ASSIGNMENT NO: 4

AIM : Execute SQL queries on the sample database using MySQL and User Interface in either Java, Python, or PHP.

INDEX TERMS: MySQL, Database Connectors, Python, Java, PHP.

THEORY

DATABASE CONNECTIVITY IN PYTHON :

Python is an old language created by Guido Van Rossum. It is an object-oriented,interpreted,high level programming language with applications in numerous areas including scripting, web programming, scientific computing and artificial intelligence. It is a very popular language and is used by organizations such as Google, NASA, the CIA and Disney. It has simple syntax and is easy to learn by someone trying to learn computer programming for the first time. This language is processed at runtime by the interpreter so, there is no need to compile program before executing it.

The following are the steps involved to establish the connection and proceed further-:

1. Download and install MySQL Python connector. It is available in various platforms like Mac OS, Microsoft Windows etc. MySQL Python connector which is a standardized database driver provided by MySQL needed to access MySQL database from Python.
2. Go to the python GUI that comes installed with Python called IDLE.From there type the following command:-

```
>>> import mysql.connector
```

mysql.connector is the name of the package. If nothing comes after it then, we are successful in installing it.

3. Establish connection with some existing MySQL database.

```
>>> import mysql.connector
>>>conn=mysql.connector.connect(user='root',
                password='123',
                 host='localhost',
                 database='family')
```

We can create a connection object which is conn here, using the connect function with arguments to the function. Here root and password are the MySQL database username and password respectively and family is the name of the database. We have created a cursor which is basically a messenger between MySQL and Python. Here the name of the cursor is pen. Now, using the cursor pen we can fetch all the tables of the database family using the commands.

```
>>>pen=conn.cursor()
>>>pen.execute("SHOW TABLES")
>>>print(pen.fetchall())
```

We can also find the MySQL version using the command following

```
>>>pen.execute("SHOW VARIABLES LIKE'%version%'")
>>>print(pen.fetchall())
```

4. Create a new database using python

```
>>>pen.execute("CREATE DATABASE mypython")
>>>pen.execute("USE mypython")
>>>pen.execute("""CREATE TABLE customer
( idint primary key,
namevarchar(30),
emailvarchar(30),
ageint,
gender char(1))""")
```

5. Insert data into the created database

```
>>> import mysql.connector
>>>conn=mysql.connector.connect(user='root',
            password='123',
             host='localhost',
             database='family')
>>>pen=conn.cursor ()
>>>pen.execute("""INSERT INTO customer
VALUES(1,'JOE',joe@gmail.com,22,'F')""")
>>>pen.execute("""INSERT INTO customer
VALUES(2,'JIMMY', jimmy@gmail.com,10,'F')""")
>>>pen.execute("""INSERT INTO customer
VALUES(3,'JACK', jack@gmail.com,28,'M')""")
>>>conn.commit()
>>>pen.execute("SELECT * FROM customer")
>>>print(pen.fetchall())
```

6. Update the table

```
>>>pen.execute("UPDATE customer SET age=8 WHERE
                        id=2)
>>>conn.commit()
```

DATABASE CONNECTIVITY IN PHP

PHP Overview

PHP is an important language in the software development market. PHP is at the forefront of Web2.0 and Service Oriented Architectures supports technologies along with other open source projects MYSQL and Apache . For many people, the foremost reason why they acquire knowledge about a scripting language like PHP is of the interaction with database it can offer. In this, I will show you how to use PHP to connect with MYSQL database.PHP is endorsed not only by its large open source community in the IT market such as IBM, Oracle and Microsoft. This paper provides instructions for connectivity to MYSQL database using PHP.

Creating a Database

Create and delete a database you should have admin privilege. It is very easy to create a new MYSQL database. PHP uses mysql_queryfunction to create a MYSQL database. It takes two parameters. It returns FALSE on failure or TRUE on success.

Syntax:-

```
bool mysql_query_1( sql, connection);
```

Parameter & its Description

sql - *Required* – It is an SQL query to form a database

Connection - *Optional*- if not given then last opened connection by mysql_connect will be used.

Establish a connection to the MySQL database. This is a meaningful step because if script cannot connect to its database, queries to the database will fail.

```
$user name=”your_username_1”;
 $password=”your_password_1”;
 $database=”your_database_1”;
```

Connect PHP script to the database

Connection can be established with the mysql_connect PHP function:

Mysql_connect($localhost,$username,$password)

Parameter &Description

Localhost- *Optional* – It is the host name running database server. In case, if it is not stated then default value is localhost:3306.

Username- *Optional* – the username accessing the database.

Password- *Optional* – the password of the user accessing the database

DATABASE CONNECTIVITY IN JAVA

Java is an object oriented programming language that offers a robust, secure and portable environment. It is unique in the sense that it is platform independent i.e. its programs can run in various platforms such as Linux, Microsoft Windows, Apple Macintosh, etc. Compared to other high level, fully interpreted scripting languages, Java is one of the best in terms of performance. Moreover, it is a dynamic language that fully supports multithreading .Multiple relational databases over the web can be retrieved by its database connectivity interface.

JDBC Overview

Web application runs at a remote location, which can be viewed and controlled by all the users having administrative rights at any instance of time. An application can have three components:

1) Presentation logic defines the user interface and appearance of the application.

2) Business logic implements several business related policies into the application.

3) Data access logic looks after the connectivity of presentation and business logic with database.

For extension to the web, JDBC was created. JDBC is a database access framework API that comprises of a collection of interfaces and classes, allowing java programs to interrelate with database. JDBC driver transforms low level proprietary DBMS data to low level data understood by the JBC API.J2EE component use some process for interaction with DBMS. The process is divided into subsequent routines :

- Load the JDBC driver.
- Open a connection between J2EE and DBMS.
- Create and execute a statement.
- Return data and error messages that adapt to the JDBC specification to the JDBC driver.
- Return transaction management routines.
- Terminate the connection with database.

FAQs:

1.Enlist different database connectors for Python.

2.Explain different types of JDBC connectors..

Conclusion:

Outcome of the experiment is understanding of Database connectivity with Python/PHP/Java.