| 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: 10/04/2024 |
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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,
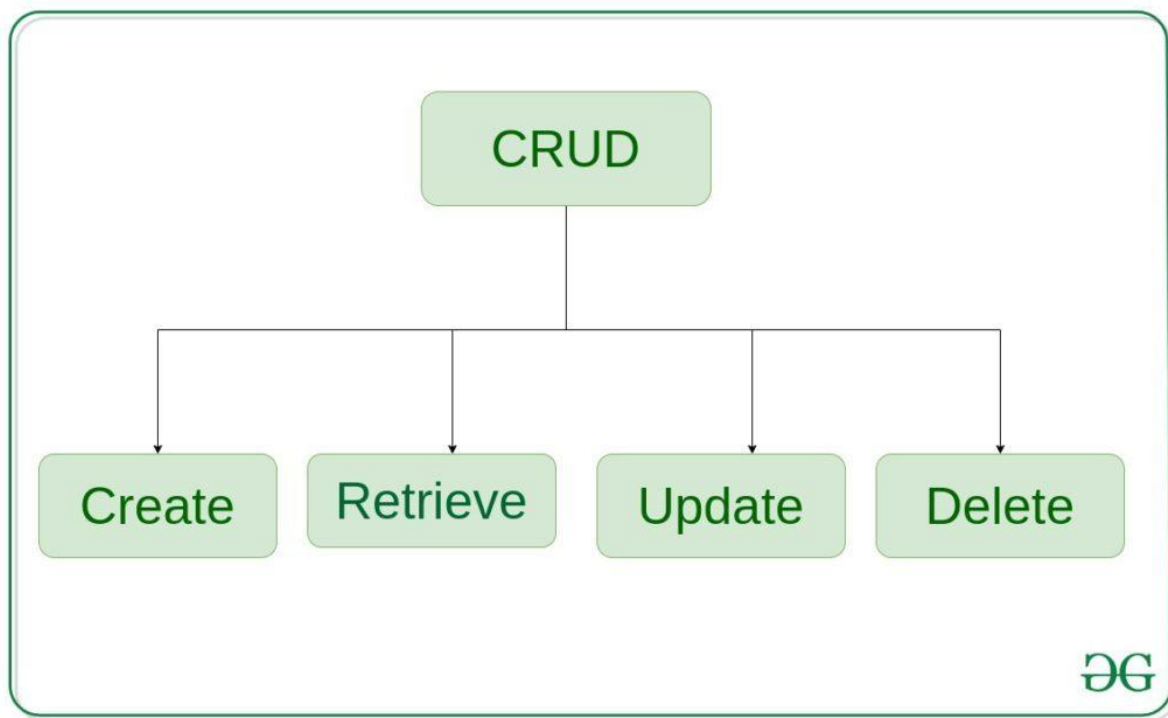
Create – create or add new entries in a table in the database.
Retrieve – read, retrieve, search, or view existing entries as a list(List View) or retrieve a particular entry in detail (Detail View)
Update – update or edit existing entries in a table in the database
Delete – delete, deactivate, or remove existing entries in a table in the database

Program:

```python
import mysql.connector


# Function to create a new record

def create_record(conn, values):

    cursor = conn.cursor()

    cursor.execute('''INSERT INTO records (name, age) VALUES (%s, %s)''', values)

    conn.commit()

    print("Record created successfully")


# Function to read all records

def read_records(conn):

    cursor = conn.cursor()

    cursor.execute('''SELECT * FROM records''')

    rows = cursor.fetchall()

    print("ID\tName\tAge")

    for row in rows:

        print("{}\t{}\t{}".format(row[0], row[1], row[2]))


# Function to update a record

def update_record(conn, record_id, values):

    cursor = conn.cursor()

    cursor.execute('''UPDATE records SET name=%s, age=%s WHERE id=%s''', (*values, record_id))
```

```python
conn.commit()

print("Record updated successfully")


# Function to delete a record

def delete_record(conn, record_id):

cursor = conn.cursor()

cursor.execute("'DELETE FROM records WHERE id=%s'", (record_id,))

conn.commit()

print("Record deleted successfully")


# Main function

def main():

conn = mysql.connector.connect(

host="localhost",

user="root",

password="om@21",

database="exp_13"

)


cursor = conn.cursor()


# Create table if not exists

cursor.execute("'CREATE TABLE IF NOT EXISTS records

(id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(255), age INT)'")
```

```python
while True:
    print("\n1. Create Record\n2. Read Records\n3. Update Record\n4. Delete Record\n5. Exit")
    choice = input("Enter your choice: ")

    if choice == '1':
        name = input("Enter name: ")
        age = int(input("Enter age: "))
        create_record(conn, (name, age))

    elif choice == '2':
        read_records(conn)

    elif choice == '3':
        record_id = int(input("Enter record ID to update: "))
        name = input("Enter new name: ")
        age = int(input("Enter new age: "))
        update_record(conn, record_id, (name, age))

    elif choice == '4':
        record_id = int(input("Enter record ID to delete: "))
        delete_record(conn, record_id)

    elif choice == '5':
```

```
break

else:

print("Invalid choice")

conn.close()

if __name__ == "__main__":

main()
```

Output:

```
1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 1

Enter name: try_1

Enter age: 19

Record created successfully


1. Create Record

2. Read Records

3. Update Record

4. Delete Record
```

5. Exit

Enter your choice: 1

Enter name: try_2

Enter age: 20

Record created successfully

1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 2

ID	Name	Age
1	try_1	19
2	try_2	20

1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 3

Enter record ID to update: 1

Enter new name: update_1

Enter new age: 25

Record updated successfully

1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 2

ID   Name   Age

1   update_1   25

2   try_2   20

1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 4

Enter record ID to delete: 1

Record deleted successfully

1. Create Record

2. Read Records

3. Update Record

4. Delete Record

5. Exit

Enter your choice: 2

ID   Name   Age

2   try_2   20

```
mysql> create database exp_13;
Query OK, 1 row affected (0.01 sec)

mysql> use exp_13;
Database changed
mysql> CREATE TABLE records (
    ->      id INT AUTO_INCREMENT PRIMARY KEY,
    ->      name VARCHAR(255),
    ->      age INT
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> SHOW TABLES;
+-----------------+
| Tables_in_exp_13 |
+-----------------+
| records         |
+-----------------+
1 row in set (0.00 sec)

mysql> select*from records;
Empty set (0.00 sec)
```

```
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 1
Enter name: try_1
Enter age: 19
Record created successfully

1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 1
Enter name: try_2
Enter age: 20
Record created successfully

1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 2
ID      Name    Age
1       try_1   19
2       try_2   20

1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice:
```

```
mysql> select*from records;
+----+-------+------+
| id | name  | age  |
+----+-------+------+
|  1 | try_1 |   19 |
|  2 | try_2 |   20 |
+----+-------+------+
2 rows in set (0.00 sec)
```

```
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 3
Enter record ID to update: 1
Enter new name: update_1
Enter new age: 25
Record updated successfully

1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 2
ID        Name      Age
1         update_1           25
2         try_2     20
```

```
mysql> select*from records;
+----+-----------+------+
| id | name      | age  |
+----+-----------+------+
|  1 | update_1  |   25 |
|  2 | try_2     |   20 |
+----+-----------+------+
2 rows in set (0.00 sec)
```

```
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 4
Enter record ID to delete: 1
Record deleted successfully

1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice: 2
ID        Name      Age
2         try_2     20
```

```
mysql> select*from records;
+----+--------+------+
| id | name   | age  |
+----+--------+------+
|  2 | try_2  |   20 |
+----+--------+------+
1 row in set (0.00 sec)
```

Conclusion:

The Python program effectively demonstrates CRUD operations on a MySQL database, showcasing the creation, reading, updating, and deletion of records. Through user-friendly prompts, it illustrates seamless interaction with the database, allowing users to manipulate data efficiently. This implementation underscores the practicality and versatility of Python in database management tasks, facilitating an understanding of fundamental CRUD principles. Overall, the program serves as a concise yet comprehensive introduction to database connectivity and manipulation using Python.