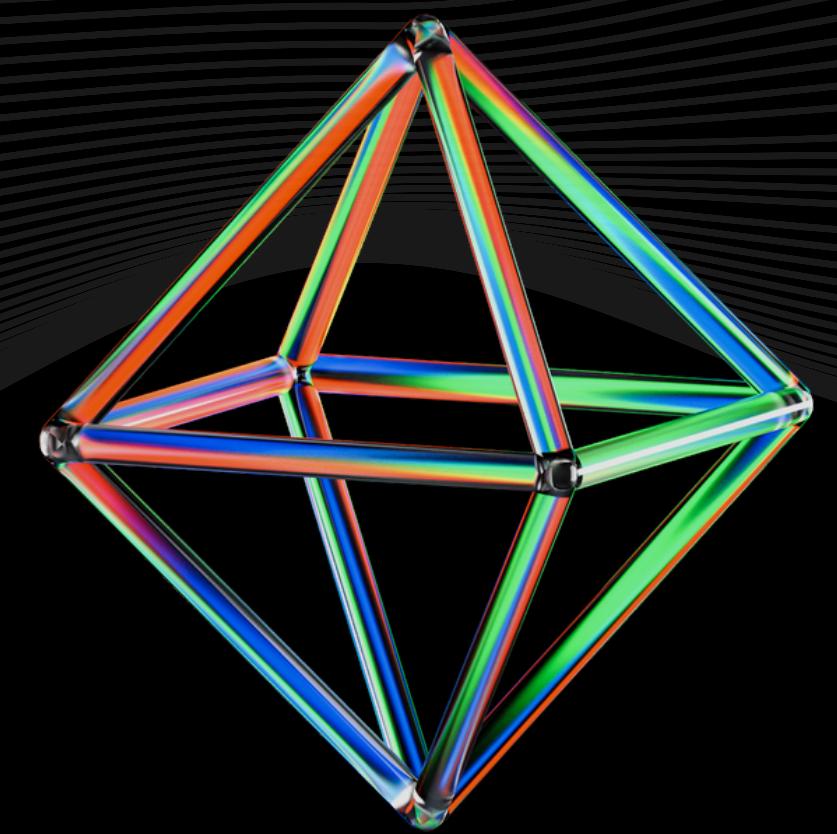
Índice

- 01 **INTRODUCCIÓN**
- 02 **CARACTERÍSTICAS**
- 03 **LIBRERÍAS**
- 04 **INSTALACIÓN**
- 05 **INTEGRACIÓN SQL - PYTHON**

Introducción

- En el ámbito informático, la manipulación de bases de datos es esencial.
- Bases de datos SQL: herramienta fundamental para almacenar y acceder a información estructurada.



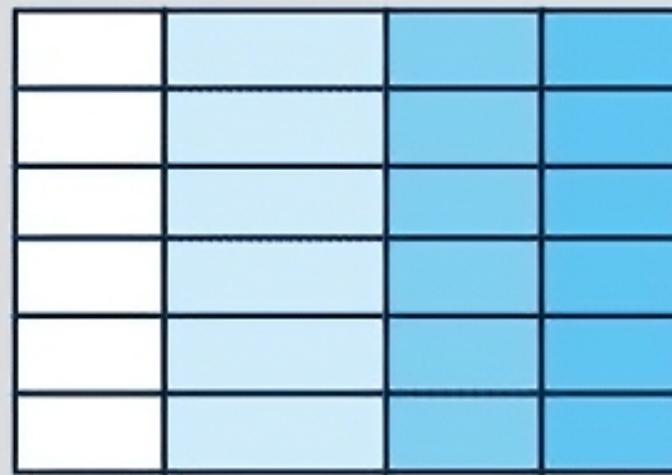


Características

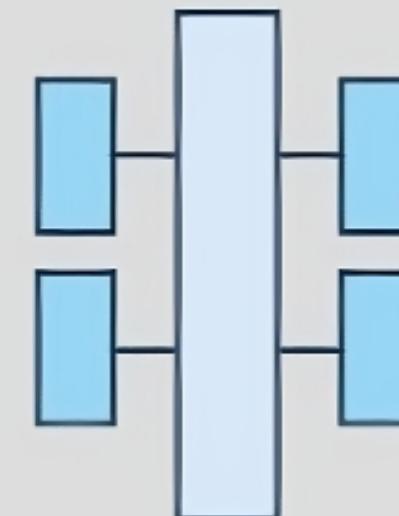
Relacionales - No Relacionales

SQL

Relational

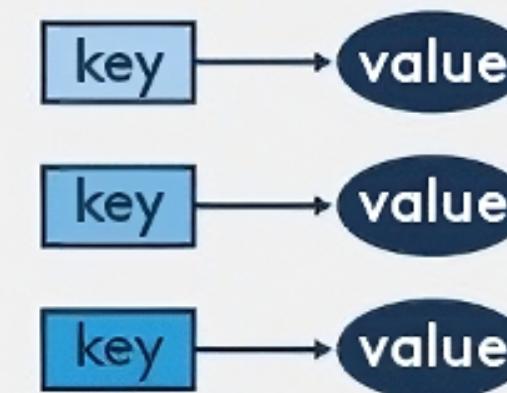


Analytical (OLAP)



NoSQL

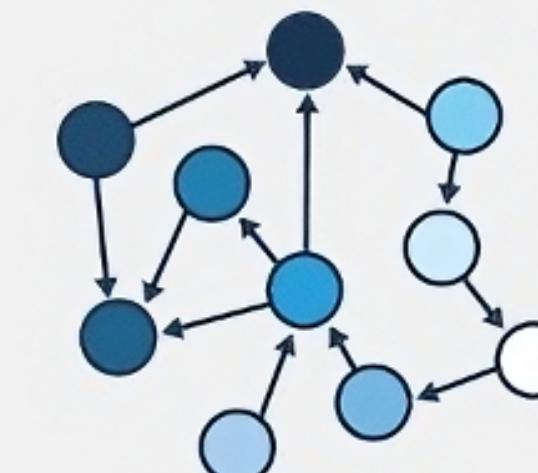
Key-Value



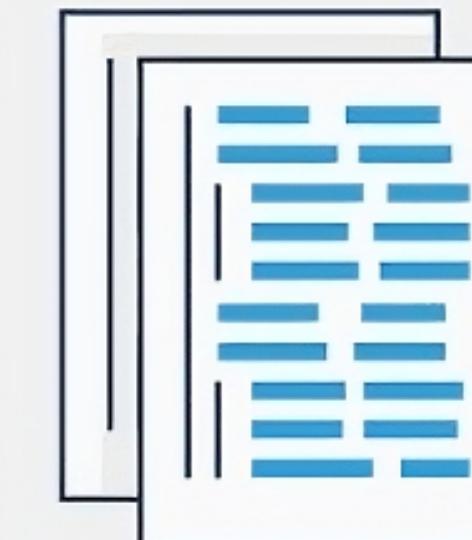
Column-Family



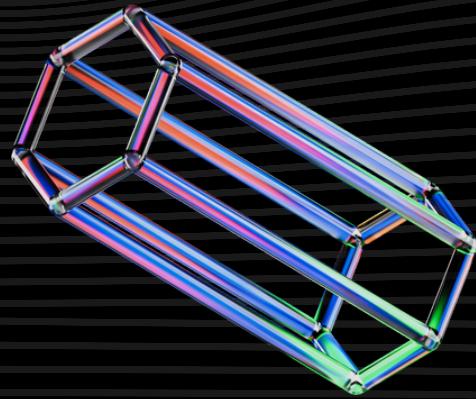
Graph



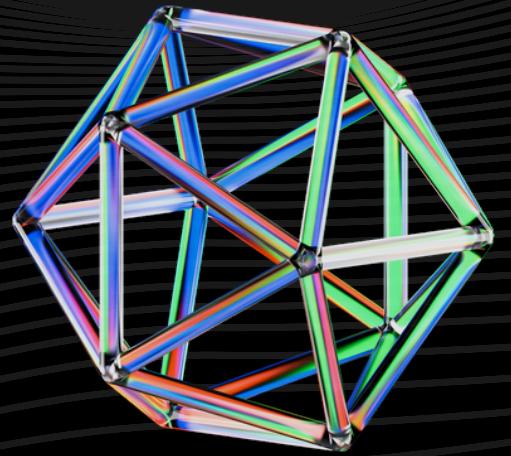
Document



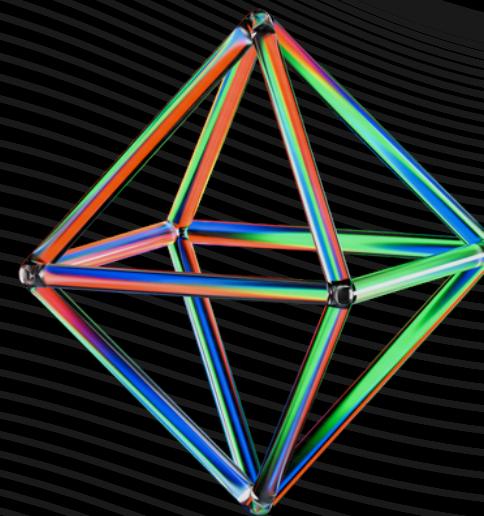
Librerías para trabajar con bases de datos en Python



SQLite



MySQL

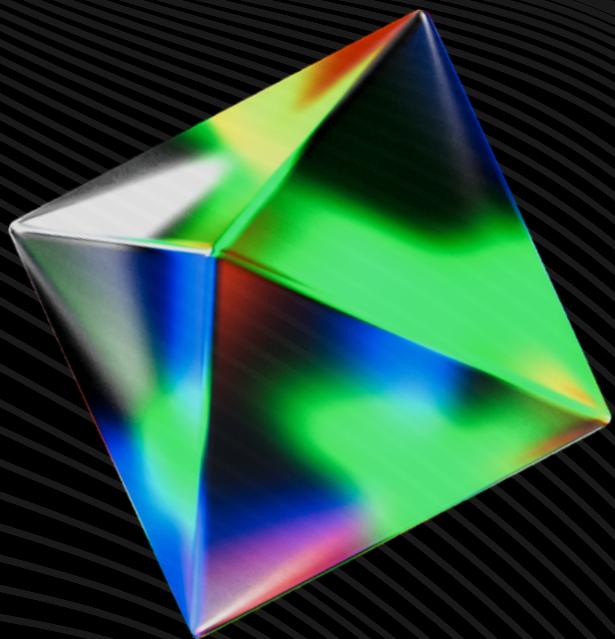


PostgreSQL

Creación y Operaciones Básicas

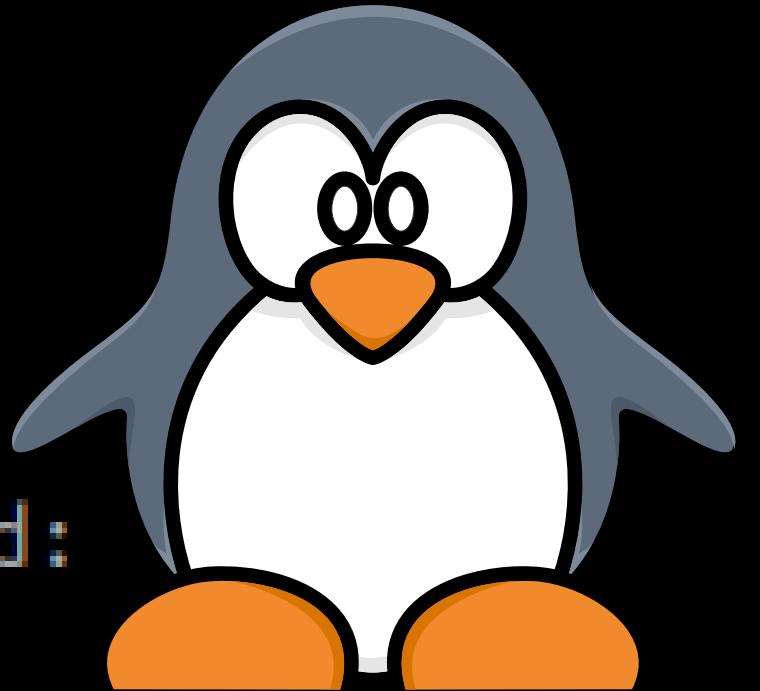
Primeros pasos

- Instalar librería mySQL
- Instalar nuestro servidor Apache
- Importar en nuestro código las libreías necesarias.



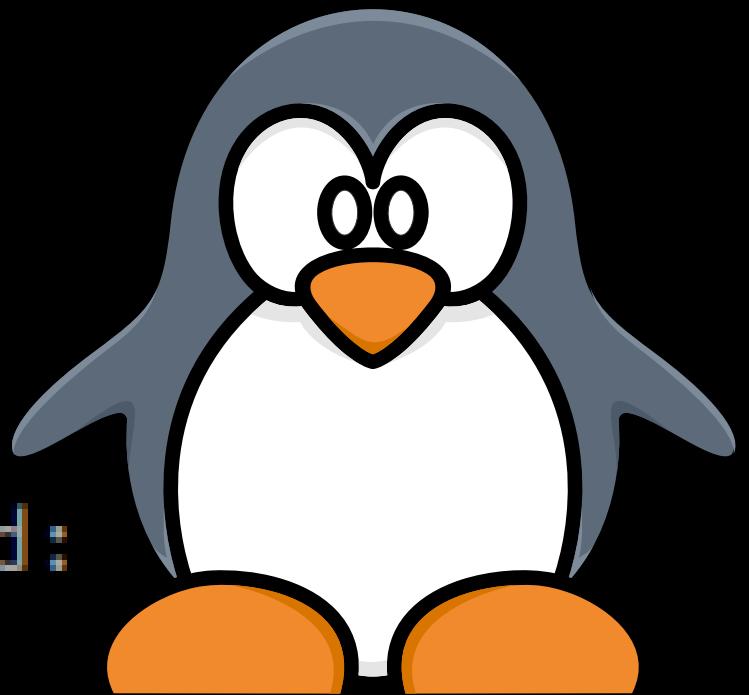
- Instalación de gestor de paquetes de Python (pip)

```
-----  
octavio@octavio:~$ sudo apt-get install pip  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
Note, selecting 'python3-pip' instead of 'pip'  
The following additional packages will be installed:  
  python3-setuptools python3-wheel  
Suggested packages:  
  python-setuptools-doc  
The following NEW packages will be installed:  
  python3-pip python3-setuptools python3-wheel
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- Instalación de librería mysql para Python



```
Processing triggers for man-db (2.10.2-1) ...
octavio@octavio:~$ pip install mysql-connector-python

Defaulting to user installation because normal site-packages is not writeable
Collecting mysql-connector-python
  Downloading mysql_connector_python-8.2.0-cp310-cp310-manylinux_2_17_x86_64.whl (31.6 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 31.6/31.6 MB 26.4 MB/s eta 0:00:00
Collecting protobuf<=4.21.12,>=4.21.1
  Downloading protobuf-4.21.12-cp37-abi3-manylinux2014_x86_64.whl (409 kB)
   ━━━━━━━━━━━━━━━━ 409.8/409.8 KB 31.6 MB/s eta 0:00:00
Installing collected packages: protobuf, mysql-connector-python
Successfully installed mysql-connector-python-8.2.0 protobuf-4.21.12
octavio@octavio:~$ 
octavio@octavio:~$ 
```

- Instalación de librería mysql para Python



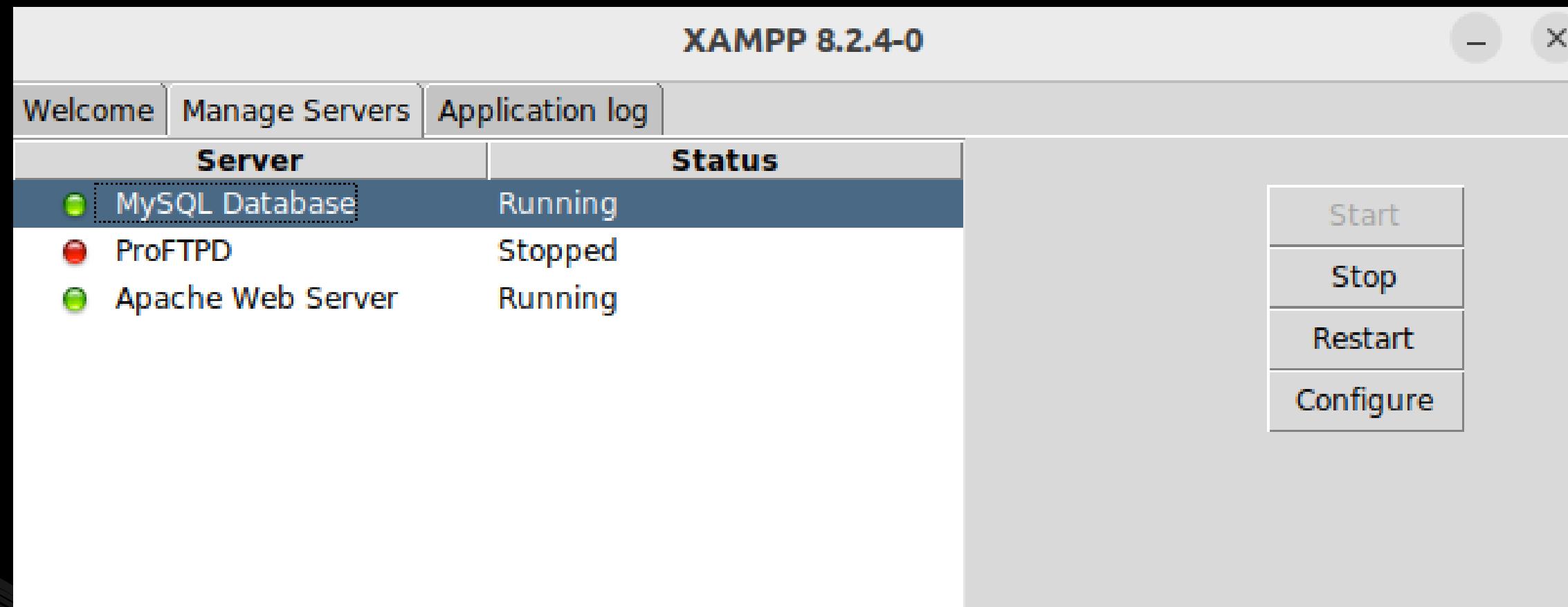
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octavio@octavio:~$ 
octavio@octavio:~$ 
```

- Importamos las librerías en nuestro código

A screenshot of a code editor showing a tooltip for the import statement. The tooltip contains four options: 'Install package mysql', 'Install package mysql-connector-python', 'Rename reference', and 'AI Actions...'. The background shows a snippet of Python code involving MySQL connector imports and connection parameters.

```
import mysql.connector  
password='password',  
.1',  
Loyees')  
Press Ctrl+Q to toggle preview
```

Iniciamos el servidor Apache con MySQL



- Podemos visualizar nuestras tablas desde el navegador
<http://localhost/phpmyadmin/>



localhost/phpmyadmin/ 80% 18

phpMyAdmin

Databases SQL Status User accounts Export Import Settings Replication VariablesCharsets Engines Plugins

Recent Favorites

New computadoras information_schema mysql new_schema performance_schema phpmyadmin tablaPrueba test

General settings

Server connection collation: utf8mb4_unicode_ci More settings

Appearance settings

Language English Theme pmahomme View all

Database server

- Server: Localhost via UNIX socket
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.4.32-MariaDB - Source distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8mb4)

Web server

- Apache/2.4.58 (Unix) OpenSSL/1.1.1w PHP/8.0.30 mod_perl/2.0.12 Perl/v5.34.1
- Database client version: libmysql - mysqlnd 8.0.30
- PHP extension: mysqli curl mbstring
- PHP version: 8.0.30

phpMyAdmin

- Version information: 5.2.1 (up to date)
- Documentation
- Official Homepage
- Contribute
- Get support
- List of changes
- License

localhost/phpmyadmin/ 80% 18

phpMyAdmin

Server: localhost

Databases SQL Status Use

General settings

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phpMyAdmin

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- List of changes
- License

Conexión a Bases de Datos

```
import mysql.connector

conn = mysql.connector.connect(
    host="localhost",
    user="root",
    password="", # Contraseña vacía
    # database="" # Reemplaza con el nombre de tu base de datos
)

#Establecemos la conexión con la base de datos
cursor = conn.cursor()

# Crear la base de datos 'clientes' si no existe
cursor.execute("CREATE DATABASE IF NOT EXISTS clientes")

# Guardar cambios y cerrar conexión
conn.commit()
conn.close()
```

phpMyAdmin

Recent Favorites

- New
- clientes
- computadoras
- information_schema
- mysql
- new_schema
- performance_schema
- phpmyadmin
- tablaPrueba
- test

Server: localhost > Database: clientes

No tables found in database.

Create new table

Table name	Number of columns
<input type="text"/>	4

Create

<http://localhost/phpmyadmin/>

```
#Para visualizar las tablas
sql = "SHOW DATABASES"

# Ejecutar la consulta
cursor.execute(sql)

# Obtener los resultados de la consulta
tablas = cursor.fetchall()

# Mostrar por pantalla los nombres de las tablas
print("Tablas disponibles en la base de datos:")
for tabla in tablas:
    print(tabla[0])

# Guardar cambios y cerrar conexión
# conn.commit()

conn.close()
```

Tablas disponibles en la base de datos:

clientes
computadoras
information_schema
mysql
new_schema
performance_schema
phpmyadmin
tablaPrueba
test

CRUD

Create

Crear nuevos registros o entradas en una base de datos. En SQL, esto se logra utilizando la sentencia **INSERT**, que permite agregar nuevos datos a una tabla.

Read

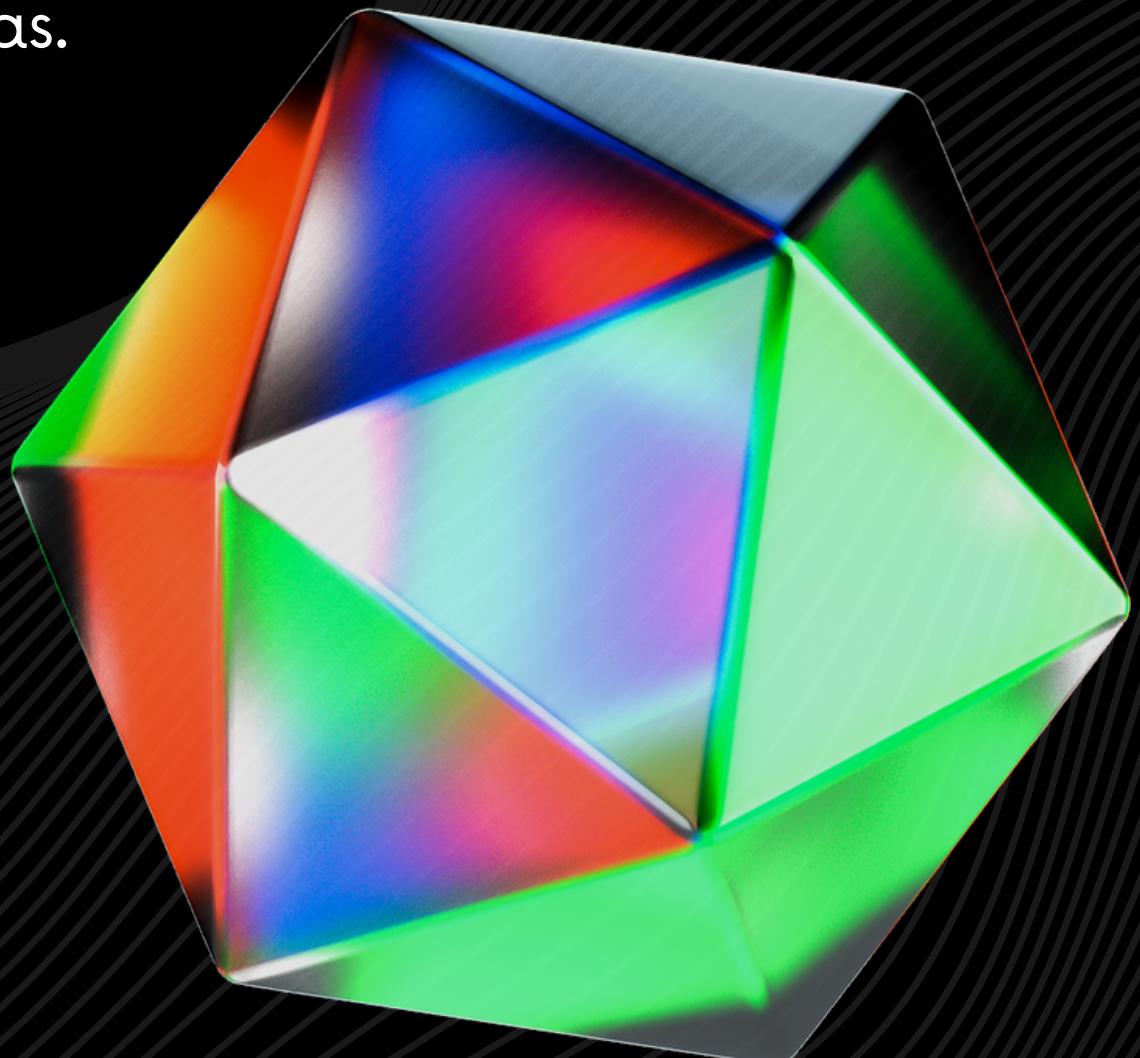
Leer o consultar datos existentes en la base de datos. En SQL, se usa la sentencia **SELECT** para recuperar datos de una o varias tablas.

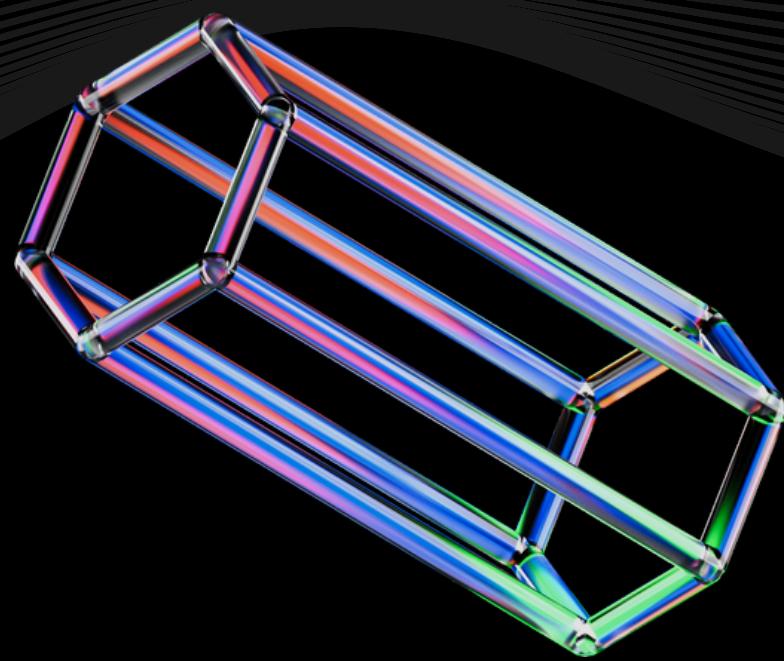
Update

Permite modificar registros existentes en la base de datos. En SQL, se utiliza la sentencia **UPDATE** para cambiar los valores de ciertas columnas en registros específicos.

Delete

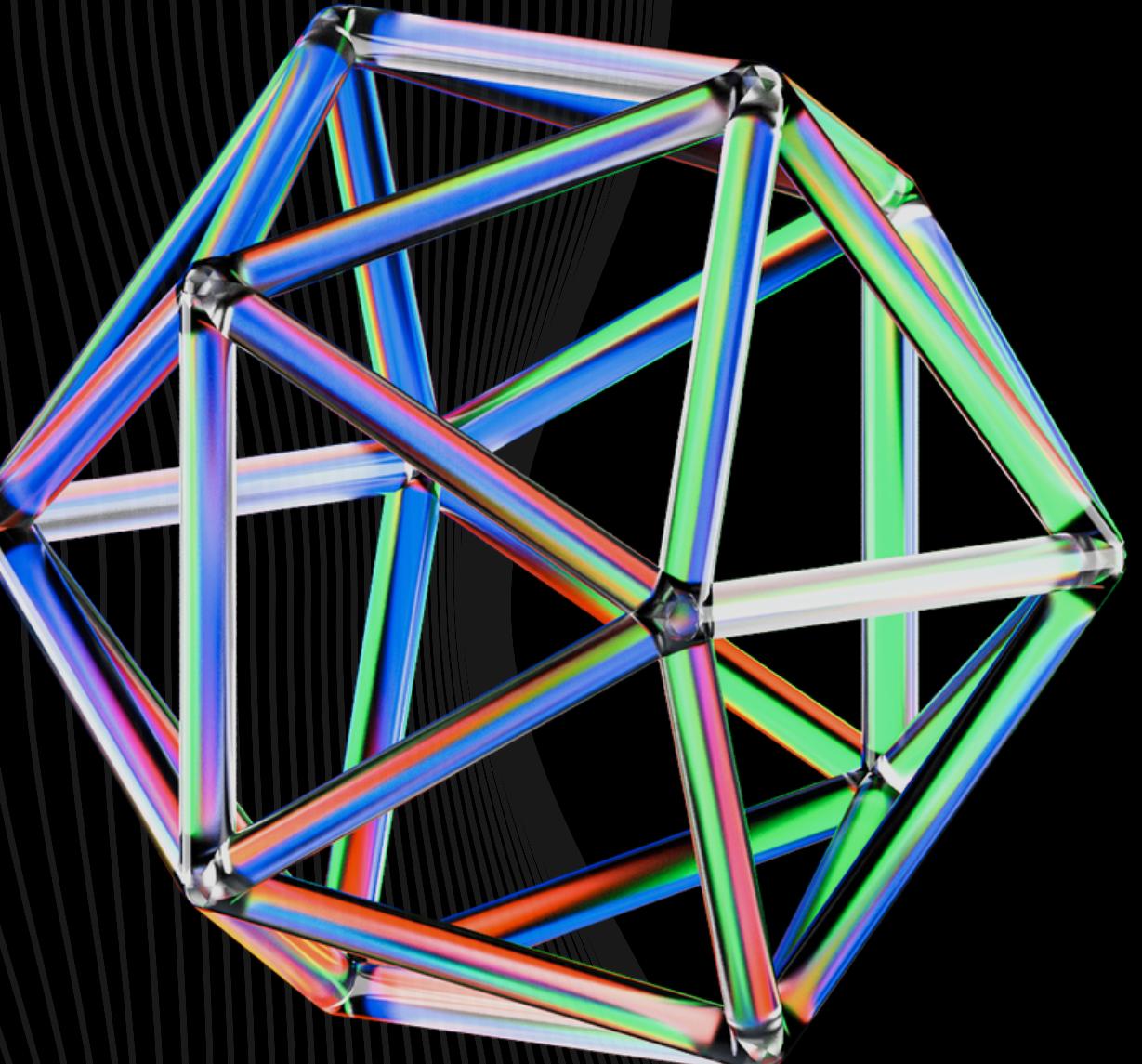
Eliminar registros de la base de datos. En SQL, se utiliza la sentencia **DELETE** para eliminar registros que cumplan ciertas condiciones.





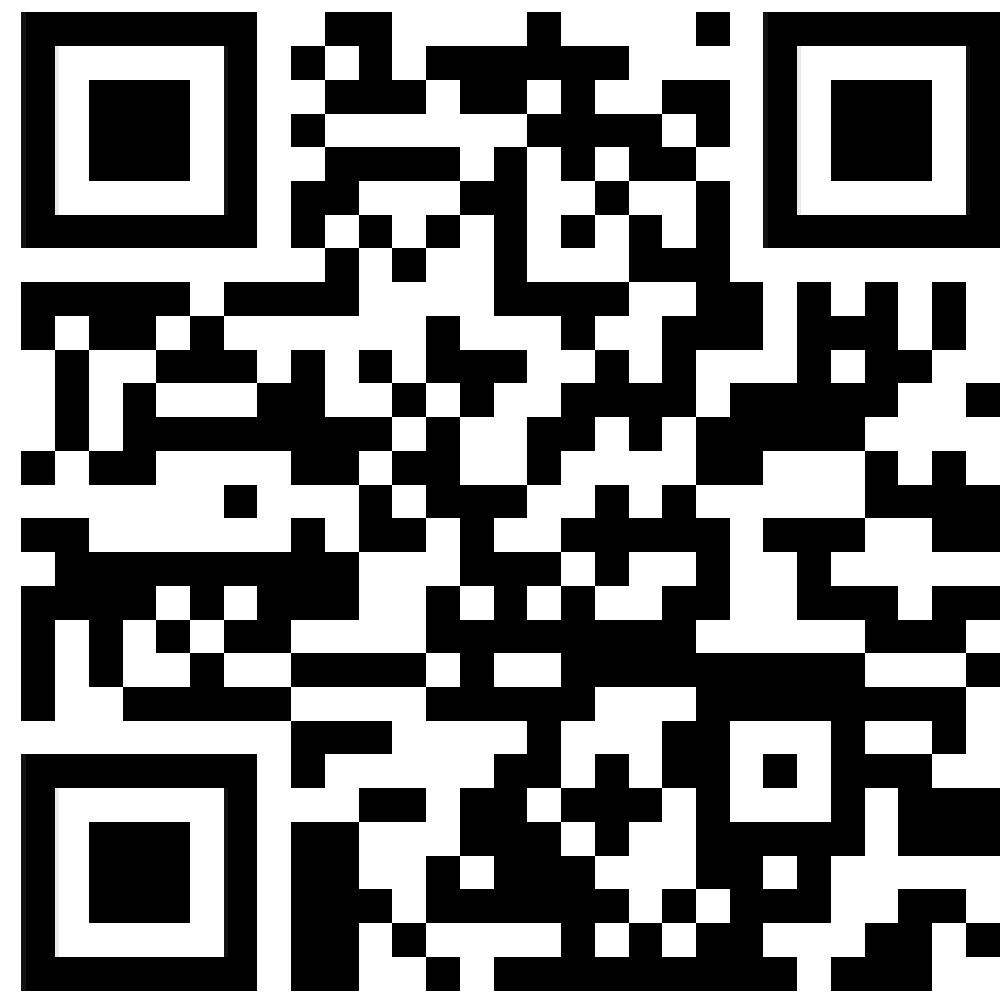
Ejemplos y explicaciones

https://github.com/sergio-octavio/python_databases



GRACIAS

Sergio Octavio Mancebo



https://github.com/sergio-octavio/python_databases