**Lab Exercise 10 - Using SQLAlchemy with Python and MySQL**

**Objective**

To perform basic Create, Insert, Select, Update, and Delete operations on a MySQL table using Python and SQLAlchemy, without using the ORM (declarative\_base()).

**Prerequisites**

1. MySQL Server running (e.g., on localhost).
2. A database named testdb created in MySQL.
3. Install required Python packages using:

pip install sqlalchemy pymysql

**Step-by-Step Instructions**

**Step 1: Import and Connect**

from sqlalchemy import create\_engine, text

# Connect to MySQL

engine = create\_engine("mysql+pymysql://root:password@localhost:3306/testdb")

Replace root, password, and testdb with your actual credentials.

**Step 2: Create Table**

with engine.connect() as conn:

conn.execute(text("""

CREATE TABLE IF NOT EXISTS users (

id INT AUTO\_INCREMENT PRIMARY KEY,

name VARCHAR(50),

email VARCHAR(100)

);

"""))

print("Table created successfully.")

**Step 3: Insert Records**

with engine.begin() as conn:

conn.execute(text("INSERT INTO users (name, email) VALUES (:name, :email)"),

{"name": "Alice", "email": "alice@example.com"})

conn.execute(text("INSERT INTO users (name, email) VALUES (:name, :email)"),

{"name": "Bob", "email": "bob@example.com"})

print("Records inserted successfully.")

**Step 4: Select and Display Records**

with engine.connect() as conn:

result = conn.execute(text("SELECT \* FROM users"))

print("\nUser records:")

for row in result:

print(row)

**Step 5: Update a Record**

with engine.begin() as conn:

conn.execute(text("UPDATE users SET email = :email WHERE name = :name"),

{"email": "alice.new@example.com", "name": "Alice"})

print("\nRecord updated.")

**Step 6: Delete a Record**

with engine.begin() as conn:

conn.execute(text("DELETE FROM users WHERE name = :name"), {"name": "Bob"})

print("\nRecord deleted.")

**Step 7: Final Select**

with engine.connect() as conn:

result = conn.execute(text("SELECT \* FROM users"))

print("\nFinal user records:")

for row in result:

print(row)

**Expected Output**

Table created successfully.

Records inserted successfully.

User records:

(1, 'Alice', 'alice@example.com')

(2, 'Bob', 'bob@example.com')

Record updated.

Record deleted.

Final user records:

(1, 'Alice', 'alice.new@example.com')