**1. Create the following tables:**

**Table name: CLIENT\_MASTER**

| **Column Name** | **Data Type** | **Size** | **Attributes** |
| --- | --- | --- | --- |
| **CLIENTNO** | **Varchar** | **6** | **Primary Key / First letter must start with ‘C’** |
| **NAME** | **Varchar** | **20** | **Not Null** |
| **CITY** | **Varchar** | **15** |  |
| **PINCODE** | **Number** | **8** |  |
| **STATE** | **Varchar** | **15** |  |
| **BALDUE** | **Number** | **10,2** |  |

**Table\_Name: PRODUCT\_MASTER**

| **Column Name** | **Data Type** | **Size** | **Attributes** |
| --- | --- | --- | --- |
| **PRODUCTNO** | **Varchar** | **6** | **Primary Key / First letter must start with ‘P’** |
| **DESCRIPTION** | **Varchar** | **15** | **Not Null** |
| **PROFITPERCENT** | **Number** | **4,2** | **Not Null** |
| **UNITMEASURE** | **Varchar** | **10** | **Not Null** |
| **QTYONHAND** | **Number** | **8** | **Not Null** |
| **REORDERLVL** | **Number** | **8** | **Not Null** |
| **SELLPRICE** | **Number** | **8,2** | **Not Null, cannot be 0** |
| **COSTPRICE** | **Number** | **8,2** | **Not Null, cannot be 0** |

**Table\_Name: SALESMAN\_MASTER**

| **Column Name** | **Data Type** | **Size** | **Attributes** |
| --- | --- | --- | --- |
| **SALESMANNO** | **Varchar** | **6** | **Primary Key / First letter must start with ‘S’** |
| **SALESMANNAME** | **Varchar** | **20** | **Not Null** |
| **ADDRESS1** | **Varchar** | **30** | **Not Null** |
| **ADDRESS2** | **Varchar** | **30** |  |
| **CITY** | **Varchar** | **20** |  |
| **PINCODE** | **Number** | **8** |  |
| **STATE** | **Varchar** | **20** |  |
| **SALAMT** | **Number** | **8,2** | **Not Null, cannot be 0** |
| **TGTTOGET** | **Number** | **6,2** | **Not Null, cannot be 0** |
| **YTDSALES** | **Number** | **6,2** | **Not Null** |
| **REMARKS** | **Varchar** | **60** |  |

**Table\_Name: SALES\_ORDER**

| **Column Name** | **Data Type** | **Size** | **Attributes** |
| --- | --- | --- | --- |
| **ORDERNO** | **Varchar** | **6** | **Primary Key / First letter must start with ‘O’** |
| **CLIENTNO** | **Varchar** | **6** | **Foreign Key references ClientNo of Client\_Master table** |
| **ORDERDATE** | **Date** |  | **Not Null** |
| **DELYADDR** | **Varchar** | **25** |  |
| **SALESMANNO** | **Varchar** | **6** | **Foreign Key references SalesmanNo of Salesman\_Master table** |
| **DELYTYPE** | **Char** | **1** |  |
| **BILLYN** | **Char** | **1** |  |
| **DELYDATE** | **Date** |  |  |
| **ORDERSTATUS** | **Varchar** | **10** |  |

**Table\_Name: SALES\_ORDER\_DETAILS**

| **Column Name** | **Data Type** | **Size** | **Attributes** |
| --- | --- | --- | --- |
| **ORDERNO** | **Varchar** | **6** | **Foreign Key references OrderNo of Sales\_Order table** |
| **PRODUCTNO** | **Varchar** | **6** | **Foreign Key references ProductNo of Product\_Master table** |
| **QTYORDERED** | **Number** | **8** |  |
| **QTYDISP** | **Number** | **8** |  |
| **PRODUCTRATE** | **Number** | **10,2** |  |

CREATE TABLE CLIENT\_MASTER (

CLIENTNO VARCHAR(6) PRIMARY KEY,

NAME VARCHAR(20) NOT NULL,

CITY VARCHAR(15),

PINCODE INT,

STATE VARCHAR(15),

BALDUE DECIMAL(10,2),

CONSTRAINT chk\_clientno CHECK (CLIENTNO LIKE 'C%')

);

CREATE TABLE PRODUCT\_MASTER (

PRODUCTNO VARCHAR(6) PRIMARY KEY,

DESCRIPTION VARCHAR(15) NOT NULL,

PROFITPERCENT DECIMAL(4,2) NOT NULL,

UNITMEASURE VARCHAR(10) NOT NULL,

QTYONHAND INT NOT NULL,

REORDERLVL INT NOT NULL,

SELLPRICE DECIMAL(8,2) NOT NULL,

COSTPRICE DECIMAL(8,2) NOT NULL,

CONSTRAINT chk\_productno CHECK (PRODUCTNO LIKE 'P%'),

CONSTRAINT chk\_sellprice CHECK (SELLPRICE <> 0),

CONSTRAINT chk\_costprice CHECK (COSTPRICE <> 0)

);

CREATE TABLE SALESMAN\_MASTER (

SALESMANNO VARCHAR(6) PRIMARY KEY,

SALESMANNAME VARCHAR(20) NOT NULL,

ADDRESS1 VARCHAR(30) NOT NULL,

ADDRESS2 VARCHAR(30),

CITY VARCHAR(20),

PINCODE INT,

STATE VARCHAR(20),

SALAMT DECIMAL(8,2) NOT NULL,

TGTTOGET DECIMAL(6,2) NOT NULL,

YTDSALES DECIMAL(6,2) NOT NULL,

REMARKS VARCHAR(60),

CONSTRAINT chk\_salesmanno CHECK (SALESMANNO LIKE 'S%'),

CONSTRAINT chk\_salamt CHECK (SALAMT <> 0),

CONSTRAINT chk\_tgttoget CHECK (TGTTOGET<> 0)

);

CREATE TABLE SALES\_ORDER (

ORDERNO VARCHAR(6) PRIMARY KEY,

CLIENTNO VARCHAR(6),

ORDERDATE DATE NOT NULL,

DELYADDR VARCHAR(25),

SALESMANNO VARCHAR(6),

DELYTYPE CHAR(1),

BILLYN CHAR(1),

DELYDATE DATE,

ORDERSTATUS VARCHAR(10),

CONSTRAINT chk\_orderno CHECK (ORDERNO LIKE 'O%'),

CONSTRAINT fk\_clientno FOREIGN KEY (CLIENTNO) REFERENCES CLIENT\_MASTER(CLIENTNO),

CONSTRAINT fk\_salesmanno FOREIGN KEY (SALESMANNO) REFERENCES SALESMAN\_MASTER(SALESMANNO)

);

CREATE TABLE SALES\_ORDER\_DETAILS (

ORDERNO VARCHAR(6),

PRODUCTNO VARCHAR(6),

QTYORDERED INT,

QTYDISP INT,

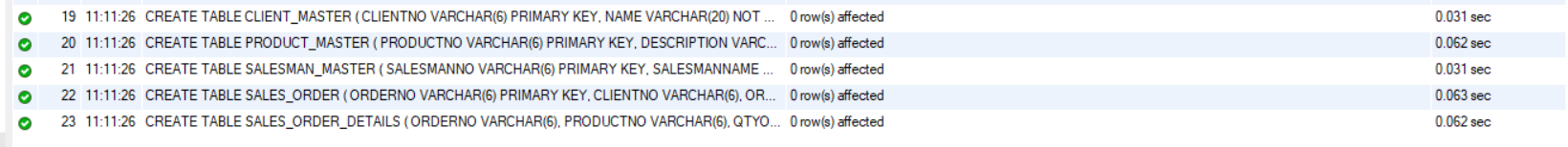
PRODUCTRATE DECIMAL(10,2),

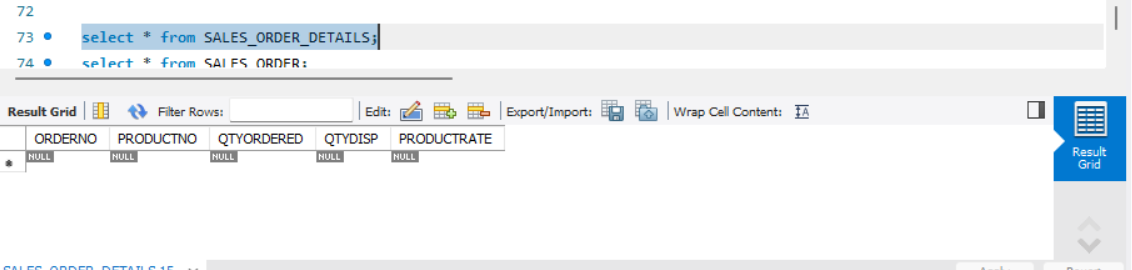
PRIMARY KEY (ORDERNO, PRODUCTNO),

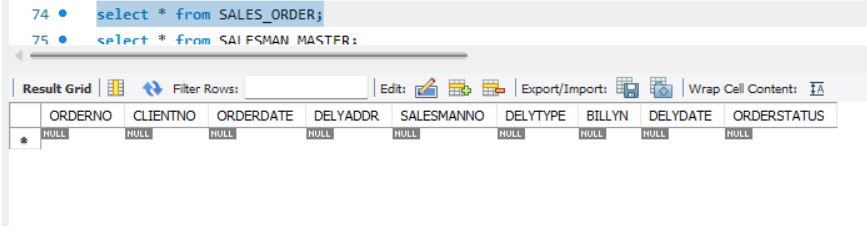
CONSTRAINT fk\_orderno FOREIGN KEY (ORDERNO) REFERENCES SALES\_ORDER(ORDERNO),

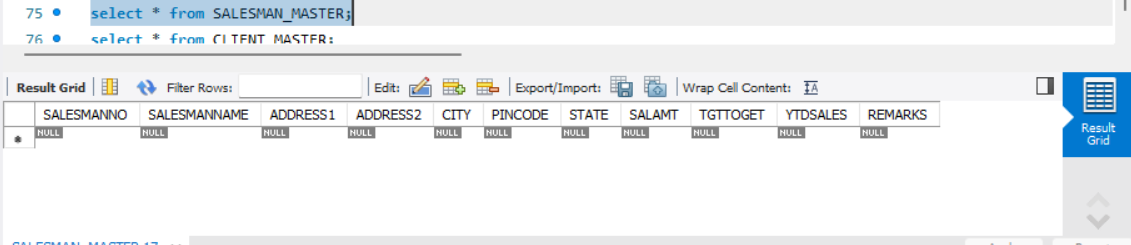
CONSTRAINT fk\_productno FOREIGN KEY (PRODUCTNO) REFERENCES PRODUCT\_MASTER(PRODUCTNO)

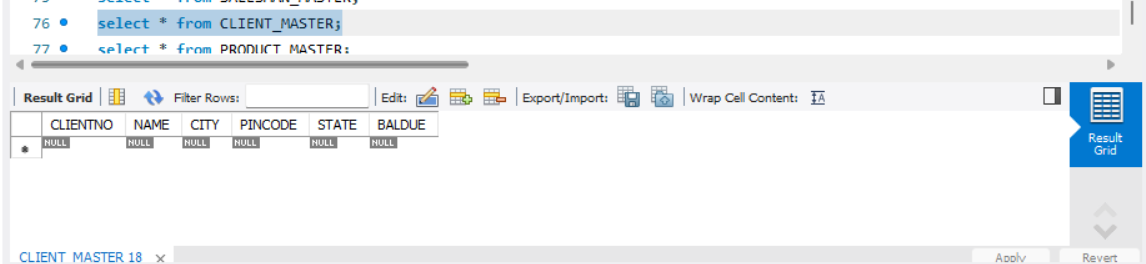
);

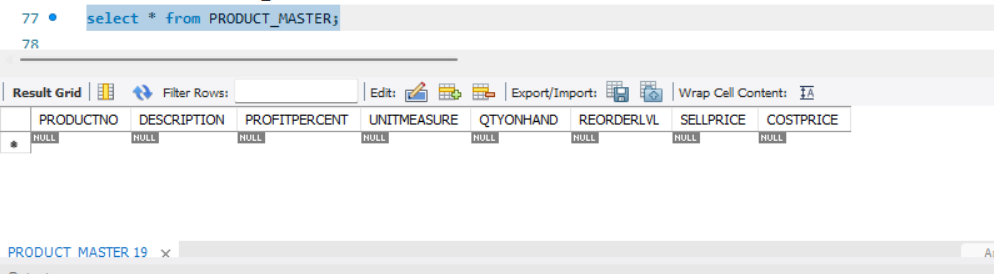




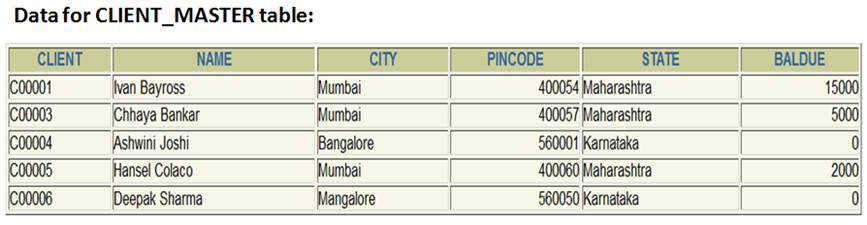


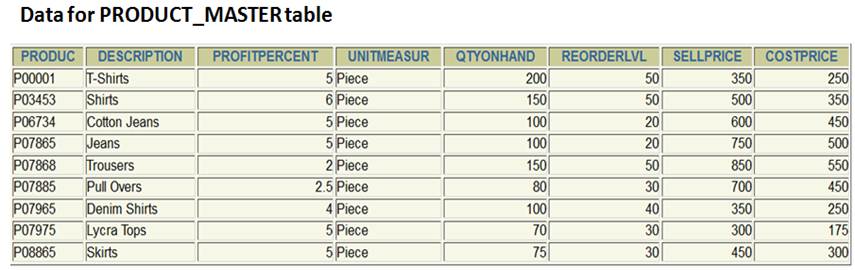


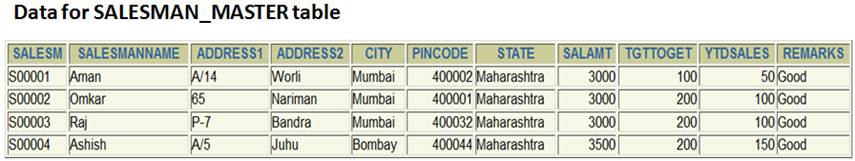




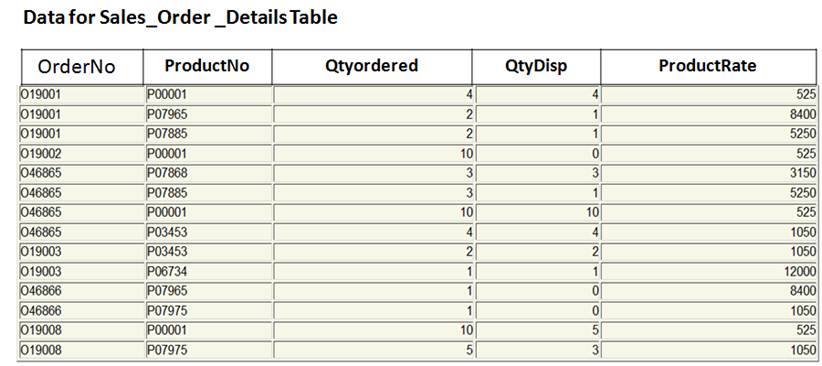
**2. Insert the following data into their respective tables:**

****

****

****

****

****

INSERT INTO CLIENT\_MASTER (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE) VALUES

('C00001', 'Ivan Bayross', 'Mumbai', 400054, 'Maharashtra', 15000.00),

('C00003', 'Chhaya Bankar', 'Mumbai', 400057, 'Maharashtra', 5000.00),

('C00004', 'Ashwini Joshi', 'Bangalore', 560001, 'Karnataka', 0.00),

('C00005', 'Hansel Colaco', 'Mumbai', 400060, 'Maharashtra', 2000.00),

('C00006', 'Deepak Sharma', 'Mangalore', 560050, 'Karnataka', 0.00);

INSERT INTO PRODUCT\_MASTER

(PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNITMEASURE, QTYONHAND, REORDERLVL, SELLPRICE, COSTPRICE)

VALUES

('P00001', 'T-Shirts', 5.00, 'Piece', 200, 50, 350.00, 250.00),

('P03453', 'Shirts', 6.00, 'Piece', 150, 50, 500.00, 350.00),

('P06734', 'Cotton Jeans', 5.00, 'Piece', 100, 20, 600.00, 450.00),

('P07865', 'Jeans', 5.00, 'Piece', 100, 20, 750.00, 500.00),

('P07868', 'Trousers', 2.00, 'Piece', 150, 50, 850.00, 550.00),

('P07885', 'Pull Overs', 2.50, 'Piece', 80, 30, 700.00, 450.00),

('P07965', 'Denim Shirts', 4.00, 'Piece', 100, 40, 350.00, 250.00),

('P07975', 'Lycra Tops', 5.00, 'Piece', 70, 30, 300.00, 175.00),

('P08865', 'Skirts', 5.00, 'Piece', 75, 30, 450.00, 300.00);

INSERT INTO SALESMAN\_MASTER

(SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALAMT, TGTTOGET, YTDSALES, REMARKS)

VALUES

('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 3000.00, 100.00, 50.00, 'Good'),

('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 3000.00, 200.00, 100.00, 'Good'),

('S00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 3000.00, 200.00, 100.00, 'Good'),

('S00004', 'Ashish', 'A/5', 'Juhu', 'Bombay', 400044, 'Maharashtra', 3500.00, 200.00, 150.00, 'Good');

INSERT INTO CLIENT\_MASTER VALUES ('C00002','Bill Gates', 'New York', 112233, 'New York', 123123);

INSERT INTO SALES\_ORDER

(ORDERNO, CLIENTNO, ORDERDATE, DELYADDR, SALESMANNO, DELYTYPE, BILLYN, DELYDATE, ORDERSTATUS)

VALUES

('O19003', 'C00001', '2002-04-03', 'Delhi', 'S00001', 'F','Y', '2002-04-07', 'Fulfilled'),

('O46866', 'C00004', '2002-05-20', 'Delhi', 'S00002', 'P','N', '2002-05-22', 'Cancelled'),

('O19008', 'C00005', '2002-05-24', 'Delhi', 'S00004', 'F','N', '1996-07-26', 'In Process'),

('O19001', 'C00001', '2002-06-12', 'Delhi', 'S00001', 'F','N', '2002-07-20', 'In Process'),

('O19002', 'C00002', '2002-06-25', 'Delhi', 'S00002', 'P','N', '2002-07-27', 'Cancelled');

INSERT INTO SALES\_ORDER VALUES ('O46865', 'C00003', '2002-04-02', 'Delhi', 'S00003', 'F', 'Y', '2002-04-04', 'Fulfilled');

INSERT INTO SALES\_ORDER\_DETAILS

(ORDERNO, PRODUCTNO, QTYORDERED, QTYDISP, PRODUCTRATE) VALUES

('O19001', 'P00001', 4, 4, 525.00),

('O19001', 'P07965', 2, 1, 8400.00),

('O19001', 'P07885', 2, 1, 5250.00),

('O19002', 'P00001', 10, 0, 525.00),

('O46865', 'P07868', 3, 3, 3150.00),

('O46865', 'P07885', 3, 1, 5250.00),

('O46865', 'P00001', 10, 10, 525.00),

('O46865', 'P03453', 4, 4, 1050.00),

('O19003', 'P03453', 2, 2, 1050.00),

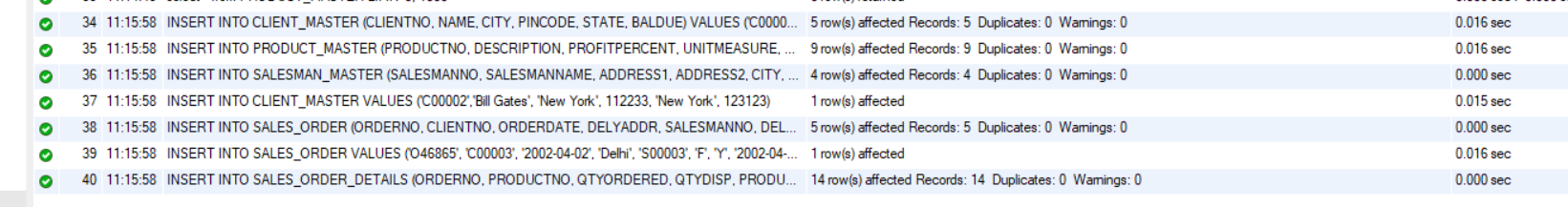
('O19003', 'P06734', 1, 1, 12000.00),

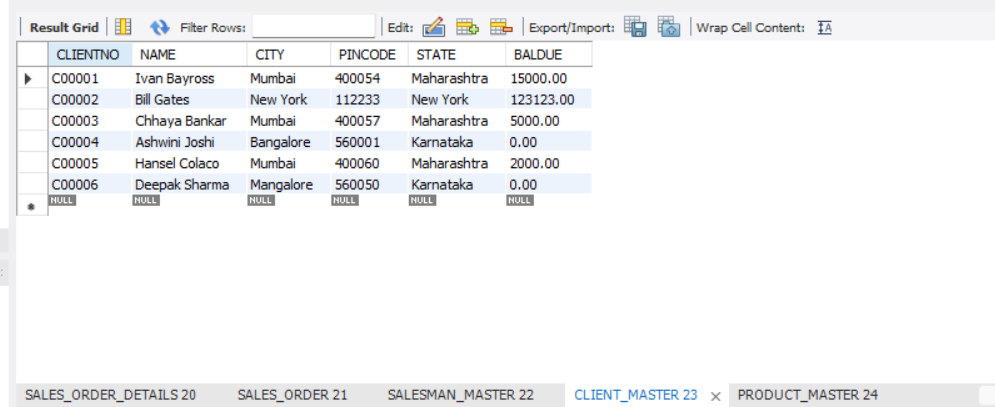
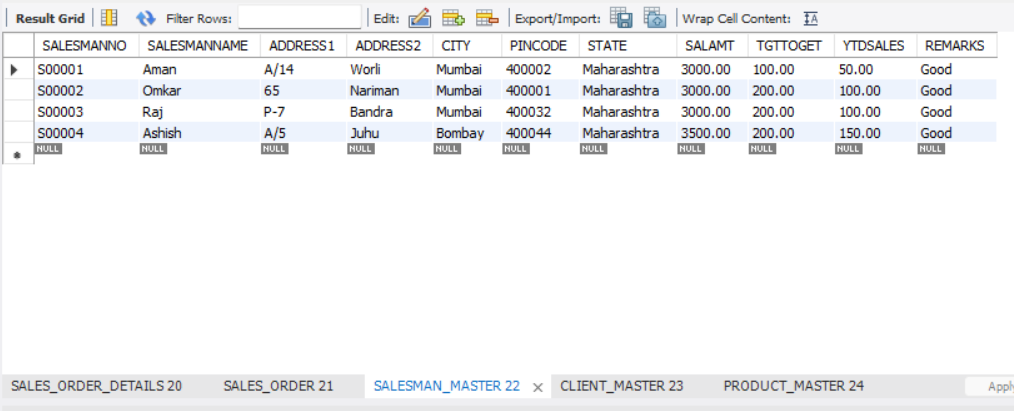
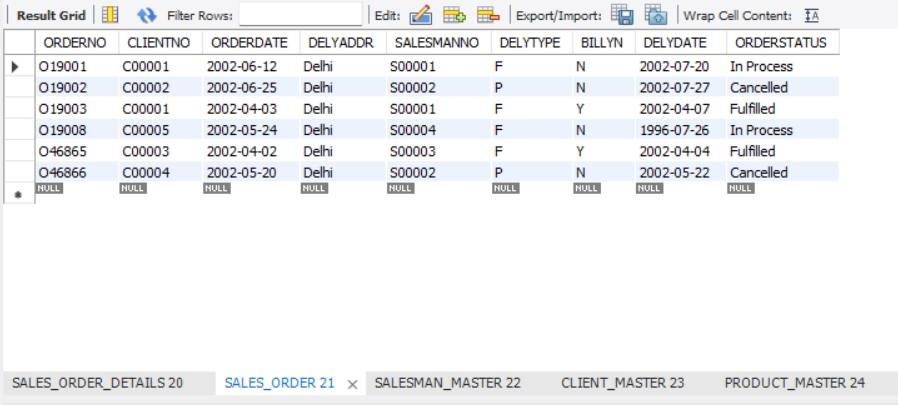
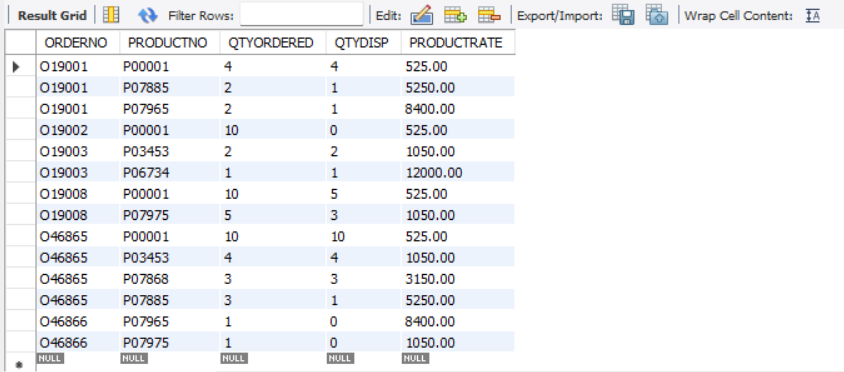
('O46866', 'P07965', 1, 0, 8400.00),

('O46866', 'P07975', 1, 0, 1050.00),

('O19008', 'P00001', 10, 5, 525.00),

('O19008', 'P07975', 5, 3, 1050.00);



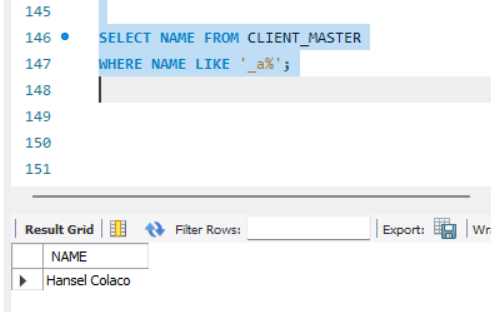


**3. Generate the SQL statements to perform the following computations on table data in Python IDLE:**

a. List the names of all clients having ‘a’ as the second letter in their names.

SELECT NAME FROM CLIENT\_MASTER

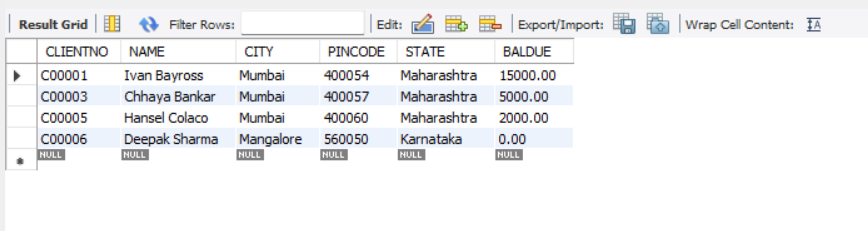
WHERE NAME LIKE '\_a%';



b. List the clients who stay in a city whose first letter is ‘M’.

SELECT \* FROM CLIENT\_MASTER

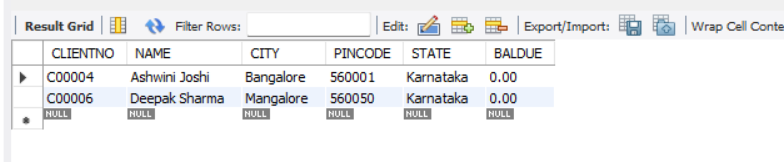
WHERE CITY LIKE 'M%';



c. List all clients who stay in ‘Bangalore’ or ‘Mangalore’.

SELECT \* FROM CLIENT\_MASTER

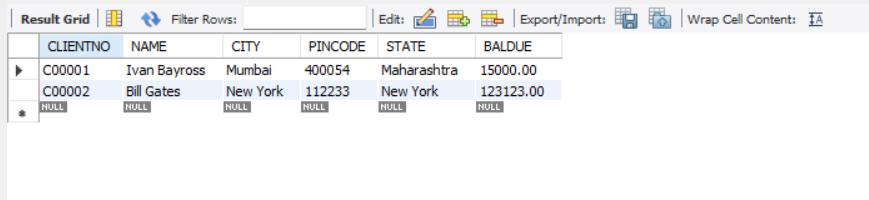
WHERE CITY IN ('Bangalore', 'Mangalore');



d. List all clients whose BalDue is greater than value 10000.

SELECT \* FROM CLIENT\_MASTER

WHERE BALDUE > 10000;

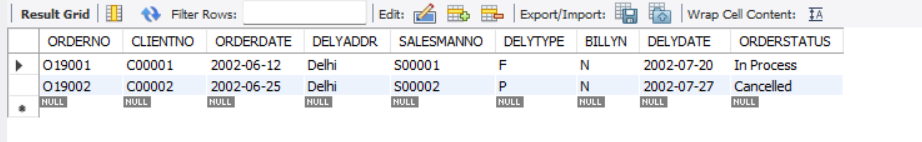


e. List all information from the Sales\_order table for order placed in the month of

June.

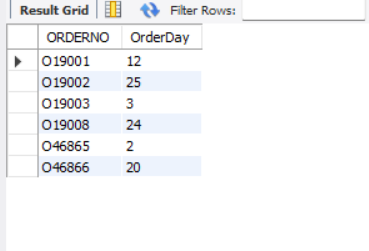
SELECT \* FROM SALES\_ORDER

WHERE MONTH(ORDERDATE) = 6;



f. List the Order No & day on which clients placed their order.

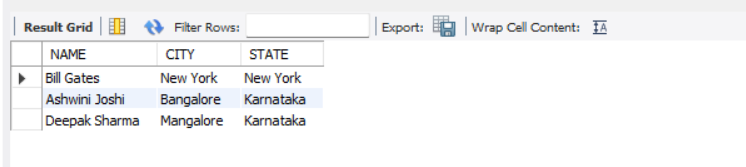
SELECT ORDERNO, DAY(ORDERDATE) AS OrderDay FROM SALES\_ORDER;



g. List the names, city and state of clients who are not in the state of ‘Maharashtra’.

SELECT NAME, CITY, STATE FROM CLIENT\_MASTER

WHERE STATE <> 'Maharashtra';



**4. Exercises on Using Having, Group By and Joins in Python IDLE:**

a. Printing the description and total quantity sold for each product.

import mysql.connector

# Connect to MySQL

conn = mysql.connector.connect(

host="localhost",

user="root",

password="cdac123#",

database="mydb"

)

cursor = conn.cursor()

query\_a = """

SELECT P.DESCRIPTION, SUM(SOD.QTYORDERED) AS TotalQuantitySold

FROM PRODUCT\_MASTER P

JOIN SALES\_ORDER\_DETAILS SOD ON P.PRODUCTNO = SOD.PRODUCTNO

GROUP BY P.DESCRIPTION;

"""

cursor.execute(query\_a)

rows = cursor.fetchall()

print("Description | Total Quantity Sold")

for row in rows:

print(row[0], "|", row[1])

b. Calculating the average quantity sold for each client that has a maximum order value of 15000.00.

query\_b = """

SELECT C.CLIENTNO, C.NAME, AVG(SOD.QTYORDERED) AS AvgQtySold

FROM CLIENT\_MASTER C

JOIN SALES\_ORDER SO ON C.CLIENTNO = SO.CLIENTNO

JOIN SALES\_ORDER\_DETAILS SOD ON SO.ORDERNO = SOD.ORDERNO

GROUP BY C.CLIENTNO, C.NAME

HAVING MAX(SOD.QTYORDERED \* SOD.PRODUCTRATE) = 15000.00;

"""

cursor.execute(query\_b)

rows = cursor.fetchall()

print("\nClientNo | Client Name | Avg Qty Sold")

for row in rows:

print(row[0], "|", row[1], "|", row[2])