# Lab Session

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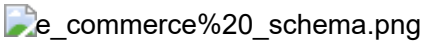
## Problem Statement

### An E-commerce website manages its data in the form of various tables.

You need to create a Database called `e_commerce` and various tables in it. The tables needed and attributes which need to be in every table are given before hand. All you have to do is create tables with data in it and answer some of the questions that follows.

### e_commerce Schema:




### Load Required Libraries

In [1]:
```
## Load required libraies
import mysql.connector
import pandas as pd
```

### Connect to DB using Mysql-connector-python package

In [2]:
```
## Lets connect to Mysql server and choose the database('e_commerce') while conne
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd")
# creating a cursor object
cursorObject = connection.cursor()
```

### You are required to create a database named 'e_commerce'

In [3]:
```
## Lets make a connection to Mysql server and create a database named 'lpg'
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd")

## creating a cursor object
cursorObject = connection.cursor()

## creating database
cursorObject.execute("CREATE DATABASE e_commerce")

## closing the connection after creating a database('e_commerce')
connection.close()
```

## Q1. Create tables for supplier, customer, category, product, productDetails, order, rating to store the data for the E-commerce with the schema definition given below.

- **supplier** (SUPP _ID int primary key, SUPP_NAME varchar(50), SUPP_CITY varchar(50), SUPP_PHONE varchar(10))
- **customer** (CUS_ID INT NOT NULL, CUS_NAME VARCHAR(20) NULL DEFAULT NULL, CUS_PHONE VARCHAR(10), CUS_CITY varchar(30) ,CUS_GENDER CHAR,PRIMARY KEY (CUS_ID))
- **category** (CAT_ID INT NOT NULL, CAT_NAME VARCHAR(20) NULL DEFAULT NULL,PRIMARY KEY (CAT_ID))
- **product** (PRO_ID INT NOT NULL, PRO_NAME VARCHAR(20) NULL DEFAULT NULL, PRO_DESC VARCHAR(60) NULL DEFAULT NULL, CAT_ID INT NOT NULL,PRIMARY KEY (PRO_ID),FOREIGN KEY (CAT_ID) REFERENCES CATEGORY (CAT_ID))
- **product_details** (PROD_ID INT NOT NULL, PRO_ID INT NOT NULL, SUPP_ID INT NOT NULL, PROD_PRICE INT NOT NULL, PRIMARY KEY (PROD_ID),FOREIGN KEY (PRO_ID) REFERENCES PRODUCT (PRO_ID), FOREIGN KEY (SUPP_ID) REFERENCES SUPPLIER(SUPP_ID))
- **order** (ORD_ID INT NOT NULL, ORD_AMOUNT INT NOT NULL, ORD_DATE DATE, CUS_ID INT NOT NULL, PROD_ID INT NOT NULL,PRIMARY KEY (ORD_ID),FOREIGN KEY (CUS_ID) REFERENCES CUSTOMER(CUS_ID),FOREIGN KEY (PROD_ID) REFERENCES PRODUCT_DETAILS(PROD_ID))
- **rating** (RAT_ID INT NOT NULL, CUS_ID INT NOT NULL, SUPP_ID INT NOT NULL, RAT_RATSTARS INT NOT NULL,PRIMARY KEY (RAT_ID),FOREIGN KEY (SUPP_ID) REFERENCES SUPPLIER (SUPP_ID),FOREIGN KEY (CUS_ID) REFERENCES CUSTOMER(CUS_ID))

In [5]:

```
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()


table_creation_query = """create table supplier(`SUPP_ID` int primary key, `SUPP_

                          create table customer(`CUS_ID` INT NOT NULL, `CUS_NAME`

                          create table category(`CAT_ID` INT NOT NULL, `CAT_NAME`

                          create table product(`PRO_ID` INT NOT NULL, `PRO_NAME`

                          create table product_details(`PROD_ID` INT NOT NULL, `P

                          create table orders(`ORD_ID` INT NOT NULL, `ORD_AMOUNT`

                          create table rating(`RAT_ID` INT NOT NULL, `CUS_ID` INT

# Executing the query
cursorObject.execute(table_creation_query)
```

## Q2. Insert the following data in the table created above

**Note: If you are getting any error while inserting the data into tables, Kindly close the connection and reconnect**

**Table: supplier**

| SUPP_ID | SUPP_NAME | SUPP_CITY | SUPP_PHONE |
|---|---|---|---|
| 1 | Rajesh Retails | Delhi | 1234567890 |
| 2 | Appario Ltd. | Mumbai | 258963147032 |
| 3 | Knome products | Bangalore | 9785462315 |
| 4 | Bansal Retails | Kochi | 8975463285 |
| 5 | Mittal Ltd. | Lucknow | 7898456532 |

In [6]:
```
# insert into "supplier" table

connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_supplier_details = """INSERT INTO supplier (SUPP_ID, SUPP_NAME, SUPP_CITY,
                        VALUES (%s, %s, %s, %s)"""

val = [(1,'Rajesh Retails','Delhi','1234567890'),(2,'Appario Ltd.','Mumbai','258

cursorObject.executemany(insert_supplier_details, val)
connection.commit()
```

**Table: customer**

| CUS_ID | CUS_NAME | SUPP_PHONE | CUS_CITY | CUS_GENDER |
|---|---|---|---|---|
| 1 | AAKASH | 9999999999 | DELHI | M |
| 2 | AMAN | 9785463215 | NOIDA | M |
| 3 | NEHA | 9999999998 | MUMBAI | F |
| 4 | MEGHA | 9994562399 | KOLKATA | F |
| 5 | PULKIT | 7895999999 | LUCKNOW | M |

In [15]:
```
# insert into "customer" table

connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_customer_details = """INSERT INTO customer (CUS_ID, CUS_NAME, CUS_PHONE, C
                        VALUES (%s, %s, %s, %s, %s)"""

val = [(1, 'AAKASH', '9999999999', 'DELHI', 'M'),(2, 'AMAN', '9785463215', 'NOIDA

cursorObject.executemany(insert_customer_details, val)
connection.commit()
```

**Table: category**

| CAT_ID | CAT_NAME |
|---|---|

| CAT_ID | CAT_NAME |
|---|---|
| 1 | BOOKS |
| 2 | GAMES |
| 3 | GROCERIES |
| 4 | ELECTRONICS |
| 5 | CLOTHES |

In [16]:
```
# insert into "categoty" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_category_details = """INSERT INTO category (CAT_ID, CAT_NAME)
                        VALUES (%s, %s)"""

val = [(1,'BOOKS'),(2,'GAMES'),(3,'GROCERIES'),(4,'ELECTRONICS'),(5,'CLOTHES')]

cursorObject.executemany(insert_category_details, val)
connection.commit()
```

**Table: product**

| PRO_ID | PRO_NAME | PRO_DESC | CAT_ID |
|---|---|---|---|
| 1 | GTA V | DFJDJFDJFDJFDJFJF | 2 |
| 2 | TSHIRT | DFDFJDFJDKFD | 5 |
| 3 | ROG LAPTOP | DFNTTNTNTERND | 4 |
| 4 | OATS | REURENTBTOTH | 3 |
| 5 | HARRY POTTER | NBEMCTHTJTH | 1 |

In [17]:
```
# insert into "product" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_product_details = """INSERT INTO product (PRO_ID,PRO_NAME,PRO_DESC,CAT_ID)
                        VALUES (%s, %s, %s, %s)"""

val = [(1,'GTA V','DFJDJFDJFDJFDJFJF',2),(2,'TSHIRT','DFDFJDFJDKFD',5),(3,'ROG LA

cursorObject.executemany(insert_product_details, val)
connection.commit()
```

**Table: product_details**

| PROD_ID | PRO_ID | SUPP_ID | PROD_PRICE |
|---|---|---|---|
| 1 | 1 | 2 | 1500 |
| 2 | 3 | 5 | 30000 |
| 3 | 5 | 1 | 3000 |
| 4 | 2 | 3 | 2500 |
| 5 | 4 | 1 | 1000 |

In [23]:
```
# insert into "product_details" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_product_details_details = """INSERT INTO product_details (PROD_ID,PRO_ID,S
                        VALUES (%s, %s, %s, %s)"""

val = [(1,1,2,'1500'),(2,3,5,'30000'),(3,5,1,'3000'),(4,2,3,'2500'),(5,4,1,'1000'

cursorObject.executemany(insert_product_details_details, val)
connection.commit()
```

**Table: orders**

| ORD_ID | ORD_AMOUNT | ORD_DATE | CUS_ID | PROD_ID |
|---|---|---|---|---|
| 20 | 1500 | 2021-10-12 | 3 | 5 |
| 25 | 30500 | 2021-09-16 | 5 | 2 |

| ORD_ID | ORD_AMOUNT | ORD_DATE | CUS_ID | PROD_ID |
|---|---|---|---|---|
| 26 | 2000 | 2021-10-05 | 1 | 1 |
| 30 | 3500 | 2021-08-16 | 4 | 3 |
| 50 | 2000 | 2021-10-06 | 2 | 1 |

In [25]:
```
# insert into "orders" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_orders_details = "INSERT INTO orders (ORD_ID, ORD_AMOUNT, ORD_DATE, CUS_ID

val = [(20,1500,"2021-10-12",3,5),(25,30500,"2021-09-16",5,2),(26,2000,"2021-10-0

cursorObject.executemany(insert_orders_details, val)
connection.commit()
```

**Table: rating**

| RAT_ID | CUS_ID | SUPP_ID | RAT_RATSTARS |
|---|---|---|---|
| 1 | 2 | 2 | 4 |
| 2 | 3 | 4 | 3 |
| 3 | 5 | 1 | 5 |
| 4 | 1 | 3 | 2 |
| 5 | 4 | 5 | 4 |

In [26]:
```
# insert into "rating" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

insert_rating_details = "INSERT INTO rating (RAT_ID, CUS_ID, SUPP_ID, RAT_RATSTAR

val = [(1, 2, 2, 4),(2, 3, 4, 3),(3, 5, 1, 5),(4, 1, 3, 2),(5, 4, 5, 4)]

cursorObject.executemany(insert_rating_details, val)
connection.commit()
```

## Q3) Display the number of the customer group by their genders who have placed any order of amount greater than or equal to

**Rs.3000.**

In [48]:
```
# insert into "rating" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

Query1 = """select customer.cus_gender,count(customer.cus_gender) as count from c
            `orders` on customer.cus_id=`orders`.cus_id where `orders`.ord_amount

cursorObject.execute(Query1)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['CUS_GENDER', 'COUNT'])
output_df
```

Out[48]:

| | CUS_GENDER | COUNT |
|---|---|---|
| **0** | M | 1 |
| **1** | F | 1 |

## Q4) Display all the order along with product name ordered by a customer having Customer_Id=2;

In [51]:
```
Query2 = """select `orders`.*,product.pro_name from `orders` ,product_details,pro
where `orders`.cus_id=2 and `orders`.prod_id=product_details.prod_id and product_

cursorObject.execute(Query2)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['ORD_ID', 'ORD_AMOUNT', 'ORD_DATE', '
output_df
```

Out[51]:

| | ORD_ID | ORD_AMOUNT | ORD_DATE | CUS_ID | PROd_ID | PRO_NAME |
|---|---|---|---|---|---|---|
| **0** | 50 | 2000 | 2021-10-06 | 2 | 1 | GTA V |

## Q5) Display the Supplier details who can supply more than one product.

In [60]:
```
# insert into "rating" table
connection = mysql.connector.connect(host ="localhost",
                                     user ="root",
                                     passwd ="P@$$w0rd",
                                     database = 'e_commerce')

## creating a cursor object
cursorObject = connection.cursor()

Query3 = """select supplier.* from supplier,product_details where supplier.supp_i
            (select product_details.supp_id from product_details group by product
            count(product_details.supp_id)>1) group by supplier.supp_id;"""

cursorObject.execute(Query3)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['SUPP_ID', 'SUPP_NAME', 'SUPP_CITY',
output_df
```

Out[60]:

| | SUPP_ID | SUPP_NAME | SUPP_CITY | SUPP_PHONE |
|---|---|---|---|---|
| **0** | 1 | Rajesh Retails | Delhi | 1234567890 |

## Q6) Find the category of the product whose order amount is minimum.

In [61]:
```
Query4 = """select category.* from `orders` inner join product_details on `orders
            inner join product on product.pro_id=product_details.pro_id inner joi
            having min(`orders`.ord_amount);"""

cursorObject.execute(Query4)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['CAT_ID', 'CAT_NAME'])
output_df
```

Out[61]:

| | CAT_ID | CAT_NAME |
|---|---|---|
| **0** | 3 | GROCERIES |

## Q7) Display the Id and Name of the Product ordered after “2021-10-05”.

In [67]:
```
Query5 = """select product.pro_id,product.pro_name from `orders` inner join produ
product on product.pro_id=product_details.pro_id where `orders`.ord_date>'2021-10

cursorObject.execute(Query5)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['PRO_ID','PRO_NAME'])
output_df
```

Out[67]:

| | PRO_ID | PRO_NAME |
|---|---|---|
| **0** | 4 | OATS |
| **1** | 1 | GTA V |

## Q8) Print the top 3 supplier name and id and rating on the basis of their rating along with the customer name who has given the rating.

In [68]:
```
Query6 = """select supplier.supp_id, supplier.supp_name, customer.cus_name,rating
            from rating inner join supplier on rating. supp_id=supplier.supp_id
            inner join customer on rating.cus_id=customer.cus_id order by rating.

cursorObject.execute(Query6)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['SUPP_ID', 'SUPP_NAME', 'cus_name', '
output_df
```

Out[68]:

| | SUPP_ID | SUPP_NAME | cus_name | rat_ratstars |
|---|---|---|---|---|
| **0** | 1 | Rajesh Retails | PULKIT | 5 |
| **1** | 2 | Appario Ltd. | AMAN | 4 |
| **2** | 5 | Mittal Ltd. | MEGHA | 4 |

## Q9) Display customer name and gender whose names start or end with character 'A'.

In [69]:
```
Query7 = """select customer.cus_name, customer.cus_gender
            from customer where customer.cus_name like 'A%' or customer.cus_name

cursorObject.execute(Query7)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['cus_name', 'cus_gender'])
output_df
```

Out[69]:

| | cus_name | cus_gender |
|---|---|---|
| **0** | AAKASH | M |
| **1** | AMAN | M |

## Q10) Display the total order amount of the male customers.

In [70]:
```
Query8 = """select sum(`orders`.ord_amount) as Amount from `orders` inner join cu
            `orders`.cus_id=customer.cus_id where customer.cus_gender='M';"""

cursorObject.execute(Query8)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['Amount'])
output_df
```

Out[70]:

| | Amount |
|---|---|
| **0** | 34500 |

## Q11) Display all the Customers left outer join with the orders

In [72]:
```
Query9 = "select * from customer left outer join `orders` on customer.cus_id= `or

cursorObject.execute(Query9)
output = cursorObject.fetchall()

output_df = pd.DataFrame(output, columns = ['CUS_ID', 'CUS_NAME', 'CUS_PHONE', 'C
output_df
```

Out[72]:

| | CUS_ID | CUS_NAME | CUS_PHONE | CUS_CITY | CUS_GENDER | ORD_ID | ORD_AMOUNT | ORD_DA |
|---|---|---|---|---|---|---|---|---|
| **0** | 1 | AAKASH | 9999999999 | DELHI | M | 26 | 2000 | 2021-10 |
| **1** | 2 | AMAN | 9785463215 | NOIDA | M | 50 | 2000 | 2021-10 |
| **2** | 3 | NEHA | 9999999998 | MUMBAI | F | 20 | 1500 | 2021-10 |
| **3** | 4 | MEGHA | 9994562399 | KOLKATA | F | 30 | 3500 | 2021-08 |
| **4** | 5 | PULKIT | 7895999999 | LUCKNOW | M | 25 | 30500 | 2021-09 |

**NOTE:** Always close an open connection once you are done with the database operations

# Happy Learning:)