Database Operations With Python

Objectives

After completing this lesson, you should be able to do the following:

- **Database basic concepts**
- **Creating Database**
- **Managing database objects**
- **Transactions in Database**
- **Database Exception handling**

What is Database

- Database is systematic collection of data
- We can easily mange the data in Database
- Python allows to connect many databases
- Python provide operation on database SQLite3

Create Connection

To connect Pyton to any Database We need connectors of that specific Database.

i.e. MYSQL Connector

**** Note: if don't have connector need to install ****

Step 1:- install mysql-connector

c:\>python -m pip install mysql-connector

Step2 : Create Connection

```
import mysql.connector as msc

mydb = mysql.connector.connect(
  host="localhost",
  user="root",
  passwd="root“
  Database="Avidb“       #optional in mysql
)
```

Create New Database

```
#import mysql connector
import mysql.connector as msc
#create connection object
mydb = msc.connect(
  host="localhost",
  user="root",
  passwd="root"
)
print(mydb)

mycursor = mydb.cursor()  # Create Cursor

# Pass executable statement to cursor

mycursor.execute("CREATE DATABASE Avidb")
```

Close the connection

```
# Close all cursors
mycursor.close()
# Close all databases
mydb.close()
```

Check Database

 # print the available database

```
mycursor.execute("SHOW DATABASES")

for x in mycursor:
  print(x)
```

Create TABLE

```
#import mysql connector
import mysql.connector as msc
#create connection object with new Database
mydb = msc.connect(
  host="localhost",   user="root",
  passwd="root",    database="Avidb"
)
print(mydb)
# Create Cursor
mycursor = mydb.cursor()
# Pass executable statement to cursor
mycursor.execute("CREATE TABLE Avitbl1 (name VARCHAR(255), address VARCHAR(255))")
```

Check if Table Exists

 # Pass executable statement to cursor

```
mycursor.execute("SHOW TABLES")

for x in mycursor:
  print(x)
```

Alter TABLE

#import mysql connector

import mysql.connector as msc

#create connection object with new Database

Same as we did in previous examples

 # Create Cursor

Same as we did in previous examples

 # Pass executable statement to cursor

mycursor.execute("ALTER TABLE Avitbl1 ADD COLUMN Asal int(5)")

Cursor values

- **Database cursor object used to execute the DB operations.**
- **It also provides some useful information in context to understand the DB operation done successful.**
- **Here we are going to discuss some variables**
- **Inserting/Updating/Deleting(DML) :-**

1:-rowcount # This shows number of rows effected by STMT

2:-lastrowid # It provided the last id of auto increment/sequence value.

- **Selection:-**

1:-Fetchall() # Fetches all rows from the last executed statement.

2:-Fetchone() # Returns single record

Sample Insert Operation

#import mysql connector

import mysql.connector as msc

#create connection object with new Database

Same as we did in previous examples

 # Create Cursor

Same as we did in previous examples

 # Pass executable statement to cursor

```
sql = "INSERT INTO Avitbl1 (name, address,Asal) VALUES (%s, %s, %s)"
val = ("John", "Highway 21", "2000")
mycursor.execute(sql, val)

mydb.commit()                    # This will save data in Database

print(mycursor.rowcount, "record inserted.")
```

Insert multiple records

```
# Create connection object with new Database
# Create Cursor
# Pass executable statement to cursor
sql = "INSERT INTO Avitbl1 (name, address ,asal) VALUES (%s, %s ,%s)"
val = [   ('Peter', 'Lowstreet 4' ,'1000'),   ('Amy', 'Apple st 652','2000'),   ('Hannah', 'Mountain 21','2000'),
   ('Michael', 'Valley 345','2000'),  ('Sandy', 'Ocean blvd 2','2000'),   ('Betty', 'Green Grass 1','4500'),
 ('Richard', 'Sky st 331','12000'),   ('Susan', 'One way 98','20500'),   ('Vicky', 'Yellow Garden 2','32000'),
  ('Ben', 'Park Lane 38','22000'),  ('William', 'Central st 954','6000'),   ('Chuck', 'Main Road 989','3500'),
  ('Viola', 'Sideway 1633','2000')
]

mycursor.executemany(sql, val)          # executemany is used for multiple insert
mydb.commit()                           # This will save data in Database

print(mycursor.rowcount, "record inserted.")
```

Fetch data from table

#create connection object with new Database

Same as we did in previous examples

 # Create Cursor

Same as we did in previous examples

 # Pass executable statement to cursor

```
mycursor.execute("SELECT * FROM Avitbl1")


myresult = mycursor.fetchall()


for x in myresult:
  print(x)
```

Assignments

1: Fetch 'Richard' records

2: Fetch records salary higher then 5000

3: Add new column department id

4: Delete any record where the salary is "3500":

5: Update salary of Vicky to 40500.

6: Drop your table

7: Re execute 6

8: Create employee(eid, ename,salary,did) and department(did,dname,dmanager) table

9: Add sample records in both tables

10: Fetch employee details with respective department details

** Note: Close DB connections after use…

THANKS