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June 27, 2023

[1]:
```
#library
!pip install mysql-connector-python
```

```
Requirement already satisfied: mysql-connector-python in
c:\users\kiran\anaconda3\lib\site-packages (8.0.33)
Requirement already satisfied: protobuf<=3.20.3,>=3.11.0 in
c:\users\kiran\anaconda3\lib\site-packages (from mysql-connector-python)
(3.11.2)
Requirement already satisfied: six>=1.9 in c:\users\kiran\anaconda3\lib\site-
packages (from protobuf<=3.20.3,>=3.11.0->mysql-connector-python) (1.16.0)
Requirement already satisfied: setuptools in c:\users\kiran\anaconda3\lib\site-
packages (from protobuf<=3.20.3,>=3.11.0->mysql-connector-python) (61.2.0)
```

[2]:
```
#importing libraries
import mysql.connector
from mysql.connector import Error
import pandas as pd
```

[3]:
```
#creating connection with server
def create_server_connection(host_name,user_name,password):
    connection=None
    try:
        connection=mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=password
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")
    return connection
```

[4]:
```
connection=create_server_connection("localhost","root","BALU@2003")
```

```
MySQL Database connection successful
```

[5]:
```
#creating a database
def create_database(connection,query):
```

```
    cursor = connection.cursor()
    try:
        cursor.execute(query)
        print("Database created successfully")
    except Error as err:
        print(f"Error: '{err}'")
```

[6]:
```
create_database_query='Create database CompanyAlpha'
create_database(connection,create_database_query)
```

```
Database created successfully
```

[7]:
```
# Defining a function to make the connection with the database
def create_db_connection(host_name,user_name,password,db_name):
    connection=None
    try:
        connection=mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=password,
            database=db_name
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")
    return connection
```

[8]:
```
# the below function helps to create the tbles, DML commands
def execute_query(connection,query):
    cursor=connection.cursor()
    try:
        cursor.execute(query)
        connection.commit()
        print('Query successful')
    except Error as err:
        print(f"Error : '{err}'")
```

[9]:
```
# creating the tables
create_employees_table="""
    CREATE TABLE EMPLOYEES(
    emp_no int(11) not null auto_increment,
    first_name varchar(15) not null,
    last_name varchar(15) not null,
    hire_data varchar(15) not null,
    gender enum('M','F') not null,
    birth_date varchar(15) not null,
    primary key(emp_no)
```

```
    );
    """
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_employees_table)
```

```
MySQL Database connection successful
Query successful
```

[10]:
```
create_departments_table="""
    CREATE TABLE DEPARTMENTS(
        dept_no varchar(10) not null,
        dept_name varchar(10) not null,
        primary key(dept_no),
        unique key dept_name(dept_name)
    );
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_departments_table)
```

```
MySQL Database connection successful
Query successful
```

[12]:
```
create_salaries_table="""
    CREATE TABLE SALARIES(
            emp_no int(11) not null,
            salary int(11) not null,
            from_date varchar(15) not null,
            to_date varchar(15) not null,
            primary key(emp_no,from_date),
            key emp_no(emp_no),
            constraint salaries_ibfk_1 foreign key(emp_no) references␣
 ↪employees(emp_no) on delete cascade
    );
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_salaries_table)
```

```
MySQL Database connection successful
Query successful
```

[13]:
```
create_deptemp_table="""
    CREATE TABLE DEPT_EMP(
        emp_no int(11) not null,
        dept_no varchar(10) not null,
        from_date varchar(15) not null,
        to_date varchar(15) not null,
        primary key(emp_no,dept_no),
```

```
        key emp_no(emp_no),
        key dept_no(dept_no),
        constraint dept_emp_ibfk_1 foreign key(emp_no) references␣
 ↪employees(emp_no) on delete cascade,
        constraint dept_emp_ibfk_2 foreign key(dept_no) references␣
 ↪departments(dept_no) on delete cascade
    );
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_deptemp_table)
```

```
MySQL Database connection successful
Query successful
```

[14]:
```
create_dept_manager_table="""
    CREATE TABLE DEPT_MANAGER(
        emp_no int(11) not null,
        dept_no varchar(10) not null,
        from_date varchar(15) not null,
        to_date varchar(15) not null,
        primary key(emp_no,dept_no),
        key emp_no(emp_no),
        key dept_no(dept_no),
        constraint dept_manager_ibfk_1 foreign key(emp_no) references␣
 ↪employees(emp_no) on delete cascade,
        constraint dept_manager_ibfk_2 foreign key(dept_no) references␣
 ↪departments(dept_no) on delete cascade
    );
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_dept_manager_table)
```

```
MySQL Database connection successful
Query successful
```

[16]:
```
create_titles_table="""
    CREATE TABLE TITLES(
        emp_no int(11) not null,
        title varchar(50) not null,
        from_date varchar(15) not null,
        to_date varchar(15) default null,
        primary key(emp_no,title,from_date),
        key emp_no(emp_no),
        constraint titles_ibfk_1 foreign key(emp_no) references␣
 ↪employees(emp_no) on delete cascade
    );
"""
```

```
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,create_titles_table)
```

```
MySQL Database connection successful
Query successful
```

[17]:
```
#inserting values to the tables
pop_employee = """
    INSERT INTO employees VALUES
        (1, 'Raju', 'Rathi', '1999-02-20', 'M', '1977-06-14'),
        (2, 'Shyam', 'Naik', '2007-11-08', 'M', '1985-11-01'),
        (3, 'Baburao', 'Apte', '2014-06-11', 'M', '1984-02-01'),
        (4, 'Anjali', 'Pande', '2000-08-23', 'F', '1978-05-19'),
        (5, 'Abhilasha', 'Mohite', '2020-03-30', 'F', '1994-01-17'),
        (6, 'Suresh', 'Kadam', '1999-02-21', 'M', '1977-08-21'),
        (7, 'Manish', 'Joshi', '2014-06-11', 'M', '1992-09-29'),
        (8, 'Radha',  'Marathe', '2020-03-29', 'F', '1988-11-22')
    """
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,pop_employee)
```

```
MySQL Database connection successful
Query successful
```

[19]:
```
pop_dept = """
    INSERT INTO departments VALUES
        ('HR01', 'HR'),
        ('SFT01', 'SD'),
        ('SFT02', 'ST'),
        ('MKT01', 'Mark')
    """
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,pop_dept)
```

```
MySQL Database connection successful
Query successful
```

[20]:
```
pop_manager = """
    INSERT INTO dept_manager VALUES
        (2, 'SFT01','2008-12-20','2012-03-19'),
        (3, 'MKT01', '2014-06-11', '2020-10-04'),
        (6, 'SFT02', '2002-04-07','2004-11-10'),
        (8, 'HR01', '2020-03-29','2022-03-03')
    """
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,pop_manager)
```

```
MySQL Database connection successful
```

```
Query successful
```

[21]:
```
pop_title = """
    INSERT INTO titles VALUES
        (1,'Sr.Soft.Developer','2002-12-06', '2007-07-18'),
        (2,'Soft.Developer Mngr.','2008-12-20', '2012-03-19'),
        (3,'Marketing Mngr','2014-06-11', '2020-10-04'),
        (4,'Soft.Tester','2000-08-23', '2005-12-03'),
        (5,'HR Staff','2020-03-30','2021-10-09'),
        (6,'Soft.Tester Mngr','2002-12-06','2004-11-10'),
        (7,'Marketing Staff','2014-06-11','2016-12-04'),
        (8,'HR Manager','2020-03-29','2022-03-03')
    """
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_query(connection,pop_title)
```

```
MySQL Database connection successful
Query successful
```

[22]:
```
#inserting the values in the form of lists - list will help to prevent against␣
 ↪sql injection attacks
#instead of exeute() method now we will use executemany() method

def execute_list_query(connection,sql,val):
    cursor=connection.cursor()
    try:
        cursor.executemany(sql,val)
        connection.commit()
        print("Query successful")
    except Error as err:
        print(f"Error: '{err}'")
```

[23]:
```
from datetime import datetime,date
pop_salary = """
    INSERT INTO salaries (emp_no, salary, from_date, to_date) VALUES (%s, %s,␣
 ↪%s, %s)
"""
today = datetime.now().date()
sal_data = [
(1, 1234567, '1999-02-20', today.isoformat()),
(2, 2345678, '2007-11-08', today.isoformat()),
(3, 3456789, '2014-06-11', today.isoformat()),
(4, 4567890, '2000-08-23', today.isoformat()),
(5, 5678901, '2020-03-30', today.isoformat()),
(6, 6789012, '1999-02-21', today.isoformat()),
(7, 7890123, '2014-06-11', today.isoformat()),
(8, 8901234, '2020-03-29', today.isoformat())
```

```
]
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_list_query(connection,pop_salary,sal_data)
```

```
MySQL Database connection successful
Query successful
```

[24]:
```
pop_deptemp = """
    INSERT INTO dept_emp (emp_no, dept_no, from_date, to_date) VALUES (%s, %s,␣
 ↪%s, %s)
"""
deptemp_data = [
(1, 'SFT01','1999-02-20', today.isoformat()),
(2, 'SFT01','2007-11-08',today.isoformat()),
(3, 'MKT01','2014-06-11',today.isoformat()),
(4, 'SFT02','2000-08-23',today.isoformat()),
(5, 'HR01','2020-03-30',today.isoformat()),
(6, 'SFT02','1999-02-21',today.isoformat()),
(7, 'MKT01','2014-06-11',today.isoformat()),
(8, 'HR01','2020-03-29',today.isoformat())
]
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
execute_list_query(connection,pop_deptemp,deptemp_data)
```

```
MySQL Database connection successful
Query successful
```

[25]:
```
#reading the data
#instead of cursor.commit() method we use cursor.fetchall(). This function is␣
 ↪to read the data from the database and will not make any changes
def read_query(connection,query):
    cursor=connection.cursor()
    result=None
    try:
        cursor.execute(query)
        result=cursor.fetchall()
        return result
    except Error as err:
        print(f"Error: '{err}'")
```

[26]:
```
query1="""
Select * from employees;
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
results=read_query(connection,query1)
```

```
MySQL Database connection successful
```

[27]:
```
results
```

[27]:
```
[(1, 'Raju', 'Rathi', '1999-02-20', 'M', '1977-06-14'),
 (2, 'Shyam', 'Naik', '2007-11-08', 'M', '1985-11-01'),
 (3, 'Baburao', 'Apte', '2014-06-11', 'M', '1984-02-01'),
 (4, 'Anjali', 'Pande', '2000-08-23', 'F', '1978-05-19'),
 (5, 'Abhilasha', 'Mohite', '2020-03-30', 'F', '1994-01-17'),
 (6, 'Suresh', 'Kadam', '1999-02-21', 'M', '1977-08-21'),
 (7, 'Manish', 'Joshi', '2014-06-11', 'M', '1992-09-29'),
 (8, 'Radha', 'Marathe', '2020-03-29', 'F', '1988-11-22')]
```

[28]:
```
query2 = """
SELECT employees.first_name, employees.last_name FROM employees JOIN␣
 ↪dept_manager ON employees.emp_no = dept_manager.emp_no;
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
results=read_query(connection,query2)
```

```
MySQL Database connection successful
```

[29]:
```
results
```

[29]:
```
[('Shyam', 'Naik'),
 ('Baburao', 'Apte'),
 ('Suresh', 'Kadam'),
 ('Radha', 'Marathe')]
```

[30]:
```
query3 = """
SELECT dept_emp.emp_no, employees.first_name, employees.last_name, dept_manager.
 ↪dept_no, titles.title, salaries.from_date, salaries.to_date, salaries.salary␣
 ↪FROM dept_emp  JOIN dept_manager ON dept_emp.emp_no = dept_manager.emp_no␣
 ↪JOIN titles on dept_manager.emp_no = titles.emp_no JOIN employees ON␣
 ↪employees.emp_no = dept_manager.emp_no JOIN salaries ON salaries.emp_no =␣
 ↪dept_manager.emp_no
"""
connection=create_db_connection("localhost","root","BALU@2003","CompanyAlpha")
results=read_query(connection,query3)
```

```
MySQL Database connection successful
```

[31]:
```
results
```

[31]:
```
[(2,
  'Shyam',
  'Naik',
  'SFT01',
  'Soft.Developer Mngr.',
```

```
 '2007-11-08',
 '2023-06-27',
 2345678),
(3,
 'Baburao',
 'Apte',
 'MKT01',
 'Marketing Mngr',
 '2014-06-11',
 '2023-06-27',
 3456789),
(6,
 'Suresh',
 'Kadam',
 'SFT02',
 'Soft.Tester Mngr',
 '1999-02-21',
 '2023-06-27',
 6789012),
(8,
 'Radha',
 'Marathe',
 'HR01',
 'HR Manager',
 '2020-03-29',
 '2023-06-27',
 8901234)]
```

[ ]: