

16 Introduction to MySQL Database

A. Multiple Choice Question

1. B
2. B
3. B
4. D
5. C

B. True or False

1. True
2. False
3. False
4. True
5. False

C.

1. The different ways to create the connection to MySQL through Python are as follows.

a. **The `mysql.connector.connect()` function:** The function work as wrapper that returns an object of the appropriate class depending on setting. The syntax is as follows

```
con = mysql.connector.connect(**kwargs)
```

b. **The `MySQLConnection()` constructor with `ConnectionArguments`:** constructor is invoked, which in turn returns the connection object, which is used for subsequent database operations. The syntax for the same is as follows

```
con = mysql.connector.MySQLConnection(**kwargs)
```

c. **The `MySQLConnection.connect()` with `config` method:**

The **`MySQLConnection.config()`** method is called explicitly to configure the connection. The syntax is as follows.

```
con = mysql.connector.MySQLConnection()  
con.config(**kwargs)  
con.connect()
```

2. Cursor:

It is the object, actually used to interact with the data present within the database. It enables traversal over records in a database. To create cursor, use **cursor()** method of **mysql.connector.connect()** object that we created for the connection.

3. Yes, we can insert multiple values into any MySQL table through python.

Example: Insert following records into the table named "maruti" defined under database "Car_db".

Model_name	Price	Launch_Year
Wagon R	600000.0000	1999
Alto	400000.0000	2012

Steps to insert multiple records into table "maruti" are as follows:

```
import mysql.connector as mysql
from mysql.connector import Error

#Step 1: Create Connection
try:

    mysqlobj = mysql.connect(
        host="localhost",
        user="root",
        passwd="admin",
        database = "car_db")

    #Step 2: Create Cursor object
    cursor = mysqlobj.cursor()

    query = "INSERT INTO maruti (Model_name, Price, Launch_Year)\
        values (%s, %s, %s)"

    # Step 3: Store values into list
    values = [('Wagon R', 600000.00, '1999'),
              ('Alto', 400000.00, '2012')]

    #Step 4: Insert multiple records at once
    cursor.executemany(query, values)

    #Step 5: Save changes made to the table and the database
    mysqlobj.commit()
    print(cursor.rowcount, "Record inserted successfully into maruti table")
except mysql.connector.Error as error:
    print("Failed to insert record into MySQL table {}".format(error))

finally:
```

```
if (mysqlobj.is_connected()):  
    cursor.close()  
    mysqlobj.close()  
    print("MySQL connection is closed")
```

Output:

```
2 Record inserted successfully into maruti table  
MySQL connection is closed
```

4.

Drop: The drop statement is used to drop all tables from the database and delete database permanently

Delete: The delete statement is used to delete records that are no longer required from the database. It can delete one or more records from a table in a single query.

Truncate: The SQL truncate command is used to remove all records from a table. It is similar to delete statement without a where clause.

5.

Steps to Update records are as follows

- a. Create Mysql connection object
- b. Create cursor object
- c. Execute update command through execute command of cursor object as follows.

```
cur.execute("update " + table + " SET col_name = %s, "  
            "WHERE id = %s")
```
- d. Save changes through commit () method.
- e. Close cursor
- f. Close the connection

D. Programming Assignments

1.

```
from tkinter import *  
import tkinter.font as font  
import mysql.connector  
class mysqlConfiguaration():  
    def __init__(self):  
        print('constructor')  
  
    def connect(self):  
        self.myCon = mysql.connector.connect(  
            host="localhost",  
            user="root",  
            password="admin")  
        return self.myCon  
  
    def create_database(self,db):  
        mysqlobj = self.connect()  
        cursor = mysqlobj.cursor()  
        cursor.execute("Create Database IF NOT EXISTS " + db)
```

```
cursor.execute("Show Databases")
records = cursor.fetchall()
print('List of Databases present:')
print('-'*20)
for r in records:
    print(r)
    print('-'*20)
cursor.close()

def close_connection(self):
    mysqlobj = self.connect()
    print('Closing Connection')
    mysqlobj.close()
    print('Connection Closed Successfully')

def create_table(self,db,table):
    mysqlobj = self.connect()
    cur = mysqlobj.cursor()
    cur.execute("Use " + db)
    print('Using Database ',db)
    cur.execute("CREATE TABLE IF NOT EXISTS " + table + " (id \
                INTEGER(100) NOT NULL AUTO_INCREMENT PRIMARY KEY,\
                Brand_Name text, Price Decimal(10,4))")
    print('Table Created Successfully')
    cur.close()

mysqlobj = mysqlConfiguration()
mysqlobj.create_database('Electronics')
mysqlobj.create_table('Electronics','Laptops')
```

2.

```
from tkinter import *
import tkinter.font as font
import mysql.connector
class mysqlConfiguration():
    def __init__(self):
        print('constructor')

    def connect(self):
        self.myCon = mysql.connector.connect(
            host="localhost",
            user="root",
            password="admin")
        return self.myCon

    def create_database(self,db):
        mysqlobj = self.connect()
        cursor = mysqlobj.cursor()
```

```
cursor.execute("Create Database IF NOT EXISTS " + db)
cursor.execute("Show Databases")
records = cursor.fetchall()
print('List of Databases present:')
print('-'*20)
for r in records:
    print(r)
    print('-'*20)
cursor.close()

def close_connection(self):
    mysqlobj = self.connect()
    print('Closing Connection')
    mysqlobj.close()
    print('Connection Closed Successfully')

def create_table(self,db,table):
    mysqlobj = self.connect()
    cur = mysqlobj.cursor()
    cur.execute("Use " + db)
    print('Using Database ',db)
    cur.execute("CREATE TABLE IF NOT EXISTS " + table + " (id \
                INTEGER(100) NOT NULL AUTO_INCREMENT PRIMARY KEY,\
                Book_Name text, Author_Name text, No_of_Pages integer)")
    print('Table Created Successfully')
    cur.close()

class bookInventoryOperations(mysqlConfiguaration):
    def insert(self,Book_Name, Author_Name, No_of_Pages):
        try:
            mysqlobj = self.connect()
            cur = mysqlobj.cursor()
            cur.execute("Use " + db)
            query = "INSERT INTO " + table + \
                    " (Book_Name, Author_Name ,No_of_Pages)\
                    VALUES (%s,%s,%s) "
            values = [(Book_Name,Author_Name,No_of_Pages)]
            cur.executemany(query,values)
            mysqlobj.commit()
            cur.close()
            print('Inserted Record Successfully')
        except Exception as err:
            print('Problem in Insertion...Please Check!!! ',err)

mysqlobj = mysqlConfiguaration()
bk1 = bookInventoryOperations()
db ="Book_DB"
table="Books"
mysqlobj.create_database(db)
mysqlobj.create_table(db,table)
```

```
bk1.insert("India 2020: A Vision for the New Millennium",\
          "APJ Abdul Kalam","350")
bk1.insert("Wings of Fire: An Autobiography","APJ Abdul Kalam","300")
bk1.insert("My Life, My Mission","Baba Ramdev","200")
```

3.

```
from tkinter import *
import tkinter.font as font
import mysql.connector
class mysqlConfiguaration():
    def __init__(self):
        print('constructor')

    def connect(self):
        self.myCon = mysql.connector.connect(
            host="localhost",
            user="root",
            password="admin")
        return self.myCon

    def create_database(self,db):
        mysqlobj = self.connect()
        cursor = mysqlobj.cursor()
        cursor.execute("Create Database IF NOT EXISTS " + db)
        cursor.execute("Show Databases")
        records = cursor.fetchall()
        print('List of Databases present:')
        print('-'*20)
        for r in records:
            print(r)
            print('-'*20)
        cursor.close()

    def close_connection(self):
        mysqlobj = self.connect()
        print('Closing Connection')
        mysqlobj.close()
        print('Connection Closed Successfully')

    def create_table(self,db,table):
        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        print('Using Database ',db)
        cur.execute("CREATE TABLE IF NOT EXISTS " + table + " (id \
            INTEGER(100) NOT NULL AUTO_INCREMENT PRIMARY KEY,\
            Book_Name text, Author_Name text, No_of_Pages integer)")
        print('Table Created Successfully')
```

```
cur.close()

class bookInventoryOperations(mysqlConfiguaration):
    def insert(self,Book_Name, Author_Name, No_of_Pages):
        try:
            mysqlobj = self.connect()
            cur = mysqlobj.cursor()
            cur.execute("Use " + db)
            query = "INSERT INTO " + table + \
                    " (Book_Name, Author_Name ,No_of_Pages)\
                    VALUES(%s,%s,%s)"
            values = [(Book_Name,Author_Name,No_of_Pages)]
            cur.executemany(query,values)
            mysqlobj.commit()
            cur.close()
            print('Inserted Record Successfully')
        except Exception as err:
            print('Problem in Insertion...Please Check!!! ',err)

#Code to fetch records from Database
    def display_records(self):
        try:

            mysqlobj = self.connect()
            cur = mysqlobj.cursor()
            cur.execute("Use " + db)
            cur.execute("Select *from "+table)
            records = cur.fetchall()
            print("Total Number of records within table are:",cur.rowcount)
            print("Records are as follows:")

            for row in records:
                print(" ",row[0],end=" ")
                print(" ",row[1],end="\t")
                print(" ",row[2],end="\t")
                print(" ",row[3],end="\t")
                print("\n")
            print("-----")
        except Exception as err:
            print('Problem in Insertion...Please Check!!! ',err)

mysqlobj = mysqlConfiguaration()
bk1 = bookInventoryOperations()
db ="Book_DB"
table="Books"
mysqlobj.create_database(db)
mysqlobj.create_table(db,table)
bk1.display_records()    #Display Records
```

```
from tkinter import *
import tkinter.font as font
import mysql.connector
class mysqlConfiguaration():
    def __init__(self):
        print('constructor')

    def connect(self):
        self.myCon = mysql.connector.connect(
            host="localhost",
            user="root",
            password="admin")
        return self.myCon

    def create_database(self,db):
        mysqlobj = self.connect()
        cursor = mysqlobj.cursor()
        cursor.execute("Create Database IF NOT EXISTS " + db)
        cursor.execute("Show Databases")
        records = cursor.fetchall()
        print('List of Databases present:')
        print('-'*20)
        for r in records:
            print(r)
            print('-'*20)
        cursor.close()

    def close_connection(self):
        mysqlobj = self.connect()
        print('Closing Connection')
        mysqlobj.close()
        print('Connection Closed Successfully')

    def create_table(self,db,table):
        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        print('Using Database ',db)
        cur.execute("CREATE TABLE IF NOT EXISTS " + table + " (id \
            INTEGER(100) NOT NULL AUTO_INCREMENT PRIMARY KEY,\
            Book_Name text, Author_Name text, No_of_Pages integer)")
        print('Table Created Successfully')
        cur.close()

class bookInventoryOperations(mysqlConfiguaration):
    def insert(self,Book_Name, Author_Name, No_of_Pages):
        try:
            mysqlobj = self.connect()
            cur = mysqlobj.cursor()
```



```
cur.execute("Use " + db)
query = "INSERT INTO " + table + \
        " (Book_Name, Author_Name ,No_of_Pages)\
        VALUES(%s,%s,%s)"
values = [(Book_Name,Author_Name,No_of_Pages)]
cur.executemany(query,values)
mysqlobj.commit()
cur.close()
print('Inserted Record Successfully')
except Exception as err:
    print('Problem in Insertion...Please Check!!! ',err)

def display_records_sort_by_pages(self):
    try:

        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        cur.execute("Select *from "+table + " order by No_of_Pages asc")
        records = cur.fetchall()
        print("Total Number of records within table are:",cur.rowcount)
        print("Records are as follows:")

        for row in records:
            print(" ",row[0],end=" ")
            print(" ",row[1],end="\t")
            print(" ",row[2],end="\t")
            print(" ",row[3],end="\t")
            print("\n")

        print("-----")
    except Exception as err:
        print('Problem in Insertion...Please Check!!! ',err)
```

```
mysqlobj = mysqlConfiguration()
bk1 = bookInventoryOperations()
db ="Book_DB"
table="Books"
mysqlobj.create_database(db)
mysqlobj.create_table(db,table)
bk1.insert("India 2020: A Vision for the New Millennium",\
          "APJ Abdul Kalam","350")
bk1.insert("Wings of Fire: An Autobiography","APJ Abdul Kalam","300")
bk1.insert("My Life, My Mission","Baba Ramdev","200")
bk1.display_records_sort_by_pages()
```

```
from tkinter import *
import tkinter.font as font
import mysql.connector
class mysqlConfiguaration():
    def __init__(self):
        print('constructor')

    def connect(self):
        self.myCon = mysql.connector.connect(
            host="localhost",
            user="root",
            password="admin")
        return self.myCon

    def create_database(self,db):
        mysqlobj = self.connect()
        cursor = mysqlobj.cursor()
        cursor.execute("Create Database IF NOT EXISTS " + db)
        cursor.execute("Show Databases")
        records = cursor.fetchall()
        print('List of Databases present:')
        print('-'*20)
        for r in records:
            print(r)
        print('-'*20)
        cursor.close()

    def close_connection(self):
        mysqlobj = self.connect()
        print('Closing Connection')
        mysqlobj.close()
        print('Connection Closed Successfully')

    def create_table(self,db,table):
        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        print('Using Database ',db)
        cur.execute("CREATE TABLE IF NOT EXISTS " + table + " (id \
INTEGER(100) NOT NULL AUTO_INCREMENT PRIMARY KEY,\
Book_Name text, Author_Name text, No_of_Pages integer)")

        print('Table Created Successfully')
        cur.close()

class bookInventoryOperations(mysqlConfiguaration):
    def insert(self,Book_Name, Author_Name, No_of_Pages):
        try:
            mysqlobj = self.connect()
```

```

        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        query = "INSERT INTO " + table + \
            " (Book_Name, Author_Name ,No_of_Pages)\
            VALUES(%s,%s,%s) "
        values = [(Book_Name,Author_Name,No_of_Pages)]
        cur.executemany(query,values)
        mysqlobj.commit()
        cur.close()
        print('Inserted Record Successfully')
    except Exception as err:
        print('Problem in Insertion...Please Check!!! ',err)

def display_records_sort_by_pages(self):
    try:
        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        cur.execute("Select *from "+table + " order by
No_of_Pages asc")
        records = cur.fetchall()
        print("Total Number of records within table
are:",cur.rowcount)
        print("Records are as follows:")
        for row in records:
            print(" ",row[0],end=" ")
            print(" ",row[1],end="\t")
            print(" ",row[2],end="\t")
            print(" ",row[3],end="\t")
            print("\n")
        print("-----")
    except Exception as err:
        print('Problem in Insertion...Please Check!!! ',err)

def update(self, Book_Name, No_of_Pages):
    try:
        mysqlobj = self.connect()
        cur = mysqlobj.cursor()
        cur.execute("Use " + db)
        cur.execute(""" UPDATE """+ table + """" set No_of_Pages =
%s where Book_Name = %s """, (No_of_Pages,Book_Name))
        mysqlobj.commit()
        cur.close()
        print('Inserted Record Successfully')
    except Exception as err:
        print('Problem in Insertion...Please Check!!! ',err)

mysqlobj = mysqlConfiguration()
bk1 = bookInventoryOperations()
db ="Book_DB"

```

```
table="Books"
bk1.insert("India 2020: A Vision for the New Millennium",\
"APJ Abdul Kalam","350")
bk1.insert("Wings of Fire: An Autobiography","APJ Abdul Kalam","300")
bk1.insert("My Life, My Mission","Baba Ramdev","200")
bk1.display_records_sort_by_pages()
No_of_Pages = 250
bk1.update('My Life, My Mission', No_of_Pages)
bk1.display_records_sort_by_pages()
```