EXPERIMENT - 5

DATABASE MANAGEMENT SYSTEMS LAB

Aim

Write the queries to implement the concept of Integrity Constraints like Primary Key, Foreign Key, NOT NULL to the tables.

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EXPERIMENT – 5

Aim:
Write the queries to implement the concept of Integrity Constraints like Primary Key, Foreign Key, NOT NULL to the tables.

Tools Used:
MariaDB

Procedure:

Creation of Table:

1. **Table Name:** CLIENT_MASTER2
2. **Description:** Used to store Client Information

Commands used for Creating Table:

→ CREATE TABLE CLIENT_MASTER2 (
→ CLIENT_NO CHAR(6) PRIMARY KEY,
→ NAME VARCHAR(20) NOT NULL,
→ ADDRESS1 VARCHAR(30),
→ ADDRESS2 VARCHAR(30),
→ CITY VARCHAR(15),
→ PINCODE INT(8),
→ STATE VARCHAR(15),
→ BAL_DUE FLOAT(10,2));

```
MariaDB [info]> CREATE TABLE CLIENT_MASTER2 (
    -> CLIENT_NO CHAR(6) PRIMARY KEY,
    -> NAME VARCHAR(20) NOT NULL,
    -> ADDRESS1 VARCHAR(30),
    -> ADDRESS2 VARCHAR(30),
    -> CITY VARCHAR(15),
    -> PINCODE INT(8),
    -> STATE VARCHAR(15),
    -> BAL_DUE FLOAT(10,2));
Query OK, 0 rows affected (0.013 sec)
```

Describing Schema of the Table:

Commands used:
  → DESCRIBE CLIENT_MASTER2 or DESC CLIENT_MASTER2;

```
MariaDB [info]> DESCRIBE CLIENT_MASTER2;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| CLIENT_NO | char(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(8)      | YES  |     | NULL    |       |
| STATE     | varchar(15) | YES  |     | NULL    |       |
| BAL_DUE   | float(10,2) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
8 rows in set (0.016 sec)
```

Inserting Data

insert into CLIENT_MASTER values('C00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 30000);

insert into CLIENT_MASTER values('C00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 8000);

insert into CLIENT_MASTER values('C00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 12000);

insert into CLIENT_MASTER values('C00004', 'Ashi', 'A/9', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 0);

insert into CLIENT_MASTER values('C00005', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 3500);

insert into CLIENT_MASTER values('C00006', 'Ashutosh', 'F/5', 'Andheri', 'Mumbai', 400044, 'Maharashtra', 0);

```
MariaDB [labdb2]> insert into CLIENT_MASTER values('C00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 30000);
Query OK, 1 row affected (0.056 sec)

MariaDB [labdb2]> insert into CLIENT_MASTER values('C00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 8000);
Query OK, 1 row affected (0.024 sec)

MariaDB [labdb2]> insert into CLIENT_MASTER values('C00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 12000);
Query OK, 1 row affected (0.030 sec)

MariaDB [labdb2]> insert into CLIENT_MASTER values('C00004', 'Ashi', 'A/9', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 0);
Query OK, 1 row affected (0.026 sec)

MariaDB [labdb2]> insert into CLIENT_MASTER values('C00005', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 3500);
Query OK, 1 row affected (0.023 sec)

MariaDB [labdb2]> insert into CLIENT_MASTER values('C00006', 'Ashutosh', 'F/5', 'Andheri', 'Mumbai', 400044, 'Maharashtra', 0);
Query OK, 1 row affected (0.020 sec)

MariaDB [labdb2]> select * from client_master;
+----------+----------+----------+----------+--------+---------+-------------+----------+
| clientno | name     | address1 | address2 | city   | pincode | state       | bal_due  |
+----------+----------+----------+----------+--------+---------+-------------+----------+
| C00001   | Aman     | A/14     | Worli    | Mumbai |  400002 | Maharashtra | 30000.00 |
| C00002   | Omkar    | 65       | Nariman  | Mumbai |  400001 | Maharashtra |  8000.00 |
| C00003   | Raj      | P-7      | Bandra   | Mumbai |  400032 | Maharashtra | 12000.00 |
| C00004   | Ashi     | A/9      | Juhu     | Mumbai |  400044 | Maharashtra |     0.00 |
| C00005   | Ashish   | A/5      | Juhu     | Mumbai |  400044 | Maharashtra |  3500.00 |
| C00006   | Ashutosh | F/5      | Andheri  | Mumbai |  400044 | Maharashtra |     0.00 |
+----------+----------+----------+----------+--------+---------+-------------+----------+
6 rows in set (0.013 sec)
```

Creation of Table:

1. **Table Name:**   PRODUCT_MASTER2
2. **Description:**   Used to store Prdouct Information

Commands for Creating Table:

→ CREATE TABLE PRODUCT_MASTER2(
→ PRODUCT_NO VARCHAR(6) PRIMARY KEY,
→ DESCRIPTION VARCHAR(15) NOT NULL,
→ PROFIT_PERCENT FLOAT(4,2) NOT NULL,
→ UNIT_MEASURE VARCHAR(10) NOT NULL,
→ QTY_ON_HEAD INT(8) NOT NULL,
→ REORDER_LVL INT(8) NOT NULL,
→ SELL_PRICE FLOAT(8,2) NOT NULL,
→ COST_PRICE FLOAT(8,2) NOT NULL);

```
MariaDB [info]> CREATE TABLE PRODUCT_MASTER2(
    -> PRODUCT_NO VARCHAR(6) PRIMARY KEY,
    -> DESCRIPTION VARCHAR(15) NOT NULL,
    -> PROFIT_PERCENT FLOAT(4,2) NOT NULL,
    -> UNIT_MEASURE VARCHAR(10) NOT NULL,
    -> QTY_ON_HAND INT(8) NOT NULL,
    -> REORDER_LVL INT(8) NOT NULL,
    -> SELL_PRICE FLOAT(8,2) NOT NULL,
    -> COST_PRICE FLOAT(8,2) NOT NULL);
Query OK, 0 rows affected (0.013 sec)
```

Describing Schema of the Table:

Commands used:
→ DESCRIBE PRODUCT_MASTER2 or DESC PRODUCT_MASTER2;

```
MariaDB [info]> DESC PRODUCT_MASTER2;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| PRODUCT_NO     | varchar(6)  | NO   | PRI | NULL    |       |
| DESCRIPTION    | varchar(15) | NO   |     | NULL    |       |
| PROFIT_PERCENT | float(4,2)  | NO   |     | NULL    |       |
| UNIT_MEASURE   | varchar(10) | NO   |     | NULL    |       |
| QTY_ON_HAND    | int(8)      | NO   |     | NULL    |       |
| REORDER_LVL    | int(8)      | NO   |     | NULL    |       |
| SELL_PRICE     | float(8,2)  | NO   |     | NULL    |       |
| COST_PRICE     | float(8,2)  | NO   |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
8 rows in set (0.011 sec)
```

Inserting Data

insert into product_master values('P00001','T-Shirts',5,'Piece',200,50,5350,250);

insert into product_master values('P0345','Shirts',6,'Piece',150,50,500,350);

insert into product_master values('P07868','Trousers',2,'Piece',150,50,850,550);

insert into product_master values('P07865','Jeans',5,'Piece',100,20,750,500);

insert into product_master values('P07965','Denim Shirts',4,'Piece',100,40,350,250);

insert into product_master values('P07885','Pull Overs',2.5,'Piece',80,30,700,450);

insert into product_master values('P08865','Skirts',5,'Piece',75,30,450,300);

insert into product_master values('P06734','Cotton Jeans',5,'Piece',100,20,600,450);

insert into product_master values('P07975','Lycra Tops',5,'Piece',70,30,300,175);

```
MariaDB [labdb2]>
MariaDB [labdb2]> insert into product_master values('P00001','T-Shirts',5,'Piece',200,50,5350,250);
Query OK, 1 row affected (1.730 sec)

MariaDB [labdb2]> insert into product_master values('P0345','Shirts',6,'Piece',150,50,500,350);
Query OK, 1 row affected (0.764 sec)

MariaDB [labdb2]> insert into product_master values('P07868','Trousers',2,'Piece',150,50,850,550);
Query OK, 1 row affected (0.075 sec)

MariaDB [labdb2]> insert into product_master values('P07865','Jeans',5,'Piece',100,20,750,500);
Query OK, 1 row affected (0.032 sec)

MariaDB [labdb2]> insert into product_master values('P07965','Denim Shirts',4,'Piece',100,40,350,250);
Query OK, 1 row affected (0.026 sec)

MariaDB [labdb2]> insert into product_master values('P07885','Pull Overs',2.5,'Piece',80,30,700,450);
Query OK, 1 row affected (0.080 sec)

MariaDB [labdb2]> insert into product_master values('P08865','Skirts',5,'Piece',75,30,450,300);
Query OK, 1 row affected (0.042 sec)

MariaDB [labdb2]> insert into product_master values('P06734','Cotton Jeans',5,'Piece',100,20,600,450);
Query OK, 1 row affected (0.023 sec)

MariaDB [labdb2]> insert into product_master values('P07975','Lycra Tops',5,'Piece',70,30,300,175);
Query OK, 1 row affected (1.176 sec)

MariaDB [labdb2]> select * from product_master;
+------------+--------------+----------------+-------------+----------+-----------+------------+------------+
| Production | Description  | Profit_Percent | UnitMeasure | QTYONHAND | ReorderLvl | Sell_Price | Cost_Price |
+------------+--------------+----------------+-------------+----------+-----------+------------+------------+
| P00001     | T-Shirts     |              5 | Piece       |      200 |        50 |       5350 |        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   |              3 | Piece       |       80 |        30 |        700 |        450 |
| P07965     | Denim Shirts |              4 | Piece       |      100 |        40 |        350 |        250 |
| P07975     | Lycra Tops   |              5 | Piece       |       70 |        30 |        300 |        175 |
| P08865     | Skirts       |              5 | Piece       |       75 |        30 |        450 |        300 |
+------------+--------------+----------------+-------------+----------+-----------+------------+------------+
9 rows in set (0.123 sec)
```

Creation of Table:

1) **Table Name:** SALESMAN_MASTER2
2) **Description:** Used to store Salesman Information

Commands for Creating Table:

```
→ CREATE TABLE SALESMAN_MASTER (
→ SALESMAN_NO VARCHAR(6) PRIMARY KEY,
→ SALESMAN_NAME VARCHAR(20) NOT NULL,
→ ADDRESS1 VARCHAR(30) NOT NULL,
→ ADDRESS2 VARCHAR(30),
→ CITY VARCHAR(20),
→ PINCODE INT(8),
→ STATE VARCHAR(20),
→ SAL_AMT FLOAT(8,2) NOT NULL,
→ TGT_TO_GET FLOAT(6,2) NOT NULL,
→ YTD_SALES FLOAT(6,2) NOT NULL,
→ REMARKS VARCHAR(60),
→ CONSTRAINT CK_SALESMAN_NO CHECK(SALESMAN_NO LIKE "S%"),
→ CONSTRAINT CK_SAL_AMT CHECK(SAL_AMT != 0),
→ CONSTRAINT CK_TGT_TO_GET CHECK(TGT_TO_GET != 0));
```

```
MariaDB [info]> CREATE TABLE SALESMAN_MASTER2(
    -> SALESMAN_NO VARCHAR(6) PRIMARY KEY,
    -> SALESMAN_NAME VARCHAR(20) NOT NULL,
    -> ADDRESS1 VARCHAR(30) NOT NULL,
    -> ADDRESS2 VARCHAR(30),
    -> CITY VARCHAR(20),
    -> PINCODE INT(8),
    -> STATE VARCHAR(20),
    -> SAL_AMT FLOAT(8,2) NOT NULL,
    -> TGT_TO_GET FLOAT(6,2) NOT NULL,
    -> YTD_SALES FLOAT(6,2) NOT NULL,
    -> REMARKS VARCHAR(60),
    -> CONSTRAINT CK_SALESMAN_NO CHECK(SALESMAN_NO LIKE "S%"),
    -> CONSTRAINT CK_SAL_AMT CHECK(SAL_AMT != 0),
    -> CONSTRAINT CK_TGT_TO_GET CHECK(TGT_TO_GET != 0));
Query OK, 0 rows affected (0.014 sec)
```

Schema of the Table:

Commands used:

➜ DESCRIBE SALESMAN_MASTER2 or DESC SALESMAN_MASTER2;

```
MariaDB [info]> DESC SALESMAN_MASTER2;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| SALESMAN_NO   | varchar(6)  | NO   | PRI | NULL    |       |
| SALESMAN_NAME | varchar(20) | NO   |     | NULL    |       |
| ADDRESS1      | varchar(30) | NO   |     | NULL    |       |
| ADDRESS2      | varchar(30) | YES  |     | NULL    |       |
| CITY          | varchar(20) | YES  |     | NULL    |       |
| PINCODE       | int(8)      | YES  |     | NULL    |       |
| STATE         | varchar(20) | YES  |     | NULL    |       |
| SAL_AMT       | float(8,2)  | NO   |     | NULL    |       |
| TGT_TO_GET    | float(6,2)  | NO   |     | NULL    |       |
| YTD_SALES     | float(6,2)  | NO   |     | NULL    |       |
| REMARKS       | varchar(60) | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
11 rows in set (0.026 sec)
```

Inserting Data

insert into SALESMAN_MASTER values('S00001', 'Kiran', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 30000, 100, 50, 'Good');

insert into SALESMAN_MASTER values('S00002', 'Manish', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 3000, 200, 100, 'Good');

insert into SALESMAN_MASTER values('S00003', 'Ravi', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 3000, 200, 100, 'Good');

insert into SALESMAN_MASTER values('S00004', 'Ashish', 'A/9', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 3000, 200, 150, 'Good');

```
MariaDB [labdb2]> insert into SALESMAN_MASTER values('S00001', 'Kiran', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 30000, 100, 50, 'Good');
Query OK, 1 row affected (0.037 sec)

MariaDB [labdb2]> insert into SALESMAN_MASTER values('S00002', 'Manish', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 3000, 200, 100, 'Good');
Query OK, 1 row affected (0.019 sec)

MariaDB [labdb2]> insert into SALESMAN_MASTER values('S00003', 'Ravi', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 3000, 200, 100, 'Good');
Query OK, 1 row affected (0.076 sec)

MariaDB [labdb2]> insert into SALESMAN_MASTER values('S00004', 'Ashish', 'A/9', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 3000, 200, 150, 'Good');
Query OK, 1 row affected (0.057 sec)

MariaDB [labdb2]> select * from salesman_master;
+-----------+------------+----------+----------+--------+---------+-------------+--------+---------+----------+---------+
| SALESMANNO | SALESMANNAME | ADDRESS1 | ADDRESS2 | CITY   | PINCODE | STATE       | SALAMT | TGTTOGET | YTDSALES | REMARKS |
+-----------+------------+----------+----------+--------+---------+-------------+--------+---------+----------+---------+
| S00001    | Kiran      | A/14     | Worli    | Mumbai | 400002  | Maharashtra | 30000  | 100     | 50       | Good    |
| S00002    | Manish     | 65       | Nariman  | Mumbai | 400001  | Maharashtra | 3000   | 200     | 100      | Good    |
| S00003    | Ravi       | P-7      | Bandra   | Mumbai | 400032  | Maharashtra | 3000   | 200     | 100      | Good    |
| S00004    | Ashish     | A/9      | Juhu     | Mumbai | 400044  | Maharashtra | 3000   | 200     | 150      | Good    |
+-----------+------------+----------+----------+--------+---------+-------------+--------+---------+----------+---------+
4 rows in set (0.001 sec)
```

```
MariaDB [labdb2]> CREATE TABLE SALESMAN_MASTER (
    ->      SALESMANNO varchar(6) primary key,
    ->      SALESMANNAME varchar(20),
    ->      ADDRESS1 varchar(20),
    ->      ADDRESS2 varchar(20),
    ->      CITY varchar(20),
    ->      PINCODE int(8),
    ->      STATE varchar(20),
    ->      SALAMT int,
    ->      TGTTOGET int,
    ->      YTDSALES int,
    ->      REMARKS varchar(20)
    -> );
Query OK, 0 rows affected (0.229 sec)

MariaDB [labdb2]> describe salesman_master;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| SALESMANNO   | varchar(6)  | NO   | PRI | NULL    |       |
| SALESMANNAME | varchar(20) | YES  |     | NULL    |       |
| ADDRESS1     | varchar(20) | YES  |     | NULL    |       |
| ADDRESS2     | varchar(20) | YES  |     | NULL    |       |
| CITY         | varchar(20) | YES  |     | NULL    |       |
| PINCODE      | int(8)      | YES  |     | NULL    |       |
| STATE        | varchar(20) | YES  |     | NULL    |       |
| SALAMT       | int(11)     | YES  |     | NULL    |       |
| TGTTOGET     | int(11)     | YES  |     | NULL    |       |
| YTDSALES     | int(11)     | YES  |     | NULL    |       |
| REMARKS      | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
11 rows in set (0.027 sec)
```

Creation of Table:

      1) **Table Name:** SALES_ORDER

      2) **Description:** Used to store Sales Order Information

Commands for Creating Table:

→ CREATE TABLE SALES_ORDER(
→ ORDER_NO CHAR(6) PRIMARY KEY,
→ CLIENT_NO CHAR(6)REFERENCES CLIENT_MASTER2,
→ ORDERDATE DATE,
→ SALESMAN_NO CHAR(6) REFERENCES SALESMAN_MASTER2,
→ DELIVTYPE CHAR(1) DEFAULT 'F',
→ BILLYN CHAR(1),
→ DELIVDATE DATE,
→ ORDERSTATUS VARCHAR(10),
→ CONSTRAINT CK_DELIVTYPE CHECK(DELIVTYPE IN('P','F')),
→ CONSTRAINT CK_DELIVDATE CHECK(DELIVDATE>ORDERDATE),
→ CONSTRAINT CK_ORDERSTATUS CHECK(ORDERSTATUS IN('In
    Process','Fulfilled','Backorder','Cancelled')));

```
MariaDB [info]> CREATE TABLE SALES_ORDER(
    -> ORDER_NO CHAR(6) PRIMARY KEY,
    -> CLIENT_NO CHAR(6)REFERENCES CLIENT_MASTER2,
    -> ORDERDATE DATE,
    -> SALESMAN_NO CHAR(6) REFERENCES SALESMAN_MASTER2,
    -> DELIVTYPE CHAR(1) DEFAULT 'F',
    -> BILLYN CHAR(1),
    -> DELIVDATE DATE,
    -> ORDERSTATUS VARCHAR(10),
    -> CONSTRAINT CK_DELIVTYPE CHECK(DELIVTYPE IN('P','F')),
    -> CONSTRAINT CK_DELIVDATE CHECK(DELIVDATE>ORDERDATE),
    -> CONSTRAINT CK_ORDERSTATUS CHECK(ORDERSTATUS IN('In Process','Fulfilled','Backorder','Cancelled')));
Query OK, 0 rows affected (0.018 sec)
```

Describing Schema of the Table:

→ DESCRIBE SALES_ORDER or DESC SALES_ORDER;

```
MariaDB [info]> DESC SALES_ORDER;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| ORDER_NO    | char(6)     | NO   | PRI | NULL    |       |
| CLIENT_NO   | char(6)     | YES  | MUL | NULL    |       |
| ORDERDATE   | date        | YES  |     | NULL    |       |
| SALESMAN_NO | char(6)     | YES  | MUL | NULL    |       |
| DELIVTYPE   | char(1)     | YES  |     | F       |       |
| BILLYN      | char(1)     | YES  |     | NULL    |       |
| DELIVDATE   | date        | YES  |     | NULL    |       |
| ORDERSTATUS | varchar(10) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
8 rows in set (0.011 sec)
```

Inserting Data

insert into sales_order values('O19001','C00001', '12-01-10', 'S00001', 'F', 'N', '20-01-10', 'In process');

insert into sales_order values('O19002','C00002', '25-01-10', 'S00002', 'P', 'N', '27-01-10', 'Cancelled');

insert into sales_order values('O46865','C00003', '18-02-10', 'S00003', 'F', 'Y', '20-02-10', 'Fulfilled');

insert into sales_order values('O19003','C00004', '03-04-10', 'S00001', 'F', 'Y', '07-04-10', 'Fulfilled');

insert into sales_order values('O46866','C00005', '20-05-10', 'S00002', 'P', 'N', '22-05-10', 'Cancelled');

insert into sales_order values('O19008','C00006', '24-05-10', 'S00004', 'F', 'N', '26-05-10', 'In process');

```
MariaDB [labdb2]> insert into sales_order values('O19001','C00001',  '20-01-10', 'S00001', 'F', 'N', '20-01-10', 'In process');
ERROR 4025 (23000): CONSTRAINT `ck_delivdate` failed for `labdb2`.`sales_order`
MariaDB [labdb2]> insert into sales_order values('O19002','C00002',  '25-01-10', 'S00002', 'P', 'N', '27-01-10', 'Cancelled');
Query OK, 1 row affected (0.036 sec)

MariaDB [labdb2]> insert into sales_order values('O46865','C00003',  '18-02-10', 'S00003', 'F', 'Y', '20-02-10', 'Fulfilled');
Query OK, 1 row affected (0.019 sec)

MariaDB [labdb2]> insert into sales_order values('O19003','C00004',  '03-04-10', 'S00001', 'F', 'Y', '07-04-10', 'Fulfilled');
Query OK, 1 row affected (0.037 sec)

MariaDB [labdb2]> insert into sales_order values('O46866','C00005',  '20-05-10', 'S00002', 'P', 'N', '22-05-10', 'Cancelled');
Query OK, 1 row affected (0.019 sec)

MariaDB [labdb2]> insert into sales_order values('O19008','C00006',  '24-05-10', 'S00004', 'F', 'N', '26-05-10', 'In process');
Query OK, 1 row affected (0.011 sec)

MariaDB [labdb2]> insert into sales_order values('O19001','C00001',  '12-01-10', 'S00001', 'F', 'N', '20-01-10', 'In process');
Query OK, 1 row affected (0.038 sec)

MariaDB [labdb2]> select * from sales_order;
+----------+-----------+------------+------------+----------+--------+------------+------------+
| order_no | client_no | orderdate  | salesman_no | delivtype | billyn | delivdate  | orderstatus |
+----------+-----------+------------+------------+----------+--------+------------+------------+
| O19001   | C00001    | 2012-01-10 | S00001     | F        | N      | 2020-01-10 | In process |
| O19002   | C00002    | 2025-01-10 | S00002     | P        | N      | 2027-01-10 | Cancelled  |
| O19003   | C00004    | 2003-04-10 | S00001     | F        | Y      | 2007-04-10 | Fulfilled  |
| O19008   | C00006    | 2024-05-10 | S00004     | F        | N      | 2026-05-10 | In process |
| O46865   | C00003    | 2018-02-10 | S00003     | F        | Y      | 2020-02-10 | Fulfilled  |
| O46866   | C00005    | 2020-05-10 | S00002     | P        | N      | 2022-05-10 | Cancelled  |
+----------+-----------+------------+------------+----------+--------+------------+------------+
6 rows in set (0.001 sec)
```

Creation of Table:

1) **Table Name:** SALES_ORDER_DETAILS
2) **Description:** Used to store Client's Orders with details of each product.

Commands for Creating Table:

→ CREATE TABLE SALES_ORDER_DETAILS(
→ ORDER_NO CHAR(6) REFERENCES SALES_ORDER,
→ PRODUCT_NO CHAR(6) REFERENCES PRODUCT_MASTER2,
→ QTY_ORDERED INT,
→ QTY_DISP INT,
→ PRODUCT_RATE FLOAT(10,2));

```
MariaDB [info]> CREATE TABLE SALES_ORDER_DETAILS(
    -> ORDER_NO CHAR(6) REFERENCES SALES_ORDER,
    -> PRODUCT_NO CHAR(6) REFERENCES PRODUCT_MASTER2,
    -> QTY_ORDERED INT,
    -> QTY_DISP INT,
    -> PRODUCT_RATE FLOAT(10,2));
Query OK, 0 rows affected (0.015 sec)
```

Describing Schema of the Table:
Commands used:

→ DESCRIBE SALES_ORDER_DETAILS or DESC SALES_ORDER_DETAILS;

```
MariaDB [info]> DESC SALES_ORDER_DETAILS;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| ORDER_NO     | char(6)     | YES  | MUL | NULL    |       |
| PRODUCT_NO   | char(6)     | YES  | MUL | NULL    |       |
| QTY_ORDERED  | int(11)     | YES  |     | NULL    |       |
| QTY_DISP     | int(11)     | YES  |     | NULL    |       |
| PRODUCT_RATE | float(10,2) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
5 rows in set (0.016 sec)
```

Inserting Data

insert into sales_order_details values('O19001','P00001', 4, 4, 525);

insert into sales_order_details values('O19001','P07965', 2, 1, 8400);

insert into sales_order_details values('O19001','P07885', 2, 1, 5250);

insert into sales_order_details values('O19002','P00001', 10, 0, 525);

insert into sales_order_details values('O46865','P07868', 3, 3, 3150);

insert into sales_order_details values('O46865','P07885', 3, 1, 5250);

insert into sales_order_details values('O46865','P00001', 10, 10, 525);

insert into sales_order_details values('O46865','P03453', 4, 4, 1050);

insert into sales_order_details values('O19003','P03453', 2, 2, 1050);

insert into sales_order_details values('O19003','P06734', 1, 1, 12000);

insert into sales_order_details values('O04686','P07965', 1, 0, 8400);

insert into sales_order_details values('O04686','P07975', 1, 0, 1050);

insert into sales_order_details values('O19008','P00001', 10, 5, 525);

insert into sales_order_details values('O19008','P07975', 5, 3, 1050);

```
MariaDB [labdb2]> insert into sales_order_details values('O19001','P00001', 4, 4, 525);
Query OK, 1 row affected (0.037 sec)

MariaDB [labdb2]> insert into sales_order_details values('O19001','P07965', 2, 1, 8400);
Query OK, 1 row affected (0.019 sec)

MariaDB [labdb2]> insert into sales_order_details values('O19001','P07885', 2, 1, 5250);
Query OK, 1 row affected (0.037 sec)

MariaDB [labdb2]> insert into sales_order_details values('O19002','P00001', 10, 0, 525);
Query OK, 1 row affected (0.021 sec)

MariaDB [labdb2]> insert into sales_order_details values('O46865','P07868', 3, 3, 3150);
Query OK, 1 row affected (0.032 sec)

MariaDB [labdb2]> insert into sales_order_details values('O46865','P07885', 3, 1, 5250);
Query OK, 1 row affected (0.021 sec)

MariaDB [labdb2]> insert into sales_order_details values('O46865','P00001', 10, 10, 525);
Query OK, 1 row affected (0.019 sec)

MariaDB [labdb2]> insert into sales_order_details values('O46865','P03453', 4, 4, 1050);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`lab
Y (`productno`) REFERENCES `product_master` (`Production`))
MariaDB [labdb2]> insert into sales_order_details values('O19003','P03453', 2, 2, 1050);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`lab
Y (`productno`) REFERENCES `product_master` (`Production`))
MariaDB [labdb2]> insert into sales_order_details values('O19003','P06734', 1, 1, 12000);
Query OK, 1 row affected (0.011 sec)

MariaDB [labdb2]> insert into sales_order_details values('O04686','P07965', 1, 0, 8400);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`lab
Y (`orderno`) REFERENCES `sales_order` (`order_no`))
MariaDB [labdb2]> insert into sales_order_details values('O04686','P07975', 1, 0, 1050);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`lab
Y (`orderno`) REFERENCES `sales_order` (`order_no`))
MariaDB [labdb2]> insert into sales_order_details values('O19008','P00001', 10, 5, 525);
Query OK, 1 row affected (0.014 sec)
```

```
MariaDB [labdb2]> select * from sales_order_details;
+---------+-----------+------------+---------+-------------+
| orderno | productno | qtyordered | qtydisp | productrate |
+---------+-----------+------------+---------+-------------+
| 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 |
| O19003  | P06734    |          1 |       1 |    12000.00 |
| O19008  | P00001    |         10 |       5 |      525.00 |
| O19008  | P07975    |          5 |       3 |     1050.00 |
+---------+-----------+------------+---------+-------------+
10 rows in set (0.001 sec)
```

Database already created named college;

1) use College;
2) CREATE TABLE Teachers (teach_id int NOT NULL,LastName varchar(255),FirstName varchar(255),Address varchar(255),City varchar(255),PRIMARY KEY(teach_id);
3) INSERT INTO Teachers (teach_id,LastName,FirstName,Address,City)VALUES ('1', 'ferguson', 'sir alex', 'platama', 'Scotland');
4) INSERT INTO Teachers (teach_id,LastName,FirstName,Address,City)VALUES ('2', 'mourinhio', 'jose', 'porto', 'Portugal');

```
+---------+-----------+------------+----------------+----------+
| stud_id | LastName  | FirstName  | Address        | City     |
+---------+-----------+------------+----------------+----------+
|       1 | solkjaer  | Ole gunner | 15 Norway road | Norway   |
|       2 | fernandes | Bruno      | lisbon street  | Portugal |
+---------+-----------+------------+----------------+----------+
2 rows in set (0.001 sec)

MariaDB [College]> CREATE TABLE Teachers (teach_id int NOT NULL,LastName varchar(255),FirstName varchar(255),Address varchar(255),City varchar(255),PRIMARY KEY(teach_id);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near '' at line 1
MariaDB [College]> CREATE TABLE Teachers (teach_id int NOT NULL,LastName varchar(255),FirstName varchar(255),Address varchar(255),City varchar(255),PRIMARY KEY(teach_id));
Query OK, 0 rows affected (0.019 sec)

MariaDB [College]> INSERT INTO Teachers (teach_id,LastName,FirstName,Address,City)VALUES ('1', 'ferguson', 'sir alex', 'platama', 'Scotland');
Query OK, 1 row affected (0.006 sec)

MariaDB [College]> INSERT INTO Teachers (teach_id,LastName,FirstName,Address,City)VALUES ('2', 'mourinhio', 'jose', 'porto', 'Portugal');
Query OK, 1 row affected (0.004 sec)
```

5) show tables;
6) SELECT * FROM TABLES;

```
MariaDB [college]> show tables;
+-------------------+
| Tables_in_college |
+-------------------+
| students          |
| teachers          |
+-------------------+
2 rows in set (0.001 sec)

MariaDB [college]> select * FROM Teachers;
+----------+-----------+-----------+----------+----------+
| teach_id | LastName  | FirstName | Address  | City     |
+----------+-----------+-----------+----------+----------+
|        1 | ferguson  | sir alex  | platama  | Scotland |
|        2 | mourinhio | jose      | porto    | Portugal |
+----------+-----------+-----------+----------+----------+
2 rows in set (0.000 sec)
```

7) SHOW KEYS FROM Teachers WHERE Key_name = 'PRIMARY';'

```
MariaDB [college]> select * FROM Teachers;
+----------+-----------+-----------+---------+----------+
| teach_id | LastName  | FirstName | Address | City     |
+----------+-----------+-----------+---------+----------+
|        1 | ferguson  | sir alex  | platama | Scotland |
|        2 | mourinhio | jose      | porto   | Portugal |
+----------+-----------+-----------+---------+----------+
2 rows in set (0.000 sec)

MariaDB [college]> SHOW KEYS FROM Teachers WHERE Key_name = 'PRIMARY';
+----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+
| Table    | Non_unique | Key_name | Seq_in_index | Column_name | Collation | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comment |
+----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+
| teachers |          0 | PRIMARY  |            1 | teach_id    | A         |           2 |     NULL | NULL   |      | BTREE      |         |               |
+----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+
1 row in set (0.019 sec)
```

Here we can see The implementation of PRIMARY KEY AND NOT NULL CONSTRAINS

Now For FOREIGN KEY

8) CREATE TABLE Insititute (inst_id int NOT NULL,Name varchar(255) NOT NULL,teach_id int, PRIMARY KEY (inst_id),FOREIGN KEY (teach_id) REFERENCES Teachers(teach_id));
9) INSERT INTO Teachers (inst_id,Name,teach_id)VALUES ('1', 'MIT','1');
10) INSERT INTO Insititute (inst_id,Name,teach_id)VALUES ('2', 'IIT','2');
11) SELECT * FROM Insititute;

```
Command Prompt (MariaDB 10.5 (x64)) - mysql  -u root -p                                                      —    □    ✕
Database changed
MariaDB [college]> CREATE TABLE Insititute (inst_id int NOT NULL PRIMARY KEY,Name varchar(255) NOT NULL,teach_id int FOREIGN KEY REFERENCES Teachers(teach_id));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near 'FOREIGN KEY REF
ERENCES Teachers(teach_id))' at line 1
MariaDB [college]> CREATE TABLE Insititute (inst_id int NOT NULL,Name varchar(255) NOT NULL,teach_id int, PRIMARY KEY (inst_id),FOREIGN KEY (teach_id) REFERENCES Teachers(t
each_id));
Query OK, 0 rows affected (0.027 sec)

MariaDB [college]> INSERT INTO Teachers (inst_id,Name,teach_id)VALUES ('1', 'MIT','1');
ERROR 1054 (42S22): Unknown column 'inst_id' in 'field list'
MariaDB [college]> INSERT INTO Institute (inst_id,Name,teach_id)VALUES ('1', 'MIT','1');
ERROR 1146 (42S02): Table 'college.institute' doesn't exist
MariaDB [college]> INSERT INTO Insititute (inst_id,Name,teach_id)VALUES ('1', 'MIT','1');
Query OK, 1 row affected (0.007 sec)

MariaDB [college]> INSERT INTO Insititute (inst_id,Name,teach_id)VALUES ('2', 'IIT','2');
Query OK, 1 row affected (0.004 sec)

MariaDB [college]> show tables;
+-------------------+
| Tables_in_college |
+-------------------+
| insititute        |
| students          |
| teachers          |
+-------------------+
3 rows in set (0.001 sec)

MariaDB [college]> SHOW KEYS FROM Insitiute WHERE Key_name = 'FOREIGN';
ERROR 1146 (42S02): Table 'college.insitiute' doesn't exist
MariaDB [college]> SHOW KEYS FROM Insititute WHERE Key_name = 'FOREIGN';
Empty set (0.001 sec)

MariaDB [college]> SELECT * FROM Insititute;
+---------+------+----------+
| inst_id | Name | teach_id |
+---------+------+----------+
|       1 | MIT  |        1 |
|       2 | IIT  |        2 |
+---------+------+----------+
2 rows in set (0.000 sec)

MariaDB [college]> _
```

VIVA QUESTIONS:

Que1. What are different Constraints in SQL?
Ans.

-NOT NULL Constraint restricts a column from having a NULL value. Once NOT NULL constraint is applied to a column, you cannot pass a null value to that column.

-UNIQUE Constraint ensures that a field or column will only have unique values. A

-UNIQUE constraint field will not have duplicate data.

-Primary key Constraint uniquely identifies each record in a database. A Primary Key must contain unique value and it must not contain null value.

-Foreign key Constraint is also used to restrict actions that would destroy links between tables. Foreign key is used to relate two tables.

-CHECK Constraint is used to restrict the value of a column between a range. It performs check on the values, before storing them into the database.

-Default Constraint is used to assign a default value to a column when no value is specified. Index Constraint is used to create and retrieve data from the database very quickly. An Index can be created by using a single or group of columns in a table.

Que2. What is the purpose of Null Constraint?
Ans.

This implies that the column need not receive any value during insert or update operations. a column can hold NULL values. The NULL constraint is logically equivalent to omitting the NOT NULL constraint from the column definition. Once NULL constraint is applied to a column, you can pass a null value to that column.

Que 3. What is Index Constraint?
Ans.

Indexes are used to retrieve data from the database more quickly than otherwise. The users cannot see the indexes, they are just used to speed up searches/queries. When the index is created, it is assigned a ROWID for each row before it sorts out the data. Proper indexes are good for performance in large databases.

Que 4. What is the purpose of Default Constraint?

Ans.

The DEFAULT constraint provides a default value to a column when the INSERT INTO statement does not provide a specific value. It is used to provide a default value for a column. The default value will be added to all new records IF no other value is specified.