Experiment 4:

Title: To understand and apply the concept of Constraints.

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

1. Create the tables described below:

Table name: CLIENT_MASTER

```
mysql> USE COMPANY;
Database changed
mysql> CREATE TABLE CLIENT_MASTER(
    -> CLIENTNO VARCHAR(6) PRIMARY KEY,
    -> NAME VARCHAR(20) NOT NULL,
    -> ADDRESS1 VARCHAR(30),
    -> ADDRESS2 VARCHAR(30),
    -> CITY VARCHAR(15),
    -> PINCODE INT(8),
    -> STATE VARCHAR(15),
    -> BALDUE DECIMAL(10,2));
Query OK, 0 rows affected, 1 warning (0.43 sec)
```

```
mysql> INSERT INTO CLIENT_MASTER(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
    -> ("C00001","Ivan Bayross","Mumbai",400054,"Maharashtra",15000),
    -> ("C00002","Mamta Muzumdar","Madras",780001,"Tamil Nadu",0),
    -> ("C00003","Chhaya Bankar","Mumbai",400057,"Maharashtra",5000),
    -> ("C00004","Ashwini Joshi","Bangalore",560001,"Karnataka",0),
    -> ("C00005","Hansel Colaco","Mumbai",400060,"Maharashtra",2000),
    -> ("C00006","Deepak Sharma","Mangalore",560050,"Karnataka",0);
Query OK, 6 rows affected (0.03 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

TableName: PRODUCT_MASTER
Description: used to store product information

```
mysql> 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(8) NOT NULL,
    -> REORDERL_VL INT(8) NOT NULL,
    -> SELLPRICE DECIMAL(8,2) NOT NULL,
    -> COSTPRICE DECIMAL(8,2) NOT NULL);
Query OK, 0 rows affected, 2 warnings (0.04 sec)
```

```
mysql> INSERT INTO PRODUCT_MASTER(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASURE,Q
TYONHAND,REORDERL_VL, SELLPRICE,COSTPRICE) VALUES
    -> ("P00001","T-Shirt",5,"Piece",200,50,350,250),
    -> ("P0345","Shirts",6,"Piece",150,50,500,350),
    -> ("P06734","Cotton Jeans",5,"Piece",100,20,600,450),
    -> ("P07865","Jeans",5,"Piece",100,20,750,500),
    -> ("P07868","Trousers",2,"Piece",150,50,850,550),
    -> ("P07885","Pull Overs",2.5,"Piece",80,30,700,450),
    -> ("P07965","Denim Jeans",4,"Piece",100,40,350,250),
    -> ("P07975","Lycra Tops",5,"Piece",70,30,300,175),
    -> ("P08865","Skirts",5,"Piece",75,30,450,300);
Query OK, 9 rows affected (0.03 sec)
Records: 9  Duplicates: 0  Warnings: 0
```

Table Name: **SALESMAN_MASTER**

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

```
mysql> 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(8),
    -> STATE VARCHAR(20),
    -> SALAMT REAL(8,2) NOT NULL,
    -> TGTTOGET DECIMAL(6,2) NOT NULL,
    -> YTDSALES DOUBLE(6,2) NOT NULL,
    -> REMARKS VARCHAR(60));
Query OK, 0 rows affected, 3 warnings (0.06 sec)
```

```
mysql>  INSERT INTO SALESMAN_MASTER(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CITY,PINCODE
,STATE) VALUES
    -> ("S00001","Aman","A/14","Worli","Mumbai",400002,"Maharashtra"),
    -> ("S00002","Omkar","65","Nariman","Mumbai",400001,"Maharashtra"),
    -> ("S00003","Raj","P-7","Bandra","Mumbai",400032,"Maharashtra"),
    -> ("S00004","Ashish","A/5","Juhu","Mumbai",400044,"Maharashtra");
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

2. **Exercise on retrieving records from a table.**

a. Find out the names of all the clients.

```
mysql> SELECT NAME FROM CLIENT_MASTER;
+----------------+
| NAME           |
+----------------+
| Ivan Bayross   |
| Mamta Muzumdar |
| Chhaya Bankar  |
| Ashwini Joshi  |
| Hansel Colaco  |
| Deepak Sharma  |
+----------------+
```

b. Retrieve all the contents of the Client_Master table.

```
mysql> SELECT * FROM CLIENT_MASTER;
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| CLIENTNO | NAME           | ADDRESS1 | ADDRESS2 | CITY      | PINCODE | STATE       | BALDUE   |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
| C00001   | Ivan Bayross   | NULL     | NULL     | Mumbai    |  400054 | Maharashtra | 15000.00 |
| C00002   | Mamta Muzumdar | NULL     | NULL     | Madras    |  780001 | Tamil Nadu  |     0.00 |
| C00003   | Chhaya Bankar  | NULL     | NULL     | Mumbai    |  400057 | 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 |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
```

c. Retrieve the list of names, cities and the clients' state.

```
mysql> SELECT NAME, CITY, STATE FROM CLIENT_MASTER;
+----------------+-----------+-------------+
| NAME           | CITY      | STATE       |
+----------------+-----------+-------------+
| Ivan Bayross   | Mumbai    | Maharashtra |
| Mamta Muzumdar | Madras    | Tamil Nadu  |
| Chhaya Bankar  | Mumbai    | Maharashtra |
| Ashwini Joshi  | Bangalore | Karnataka   |
| Hansel Colaco  | Mumbai    | Maharashtra |
| Deepak Sharma  | Mangalore | Karnataka   |
+----------------+-----------+-------------+
6 rows in set (0.01 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 (0.01 sec)
```

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

```
mysql> SELECT NAME,CITY FROM CLIENT_MASTER WHERE CITY="Mumbai";
+---------------+--------+
| NAME          | CITY   |
+---------------+--------+
| Ivan Bayross  | Mumbai |
| Chhaya Bankar | Mumbai |
| Hansel Colaco | Mumbai |
+---------------+--------+
3 rows in set (0.00 sec)
```

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

```
mysql> SELECT SALESMANNAME FROM SALESMAN_MASTER WHERE SALAMT=30000;
+--------------+
| SALESMANNAME |
+--------------+
| Aman         |
| Raj          |
| Ashish       |
+--------------+
3 rows in set (0.01 sec)
```

3. 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 CLIENTNO,CITY FROM CLIENT_MASTER;
+----------+-----------+
| CLIENTNO | CITY      |
+----------+-----------+
| C00001   | Mumbai    |
| C00002   | Madras    |
| C00003   | Mumbai    |
| C00004   | Bangalore |
| C00005   | Bangalore |
| C00006   | Mangalore |
+----------+-----------+
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 CLIENTNO,BALDUE FROM CLIENT_MASTER;
+----------+---------+
| CLIENTNO | BALDUE  |
+----------+---------+
| C00001   | 1000.00 |
| C00002   |    0.00 |
| C00003   | 5000.00 |
| C00004   |    0.00 |
| C00005   | 2000.00 |
| C00006   |    0.00 |
+----------+---------+
6 rows in set (0.01 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 DESCRIPTION, COSTPRICE FROM PRODUCT_MASTER;
+-------------+-----------+
| DESCRIPTION | COSTPRICE |
+-------------+-----------+
| T-Shirt     |    250.00 |
| Shirts      |    350.00 |
| Cotton Jeans|    450.00 |
| Jeans       |    500.00 |
| Trousers    |    950.00 |
| Pull Overs  |    450.00 |
| Denim Jeans |    250.00 |
| Lycra Tops  |    175.00 |
| Skirts      |    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";
Query OK, 4 rows affected (0.01 sec)
Rows matched: 4  Changed: 4  Warnings: 0

mysql> SELECT SALESMANNAME,CITY FROM SALESMAN_MASTER;
+--------------+------+
| SALESMANNAME | CITY |
+--------------+------+
| Aman         | Pune |
| Omkar        | Pune |
| Raj          | Pune |
| Ashish       | Pune |
+--------------+------+
4 rows in set (0.00 sec)
```

4 Exercise on deleting records in a table

a. Delete all salesmen from the Salesman_Master whose salaries are equal to Rs.3500.

```
mysql> DELETE FROM SALESMAN_MASTER WHERE SALAMT=3500;
Query OK, 0 rows affected (0.01 sec)
```

a. 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 DESCRIPTION,QTYONHAND FROM PRODUCT_MASTER;
+-------------+-----------+
| DESCRIPTION | QTYONHAND |
+-------------+-----------+
| T-Shirt     |       200 |
| Shirts      |       150 |
| Trousers    |       150 |
| Pull Overs  |        80 |
| Lycra Tops  |        70 |
| Skirts      |        75 |
+-------------+-----------+
6 rows in set (0.00 sec)
```

b. 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 (0.01 sec)

mysql> SELECT STATE FROM CLIENT_MASTER;
+-------------+
| STATE       |
+-------------+
| Maharashtra |
| Maharashtra |
| Karnataka   |
| Maharashtra |
| Karnataka   |
+-------------+
5 rows in set (0.00 sec)
```

5. **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 INT;
Query OK, 0 rows affected (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESCRIBE CLIENT_MASTER;
+-----------+---------------+------+-----+---------+-------+
| Field     | Type          | Null | Key | Default | Extra |
+-----------+---------------+------+-----+---------+-------+
| CLIENTNO  | varchar(6)    | NO   | PRI | NULL    |       |
| NAME      | varchar(20)   | NO   |     | 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    |       |
| TELEPHONE | int           | YES  |     | NULL    |       |
+-----------+---------------+------+-----+---------+-------+
9 rows in set (0.12 sec)
```

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

```
mysql> ALTER TABLE PRODUCT_MASTER MODIFY SELLPRICE DECIMAL(10, 2);
Query OK, 6 rows affected (0.09 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> DESCRIBE PRODUCT_MASTER;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| PRODUCTNO    | varchar(6)   | NO   | PRI | NULL    |       |
| DESCRIPTION  | varchar(15)  | NO   |     | NULL    |       |
| PROFITPERCENT| decimal(4,2) | NO   |     | NULL    |       |
| UNITMEASURE  | varchar(10)  | NO   |     | NULL    |       |
| QTYONHAND    | int          | NO   |     | NULL    |       |
| REORDERL_VL  | int          | NO   |     | NULL    |       |
| SELLPRICE    | decimal(10,2)| YES  |     | NULL    |       |
| COSTPRICE    | decimal(8,2) | NO   |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
8 rows in set (0.01 sec)
```

6. **Exercise on deleting the table structure along with the data**

a. Destroy the table Client_Master along with its data.

```
mysql> DROP TABLE CLIENT_MASTER;
Query OK, 0 rows affected (0.04 sec)

mysql> DESCRIBE CLIENT_MASTER;
ERROR 1146 (42S02): Table 'company.client_master' doesn't exist
mysql>
```