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Python Programming

Database Connection & Python Libraries

Session Objective

To understand the concepts of Database connection with MySql and Python Libraries,

- Database connection
  - Database Connection with MySql
  - Database Operations - CRUD

Database Connection

Database Connection

What is Database?

- A database is a collection of structured data that can be easily be retrieved, managed and accessed in various ways.

- One of the simplest, most lightweight SQL databases is **SQLite**, which runs directly on the machine and comes bundled with Python automatically.

- Relational databases are the most popular database system which includes
  - MySQL
  - Oracle Database
  - SQL server
  - Sybase
  - Informix
  - IBM db2
  - NO SQL

Database Connection Contd...

Steps to Connect MySQL Database

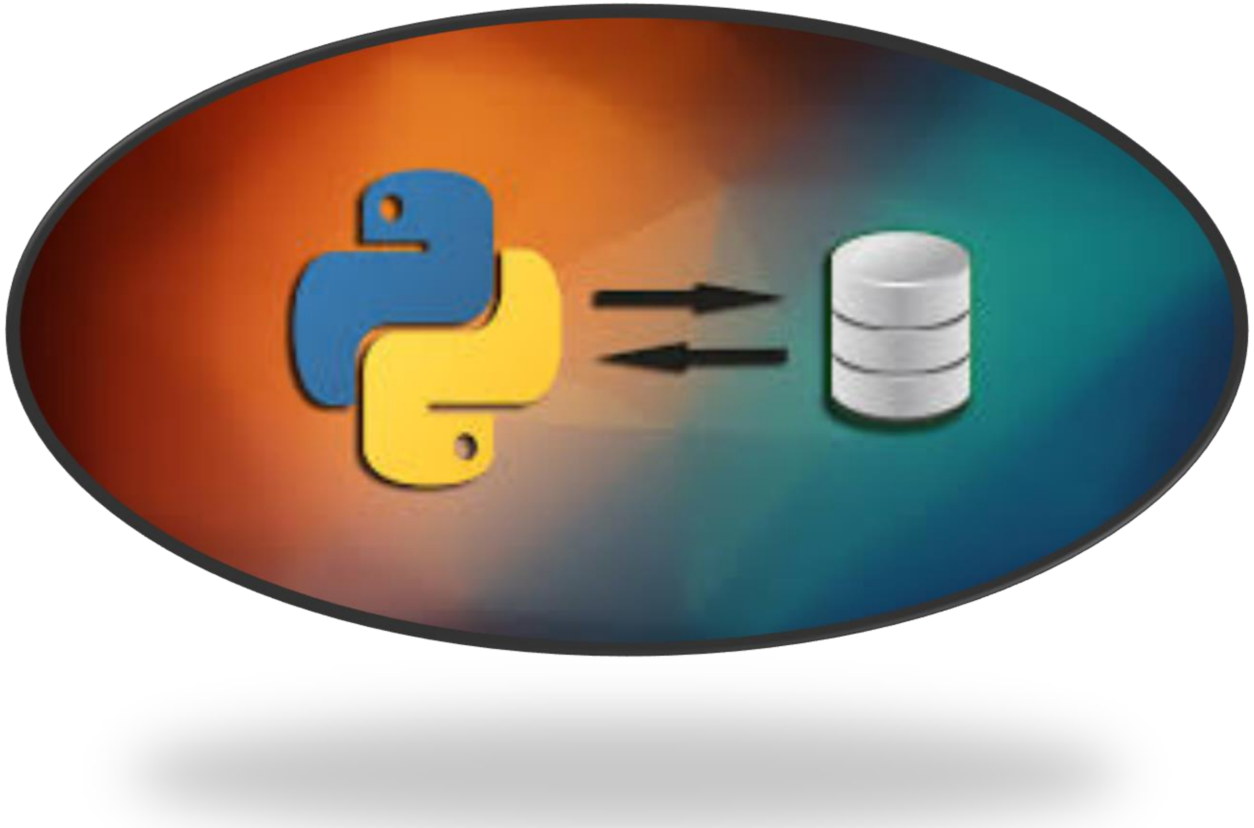
- Open MySQL with its credential, Username and Password
- Create database with the following command,

```
create database database_name;
```

Example,

```
create database myTraining;
```

```
show databases;
```



Database Connection Contd…

Packages to Install

- mysql-connector-python
- mysql-python

Command:

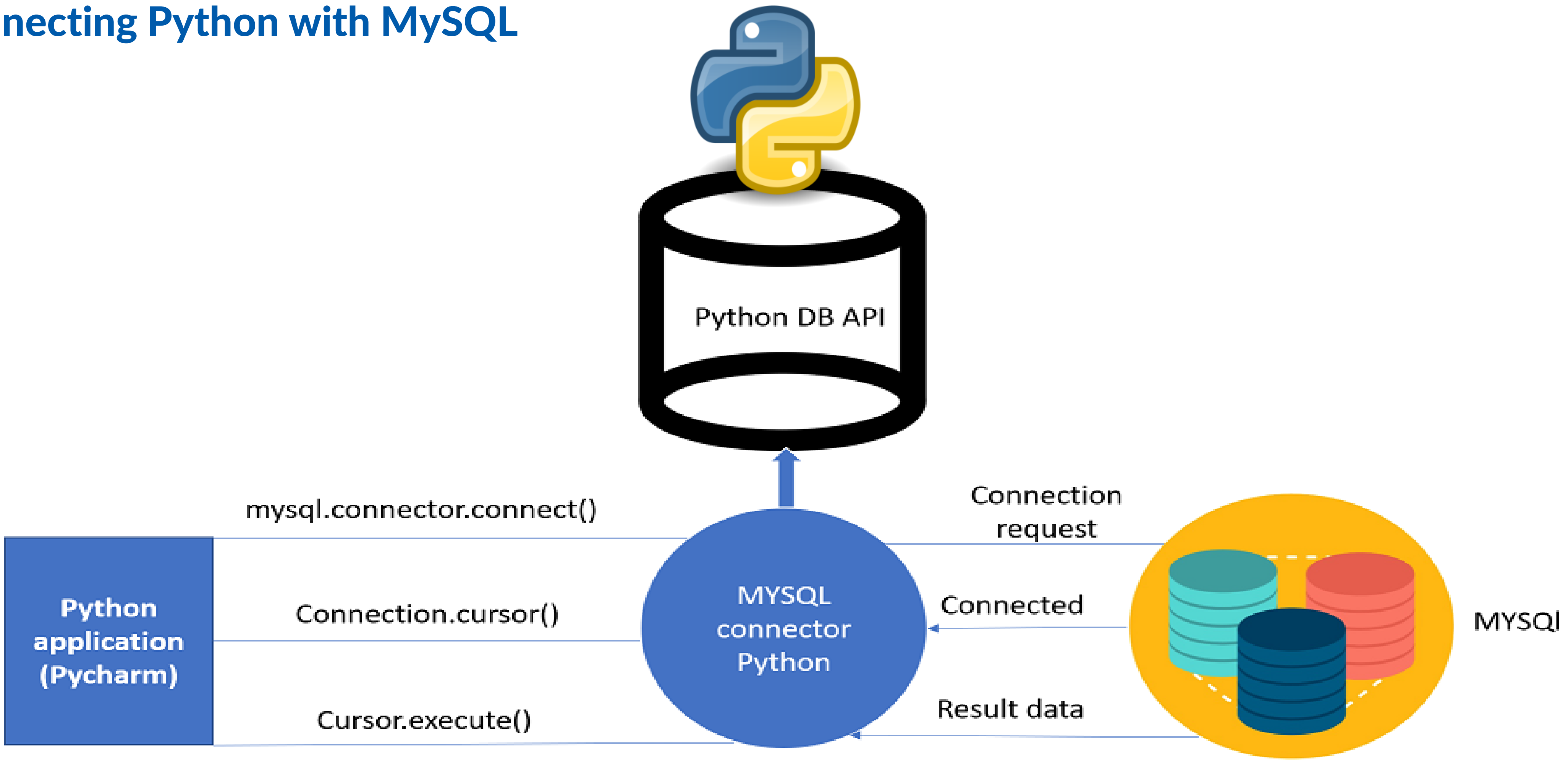
```
pip install MySQL-python
pip install MySQL-python-connector
Or
python -m pip install mysql-connector
```

Import Package

```
import  mysql.connector
```

Database Connection Contd...

Connecting Python with MySQL



Database Connection Contd...

Steps to Connect Database

1.connect()

This method is used for creating a connection to the database it has four arguments:

1. Server Name
2. Database Username
3. Database Password
4. Database Name

```
# Open database connection

myconn = mysql.connector.connect(host = "localhost", user = "root",passwd = “Password123", database = "
mydb")
```

Database Connection Contd...

2. cursor()

This method creates a cursor object that is capable for executing sql query on database.

```
<my_cur>  = conn.cursor()


#creating the cursor object
cur = myconn.cursor()
```

Database Connection Contd…

3.execute()

- This method is used for executing sql query on database.
- It takes a sql query as string, as an argument.

```
cursorObj.execute()

# execute SQL query using execute() method.
 cursor.execute("Show databases”)
```

Database Connection Contd...

4.**fetchone() :**

This method retrieves the next row of a query result set and returns a single sequence, or None if no more rows are available.

```
# Fetch a single row using fetchone() method.
data = cursor.fetchone()
```

5.**close() :**

This method close the database connection.

```
# disconnect from server
db.close()
```

Database Operations

Database Operations

Database Operations[CRUD]:

- Create– It is an SQL statement that is used for creating a table.
- Read- It is used for fetching information from the database.
- Update- It is used for updating the records in the table or updating the table.
- Delete- It is used for deleting the table.

Database Operations Contd...

Creating a Database Table

Once a database connection is established, CREATE tables or records into the database tables using execute method of the created cursor.

```
import mysql.connector

# Create the connection object
myconn = mysql.connector.connect(host="localhost", user="root",
passwd="Password123", database="trainingdb")

cur = myconn.cursor()

cur.execute("create table LoginCustomer(username varchar(20),password
varchar(20))")

print("Table created")
```

Database Operations Contd...

Reading from Database

- READ operation fetches some information from the database.
- **fetchone()** method to fetch single record from database table.
- **fetchall()** method to fetch multiple values from a database table.

```
import mysql.connector

myconn = mysql.connector.connect(host="localhost", user="root",
passwd="Password123", database="trainingdb")

cur = myconn.cursor()

cur.execute("select * from Login")
for i in cur:
   print(i)
```

Database Operations Contd...

Update Operation

UPDATE Operation, updates one or more records, which are already available in the database.

```
import mysql.connector

db = mysql.connector.connect(host="localhost", user="root",
passwd="Password123", database="trainingdb")
cursor = db.cursor()
sql="update LoginCust set username='%s' where
password='Python'"%'Vishwa'
try:
  cursor.execute(sql)
  db.commit()
  print("Tabel updated")
except:
   db.rollback()
finally
   db.close()
```

Database Operations Contd...

Delete Operation

DELETE operation is used to delete some records in the database.

```
import mysql.connector

db = mysql.connector.connect(host="localhost", user="root",
passwd="Password123", database="trainingdb")
cursor = db.cursor()
sql="delete from LoginCust"
cursor.execute(sql)
db.commit()
print("Tabel deleted")
db.close()
```

Think & Answer

1. What is the name of the SQL database the comes distributed with Python?
2. Which of the following are valid Cursor methods used to execute SQL statments and retrieve query results?
3. What is the type of the results variable in the following code snippet?

   select * from emp;

4. What is the use of fetchone() method?

Think & Answer

1. SqLite
2. Cursor.execute()
3. List
4. returns one record as a tuple

Thank you

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