**Lab Exercise 8 - Connecting to MySQL Databases in Python**

**Objective:**

To practice:

* Connecting to a MySQL database using Python
* Executing SQL queries (SELECT, INSERT)
* Fetching and displaying data using Python

**Software/Tools Required:**

* Python 3.x installed
* MySQL Server (or XAMPP/LAMP with MySQL)
* MySQL user credentials (host, username, password)
* mysql-connector-python library installed

pip install mysql-connector-python

**Part A: Setup – Create Sample Database and Table in MySQL**

**Step 1: Create a Database and Table**

Use MySQL Workbench or CLI:

CREATE DATABASE PythonDB;

USE PythonDB;

CREATE TABLE Users (

user\_id INT AUTO\_INCREMENT PRIMARY KEY,

name VARCHAR(100),

email VARCHAR(100),

age INT

);

**Part B: Python Code to Connect and Interact**

**Step 2: Python Script – Connect and Insert Data**

import mysql.connector

# Connect to the MySQL database

conn = mysql.connector.connect(

host="localhost", # or "127.0.0.1"

user="root", # your MySQL username

password="your\_password", # your MySQL password

database="PythonDB"

)

cursor = conn.cursor()

# Insert data into Users table

insert\_query = """

INSERT INTO Users (name, email, age)

VALUES (%s, %s, %s)

"""

user\_data = ("Alice", "alice@example.com", 25)

cursor.execute(insert\_query, user\_data)

conn.commit()

print("Record inserted successfully.")

cursor.close()

conn.close()

**Step 3: Python Script – Fetch and Display Data**

import mysql.connector

conn = mysql.connector.connect(

host="localhost",

user="root",

password="your\_password",

database="PythonDB"

)

cursor = conn.cursor()

# Retrieve all users

cursor.execute("SELECT \* FROM Users")

rows = cursor.fetchall()

print("User Records:")

for row in rows:

print(f"ID: {row[0]}, Name: {row[1]}, Email: {row[2]}, Age: {row[3]}")

cursor.close()

conn.close()

**Part C: Exercises**

**Task 1: Insert Multiple Users**

* Modify the insert script to insert 3 users in one run using a loop or executemany().

**Task 2: Select Users Aged Over 25**

* Write a Python query to fetch only users whose age is greater than 25.

**Task 3: Update User Email**

* Use Python to update the email of a user by ID.

**Task 4: Delete a User**

* Use Python to delete a user record by user ID.

**Learning Outcomes:**

By the end of this lab, you will be able to:

* Connect Python to a MySQL database using mysql-connector-python
* Perform basic SQL operations (INSERT, SELECT, UPDATE, DELETE) via Python
* Use Python to fetch and display database records
* Handle MySQL transactions using Python scripts