Institute of Computer Technology
B. Tech Computer Science and Engineering
Sub: Database Management System (2CSE301)

Practical 4: Create tables with various Data Constraints and verify by inserting values in it.

Scenario : Mohan as an engineer know what are the issues when an entry gets wrongly inserted. Thus to avoid such issues Mohan suggested to have constraints so that whenever by mistake also if someone tries to enter data can first get checked and than inserted.

A) Table Name: Client_master
   Description: Used to store information about clients.

Column Name	Data Type	Size	Attributes
Client_no	Varchar	6	Primary key/ first letter must start with 'C'
Name	Varchar	15	Not Null
City	Varchar	15	
Pincode	Numeric	8	
State	Varchar	15	
Bal_due	Numeric	10,2	

Client_no	Name	City	Pincode	State	Bal_due
C001	Ivan	Bombay	400054	Maharashtra	15000
C002	Vandana	Madras	780001	Tamil Nadu	0
C003	Pramada	Bombay	400057	Maharashtra	5000
C004	Basu	Bombay	400056	Maharashtra	0
C005	Ravi	Delhi	100001	Gujarat	2000
C006	Rukmani	Bombay	400050	Maharashtra	0

B) Table Name: Product_master
   Description: Used to store information about products.

Column Name	Data Type	Size	Attributes
Product_no	Varchar	6	Primary key/ first letter must start with 'P'
Description	Varchar	15	Not Null
P_percent	Numeric	4,2	Not Null
U_measure	Varchar	10	Not Null
Qty_on_hand	Numeric	8	Not Null
Reorder_lvl	Numeric	8	Not Null
Sell_price	Numeric	8,2	Not Null, cannot be 0
Cost_price	Numeric	8,2	Not Null, cannot be 0

Product_ No	Description	P_ Percent	U_ Measure	Qty_on_ hand	Reorder_ Lvl	sell_ price	Cost_ Price
P001	Floppies	5	Piece	100	20	525	500
P002	Monitor	6	Piece	10	3	12000	11280
P003	Mouse	5	Piece	20	5	1050	1000
P004	Floppies	5	Piece	100	20	525	500
P005	Keyboards	2	Piece	10	3	3150	3050
P006	Cd Drive	2.5	Piece	10	3	5250	5100
P007	1.44 Drive	4	Piece	10	3	8400	8000

C) Table Name: Salesman_master
   Description: Used to store information about salesman working in the company.

Column Name	Data Type	Size	Attributes
S_no	Varchar	6	Primary key/ first letter must start with 'S'
S_name	Varchar	15	Not Null
City	Varchar	10	
Pincode	Numeric	8	
State	Varchar	12	
Sal_amt	Numeric	8,2	Not Null, cannot be 0
Tgt_to_get	Numeric	6,2	Not Null, cannot be 0
Ytd_sales	Numeric	6,2	Not Null
Remarks	Varchar	20	

S_no	S_name	City	Pincode	State	Sal_ Amt	Tgt_ to get	Ytd_ Sales	remarks
S001	Kiran	Bombay	400002	Maharashtar	3000	100	50	Excellent
S002	Manish	Bombay	400001	Maharashta	3000	200	100	Good
S003	Ravi	Bombay	400032	Maharashta	3000	200	100	Average
S004	Ashish	Bombay	400044	Maharashta	3500	200	150	Good

D) Table Name: Sales_order
   Description: Used to store client's orders.

Column Name	Data Type	Size	Attributes
Order_no	Varchar	6	Primary key/ first letter must start with 'O'
Order_date	Date		
Client_no	Varchar	6	Foreign key references client_no of client_master table.
S_no	Varchar	6	Foreign key references s_no of salesman_master table.
Dely_type	Char	1	Delivery: part(P) / full (F) Default 'F'
Billed_yn	Char	1	
Dely_date	Date		Cannot be less than order_date
Order_status	Varchar	10	Values('inprocess','fullfiled','backorder','cancelled')

Order_no	Order_date	Client_no	S_no	Dely_ type	Billed_yn	Dely_date	Order_status
O1901	12-Jan-06	C001	S001	F	N	20-Jan-06	In Process
O1902	25-Jan-06	C002	S002	P	N	27-Jan-06	Cancelled
O4665	18-feb-06	C003	S003	F	Y	20-Feb-06	Fullfilled
O1903	03-Apr-06	C001	S001	F	Y	07-Apr-06	Fullfield
O4666	20-May-06	C004	S002	P	N	22-May-06	Cancelled
O1908	24-May-06	C005	S003	F	N	26-May-06	In Process

E) Table Name: Sales_order_details
Description: Used to store client's orders with details of each product ordered.

Column Name	Data Type	Size	Attributes
Order_no	Varchar	6	Primary Key/ Foreign Key references order_no of the sales_order table.
Product_no	Varchar	6	Primary Key/ Foreign Key references product_no of the Product_master table.
Qty_ordered	Numeric	8	
Qty_disp	Numeric	8	
Product_rate	Numeric	10,2	

Order_no	Product_no	Qty_ordered	Qty_disp	Product_rate
O1901	P001	4	4	525
O1901	P002	2	1	8400
O1901	P003	2	1	5250
O1902	P001	10	0	525
O4665	P002	3	3	3150
O4665	P004	3	1	5250
O4665	P005	10	10	525
O4665	P003	4	4	1050
O1903	P006	2	2	1050
O1903	P004	1	1	12000
O1908	P005	1	0	8400
O1908	P007	10	0	1050

Exercise:

Create Above tables with given constraints and insert data in it.

Solution Query:

A. Table: Client_master

➢ CREATE TABLE Client_master
(
        Client_no VARCHAR(6) NOT NULL PRIMARY KEY CHECK
        (Client_no LIKE 'C%'),
        Name VARCHAR(15) NOT NULL,
        City VARCHAR(15),
        Pincode NUMERIC(8),
        State VARCHAR(15),
        Bal_due NUMERIC(10,2)
);

➢ INSERT INTO Client_master (Client_no, Name, City, Pincode, State, Bal_due)
VALUES
        ('C001', 'Ivan', 'Bombay', 400054, 'Maharashtra', 15000),
        ('C002', 'Vandana', 'Madras', 780001, 'Tamil Nadu', 0),
        ('C003', 'Pramada', 'Bombay', 400057, 'Maharashtra', 5000),
        ('C004', 'Basu', 'Bombay', 400056, 'Maharashtra', 0),
        ('C005', 'Ravi', 'Delhi', 100001, 'Gujarat', 2000),
        ('C006', 'Rukmani', 'Bombay', 400050, 'Maharashtra', 0);

➢ SELECT * FROM Client_master;

B. Table: Product_master

➢ CREATE TABLE Product_master
(
    Product_no VARCHAR(6) NOT NULL PRIMARY KEY
    CHECK(Product_no LIKE 'P%'),
    Description VARCHAR(15) NOT NULL,
    P_percent NUMERIC(4,2) NOT NULL,

U_measure VARCHAR(10) NOT NULL,
Qty_on_hand NUMERIC(8) NOT NULL,
Reorder_lvl NUMERIC(8) NOT NULL,
Sell_price NUMERIC(8,2) NOT NULL CHECK (Sell_price != 0),
Cost_price NUMERIC(8,2) NOT NULL CHECK (Cost_price != 0)
);

➢ INSERT INTO Product_master (Product_no, Description, P_percent, U_measure, Qty_on_hand, Reorder_lvl, Sell_price, Cost_price)
VALUES
('P001', 'Floppies', 5, 'Piece', 100, 20, 525, 500),
('P002', 'Monitor', 6, 'Piece', 10, 3, 12000, 11280),
('P003', 'Mouse', 5, 'Piece', 20, 5, 1050, 1000),
('P004', 'Floppies', 5, 'Piece', 100, 20, 525, 500),
('P005', 'Keyboards', 2, 'Piece', 10, 3, 3150, 3050),
('P006', 'Cd Drive', 2.5, 'Piece', 10, 3, 5250, 5100),
('P007', '1.44 Drive', 4, 'Piece', 10, 3, 8400, 8000);

➢ SELECT * FROM Product_master;

C. Table: Salesman_master

➢ CREATE TABLE Salesman_master
(
S_no VARCHAR(6) NOT NULL PRIMARY KEY CHECK (S_no LIKE 'S%'),
S_name VARCHAR(15) NOT NULL,
City VARCHAR(10),
Pincode NUMERIC(8),
State VARCHAR(12),
Sal_amt NUMERIC(8,2) NOT NULL CHECK (Sal_amt != 0),
Tgt_to_get NUMERIC(6,2) NOT NULL CHECK (Tgt_to_get != 0),
Ytd_sales NUMERIC(6,2) NOT NULL,
Remarks VARCHAR(20)
);

➢ INSERT INTO Salesman_master (S_no, S_name, City, Pincode, State, Sal_amt, Tgt_to_get, Ytd_sales, Remarks)

VALUES
('S001', 'Kiran', 'Bombay', 400002, 'Maharashtra', 3000, 100, 50,
'Excellent'),
('S002', 'Manish', 'Bombay', 400001, 'Maharashtra', 3000, 200, 100,
'Good'),
('S003', 'Ravi', 'Bombay', 400032, 'Maharashtra', 3000, 200, 100,
'Average'),
('S004', 'Ashish', 'Bombay', 400044, 'Maharashtra', 3500, 200, 150,
'Good');

- ➢ SELECT * FROM Salesman_master;

D. Table: Sales_order

- ➢ CREATE TABLE Sales_order
  (
  Order_no VARCHAR(6) PRIMARY KEY CHECK (Order_no LIKE
  'O%'),
  Order_date DATE,
  Client_no VARCHAR(6),
  S_no VARCHAR(6),
  Dely_type CHAR(1) DEFAULT 'F',
  Billed_yn CHAR(1),
  Dely_date DATE,
  Order_status VARCHAR(10),
  FOREIGN KEY (Client_no) REFERENCES Client_master(Client_no),
  FOREIGN KEY (S_no) REFERENCES Salesman_master(S_no),
  CHECK (Dely_type IN ('P', 'F')),
  CHECK (Dely_date >= Order_date),
  CHECK (Order_status IN ('inprocess', 'fullfiled', 'backorder', 'cancelled'))
  );

- ➢ INSERT INTO Sales_order (Order_no, Order_date, Client_no, S_no,
  Dely_type, Billed_yn, Dely_date, Order_status)
  VALUES
  ('O1901', '2006-01-12', 'C001', 'S001', 'F', 'N', '2006-01-20',
  'inprocess'),

('O1902', '2006-01-25', 'C002', 'S002', 'P', 'N', '2006-01-27',
'cancelled'),
('O4665', '2006-02-18', 'C003', 'S003', 'F', 'Y', '2006-02-20',
'fullfiled'),
('O1903', '2006-04-03', 'C001', 'S001', 'F', 'Y', '2006-04-07',
'fullfiled'),
('O4666', '2006-05-20', 'C004', 'S002', 'P', 'N', '2006-05-22',
'cancelled'),
('O1908', '2006-05-24', 'C005', 'S003', 'F', 'N', '2006-05-26',
'inprocess');

➢ SELECT * FROM Sales_order;

E. Table: Sales_order_details

➢ CREATE TABLE Sales_order_details
(
    Order_no VARCHAR(6),
    Product_no VARCHAR(6),
    Qty_ordered NUMERIC(8),
    Qty_disp NUMERIC(8),
    Product_rate NUMERIC(10,2),
    PRIMARY KEY (Order_no, Product_no),
    FOREIGN KEY (Order_no) REFERENCES Sales_order(Order_no),
    FOREIGN KEY (Product_no) REFERENCES
    Product_master(Product_no)
);

➢ INSERT INTO Sales_order_details (Order_no, Product_no, Qty_ordered,
Qty_disp, Product_rate)
VALUES
    ('O1901', 'P001', 4, 4, 525),
    ('O1901', 'P002', 2, 1, 8400),
    ('O1901', 'P003', 2, 1, 5250),
    ('O1902', 'P001', 10, 0, 525),
    ('O4665', 'P002', 3, 3, 3150),
    ('O4665', 'P004', 3, 1, 5250),
    ('O4665', 'P005', 10, 10, 525),

('O4665', 'P003', 4, 4, 1050),
('O1903', 'P006', 2, 2, 1050),
('O1903', 'P004', 1, 1, 12000),
('O1908', 'P005', 1, 0, 8400),
('O1908', 'P007', 10, 0, 1050);

➢ SELECT * FROM Sales_order_details;

Output:

A. Table: Client_master

Client_no	Name	City	Pincode	State	Bal_due
C001	Ivan	Bombay	400054	Maharashtra	15000.00
C002	Vandana	Madras	780001	Tamil Nadu	0.00
C003	Pramada	Bombay	400057	Maharashtra	5000.00
C004	Basu	Bombay	400056	Maharashtra	0.00
C005	Ravi	Delhi	100001	Gujarat	2000.00
C006	Rukmani	Bombay	400050	Maharashtra	0.00
NULL	NULL	NULL	NULL	NULL	NULL

B. Table: Product_master

Product_no	Description	P_percent	U_measure	Qty_on_hand	Reorder_lvl	Sell_price	Cost_price
P001	Floppies	5.00	Piece	100	20	525.00	500.00
P002	Monitor	6.00	Piece	10	3	12000.00	11280.00
P003	Mouse	5.00	Piece	20	5	1050.00	1000.00
P004	Floppies	5.00	Piece	100	20	525.00	500.00
P005	Keyboards	2.00	Piece	10	3	3150.00	3050.00
P006	Cd Drive	2.50	Piece	10	3	5250.00	5100.00
P007	1.44 Drive	4.00	Piece	10	3	8400.00	8000.00
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

C. Table: Salesman_master

S_no	S_name	City	Pincode	State	Sal_amt	Tgt_to_get	Ytd_sales	Remarks
S001	Kiran	Bombay	400002	Maharashtra	3000.00	100.00	50.00	Excellent
S002	Manish	Bombay	400001	Maharashtra	3000.00	200.00	100.00	Good
S003	Ravi	Bombay	400032	Maharashtra	3000.00	200.00	100.00	Average
S004	Ashish	Bombay	400044	Maharashtra	3500.00	200.00	150.00	Good
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

D. Table: Sales_order

Order_no	Order_date	Client_no	S_no	Dely_type	Billed_yn	Dely_date	Order_status
O1901	2006-01-12	C001	S001	F	N	2006-01-20	inprocess
O1902	2006-01-25	C002	S002	P	N	2006-01-27	cancelled
O1903	2006-04-03	C001	S001	F	Y	2006-04-07	fullfiled
O1908	2006-05-24	C005	S003	F	N	2006-05-26	inprocess
O4665	2006-02-18	C003	S003	F	Y	2006-02-20	fullfiled
O4666	2006-05-20	C004	S002	P	N	2006-05-22	cancelled
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

E. Table: Sales_order_details

Order_no	Product_no	Qty_ordered	Qty_disp	Product_rate
O1901	P001	4	4	525.00
O1901	P002	2	1	8400.00
O1901	P003	2	1	5250.00
O1902	P001	10	0	525.00
O1903	P004	1	1	12000.00
O1903	P006	2	2	1050.00
O1908	P005	1	0	8400.00
O1908	P007	10	0	1050.00
O4665	P002	3	3	3150.00
O4665	P003	4	4	1050.00
O4665	P004	3	1	5250.00
O4665	P005	10	10	525.00
NULL	NULL	NULL	NULL	NULL