DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SCHOOL OF TECHNOLOGY

PANDIT DEENDAYAL ENERGY UNIVERSITY

SESSION 2022-23

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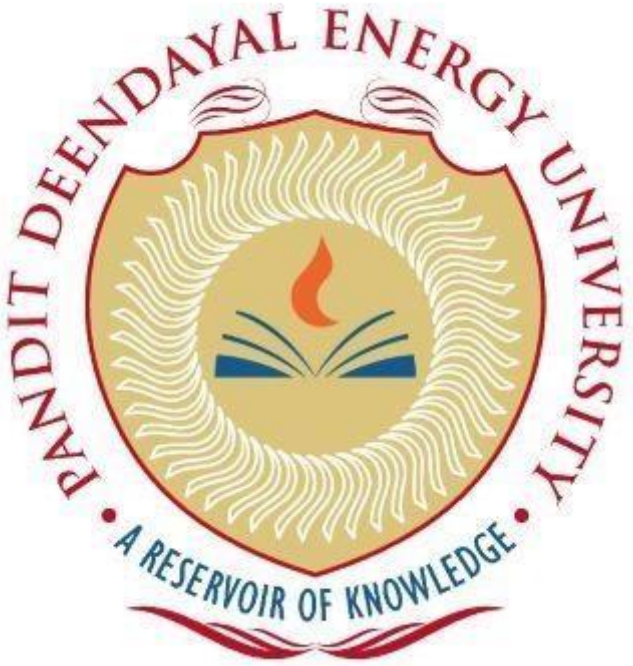

Department of Computer Science and Engineering Pandit Deendayal Energy University

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EXPERIMENT 1:

1) Create the tables described below:

TITLE: DDL (Data Definition Language) commands

Objective: To understand the concept of designing issue related to the database with creating, populating the tables.

1.Create the tables described below:

Table name: CLIENT_MASTER

Description: used to store client information.

```
mysql> desc CLIENT_MASTER;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| CLIENTNO | varchar(6)   | NO   | PRI | NULL    |       |
| Name     | varchar(20)  | YES  |     | NULL    |       |
| Address1 | varchar(30)  | YES  |     | NULL    |       |
| Address2 | varchar(30)  | YES  |     | NULL    |       |
| City     | varchar(15)  | YES  |     | NULL    |       |
| Pincode  | int          | YES  |     | NULL    |       |
| State    | varchar(15)  | YES  |     | NULL    |       |
| BALDUE   | decimal(10,2)| YES  |     | NULL    |       |
+----------+--------------+------+-----+---------+-------+
8 rows in set (0.01 sec)
```

Table Name: PRODUCT_MASTER

Description: used to store product information.

```
mysql> describe product_master;
+---------------+---------------+------+-----+---------+-------+
| Field         | Type          | Null | Key | Default | Extra |
+---------------+---------------+------+-----+---------+-------+
| PRODUCTNO     | varchar(6)    | YES  |     | NULL    |       |
| DESCRIPTION   | varchar(15)   | YES  |     | NULL    |       |
| PROFITPERCENT | decimal(4,2)  | YES  |     | NULL    |       |
| UNIT_MEASURE  | varchar(10)   | YES  |     | NULL    |       |
| QTYONHAND     | int           | YES  |     | NULL    |       |
| REORDERL_VL   | int           | YES  |     | NULL    |       |
| SELLPRICE     | decimal(10,2) | YES  |     | NULL    |       |
| COSTPRICE     | decimal(8,2)  | YES  |     | NULL    |       |
+---------------+---------------+------+-----+---------+-------+
8 rows in set (0.00 sec)
```

Table Name: SALESMAN_MASTER

Description: Used to store salesman information working for the company.

```
mysql> describe sman_mast;
+--------------+---------------+------+-----+---------+-------+
| Field        | Type          | Null | Key | Default | Extra |
+--------------+---------------+------+-----+---------+-------+
| SALESMANNO   | varchar(6)    | YES  |     | NULL    |       |
| SALESMANNAME | varchar(20)   | YES  |     | NULL    |       |
| ADDRESS1     | varchar(30)   | YES  |     | NULL    |       |
| ADDRESS2     | varchar(30)   | YES  |     | NULL    |       |
| CITY         | varchar(20)   | YES  |     | NULL    |       |
| PINCODE      | int           | YES  |     | NULL    |       |
| STATE        | varchar(20)   | YES  |     | NULL    |       |
| SALAMT       | double        | YES  |     | NULL    |       |
| TGTTOGET     | decimal(10,0) | YES  |     | NULL    |       |
| YTDSALES     | double(6,2)   | YES  |     | NULL    |       |
| REMARKS      | varchar(60)   | YES  |     | NULL    |       |
+--------------+---------------+------+-----+---------+-------+
11 rows in set (0.01 sec)
```

2) Insert the following data into their respective tables:

a) Data for CLIENT_MASTERtable:

```
mysql> insert into CLIENT_MASTER(CLIENTNO, Name, City, Pincode, State, BALDUE) Values ('C00001', 'Ivan Bayross', 'Mumbai', 40054, 'Mah
arashtra', 15000),('C00002', 'Mamta Mazumdar', 'Madras', 780001, 'Tamil Nadu', 0), ('C00003', 'Chhaya Bankar', 'Mumbai', 40057, 'Mahar
ashtra', 5000), ('C00004', 'Ashwini Joshi', 'Bangalore', 560001, 'Karnataka', 0), ('C00005', 'Hansel Colaco', 'Mumbai', 400060, 'Mahar
ashtra', 2000), ('C00006', 'Deepak Sharma', 'Mangalore', 560050, 'Karnataka',
0);
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
mysql> select * from CLIENT_MASTER;
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| CLIENTNO | Name           | Address1 | Address2 | City      | Pincode | State       | BALDUE   |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| C00001   | Ivan Bayross   | NULL     | NULL     | Mumbai    |   40054 | Maharashtra | 15000.00 |
| C00002   | Mamta Mazumdar | NULL     | NULL     | Madras    |  780001 | Tamil Nadu  |     0.00 |
| C00003   | Chhaya Bankar  | NULL     | NULL     | Mumbai    |   40057 | Maharashtra |  5000.00 |
| C00004   | Ashwini Joshi  | NULL     | NULL     | Bangalore |  560001 | Karnataka   |     0.00 |
| C00005   | Hansel Colaco  | NULL     | NULL     | Mumbai    |  400060 | Maharashtra |  2000.00 |
| C00006   | Deepak Sharma  | NULL     | NULL     | Mangalore |  560050 | Karnataka   |     0.00 |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
```

b) Data for PRODUCT_MASTER table:

```
mysql> insert into PRODUCT_MASTER values("P08865","Skirts",5,"Piece",75,30,450,300),
    -> ("P07975","Lycra Tops",5,"Piece",70,30,300,175),
    -> ("P07965","Denim Jeans",4,"Piece",100,40,350,250),
    -> ("P07885","Pull Overs",2.5,"Piece",80,30,700,450),
    -> ("P07868","Trousers",2,"Piece",150,50,850,550),
    -> ("P07865","Jeans",5,"Piece",100,20,750,500),
    -> ("P00001","T-shirt",5,"Piece",200,50,350,250),
    -> ("P06735","Cotton jeans",5,"Piece",100,20,600,450),
    -> ("P0345","Shirts",6,"Piece",150,50,500,350);
Query OK, 9 rows affected (0.01 sec)
Records: 9  Duplicates: 0  Warnings: 0
```

```
mysql> select * from  product_master;
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
| PRODUCTNO | DESCRIPTION | PROFITPERCENT | UNIT_MEASURE | QTYONHAND | REORDERL_VL | SELLPRICE | COSTPRICE |
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
| P00001    | T-shirt     |          5.00 | Piece        |       200 |          50 |    350.00 |    250.00 |
| P0345     | Shirts      |          6.00 | Piece        |       150 |          50 |    500.00 |    350.00 |
| P07868    | Trousers    |          2.00 | Piece        |       150 |          50 |    850.00 |    950.00 |
| P07885    | Pull Overs  |          2.50 | Piece        |        80 |          30 |    700.00 |    450.00 |
| P07975    | Lycra Tops  |          5.00 | Piece        |        70 |          30 |    300.00 |    175.00 |
| P08865    | Skirts      |          5.00 | Piece        |        75 |          30 |    450.00 |    300.00 |
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
6 rows in set (0.00 sec)
```

C) Data for SALESMAN_MASTER table:

```
mysql> insert into SALESMAN_MASTER values ('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 3000, 100, 50, 'Good'),
    -> ('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 3000, 200, 100, 'Good'),
    -> ('S00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 3000, 200, 100, 'Good'),
    -> ('S00004', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 3500, 200, 150, 'Good');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

```
mysql> select * from salesman_master;
+------------+-------------+----------+----------+--------+---------+-------------+--------+----------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY   | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+------------+-------------+----------+----------+--------+---------+-------------+--------+----------+----------+---------+
| S00001     | Aman        | A/14     | Worli    | Mumbai |  400002 | Maharashtra |   3000 |      100 |    50.00 | Good    |
| S00002     | Omkar       | 65       | Nariman  | Mumbai |  400001 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00003     | Raj         | P-7      | Bandra   | Mumbai |  400032 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00004     | Ashish      | A/5      | Juhu     | Mumbai |  400044 | Maharashtra |   3500 |      200 |   150.00 | Good    |
+------------+-------------+----------+----------+--------+---------+-------------+--------+----------+----------+---------+
4 rows in set (0.01 sec)
```

EXPERIMENT 2:

Title: DML commands with constraints

Objective: -To understand the concept of different DML commands.

Exercise on retrieving records from a table.

a. Find out the names of all the clients.

```
mysql> select * from client_master;
+----------+----------------+-----------+---------+-------------+----------+
| CLIENTNO | Name           | City      | Pincode | State       | Baldue   |
+----------+----------------+-----------+---------+-------------+----------+
| C00001   | Ivan Bayross   | Mumbai    |   40054 | Maharashtra | 15000.00 |
| C00002   | Mamta Mazumdar | Madras    |  780001 | Tamil Nadu  |     0.00 |
| C00003   | Chhaya Bankar  | Mumbai    |   40057 | 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 |
+----------+----------------+-----------+---------+-------------+----------+
6 rows in set (0.03 sec)
```

b. Retrieve the entire contents of the Client_Master table.

```
mysql> select Name from client_master;
+----------------+
| Name           |
+----------------+
| Ivan Bayross   |
| Mamta Mazumdar |
| Chhaya Bankar  |
| Ashwini Joshi  |
| Hansel Colaco  |
| Deepak Sharma  |
+----------------+
6 rows in set (0.00 sec)
```

c. Retrieve the list of names,city and the state of all the clients.

```
mysql> select Name, City, State from client_master;
+---------------+-----------+-------------+
| Name          | City      | State       |
+---------------+-----------+-------------+
| Ivan Bayross  | Mumbai    | Maharashtra |
| Mamta Mazumdar | Madras   | Tamil Nadu  |
| Chhaya Bankar | Mumbai    | Maharashtra |
| Ashwini Joshi | Bangalore | Karnataka   |
| Hansel Colaco | Mumbai    | Maharashtra |
| Deepak Sharma | Mangalore | Karnataka   |
+---------------+-----------+-------------+
6 rows in set (0.00 sec)
```

d. List the various products available from the Product_Master table.

```
mysql> select DESCRIPTION from product_master;
+-------------+
| DESCRIPTION |
+-------------+
| T-shirt     |
| Shirts      |
| Cotton jeans |
| Jeans       |
| Trousers    |
| Pull Overs  |
| Denim Jeans |
| Lycra Tops  |
| Skirts      |
+-------------+
9 rows in set (0.00 sec)
```

e. List all the clients who are located in Mumbai.

```
mysql> select * from client_master
    -> where city="Mumbai";
+---------+--------------+--------+---------+-------------+----------+
| CLIENTNO | Name         | City   | Pincode | State       | Baldue   |
+---------+--------------+--------+---------+-------------+----------+
| C00001  | Ivan Bayross | Mumbai |   40054 | Maharashtra | 15000.00 |
| C00003  | Chhaya Bankar | Mumbai |  40057 | Maharashtra |  5000.00 |
| C00005  | Hansel Colaco | Mumbai | 400060 | Maharashtra |  2000.00 |
+---------+--------------+--------+---------+-------------+----------+
3 rows in set (0.01 sec)
```

f. Find the names of salesman who have a salary equal to Rs.3000.

```
mysql> select salesmanname from salesman_master
    -> where salamt=3000;
+--------------+
| salesmanname |
+--------------+
| Aman         |
| Omkar        |
| Raj          |
+--------------+
3 rows in set (0.00 sec)
```

1.Exercise on updating records in a table

a. Change the city of ClientNo ‘C00005’ to ‘Bangalore’.

```
mysql> update client_master
    -> set city="Bangalore"
    -> where clientno="C00005";
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from client_master;
+----------+---------------+-----------+---------+-------------+----------+
| CLIENTNO | Name          | City      | Pincode | State       | Baldue   |
+----------+---------------+-----------+---------+-------------+----------+
| C00001   | Ivan Bayross  | Mumbai    |   40054 | Maharashtra | 15000.00 |
| C00002   | Mamta Mazumdar | Madras    |  780001 | Tamil Nadu  |     0.00 |
| C00003   | Chhaya Bankar | Mumbai    |   40057 | Maharashtra |  5000.00 |
| C00004   | Ashwini Joshi | Bangalore |  560001 | Karnataka   |     0.00 |
| C00005   | Hansel Colaco | Bangalore |  400060 | Maharashtra |  2000.00 |
| C00006   | Deepak Sharma | Mangalore |  560050 | Karnataka   |     0.00 |
+----------+---------------+-----------+---------+-------------+----------+
6 rows in set (0.00 sec)
```

b. Change the BalDue of ClientNo ‘C00001’ to Rs.1000.

```
mysql> update client_master
    -> set baldue=1000
    -> where clientno="C00001";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from client_master;
+----------+---------------+-----------+---------+-------------+---------+
| CLIENTNO | Name          | City      | Pincode | State       | Baldue  |
+----------+---------------+-----------+---------+-------------+---------+
| C00001   | Ivan Bayross  | Mumbai    |   40054 | Maharashtra | 1000.00 |
| C00002   | Mamta Mazumdar | Madras    |  780001 | Tamil Nadu  |    0.00 |
| C00003   | Chhaya Bankar | Mumbai    |   40057 | Maharashtra | 5000.00 |
| C00004   | Ashwini Joshi | Bangalore |  560001 | Karnataka   |    0.00 |
| C00005   | Hansel Colaco | Bangalore |  400060 | Maharashtra | 2000.00 |
| C00006   | Deepak Sharma | Mangalore |  560050 | Karnataka   |    0.00 |
+----------+---------------+-----------+---------+-------------+---------+
6 rows in set (0.00 sec)
```

c. Change the cost price of 'Trousers' to rs.950.00.

```
mysql> update product_master
    -> set costprice=950
    -> where description=
    -> "Trousers";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from product_master;
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
| PRODUCTNO | DESCRIPTION | PROFITPERCENT | UNIT_MEASURE | QTYONHAND | REORDERL_VL | SELLPRICE | COSTPRICE |
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
| P00001    | T-shirt     |          5.00 | Piece        |       200 |          50 |    350.00 |    250.00 |
| P0345     | Shirts      |          6.00 | Piece        |       150 |          50 |    500.00 |    350.00 |
| P06735    | 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 |    950.00 |
| P07885    | Pull Overs  |          2.50 | Piece        |        80 |          30 |    700.00 |    450.00 |
| P07965    | Denim Jeans |          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 |
+-----------+-------------+---------------+--------------+-----------+-------------+-----------+-----------+
9 rows in set (0.00 sec)
```

d. Change the city of the salesman to Pune.

```
mysql> update salesman_master
    -> set city="Pune"
    -> where city="Mumbai";
Query OK, 4 rows affected (0.01 sec)
Rows matched: 4  Changed: 4  Warnings: 0

mysql> select * from salesman_master;
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| S00001     | Aman         | A/14     | Worli    | Pune |  400002 | Maharashtra |   3000 |      100 |    50.00 | Good    |
| S00002     | Omkar        | 65       | Nariman  | Pune |  400001 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00003     | Raj          | P-7      | Bandra   | Pune |  400032 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00004     | Ashish       | A/5      | Juhu     | Pune |  400044 | Maharashtra |   3500 |      200 |   150.00 | Good    |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
4 rows in set (0.00 sec)
```

2.Exercise on deleting records in a table

a. Delete all salesman from the Salesman_Master whose salaries are equal toRs.3500.

```
mysql> delete from salesman_master
    -> where salamt=3500;
Query OK, 1 row affected (0.01 sec)

mysql> select * from salesman_master;
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| S00001     | Aman         | A/14     | Worli    | Pune |  400002 | Maharashtra |   3000 |      100 |    50.00 | Good    |
| S00002     | Omkar        | 65       | Nariman  | Pune |  400001 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00003     | Raj          | P-7      | Bandra   | Pune |  400032 | Maharashtra |   3000 |      200 |   100.00 | Good    |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
3 rows in set (0.00 sec)
```

3. b) Delete all products from Product_Master where the quantity on hand is equal to 100.

```
mysql> delete from product_master
    -> where qtyonhand=100;
Query OK, 3 rows affected (0.01 sec)

mysql> SELECT * FROM PRODUCT_MASTER;
+-----------+-------------+--------------+--------------+-----------+------------+-----------+-----------+
| PRODUCTNO | DESCRIPTION | PROFITPERCENT | UNIT_MEASURE | QTYONHAND | REORDERL_VL | SELLPRICE | COSTPRICE |
+-----------+-------------+--------------+--------------+-----------+------------+-----------+-----------+
| P00001    | T-shirt     |         5.00 | Piece        |       200 |         50 |    350.00 |    250.00 |
| P0345     | Shirts      |         6.00 | Piece        |       150 |         50 |    500.00 |    350.00 |
| P07868    | Trousers    |         2.00 | Piece        |       150 |         50 |    850.00 |    950.00 |
| P07885    | Pull Overs  |         2.50 | Piece        |        80 |         30 |    700.00 |    450.00 |
| P07975    | Lycra Tops  |         5.00 | Piece        |        70 |         30 |    300.00 |    175.00 |
| P08865    | Skirts      |         5.00 | Piece        |        75 |         30 |    450.00 |    300.00 |
+-----------+-------------+--------------+--------------+-----------+------------+-----------+-----------+
6 rows in set (0.00 sec)
```

c. Delete from Client_Master where the column state holds the value ‘Tamil Nadu’.

```
mysql> delete from client_master
    -> where state="Tamil Nadu";
Query OK, 1 row affected (0.00 sec)

mysql> select * from client_master;
+----------+--------------+-----------+---------+-------------+---------+
| CLIENTNO | Name         | City      | Pincode | State       | Baldue  |
+----------+--------------+-----------+---------+-------------+---------+
| C00001   | Ivan Bayross | Mumbai    |   40054 | Maharashtra | 1000.00 |
| C00003   | Chhaya Bankar | Mumbai    |   40057 | Maharashtra | 5000.00 |
| C00004   | Ashwini Joshi | Bangalore |  560001 | Karnataka   |    0.00 |
| C00005   | Hansel Colaco | Bangalore |  400060 | Maharashtra | 2000.00 |
| C00006   | Deepak Sharma | Mangalore |  560050 | Karnataka   |    0.00 |
+----------+--------------+-----------+---------+-------------+---------+
5 rows in set (0.00 sec)
```

4.Exercise on altering the table structure

a. Add a column called ‘Telephone’ of data type integer to the Client_Master table.

```
mysql> alter table client_master
    -> add Telephone INTEGER;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from client_master;
+----------+--------------+-----------+---------+-------------+---------+-----------+
| CLIENTNO | Name         | City      | Pincode | State       | Baldue  | Telephone |
+----------+--------------+-----------+---------+-------------+---------+-----------+
| C00001   | Ivan Bayross | Mumbai    |   40054 | Maharashtra | 1000.00 |      NULL |
| C00003   | Chhaya Bankar | Mumbai    |   40057 | Maharashtra | 5000.00 |      NULL |
| C00004   | Ashwini Joshi | Bangalore |  560001 | Karnataka   |    0.00 |      NULL |
| C00005   | Hansel Colaco | Bangalore |  400060 | Maharashtra | 2000.00 |      NULL |
| C00006   | Deepak Sharma | Mangalore |  560050 | Karnataka   |    0.00 |      NULL |
+----------+--------------+-----------+---------+-------------+---------+-----------+
5 rows in set (0.00 sec)
```

b. Change the size off SellPrice column in Product _Master to 10, 2.

```
mysql> alter table product_master modify column SELLPRICE DECIMAL(10,2);
Query OK, 6 rows affected (0.04 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

5.Exercise on deleting the table structure along with the dataa.

Destroy the table Client_Master along with its data.

```
mysql> drop table client_master;
Query OK, 0 rows affected (0.02 sec)
```

6.Exercise on renaming the table

a. Change the name of the Salesman_Master to sman_mast.

```
mysql> alter table salesman_master
    -> rename to sman_mast;
Query OK, 0 rows affected (0.02 sec)

mysql> select * from sman_mast;
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| S00001     | Aman         | A/14     | Worli    | Pune |  400002 | Maharashtra |   3000 |      100 |    50.00 | Good    |
| S00002     | Omkar        | 65       | Nariman  | Pune |  400001 | Maharashtra |   3000 |      200 |   100.00 | Good    |
| S00003     | Raj          | P-7      | Bandra   | Pune |  400032 | Maharashtra |   3000 |      200 |   100.00 | Good    |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
3 rows in set (0.01 sec)
```

EXPERIMENT 3:

TITLE: DDL (Data Definition Language) commands with Data Constraints

Objective: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key and the Foreign Key.

Create the tables described below:

Table name: CLIENT_MASTER_1

Description: Used to store client information.

```
mysql> select * from client_master_1;
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| CLIENTNO | Name           | Address1 | Address2 | City      | Pincode | State       | BALDUE   |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| C00001   | Ivan Bayross   | NULL     | NULL     | Mumbai    |   40054 | Maharashtra | 15000.00 |
| C00002   | Mamta Mazumdar | NULL     | NULL     | Madras    |  780001 | Tamil Nadu  |     0.00 |
| C00003   | Chhaya Bankar  | NULL     | NULL     | Mumbai    |   40057 | Maharashtra |  5000.00 |
| C00004   | Ashwini Joshi  | NULL     | NULL     | Bangalore |  560001 | Karnataka   |     0.00 |
| C00005   | Hansel Colaco  | NULL     | NULL     | Mumbai    |  400060 | Maharashtra |  2000.00 |
| C00006   | Deepak Sharma  | NULL     | NULL     | Mangalore |  560050 | Karnataka   |     0.00 |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
6 rows in set (0.02 sec)
```

Table Name: PRODUCT_MASTER_1

Description: used to store product information

```
mysql> select * from product_master_1;
+-----------+-------------+---------------+-------------+-----------+-------------+-----------+-----------+
| ProductNo | Description | ProfitPercent | UnitMeasure | QTYONHAND | Recorder_VL | SellPrice | CostPrice |
+-----------+-------------+---------------+-------------+-----------+-------------+-----------+-----------+
| P00001    | T-shirt     |          5.00 | Piece       |       200 |          50 |    350.00 |    250.00 |
| P0345     | Shirts      |          6.00 | Piece       |       150 |          50 |    500.00 |    350.00 |
| P06735    | 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 Jeans |          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 |
+-----------+-------------+---------------+-------------+-----------+-------------+-----------+-----------+
9 rows in set (0.01 sec)
```

Table Name: SALESMAN_MASTER _1

Description: used to store salesman information working for the company.

```
mysql> select * from salesman_master_1;
+------------+-------------+----------+----------+--------+---------+-------------+---------+----------+----------+---------+
| SalesmanNo | SalesmanName | Address1 | Address2 | City   | Pincode | State       | Salamt  | TGTTOGET | YTDSALES | Remarks |
+------------+-------------+----------+----------+--------+---------+-------------+---------+----------+----------+---------+
| 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     | Mumbai |  400044 | Maharashtra | 3500.00 |   200.00 |   150.00 | Good    |
+------------+-------------+----------+----------+--------+---------+-------------+---------+----------+----------+---------+
4 rows in set (0.01 sec)
```

EXPERIMENT-4

TITLE: DDL (Data Definition Language) commands with Data Constraints

Objective: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key, The Foreign Key, and constraints. Review this diagram.

1.Create table AUTHOR = {Author_ID, Lastname, Firstname, Email, City, Country}Where:Author_ID –text data type, 5 characters, primary keyLastname –text data type, 15 characters, not nullFirstname –text data type, 15 characters, not nullEmail –text data type, 40 characters,City –text data type, 15 characters,Country –text data type, 15 characters,

```
mysql> create table AUTHOR(AUTHOR_ID varchar(5) PRIMARY KEY NOT NULL,
    -> Lastname varchar(15)  NOT NULL,
    -> Firstname varchar(15) NOT NULL,
    -> Email varchar(40),
    -> City varchar(15),
    -> Country varchar(15));
Query OK, 0 rows affected (0.08 sec)

mysql> describe AUTHOR;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| AUTHOR_ID | varchar(5)  | NO   | PRI | NULL    |       |
| Lastname  | varchar(15) | NO   |     | NULL    |       |
| Firstname | varchar(15) | NO   |     | NULL    |       |
| Email     | varchar(40) | YES  |     | NULL    |       |
| City      | varchar(15) | YES  |     | NULL    |       |
| Country   | varchar(15) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
6 rows in set (0.06 sec)
```

2.Create Table BOOK={ Book_ID, Book_Title, Copies)Where :Book_ID –text data type, 5 characters Primary Key Start With Character BBook_Title -Text data Type Not NullCopies-No.of copies Data Type int always greater the 2

```
mysql> create table BOOK(BOOK_ID varchar(5) PRIMARY KEY check(BOOK_ID like 'B%'),
    -> Book_Title varchar(50) NOT NULL,
    -> Copies integer check(Copies>2));
Query OK, 0 rows affected (0.02 sec)

mysql> describe book;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| BOOK_ID    | varchar(5)  | NO   | PRI | NULL    |       |
| Book_Title | varchar(50) | NO   |     | NULL    |       |
| Copies     | int         | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

3.Create table AUTHOR_LIST = {Author_ID,Book_ID, Role}Where:

Author_ID –text data type, 5 characters, referenced by Author_ID from AUTHOR table Book_ID –text data type, 5 charactersRole –text data type, 15 charactersand primary key is: Author_ID, Book_ID

```
mysql> create table AUTHOR_LIST(AUTHOR_ID varchar(5) references AUTHOR(AUTHOR_ID),
    -> Book_ID varchar(5),
    -> Role varchar(15),
    -> primary key( AUTHOR_ID,BOOK_ID));
Query OK, 0 rows affected (0.02 sec)

mysql> desc author_list;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| AUTHOR_ID | varchar(5)  | NO   | PRI | NULL    |       |
| Book_ID   | varchar(5)  | NO   | PRI | NULL    |       |
| Role      | varchar(15) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

4.Add four records in each tables AUTHOR, BOOK, BOOK_LIST.

```
mysql> select * from author
    -> ;
+-----------+----------+-----------+------------------------+----------+---------+
| AUTHOR_ID | Lastname | Firstname | Email                  | City     | Country |
+-----------+----------+-----------+------------------------+----------+---------+
| A0001     | Smith    | John      | john.smith@email.com   | New York | USA     |
| A0002     | Johnson  | Jane      | jane.johnson@email.com | London   | UK      |
| A0003     | Brown    | Michael   | michael.brown@email.com| Paris    | France  |
| A0004     | Davis    | Sarah     | sarah.davis@email.com  | Berlin   | Germany |
+-----------+----------+-----------+------------------------+----------+---------+
4 rows in set (0.00 sec)

mysql> select * from book;
+---------+-------------------------------+--------+
| BOOK_ID | Book_Title                    | Copies |
+---------+-------------------------------+--------+
| B0001   | The Great Gatsby              |      5 |
| B0002   | To Kill a Mockingbird         |      7 |
| B0003   | Pride and Prejudice           |      6 |
| B0004   | One Hundred Years of Solitude |      4 |
+---------+-------------------------------+--------+
4 rows in set (0.00 sec)

mysql> select
    -> * from author_list;
+-----------+---------+-----------+
| AUTHOR_ID | Book_ID | Role      |
+-----------+---------+-----------+
| A0001     | B0001   | Author    |
| A0002     | B0002   | Editor    |
| A0003     | B0003   | Reviewer  |
| A0004     | B0004   | Co-Author |
+-----------+---------+-----------+
4 rows in set (0.00 sec)
```

5.Alter structure of table AUTHOR_LIST add the field Publisher data type of 30 Character.

```
mysql> alter table AUTHOR_LIST
    -> add Publisher varchar(30);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc AUTHOR_LIST;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| AUTHOR_ID | varchar(5)  | NO   | PRI | NULL    |       |
| Book_ID   | varchar(5)  | NO   | PRI | NULL    |       |
| Role      | varchar(15) | YES  |     | NULL    |       |
| Publisher | varchar(30) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

EXPERIMENT-5,6

Title: Use of Inbuilt functions and relational algebra operation

Objective: To understand the use of inbuilt function and relational algebra with SQL query.

1. Consider the following table structure and attempt.
Supplier-(scode,sname,scity,turnover)
Part-(pcode,weigh,color,cost,sellingprice)
Supplier_Part-(scode,pcode,qty) a) Create tables

```
mysql> use exp5;
Database changed
mysql> CREATE TABLE Supplier (
    -> scode INT PRIMARY KEY,
    -> sname VARCHAR(50) NOT NULL,
    -> scity VARCHAR(50) NOT NULL,
    -> turnover DECIMAL(10,2) NOT NULL
    -> );
Query OK, 0 rows affected (0.05 sec)

mysql> CREATE TABLE Part (
    -> pcode INT PRIMARY KEY,
    -> weigh DECIMAL(10,2) NOT NULL,
    -> color VARCHAR(20) NOT NULL,
    -> cost DECIMAL(10,2) NOT NULL,
    -> sellingprice DECIMAL(10,2) NOT NULL
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> CREATE TABLE Supplier_Part (
    -> scode INT NOT NULL,
    -> pcode INT NOT NULL,
    -> qty INT NOT NULL,
    -> PRIMARY KEY (scode, pcode),
    -> FOREIGN KEY (scode) REFERENCES Supplier(scode),
    -> FOREIGN KEY (pcode) REFERENCES Part(pcode)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

b) Populate the table.

MySQL 8.0 Command Line Cli

```
mysql> select * from supplier;
+-------+--------------------+-----------+------------+
| scode | sname              | scity     | turnover   |
+-------+--------------------+-----------+------------+
|   101 | Ramesh Traders     | Mumbai    | 1000000.00 |
|   102 | Shyam Enterprises  | Kolkata   |  500000.00 |
|   103 | Mohan Industries   | Delhi     |  750000.00 |
|   104 | Ganesh Exports     | Pune      |  400000.00 |
|   105 | Krishna Enterprises| Ahmedabad |  600000.00 |
+-------+--------------------+-----------+------------+
5 rows in set (0.00 sec)

mysql> select * from part;
+-------+-------+--------+-------+--------------+
| pcode | weigh | color  | cost  | sellingprice |
+-------+-------+--------+-------+--------------+
|   201 | 27.50 | Red    | 35.00 |        60.00 |
|   202 | 30.20 | Blue   | 50.00 |        75.00 |
|   203 | 25.80 | Green  | 20.00 |        45.00 |
|   204 | 34.10 | Yellow | 65.00 |        90.00 |
|   205 | 28.70 | Black  | 30.00 |        55.00 |
+-------+-------+--------+-------+--------------+
5 rows in set (0.00 sec)

mysql> select * from supplier_part;
+-------+-------+-----+
| scode | pcode | qty |
+-------+-------+-----+
|   101 |   201 | 100 |
|   101 |   202 |  50 |
|   102 |   202 |  75 |
|   102 |   203 | 150 |
|   103 |   201 | 200 |
|   103 |   205 | 100 |
|   104 |   203 |  50 |
|   104 |   204 |  75 |
|   105 |   202 | 125 |
|   105 |   205 | 150 |
+-------+-------+-----+
10 rows in set (0.00 sec)
```

2. Write appropriate SQL Statement for the following:

2.1) Get the supplier number and part number in ascending order of supplier number.

```
mysql> select scode, pcode from supplier,part
    -> order by scode;
+-------+-------+
| scode | pcode |
+-------+-------+
|   101 |   201 |
|   101 |   202 |
|   101 |   203 |
|   101 |   204 |
|   101 |   205 |
|   102 |   201 |
|   102 |   202 |
|   102 |   203 |
|   102 |   204 |
|   102 |   205 |
|   103 |   201 |
|   103 |   202 |
|   103 |   203 |
|   103 |   204 |
|   103 |   205 |
|   104 |   201 |
|   104 |   202 |
|   104 |   203 |
|   104 |   204 |
|   104 |   205 |
|   105 |   201 |
|   105 |   202 |
|   105 |   203 |
|   105 |   204 |
|   105 |   205 |
+-------+-------+
25 rows in set (0.01 sec)

mysql>
```

2.2) Get the details of supplier who operate from Bombay with turnover 50.

```
mysql> select * from supplier
    -> where scity="Mumbai" and turnover>500000;
+-------+---------------+--------+------------+
| scode | sname         | scity  | turnover   |
+-------+---------------+--------+------------+
|   101 | Ramesh Traders | Mumbai | 1000000.00 |
+-------+---------------+--------+------------+
1 row in set (0.01 sec)
```

2.3) Get the total number of suppliers.

```
mysql> select count(scode) as Total_Supplier from supplier;
+----------------+
| Total_Supplier |
+----------------+
|              5 |
+----------------+
1 row in set (0.00 sec)
```

2.4) Get the part number weighing between 25 and 35.

```
mysql> select pcode as Part_Number from part
    -> where weigh between 25 and 35;
+-------------+
| Part_Number |
+-------------+
|         201 |
|         202 |
|         203 |
|         204 |
|         205 |
+-------------+
5 rows in set (0.01 sec)
```

2.5) Get the supplier number whose turnover is null.

```
mysql> SELECT scode FROM Supplier WHERE turnover IS NULL;
+-------+
| scode |
+-------+
|   106 |
+-------+
1 row in set (0.00 sec)
```

2.6) Get the part number that cost 20, 30 or 40 rupees.

```
mysql> select pcode from part
    -> where cost=20 OR cost=30 OR cost=40;
+-------+
| pcode |
+-------+
|   201 |
|   203 |
|   205 |
+-------+
3 rows in set (0.00 sec)
```

2.8) Get the name of supplier who supply part 2.

```
mysql> select sname from supplier, part
    -> where pcode=201;
+---------------------+
| sname               |
+---------------------+
| Ramesh Traders      |
| Shyam Enterprises   |
| Mohan Industries    |
| Ganesh Exports      |
| Krishna Enterprises |
| Radhika Industries  |
+---------------------+
6 rows in set (0.01 sec)
```

2.9) Get the part number whose cost is greater than the average cost.

```
mysql> SELECT pcode as Part_Number FROM Part WHERE cost > (SELECT AVG(cost) FROM Part);
+-------------+
| Part_Number |
+-------------+
|         202 |
|         204 |
+-------------+
2 rows in set (0.00 sec)
```

2.10) Get the supplier number and turnover in descending order of turnover.

```
mysql> select sname as Supplier_Number,turnover from supplier
    -> order by turnover desc;
+---------------------+------------+
| Supplier_Number     | turnover   |
+---------------------+------------+
| Ramesh Traders      | 1000000.00 |
| Mohan Industries    |  750000.00 |
| Krishna Enterprises |  600000.00 |
| Shyam Enterprises   |  500000.00 |
| Ganesh Exports      |  400000.00 |
| Radhika Industries  |       NULL |
+---------------------+------------+
6 rows in set (0.00 sec)
```

EXPERIMENT 7,8:

TITLE: Nested SQL queries or Subqueries

Objective: To understand the use SQL Subquery

1.Create the following two tables (EMP and DEPT)

```
mysql> describe EMP;
+----------+-------------------+------+-----+---------+-------+
| Field    | Type              | Null | Key | Default | Extra |
+----------+-------------------+------+-----+---------+-------+
| EMPNO    | smallint unsigned | NO   | PRI | NULL    |       |
| ENAME    | varchar(10)       | YES  |     | NULL    |       |
| JOB      | varchar(9)        | YES  |     | NULL    |       |
| MGR      | smallint unsigned | YES  |     | NULL    |       |
| HIREDATE | date              | YES  |     | NULL    |       |
| SAL      | decimal(7,2)      | YES  |     | NULL    |       |
| COMM     | decimal(7,2)      | YES  |     | NULL    |       |
| DEPTNO   | int               | YES  | MUL | NULL    |       |
+----------+-------------------+------+-----+---------+-------+
8 rows in set (0.09 sec)

mysql> describe dept;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| DEPTNO | int         | NO   | PRI | NULL    |       |
| DNAME  | varchar(14) | YES  |     | NULL    |       |
| LOC    | varchar(13) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

```
mysql> select * from dept;
+--------+------------+----------+
| DEPTNO | DNAME      | LOC      |
+--------+------------+----------+
|     10 | ACCOUNTING | NEW YORK |
|     20 | RESEARCH   | DALLAS   |
|     30 | SALES      | CHICAGO  |
|     40 | OPERATIONS | BOSTON   |
+--------+------------+----------+
4 rows in set (0.01 sec)

mysql> select * from emp;
+-------+--------+-----------+------+------------+---------+---------+--------+
| EMPNO | ENAME  | JOB       | MGR  | HIREDATE   | SAL     | COMM    | DEPTNO |
+-------+--------+-----------+------+------------+---------+---------+--------+
|  7369 | SMITH  | CLERK     | 7902 | 1980-12-17 |  800.00 |    NULL |     20 |
|  7499 | ALLEN  | SALESMAN  | 7698 | 1981-02-20 | 1600.00 |  300.00 |     30 |
|  7521 | WARD   | SALESMAN  | 7698 | 1981-02-22 | 1250.00 |  500.00 |     30 |
|  7566 | JONES  | MANAGER   | 7839 | 1981-04-02 | 2975.00 |    NULL |     20 |
|  7654 | MARTIN | SALESMAN  | 7698 | 1981-09-28 | 1250.00 | 1400.00 |     30 |
|  7698 | BLAKE  | MANAGER   | 7839 | 1981-05-01 | 2850.00 |    NULL |     30 |
|  7782 | CLARK  | MANAGER   | 7839 | 1981-06-09 | 2450.00 |    NULL |     10 |
|  7788 | SCOTT  | ANALYST   | 7566 | 1982-12-09 | 3000.00 |    NULL |     20 |
|  7839 | KING   | PRESIDENT | NULL | 1981-11-17 | 5000.00 |    NULL |     10 |
|  7844 | TURNER | SALESMAN  | 7698 | 1981-09-08 | 1500.00 |    0.00 |     30 |
|  7876 | ADAMS  | CLERK     | 7788 | 1983-01-12 | 1100.00 |    NULL |     20 |
|  7900 | JAMES  | CLERK     | 7698 | 1981-12-03 |  950.00 |    NULL |     30 |
|  7902 | FORD   | ANALYST   | 7566 | 1981-12-03 | 3000.00 |    NULL |     20 |
|  7934 | MILLER | CLERK     | 7782 | 1982-01-23 | 1300.00 |    NULL |     10 |
+-------+--------+-----------+------+------------+---------+---------+--------+
```

Write the Nested Queries for the following queries.

7.1) List the details of the emps whose Salaries more than the employee BLAKE.

```
mysql> SELECT *
    -> FROM EMP
    -> WHERE SAL > (SELECT SAL FROM EMP WHERE ENAME = 'BLAKE');
+-------+-------+-----------+------+------------+---------+------+--------+
| EMPNO | ENAME | JOB       | MGR  | HIREDATE   | SAL     | COMM | DEPTNO |
+-------+-------+-----------+------+------------+---------+------+--------+
|  7566 | JONES | MANAGER   | 7839 | 1981-04-02 | 2975.00 | NULL |     20 |
|  7788 | SCOTT | ANALYST   | 7566 | 1982-12-09 | 3000.00 | NULL |     20 |
|  7839 | KING  | PRESIDENT | NULL | 1981-11-17 | 5000.00 | NULL |     10 |
|  7902 | FORD  | ANALYST   | 7566 | 1981-12-03 | 3000.00 | NULL |     20 |
+-------+-------+-----------+------+------------+---------+------+--------+
4 rows in set (0.01 sec)
```

7.2) List the emps whose Jobs are same as ALLEN.

```
mysql> SELECT *
    -> FROM EMP
    -> WHERE JOB = (SELECT JOB FROM EMP WHERE ENAME = 'ALLEN');
+-------+--------+----------+------+------------+---------+---------+--------+
| EMPNO | ENAME  | JOB      | MGR  | HIREDATE   | SAL     | COMM    | DEPTNO |
+-------+--------+----------+------+------------+---------+---------+--------+
|  7499 | ALLEN  | SALESMAN | 7698 | 1981-02-20 | 1600.00 |  300.00 |     30 |
|  7521 | WARD   | SALESMAN | 7698 | 1981-02-22 | 1250.00 |  500.00 |     30 |
|  7654 | MARTIN | SALESMAN | 7698 | 1981-09-28 | 1250.00 | 1400.00 |     30 |
|  7844 | TURNER | SALESMAN | 7698 | 1981-09-08 | 1500.00 |    0.00 |     30 |
+-------+--------+----------+------+------------+---------+---------+--------+
4 rows in set (0.00 sec)
```

7.3) List the Emps whose Sal is same as FORD or SMITH in desc order of Names.

```
mysql> SELECT *
    -> FROM EMP
    -> WHERE SAL IN (SELECT SAL FROM EMP WHERE ENAME = 'FORD' OR ENAME = 'SMITH')
    -> ORDER BY ENAME DESC;
+-------+-------+---------+------+------------+---------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE   | SAL     | COMM | DEPTNO |
+-------+-------+---------+------+------------+---------+------+--------+
|  7369 | SMITH | CLERK   | 7902 | 1980-12-17 |  800.00 | NULL |     20 |
|  7788 | SCOTT | ANALYST | 7566 | 1982-12-09 | 3000.00 | NULL |     20 |
|  7902 | FORD  | ANALYST | 7566 | 1981-12-03 | 3000.00 | NULL |     20 |
+-------+-------+---------+------+------------+---------+------+--------+
3 rows in set (0.01 sec)
```

7.4) List the emps Whose Jobs are same as MILLER or Sal is more than ALLEN.

```
mysql> SELECT * FROM EMP
    -> WHERE JOB = (SELECT JOB FROM EMP WHERE ENAME = 'MILLER')
    -> OR SAL > (SELECT SAL FROM EMP WHERE ENAME = 'ALLEN')
    -> ;
+-------+--------+-----------+------+------------+---------+------+--------+
| EMPNO | ENAME  | JOB       | MGR  | HIREDATE   | SAL     | COMM | DEPTNO |
+-------+--------+-----------+------+------------+---------+------+--------+
|  7369 | SMITH  | CLERK     | 7902 | 1980-12-17 |  800.00 | NULL |     20 |
|  7566 | JONES  | MANAGER   | 7839 | 1981-04-02 | 2975.00 | NULL |     20 |
|  7698 | BLAKE  | MANAGER   | 7839 | 1981-05-01 | 2850.00 | NULL |     30 |
|  7782 | CLARK  | MANAGER   | 7839 | 1981-06-09 | 2450.00 | NULL |     10 |
|  7788 | SCOTT  | ANALYST   | 7566 | 1982-12-09 | 3000.00 | NULL |     20 |
|  7839 | KING   | PRESIDENT | NULL | 1981-11-17 | 5000.00 | NULL |     10 |
|  7876 | ADAMS  | CLERK     | 7788 | 1983-01-12 | 1100.00 | NULL |     20 |
|  7900 | JAMES  | CLERK     | 7698 | 1981-12-03 |  950.00 | NULL |     30 |
|  7902 | FORD   | ANALYST   | 7566 | 1981-12-03 | 3000.00 | NULL |     20 |
|  7934 | MILLER | CLERK     | 7782 | 1982-01-23 | 1300.00 | NULL |     10 |
+-------+--------+-----------+------+------------+---------+------+--------+
10 rows in set (0.00 sec)
```

7.5) Find the highest paid employee of sales department.

```
mysql> SELECT e.*
    -> FROM EMP e
    -> JOIN DEPT d ON e.DEPTNO = d.DEPTNO
    -> WHERE d.DEPTNO = 30
    -> ORDER BY e.SAL DESC
    -> LIMIT 1;
+-------+-------+---------+------+------------+---------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE   | SAL     | COMM | DEPTNO |
+-------+-------+---------+------+------------+---------+------+--------+
|  7698 | BLAKE | MANAGER | 7839 | 1981-05-01 | 2850.00 | NULL |     30 |
+-------+-------+---------+------+------------+---------+------+--------+
1 row in set (0.01 sec)
```

7.6) List the employees who are senior to most recently hired employee working under king.

```
mysql> SELECT *
    -> FROM EMP
    -> WHERE HIREDATE < (
    ->     SELECT MAX(HIREDATE)
    ->     FROM EMP
    ->     WHERE MGR = (SELECT EMPNO FROM EMP WHERE ENAME = 'KING')
    -> )
    -> ;
+-------+-------+----------+------+------------+---------+---------+--------+
| EMPNO | ENAME | JOB      | MGR  | HIREDATE   | SAL     | COMM    | DEPTNO |
+-------+-------+----------+------+------------+---------+---------+--------+
|  7369 | SMITH | CLERK    | 7902 | 1980-12-17 |  800.00 |    NULL |     20 |
|  7499 | ALLEN | SALESMAN | 7698 | 1981-02-20 | 1600.00 |  300.00 |     30 |
|  7521 | WARD  | SALESMAN | 7698 | 1981-02-22 | 1250.00 |  500.00 |     30 |
|  7566 | JONES | MANAGER  | 7839 | 1981-04-02 | 2975.00 |    NULL |     20 |
|  7698 | BLAKE | MANAGER  | 7839 | 1981-05-01 | 2850.00 |    NULL |     30 |
+-------+-------+----------+------+------------+---------+---------+--------+
5 rows in set (0.01 sec)
```

7.7) List the names of the emps who are getting the highest sal dept wise.

```
mysql> SELECT d.DEPTNO, d.DNAME, e.ENAME, e.SAL
    -> FROM EMP e
    -> JOIN DEPT d ON e.DEPTNO = d.DEPTNO
    -> WHERE e.SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = e.DEPTNO)
    -> ORDER BY d.DEPTNO;
+--------+------------+-------+---------+
| DEPTNO | DNAME      | ENAME | SAL     |
+--------+------------+-------+---------+
|     10 | ACCOUNTING | KING  | 5000.00 |
|     20 | RESEARCH   | SCOTT | 3000.00 |
|     20 | RESEARCH   | FORD  | 3000.00 |
|     30 | SALES      | BLAKE | 2850.00 |
+--------+------------+-------+---------+
4 rows in set (0.01 sec)
```

7.8) List the emps whose sal is equal to the average of max and minimum

```
mysql> SELECT *
    -> FROM emp
    -> WHERE sal = (SELECT AVG(sal)
    ->              FROM (SELECT MAX(sal) AS sal
    ->                    FROM emp
    ->                    UNION
    ->                    SELECT MIN(sal) AS sal
    ->                    FROM emp) AS sal_avg)
    -> ;
Empty set (0.00 sec)
```

7.9) List the emps who joined in the company on the same date.

```
mysql> SELECT *
    -> FROM emp
    -> WHERE HIREDATE IN (
    ->     SELECT HIREDATE
    ->     FROM emp
    ->     GROUP BY HIREDATE
    ->     HAVING COUNT(*) > 1
    -> )
    -> ORDER BY HIREDATE;
+-------+-------+---------+------+------------+---------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE   | SAL     | COMM | DEPTNO |
+-------+-------+---------+------+------------+---------+------+--------+
|  7900 | JAMES | CLERK   | 7698 | 1981-12-03 |  950.00 | NULL |     30 |
|  7902 | FORD  | ANALYST | 7566 | 1981-12-03 | 3000.00 | NULL |     20 |
+-------+-------+---------+------+------------+---------+------+--------+
2 rows in set (0.00 sec)
```

7.10) Find out the emps who joined in the company before their Managers.

```
mysql> SELECT e.*
    -> FROM emp e
    -> JOIN emp m ON e.mgr = m.empno
    -> WHERE e.hiredate < m.hiredate;
+-------+-------+----------+------+------------+---------+---------+--------+
| EMPNO | ENAME | JOB      | MGR  | HIREDATE   | SAL     | COMM    | DEPTNO |
+-------+-------+----------+------+------------+---------+---------+--------+
|  7369 | SMITH | CLERK    | 7902 | 1980-12-17 |  800.00 |    NULL |     20 |
|  7499 | ALLEN | SALESMAN | 7698 | 1981-02-20 | 1600.00 |  300.00 |     30 |
|  7521 | WARD  | SALESMAN | 7698 | 1981-02-22 | 1250.00 |  500.00 |     30 |
|  7566 | JONES | MANAGER  | 7839 | 1981-04-02 | 2975.00 |    NULL |     20 |
|  7698 | BLAKE | MANAGER  | 7839 | 1981-05-01 | 2850.00 |    NULL |     30 |
|  7782 | CLARK | MANAGER  | 7839 | 1981-06-09 | 2450.00 |    NULL |     10 |
+-------+-------+----------+------+------------+---------+---------+--------+
6 rows in set (0.00 sec)
```