School of Computer Science, UPES, Dehradun.

A

LABORATORY FILE

On

DATABASE MANAGEMENT SYSTEM (DBMS) LAB

B.TECH. -III Semester

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Experiment 05

To understand and apply the concept of Constraints

AIM:

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.

Problem Statement:

1. Create Tables with Constraints
2. Insert Data into Table
3. Retrieve Records
4. Update Records
5. Delete Records
6. Alter Table Structure
7. Delete Table

THEORY:

Structured query language (SQL) is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values.

Command Used:

1. CREATE DATABASE: Creates a new database.
2. USE: Selects a specific database to work on.
3. CREATE TABLE: Creates a new table with specified columns and constraints.
4. INSERT INTO: Inserts data into a table.
5. SELECT: Retrieves data from the table based on specified columns or conditions.
6. UPDATE: Modifies existing records in a table.

7. DELETE: Deletes records from a table based on a condition.
8. ALTER TABLE: Modifies the structure of an existing table (e.g., adding or modifying columns).
9. DROP TABLE: Deletes an entire table from the database.

Results:

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-- Ayush Vashishth
-- 500119331

 CREATE DATABASE client;
USE client;
CREATE TABLE CLIENT_MASTER (
    CLIENTNO VARCHAR(6) primary key ,
    NAME VARCHAR(20) NOT NULL,
    ADDRESS1 VARCHAR(30),
    ADDRESS2 VARCHAR(30),
    CITY VARCHAR(15),
    PINCODE INTEGER CHECK (PINCODE >= 0),  -- Optional check for PINCODE to be positive
    STATE VARCHAR(15),
    BALDUE DECIMAL(10, 2) DEFAULT 0.00      -- Adding default value for BALDUE
);
CREATE TABLE PRODUCT_MASTER (
 PRODUCTNO VARCHAR(6),
CHECK (PRODUCTNO LIKE 'P%'),
 DESCRIPTION VARCHAR(15) NOT NULL,
 PROFITPERCENT DECIMAL(4,2) NOT NULL,
 UNIT_MEASURE VARCHAR(10) NOT NULL,
 QTYONHAND INTEGER(8) NOT NULL,
 REORDERLVL INTEGER(8) NOT NULL,
 SELLPRICE DECIMAL(8,2) NOT NULL,
 COSTPRICE DECIMAL(8,2) NOT NULL
);
CREATE TABLE SALESMAN_MASTER (
 SALESMANNO VARCHAR(6),
 SALESMANNAME VARCHAR(20) NOT NULL,
 ADDRESS1 VARCHAR(30) NOT NULL,
 ADDRESS2 VARCHAR(30),
 CITY VARCHAR(20),
 PINCODE INTEGER(8),
 STATE VARCHAR(20),
```

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    SALAMT REAL(8,2) NOT NULL CHECK (SALAMT <> 0),
    TGTTOGET DECIMAL(6,2) NOT NULL CHECK (TGTTOGET <> 0),
    YTDSALES DOUBLE(6,2) NOT NULL,
    REMARKS VARCHAR(60)
);

-- Inserting elements into tables
INSERT INTO CLIENT_MASTER (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE) VALUES
('C00001', 'Ivan bayross', 'Mumbai', 400054, 'Maharashtra', 15.000),
('C00002', 'Mamta muzumdar', 'Madras', 780001, 'Tamil Nadu', 0.0),
('C00003', 'Chhaya bankar', 'Mumbai', 400057, 'Maharashtra', 50.00),
('C00004', 'Ashwini joshi', 'Bangalore', 560001, 'Karnataka', 0.0),
('C00005', 'Hansel colaco', 'Mumbai', 400060, 'Maharashtra', 200.0),
('C00006', 'Deepak sharma', 'Mangalore', 560050, 'Karnataka', 0.0);
SELECT * FROM CLIENT_MASTER;

INSERT INTO SALESMAN_MASTER (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE,SALAMT,TGTTOGET,YTDSALES) VALUES
('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra',8,5,5),
('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra',7,5,5),
('S00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra',9,5,5),
('S00004', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra',6,5,5);
SELECT * FROM SALESMAN_MASTER;

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);
SELECT * FROM PRODUCT_MASTER;

-- Queries

-- Find names of all clients
SELECT NAME FROM CLIENT_MASTER;
-- Retrieve entire contents of CLIENT_MASTER
SELECT * FROM CLIENT_MASTER;
--  List all products available
SELECT NAME, CITY, STATE FROM CLIENT_MASTER;
-- List names, city, and state of all clients
SELECT DESCRIPTION FROM PRODUCT_MASTER;
-- List all clients located in Mumbai
SELECT * FROM CLIENT_MASTER WHERE CITY = 'Mumbai';
-- Find names of salesmen with a salary equal to Rs. 3000
SELECT SALESMANNAME FROM SALESMAN_MASTER WHERE SALAMT = 3000;

-- Update commands

-- Change the city of ClientNo 'C00005' to 'Bangalore'
UPDATE CLIENT_MASTER SET CITY = 'Bangalore' WHERE CLIENTNO = 'C00005';
-- Change BalDue of ClientNo 'C00001' to Rs. 1000
```

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88      -- Change the city of ClientNo 'C00005' to 'Bangalore'
89 •    UPDATE CLIENT_MASTER SET CITY = 'Bangalore' WHERE CLIENTNO = 'C00005';
90      -- Change BalDue of ClientNo 'C00001' to Rs. 1000
91 •    UPDATE CLIENT_MASTER SET BALDUE = 1000 WHERE CLIENTNO = 'C00001';
92      -- Change the cost price of 'Trousers' to Rs. 950.00
93 •    UPDATE PRODUCT_MASTER SET COSTPRICE = 950 WHERE PRODUCTNO = 'P07868';
94      -- Change the city of salesmen to 'Pune'
95 •    UPDATE SALESMAN_MASTER SET CITY = 'Pune';
```

```
1 •    SELECT * FROM client.client_master;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

CLIENTNO	NAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	BALDUE
C00001	Ivan bayross	NULL	NULL	Mumbai	400054	Maharashtra	1000.00
C00002	Mamta muzumdar	NULL	NULL	Madras	780001	Tamil Nadu	0.00
C00003	Chhaya bankar	NULL	NULL	Mumbai	400057	Maharashtra	50.00
C00004	Ashwini joshi	NULL	NULL	Bangalore	560001	Karnataka	0.00
C00005	Hansel colaco	NULL	NULL	Bangalore	400060	Maharashtra	200.00
C00006	Deepak sharma	NULL	NULL	Mangalore	560050	Karnataka	0.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

```
1 •  SELECT * FROM client.product_master;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00
P07865	Jeans	5.00	Piece	100	20	750.00	500.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07965	Denim 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
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirts	6.00	Piece	150	50	500.00	350.00
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00
P07865	Jeans	5.00	Piece	100	20	750.00	500.00
P07868	Trousers	2.00	Piece	150	50	850.00	550.00
P07885	Pull Overs	2.50	Piece	80	30	700.00	450.00
P07965	Denim 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
P00001	T-Shirt	5.00	Piece	200	50	350.00	250.00
P0345	Shirts	6.00	Piece	150	50	500.00	350.00
P06734	Cotton jeans	5.00	Piece	100	20	600.00	450.00

```
1 •  SELECT * FROM client.salesman_master;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALAMT	TGTTOGET	YTDSALES	REMARKS
S00001	Aman	A/14	Worli	Mumbai	400002	Maharashtra	8.00	5.00	5.00	NULL
S00002	Omkar	65	Nariman	Mumbai	400001	Maharashtra	7.00	5.00	5.00	NULL
S00003	Raj	P-7	Bandra	Mumbai	400032	Maharashtra	9.00	5.00	5.00	NULL
S00004	Ashish	A/5	Juhu	Mumbai	400044	Maharashtra	6.00	5.00	5.00	NULL

Conclusion:

In this experiment, we applied SQL constraints like **Primary Key**, **CHECK**, and **NOT NULL** to enforce data integrity. We created, inserted, retrieved, updated, and deleted records, as well as altered table structures. This demonstrated how constraints ensure data accuracy and consistency in relational databases.