| Experiment No. 13 |
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| Program to demonstrate CRUD (create, read, update and delete) operations on database (SQLite/ MySQL) using python |
| Date of Performance: |
| Date of Submission: |

## Experiment No. 13

**Title:** Program to demonstrate CRUD (create, read, update and delete) operations on database (SQLite/ MySQL) using python

**Aim:** To study and implement CRUD (create, read, update and delete) operations on database (SQLite/ MySQL) using python

**Objective:** To introduce database connectivity with python

**Theory:**

In general CRUD means performing Create, Retrieve, Update and Delete operations on a table in a database. Let's discuss what actually CRUD means,
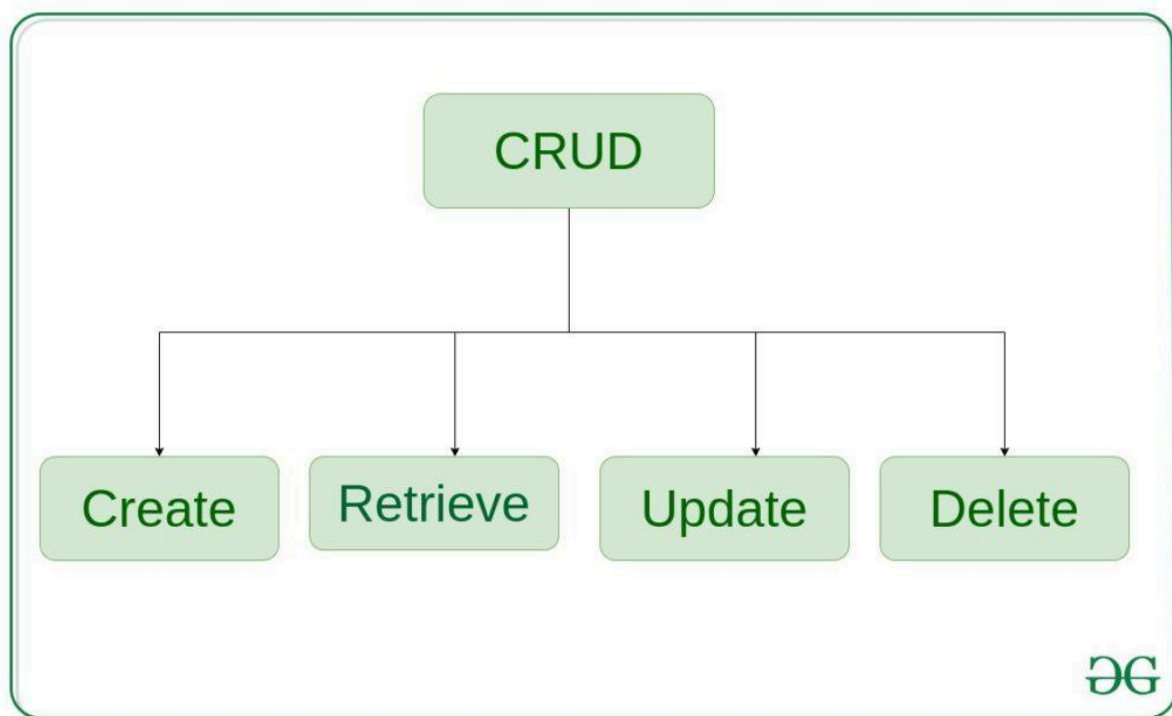


**Create** – create or add new entries in a table in the database.
**Retrieve** – read, retrieve, search, or view existing entries as a list(List View) or retrieve a particular entry in detail (Detail View)
**Update** – update or edit existing entries in a table in the database
**Delete** – delete, deactivate, or remove existing entries in a table in the database

**Code:**

```python
import sqlite3


conn = sqlite3.connect('books.db')

cursor = conn.cursor()

cursor.execute('''CREATE TABLE IF NOT EXISTS books
          (id INTEGER PRIMARY KEY, title TEXT, author TEXT, year INTEGER)''')

def create_book(title, author, year):
    cursor.execute('''INSERT INTO books (title, author, year)
            VALUES (?, ?, ?)''', (title, author, year))
    conn.commit()

def read_books():
    cursor.execute('''SELECT * FROM books''')
    books = cursor.fetchall()
    return books

def update_book(id, title, author, year):
    cursor.execute('''UPDATE books
            SET title=?, author=?, year=?
            WHERE id=?''', (title, author, year, id))
    conn.commit()

def delete_book(id):
    cursor.execute('''DELETE FROM books WHERE id=?''', (id,))
    conn.commit()

def main():
    create_book('To Kill a Mockingbird', 'Harper Lee', 1960)
    create_book('1984', 'George Orwell', 1949)
    print("All books:")
    books = read_books()
    for book in books:
        print(book)
```

```
    update_book(1, 'To Kill a Mockingbird', 'Harper Lee', 1962)

    delete_book(2)

    print("\nAfter update and delete operations:")

    books = read_books()

    for book in books:

        print(book)

    conn.close()

if __name__ == "__main__":

    main()
```

**Output:**

All books:

(1, 'To Kill a Mockingbird', 'Harper Lee', 1960)

(2, '1984', 'George Orwell', 1949)


After update and delete operations:

(1, 'To Kill a Mockingbird', 'Harper Lee', 1962)


**Conclusion:**

The program then showcases these operations by adding new books, retrieving and displaying all books, updating a book's information, and deleting a book. Finally, it closes the database connection. This experiment provides a practical illustration of how to interact with a database using SQLite and Python, offering valuable insights into database management techniques.