University of Petroleum

&

Energy Studies

SCHOOL OF COMPUTER SCIENCE

Name: Akshat Agarwal

Course: BTech CSE

SAP ID: 500118953

BATCH: 1

PRESENTED TO: Dr. Syed Sajid Hussain

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Experiment 4: To understand and apply the concept of 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.

1. **Create the tables described below:**
   a) **CLIENT_MASTER**

```
mysql> CREATE DATABASE shop;
Query OK, 1 row affected (0.02 sec)

mysql> USE shop;
Database changed
mysql> CREATE TABLE CLIENT_MASTER (
    ->     CLIENTNO VARCHAR(6) PRIMARY KEY CHECK (CLIENTNO LIKE 'C%'),
    ->     NAME VARCHAR(20) NOT NULL,
    ->     ADDRESS1 VARCHAR(30),
    ->     ADDRESS2 VARCHAR(30),
    ->     CITY VARCHAR(15),
    ->     PINCODE INT,
    ->     STATE VARCHAR(15),
    ->     BALDUE DECIMAL(10, 2)
    -> );
Query OK, 0 rows affected (0.07 sec)
```

   b) **PRODUCT_MASTER**

```
mysql> CREATE TABLE PRODUCT_MASTER (
    ->     PRODUCTNO VARCHAR(6) PRIMARY KEY CHECK (PRODUCTNO LIKE 'P%'),
    ->     DESCRIPTION VARCHAR(15) NOT NULL,
    ->     PROFITPERCENT DECIMAL(4, 2) NOT NULL,
    ->     UNIT_MEASURE VARCHAR(10) NOT NULL,
    ->     QTYONHAND INT NOT NULL,
    ->     REORDERLVL INT NOT NULL,
    ->     SELLPRICE DECIMAL(8, 2) NOT NULL,
    ->     COSTPRICE DECIMAL(8, 2) NOT NULL
    -> );
Query OK, 0 rows affected (0.05 sec)
```

   c) **SALESMAN_MASTER**

```
mysql> CREATE TABLE SALESMAN_MASTER (
    ->     SALESMANNO VARCHAR(6) PRIMARY KEY CHECK (SALESMANNO LIKE 'S%'),
    ->     SALESMANNAME VARCHAR(20) NOT NULL,
    ->     ADDRESS1 VARCHAR(30) NOT NULL,
    ->     ADDRESS2 VARCHAR(30),
    ->     CITY VARCHAR(20),
    ->     PINCODE INT,
    ->     STATE VARCHAR(20),
    ->     SALAMT REAL NOT NULL CHECK (SALAMT != 0),
    ->     TGTTOGET DECIMAL(6, 2) NOT NULL CHECK (TGTTOGET != 0),
    ->     YTDSALES DOUBLE(6, 2) NOT NULL,
    ->     REMARKS VARCHAR(60)
    -> );
Query OK, 0 rows affected, 1 warning (0.05 sec)
```

2. Insert the following data into their respective tables:

a) Data for CLIENT_MASTER table:

```
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 (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

b) Data for PRODUCT_MASTER table:

```
mysql> INSERT INTO PRODUCT_MASTER (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, REORDERLVL, 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 (0.01 sec)
Records: 9  Duplicates: 0  Warnings: 0
```

c) Data for SALESMAN_MASTER table:

```
mysql> 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, 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 (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

3. 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  |
+----------------+
6 rows in set (0.00 sec)
```

b) Retrieve the entire 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 |
+----------+----------------+----------+----------+-----------+---------+-------------+----------+
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 muzumdar | Madras    | Tamil Nadu  |
| Chhaya bankar  | Mumbai    | Maharashtra |
| Ashwini joshi  | Bangalore | Karnataka   |
| Hansel colaco  | Mumbai    | Maharashtra |
| Deepak sharma  | Mangalore | Karnataka   |
+----------------+-----------+-------------+
6 rows in set (0.00 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         | ADDRESS1 | ADDRESS2 | CITY   | PINCODE | STATE       | BALDUE   |
+----------+--------------+----------+----------+--------+---------+-------------+----------+
| C00001   | Ivan bayross | NULL     | NULL     | Mumbai |  400054 | Maharashtra | 15000.00 |
| C00003   | Chhaya bankar | NULL     | NULL     | Mumbai |  400057 | Maharashtra |  5000.00 |
| C00005   | Hansel colaco | NULL     | NULL     | Mumbai |  400060 | Maharashtra |  2000.00 |
+----------+--------------+----------+----------+--------+---------+-------------+----------+
3 rows in set (0.00 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)
```

4. 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 (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql>  SELECT * FROM CLIENT_MASTER WHERE CLIENTNO = 'C00005';
+----------+---------------+----------+----------+-----------+---------+-------------+---------+
| CLIENTNO | NAME          | ADDRESS1 | ADDRESS2 | CITY      | PINCODE | STATE       | BALDUE  |
+----------+---------------+----------+----------+-----------+---------+-------------+---------+
| C00005   | Hansel colaco | NULL     | NULL     | Bangalore |  400060 | Maharashtra | 2000.00 |
+----------+---------------+----------+----------+-----------+---------+-------------+---------+
1 row 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 WHERE CLIENTNO = 'C00001';
+----------+--------------+----------+----------+--------+---------+-------------+---------+
| CLIENTNO | NAME         | ADDRESS1 | ADDRESS2 | CITY   | PINCODE | STATE       | BALDUE  |
+----------+--------------+----------+----------+--------+---------+-------------+---------+
| C00001   | Ivan bayross | NULL     | NULL     | Mumbai |  400054 | Maharashtra | 1000.00 |
+----------+--------------+----------+----------+--------+---------+-------------+---------+
1 row 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 WHERE DESCRIPTION = 'Trousers';
+-----------+-------------+---------------+--------------+-----------+------------+-----------+-----------+
| PRODUCTNO | DESCRIPTION | PROFITPERCENT | UNIT_MEASURE | QTYONHAND | REORDERLVL | SELLPRICE | COSTPRICE |
+-----------+-------------+---------------+--------------+-----------+------------+-----------+-----------+
| P07868    | Trousers    |          2.00 | Piece        |       150 |         50 |    850.00 |    950.00 |
+-----------+-------------+---------------+--------------+-----------+------------+-----------+-----------+
1 row 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 * FROM SALESMAN_MASTER;
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
| S00001     | Aman         | A/14     | Worli    | Pune |  400002 | Maharashtra |   3000 |   100.00 |    50.00 | Good    |
| S00002     | Omkar        | 65       | Nariman  | Pune |  400001 | Maharashtra |   3000 |   200.00 |   100.00 | Good    |
| S00003     | Raj          | P-7      | Bandra   | Pune |  400032 | Maharashtra |   3000 |   200.00 |   100.00 | Good    |
| S00004     | Ashish       | A/5      | Juhu     | Pune |  400044 | Maharashtra |   3500 |   200.00 |   150.00 | Good    |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
4 rows in set (0.00 sec)
```

5. Exercise on deleting records in a table

a) Delete all salesman from the Salesman_Master whose salaries are equal to Rs.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 |   100.00 |    50.00 | Good    |
| S00002     | Omkar        | 65       | Nariman  | Pune |  400001 | Maharashtra |   3000 |   200.00 |   100.00 | Good    |
| S00003     | Raj          | P-7      | Bandra   | Pune |  400032 | Maharashtra |   3000 |   200.00 |   100.00 | Good    |
+------------+--------------+----------+----------+------+---------+-------------+--------+----------+----------+---------+
3 rows in set (0.00 sec)
```

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 | REORDERLVL | 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 (0.01 sec)

mysql> SELECT * FROM CLIENT_MASTER;
+----------+--------------+----------+----------+-----------+---------+-------------+---------+
| CLIENTNO | NAME         | ADDRESS1 | ADDRESS2 | CITY      | PINCODE | STATE       | BALDUE  |
+----------+--------------+----------+----------+-----------+---------+-------------+---------+
| C00001   | Ivan bayross | NULL     | NULL     | Mumbai    |  400054 | Maharashtra | 1000.00 |
| 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     | Bangalore |  400060 | Maharashtra | 2000.00 |
| C00006   | Deepak sharma | NULL     | NULL     | Mangalore |  560050 | Karnataka   |    0.00 |
+----------+--------------+----------+----------+-----------+---------+-------------+---------+
5 rows in set (0.00 sec)
```

6. 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 (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM CLIENT_MASTER;
+----------+--------------+----------+----------+-----------+---------+-------------+---------+-----------+
| CLIENTNO | NAME         | ADDRESS1 | ADDRESS2 | CITY      | PINCODE | STATE       | BALDUE  | TELEPHONE |
+----------+--------------+----------+----------+-----------+---------+-------------+---------+-----------+
| C00001   | Ivan bayross | NULL     | NULL     | Mumbai    |  400054 | Maharashtra | 1000.00 |      NULL |
| C00003   | Chhaya bankar | NULL     | NULL     | Mumbai    |  400057 | Maharashtra | 5000.00 |      NULL |
| C00004   | Ashwini joshi | NULL     | NULL     | Bangalore |  560001 | Karnataka   |    0.00 |      NULL |
| C00005   | Hansel colaco | NULL     | NULL     | Bangalore |  400060 | Maharashtra | 2000.00 |      NULL |
| C00006   | Deepak sharma | NULL     | NULL     | 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 SELLPRICE DECIMAL(10, 2);
Query OK, 6 rows affected (0.13 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> DESC 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    |       |
| UNIT_MEASURE  | varchar(10)   | NO   |     | NULL    |       |
| QTYONHAND     | int           | NO   |     | NULL    |       |
| REORDERLVL    | int           | NO   |     | NULL    |       |
| SELLPRICE     | decimal(10,2) | YES  |     | NULL    |       |
| COSTPRICE     | decimal(8,2)  | NO   |     | NULL    |       |
+---------------+---------------+------+-----+---------+-------+
8 rows in set (0.01 sec)
```

7. 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> DESC CLIENT_MASTER;
ERROR 1146 (42S02): Table 'shop.client_master' doesn't exist
mysql>
```