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Second Year CS
Subject: **Programming Lab1**

Experiment No. 8

AIM: Write a program in a python to perform CRUD operations on database(sqlite3/MySql)

THEORY :

Python SQLite3 module is used to integrate the SQLite database with Python. It is a standardized Python DBI API 2.0 and provides a straightforward and simple-to-use interface for interacting with SQLite databases.

SQLite is a lightweight, serverless, self-contained, and open-source relational database management system. In Python, you can interact with SQLite using the sqlite3 **module.**

CRUD stands for Create, Read, Update, and Delete—a set of basic operations used in database management systems to manipulate data.

CODE:

```
[2] import sqlite3
```

```
conn = sqlite3.connect("Student.db")
```

```
[12] conn.execute('''
        CREATE TABLE Departments(
          Code INTEGER KEY NOT NULL,
          Branch VARCHAR NOT NULL,
          StudentCount INTEGER NOT NULL
        );
    ''')
    conn.commit()
    print("Department Table Created")
```

```
Department Table Created
```

```
conn.execute('''
    CREATE TABLE STUDENTS(
      Branch INTEGER NOT NULL,
      ID INTEGER NOT NULL,
      Name VARCHAR NOT NULL,
      LastName VARCHAR NOT NULL,
      CONSTRAINT fk_Departments_Code FOREIGN KEY(Branch) REFERENCES DEPARTMENT(C
    );
''')
conn.commit()
print("Students table created")
```

```
Students table created
```

```
[14] conn.execute('''INSERT INTO Departments VALUES(01,'Computer Science',10)''')
     conn.execute('''INSERT INTO Departments VALUES(02,'IT',20)''')
     conn.execute('''INSERT INTO Departments VALUES(03,'EXTC',30)''')
     conn.execute('''INSERT INTO Departments VALUES(04,'Mech',40)''')
     conn.commit()
```

```
conn.execute('''INSERT INTO STUDENTS VALUES(01,101,'Manav','Shah')''')
conn.execute('''INSERT INTO STUDENTS VALUES(02,102,'John','Doe')''')
conn.execute('''INSERT INTO STUDENTS VALUES(02,103,'Pop','Alae')''')
conn.execute('''INSERT INTO STUDENTS VALUES(01,104,'DBdk','Shh')''')
conn.execute('''INSERT INTO STUDENTS VALUES(04,105,'iwef','ewfbhi')''')
conn.execute('''INSERT INTO STUDENTS VALUES(03,106,'wdn','wbhfe')''')
conn.execute('''INSERT INTO STUDENTS VALUES(02,107,'man','Shah')''')
conn.execute('''INSERT INTO STUDENTS VALUES(03,108,'Jonny','Doe')''')
conn.execute('''INSERT INTO STUDENTS VALUES(04,109,'Paul','Alae')''')
conn.execute('''INSERT INTO STUDENTS VALUES(03,110,'ewf','ue')''')
conn.commit()
```

```
[24] data = conn.execute(f'''SELECT * FROM Departments;''')
     for row in data:
         print(row)
```

```
(1, 'Computer Science', 10)
(2, 'IT', 20)
(3, 'EXTC', 30)
(4, 'Mech', 40)
```

```
data = conn.execute(f'''SELECT * FROM STUDENTS''')
for row in data:
    print(row)
```

```
(1, 101, 'Manav', 'Shah')
(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(1, 104, 'DBdk', 'Shh')
(4, 105, 'iwef', 'ewfbhi')
(3, 106, 'wdn', 'wbhfe')
(2, 107, 'man', 'Shah')
(3, 108, 'Jonny', 'Doe')
(4, 109, 'Paul', 'Alae')
(3, 110, 'ewf', 'ue')
```

```
[28] n = input("Enter the Branch Code to be Searched (01 : CS,02 : IT , 03 : EXTC, 04 : Mech);")

     data = conn.execute(f'''
         SELECT * FROM STUDENTS
         WHERE Branch IN({n});
     ''')

     for row in data:
         print(row)
```

```
Enter the Branch Code to be Searched (01 : CS,02 : IT , 03 : EXTC, 04 : Mech);2
(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(2, 107, 'man', 'Shah')
```

```python
print("Students data before updating : \n")
data = conn.execute(f'''
    SELECT * FROM STUDENTS
''')

for row in data:
    print(row)
print('\n')
conn.execute('''UPDATE STUDENTS SET ID = 100 WHERE Name = 'Manav' ''')
print("Students data after updating : \n")
data = conn.execute(f'''
    SELECT * FROM STUDENTS
''')

for row in data:
    print(row)
print('\n')
```

```
Students data before updating :

(1, 101, 'Manav', 'Shah')
(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(1, 104, 'DBdk', 'Shh')
(4, 105, 'iwef', 'ewfbhi')
(3, 106, 'wdn', 'wbhfe')
(2, 107, 'man', 'Shah')
(3, 108, 'Jonny', 'Doe')
(4, 109, 'Paul', 'Alae')
(3, 110, 'ewf', 'ue')


Students data after updating :

(1, 100, 'Manav', 'Shah')
(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(1, 104, 'DBdk', 'Shh')
(4, 105, 'iwef', 'ewfbhi')
(3, 106, 'wdn', 'wbhfe')
(2, 107, 'man', 'Shah')
(3, 108, 'Jonny', 'Doe')
(4, 109, 'Paul', 'Alae')
(3, 110, 'ewf', 'ue')
```

```python
print("Students data before deleting : \n")
data = conn.execute(f'''
    SELECT * FROM STUDENTS
''')

for row in data:
    print(row)
print('\n')
conn.execute('''DELETE FROM STUDENTS WHERE Name = 'Manav' ''')
print("Students data after updating : \n")
data = conn.execute(f'''
    SELECT * FROM STUDENTS
''')

for row in data:
    print(row)
print('\n')
```

```
Students data before deleting :

(1, 100, 'Manav', 'Shah')
(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(1, 104, 'DBdk', 'Shh')
(4, 105, 'iwef', 'ewfbhi')
(3, 106, 'wdn', 'wbhfe')
(2, 107, 'man', 'Shah')
(3, 108, 'Jonny', 'Doe')
(4, 109, 'Paul', 'Alae')
(3, 110, 'ewf', 'ue')


Students data after updating :

(2, 102, 'John', 'Doe')
(2, 103, 'Pop', 'Alae')
(1, 104, 'DBdk', 'Shh')
(4, 105, 'iwef', 'ewfbhi')
(3, 106, 'wdn', 'wbhfe')
(2, 107, 'man', 'Shah')
(3, 108, 'Jonny', 'Doe')
(4, 109, 'Paul', 'Alae')
(3, 110, 'ewf', 'ue')
```

CONCLUSION : In this experiment, we performed a program in a python to perform CRUD operations on a database (sqlite3). We created a table named Departments to store the information related to different departments such as branch, dept code and and other table name Students to store the information related to different students such as name, ID and branch code.