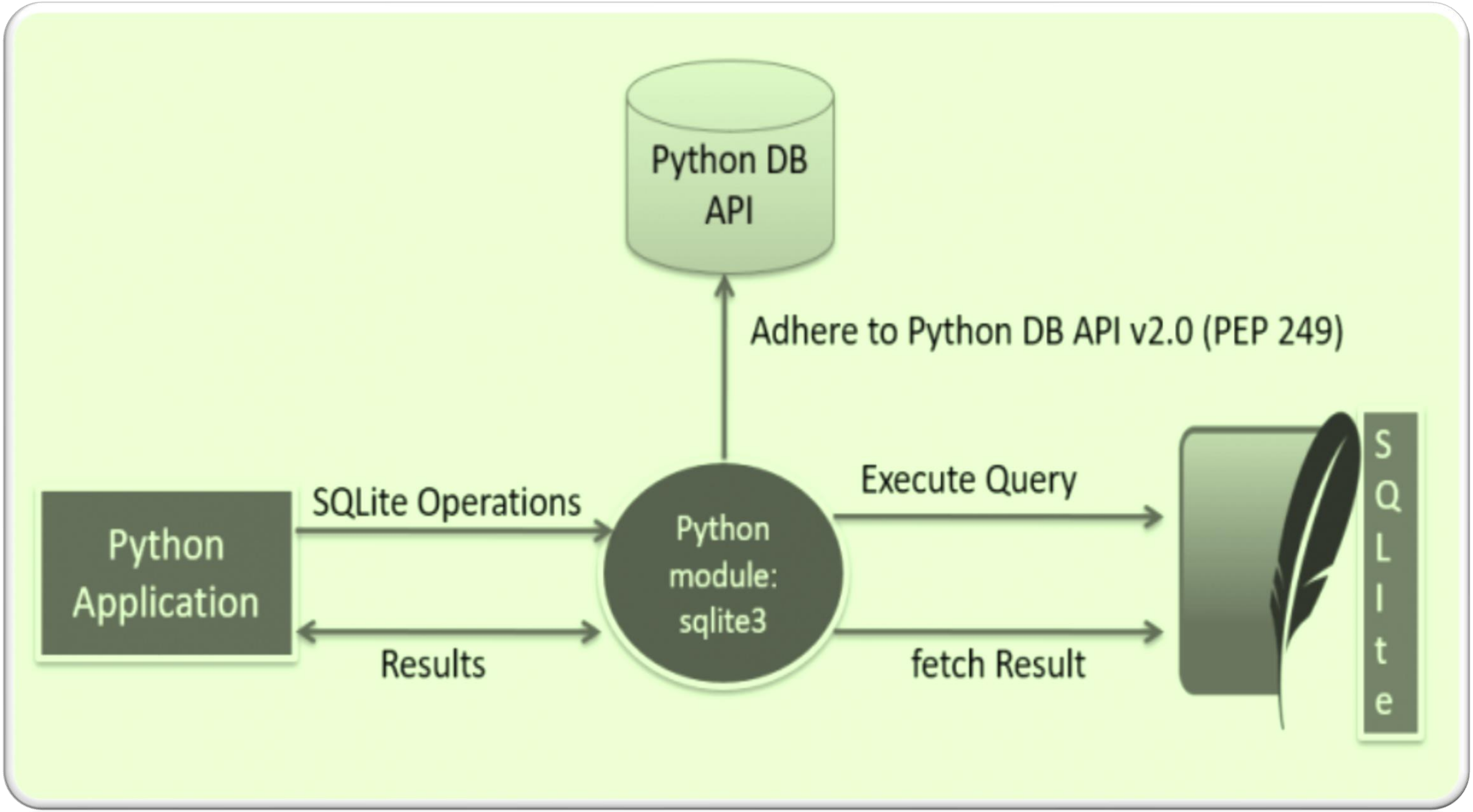
SQLITE

Data Base Engine


Python DB API
Adhere to Python DB API v2.0 (PEP 249)
Python Application
SQLite Operations
Results
Python module: sqlite3
Execute Query
fetch Result
SQLite

Overview

- SQLite is a software library that implements a self-contained, serverless, transactional SQL database engine.
- SQLite comes built-in with most of the computers, mobile devices and browsers.
- Python has a built-in module named sqlite3 to work with SQLite database.
- SQLite supports most of the query language features found in SQL92 standard.

Data Types

- NULL: – The value is a NULL value.
- INTEGER: – To store the numeric value. The integer stored in 1, 2, 3, 4, 6, or 8 bytes depending on the magnitude of the number.*
- REAL: – The value is a floating-point value, for example, 3.14 value of PI
- TEXT: – The value is a text string, TEXT value stored using the UTF-8, UTF-16BE or UTF-16LE encoding.
- BLOB: – The value is a blob of data, i.e., binary data. It is used to store images and files.

* SQLite storage class is slightly more general than a datatype. The INTEGER storage class, for example, includes 6 different integer datatypes of different lengths.

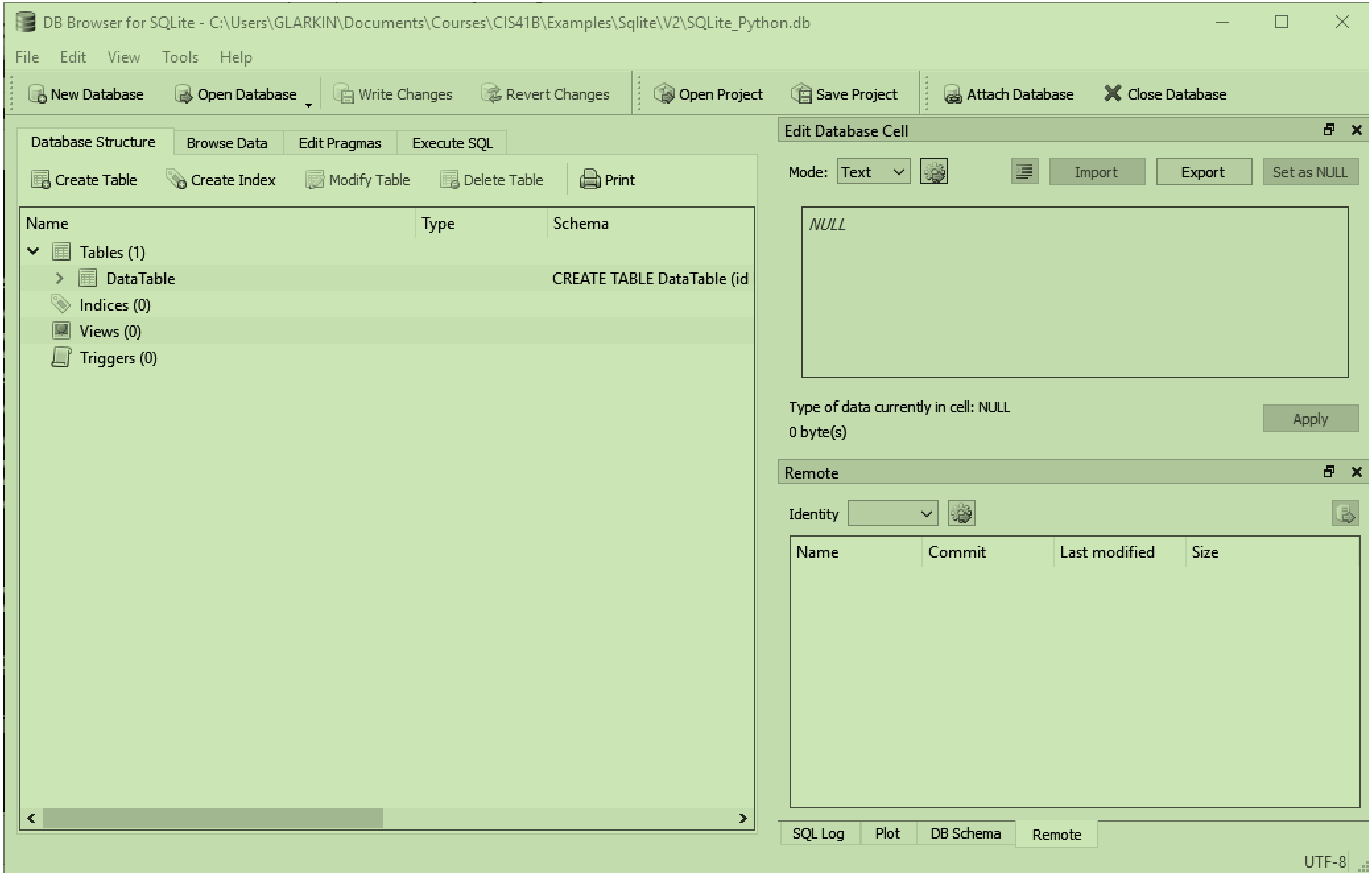
Commands

- CREATE Database
- ATTACH Database
- DETACH Database
- CREATE Table
- DROP Table
- INSERT Query
- SELECT Query
- Operators
- Expressions
- WHERE Clause

- AND & OR Clauses
- UPDATE Query
- DELETE Query
- LIKE Clause
- GLOB Clause
- LIMIT Clause
- ORDER By Clause
- GROUP By Clause
- HAVING Clause
- DISTINCT Keyword

Connect

- To establish a connection to SQLite, you need to specify the database name you want to connect.
- If you specify the database file name that already presents on disk, it will connect to it.
- If your specified SQLite database file does not exist, SQLite creates a new database for you.



DB Browser for SQLite - C:\Users\GLARKIN\Documents\Courses\CIS41B\Examples\Sqlite\V2\SQLite_Python.db

Name	Type	Schema
Tables (1)		
DataTable		CREATE TABLE DataTable (id
Indices (0)		
Views (0)		
Triggers (0)		

Mode: Text

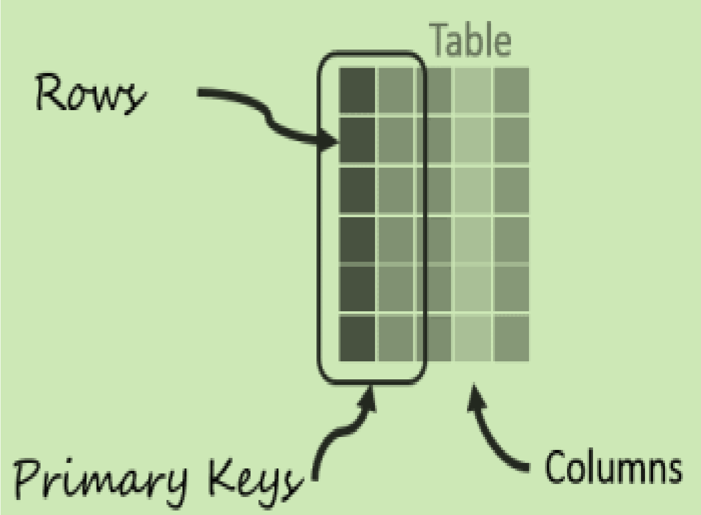
NULL

Type of data currently in cell: NULL

0 byte(s)

Table

- SQLite **CREATE TABLE** creates a new table in the database.
- Creating a table defines its columns and data types.
- A unique name or identifier follows the CREATE TABLE statement.



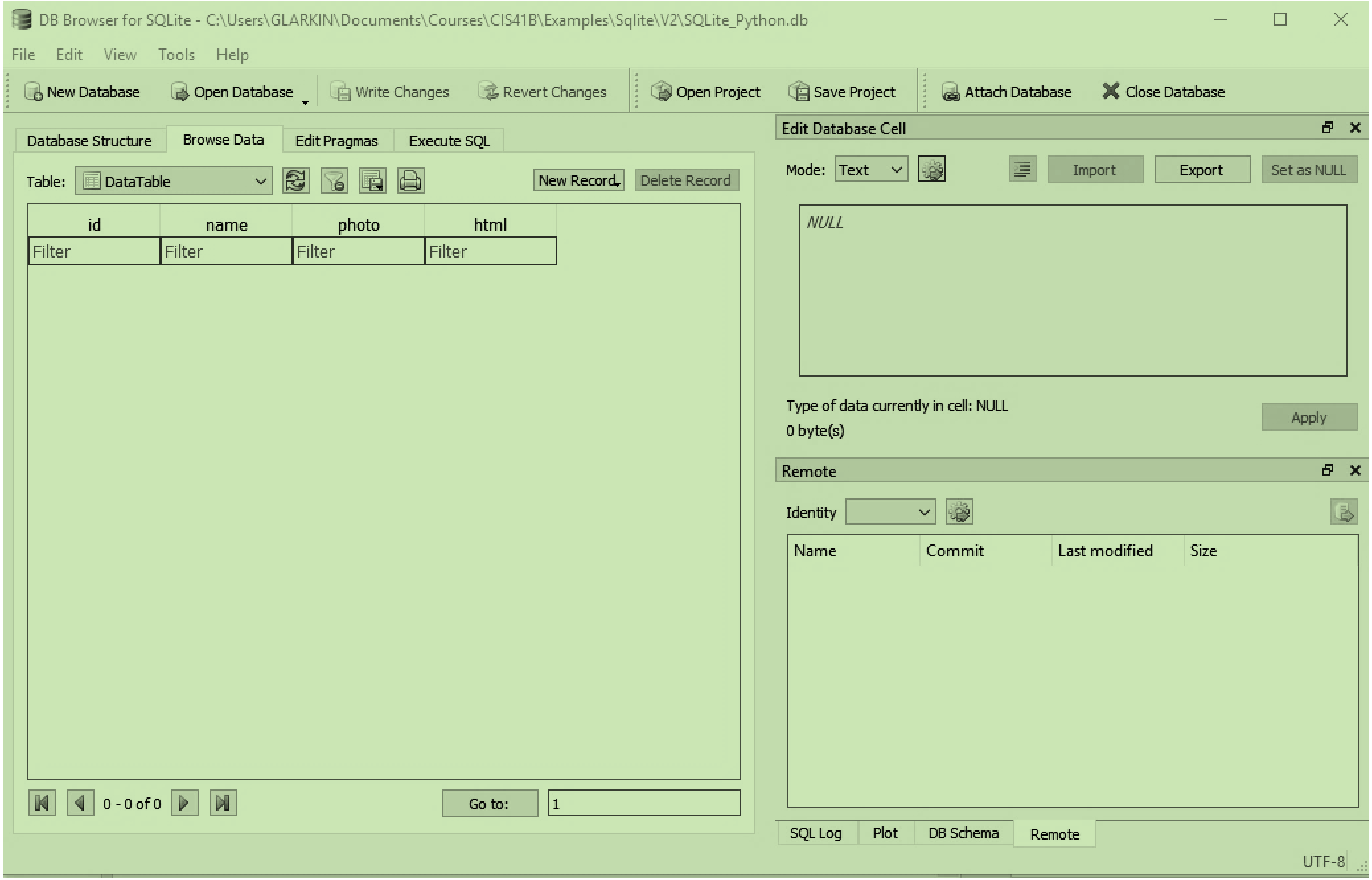


Table: DataTable

id	name	photo	html
Filter	Filter	Filter	Filter

0 - 0 of 0

Go to: 1

Mode: Text

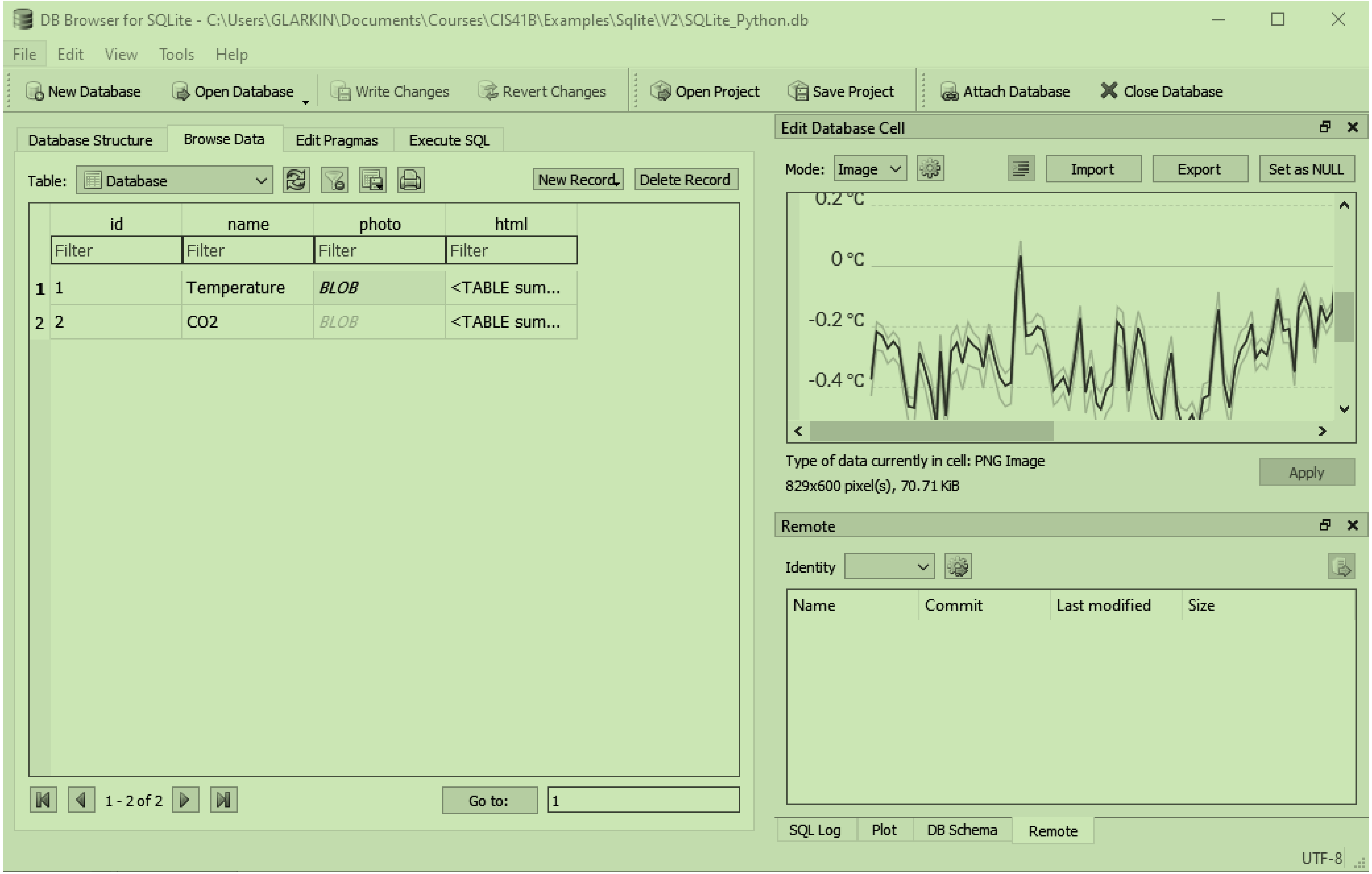
NULL

Type of data currently in cell: NULL

0 byte(s)

Insert

- SQLite **INSERT INTO** Statement is used to add new rows of data into a table in the database.
- It isn’t necessary to specify the column(s) name in the SQLite query if adding values for all the columns of the table.
- The order of the values must be the same order as the columns in the table.



DB Browser for SQLite - C:\Users\GLARKIN\Documents\Courses\CIS41B\Examples\Sqlite\V2\SQLite_Python.db

Table: Database

	id	name	photo	html
	Filter	Filter	Filter	Filter
1	1	Temperature	*BLOB*	<TABLE sum...
2	2	CO2	*BLOB*	<TABLE sum...

1 - 2 of 2

Go to: 1

Mode: Image

Type of data currently in cell: PNG Image

829x600 pixel(s), 70.71 KiB

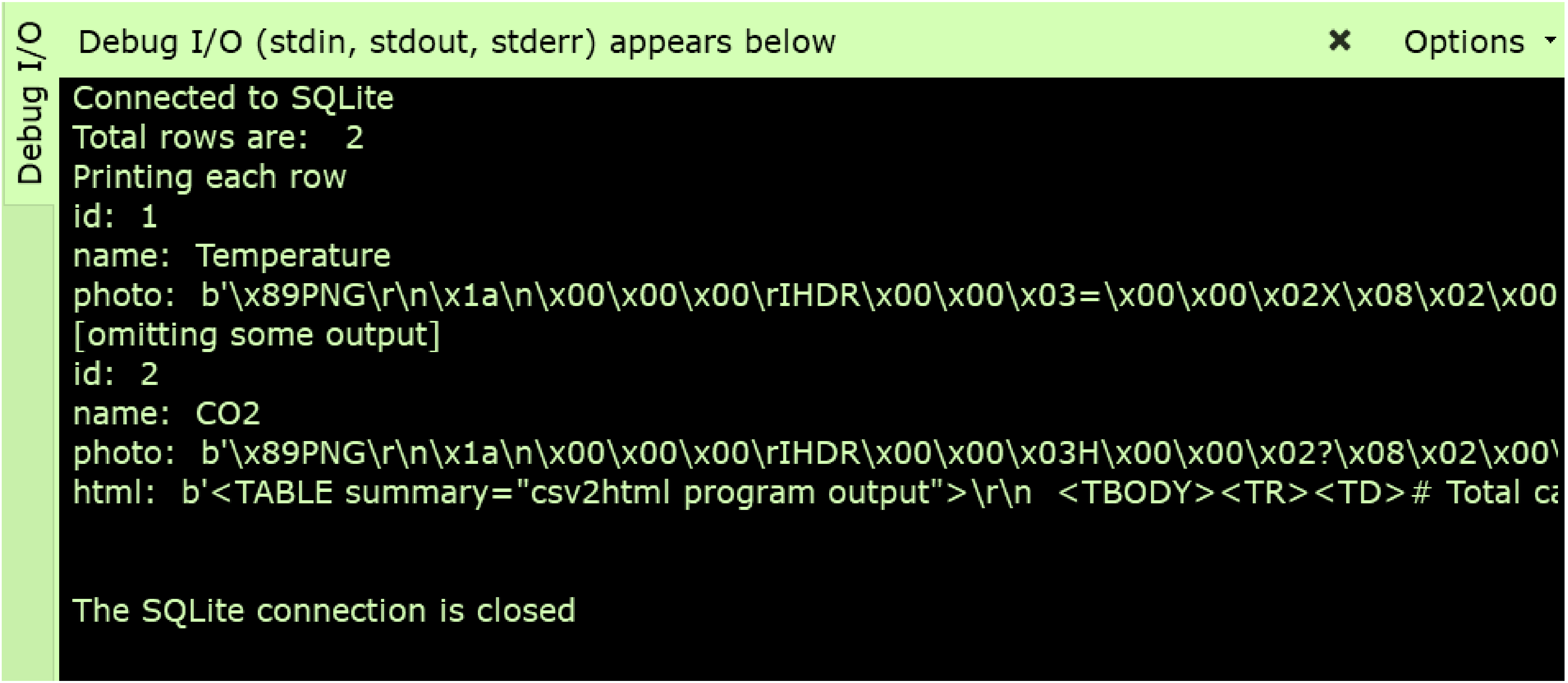
Identity

Name	Commit	Last modified	Size

Query

To query data in an SQLite database from Python:

- Establish a connection to the SQLite database.
- Create a Cursor object using the cursor method.
- Execute a SELECT statement.



```
Connected to SQLite
Total rows are:   2
Printing each row
id:  1
name:  Temperature
photo:  b'\x89PNG\r\n\x1a\n\x00\x00\x00\rIHDR\x00\x00\x03=\x00\x00\x02X\x08\x02\x00
[omitting some output]
id:  2
name:  CO2
photo:  b'\x89PNG\r\n\x1a\n\x00\x00\x00\rIHDR\x00\x00\x03H\x00\x00\x02?\x08\x02\x00\
html:  b'<TABLE summary="csv2html program output">\r\n  <TBODY><TR><TD># Total c


The SQLite connection is closed
```

Update

- SQLite **UPDATE** Query is used to modify the existing records in a table.
- Use WHERE clause with UPDATE query to update selected rows, otherwise all the rows would be updated.
- To modify all the column values in a table, omit the WHERE clause and then submit the UPDATE query.

Delete

To perform SQLite DELETE query from Python:

- Connect to SQLite from Python.
- Create a cursor object using the SQLite connection object.
- Define the SQLite DELETE Query.
- Execute the DELETE query.
- Commit your changes to the database.

SQLite Browser

DB Browser for SQLite (DB4S) is a high quality, visual, open source tool to create, design, and edit database files compatible with SQLite.

https://sqlitebrowser.org/

DB4S is for users and developers who want to create, search, and edit databases. DB4S uses a familiar spreadsheet-like interface, and complicated SQL commands do not have to be learned.