

DATABASE

RDBMS, which stands for **Relational Database Management System**, is a type of database management system that organizes and stores data in a structured manner.

The relational model represents data as tables with rows and columns, where each row corresponds to a record, and each column represents a specific attribute or field.

Commonly used Relational Databases:

- MySQL
- PostgreSQL
- Oracle Database
- Microsoft SQL Server
- SQLite
- IBM Db2
- MariaDB
- Amazon Aurora
- SAP HANA

SQLITE DATABASE

SQLite is a lightweight, self-contained, serverless, and open-source relational database management system (RDBMS) that is widely used in various applications, especially in embedded systems, mobile devices, and small-scale applications.

It is known for its simplicity, portability, and efficiency, making it a popular choice for developers who need a local database engine with minimal setup and administration.

SQLite is commonly used in mobile apps, web browsers, operating systems, IoT devices, and various software products that require local data storage and management.

It is especially valuable for prototyping, testing, and small to medium-scale projects where the simplicity and ease of integration are critical factors.

However, for large-scale enterprise applications requiring heavy concurrent access and complex data management, other relational databases like MySQL, PostgreSQL, or Oracle are more suitable options.

CRUD OPERATION

CRUD is an acronym that stands for Create, Read, Update, and Delete.

It represents the four fundamental operations used to manage data in a database or any persistent storage system.

CRUD operations are the backbone of most database applications and are essential for creating, retrieving, updating, and deleting data records.

Create Table

```
# Create a new table on database with the name of users
"CREATE TABLE users (id INT PRIMARY KEY, username VARCHAR(50) NOT NULL, email VARCHAR(100), age INT)"
```

Insert Data on the table

```
# Insert data into the users table
"INSERT INTO users (username, email, age) VALUES ('john_doe', 'john.doe@example.com', 30)"
```

Read Table

```
# Read the data on the table
"SELECT * FROM users"
```

Update Table

```
# update row in the table
"UPDATE users SET age = 35 WHERE username = 'john_doe'"
```

Delete Row

```
# Delete row in the table
"DELETE FROM users WHERE username = 'john_doe'"
```

Delete Table

```
# Delete a table in the database
"DROP TABLE IF EXISTS your_table"
```

DO NOT FORGET TO CHECK IF YOUR TABLE EXISTS

CONNECT DATABASE TO PYTHON FILE

```
import sqlite3

# Replace 'your_database_name.db' with the desired name for your database file
db_name = 'for_training.db'

# Connect to the database (this will create a new file if it doesn't exist)
connection = sqlite3.connect(db_name)
connection.close()

print(f"SQLite database '{db_name}' created successfully.")
```

Write various queries in our python file

```
# Connect to the database (this will create a new file if it doesn't exist)
connection = sqlite3.connect(db_name)

cursor_obj = connection.cursor()

# insert data into the table in the database
cursor_obj.execute("INSERT INTO user1 (id, username, email, age) VALUES (2, 'David', 'david@example.com', 24)")

connection.commit()
connection.close()
print("Queries are executed successfully!!")
```