Institute of Computer Technology

B. Tech. Computer Science and Engineering

Semester: III

Sub: Database Management System

Course Code: 2CSE301

Practical Number:4

Objective:

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.

Exercise:

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

A) Table Name: Client_master:

1) **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

Code :

Execution 1:

   alter table client_master add primary key (Client_no);

Execution 2:

   alter table client_master add constraint C_Cons CHECK (Client_no LIKE 'C%') ;

Execution 3:

   Describe client_master;

Output :

Field	Type	Null	Key	Default	Extra
Client_no	varchar(6)	NO	PRI	NULL	
Name	varchar(20)	YES		NULL	
City	varchar(15)	YES		NULL	
Pincode	decimal(8,0)	YES		NULL	
State	varchar(15)	YES		NULL	
Bal_due	decimal(10,2)	YES		NULL	

Code :

Execution 1:

   ALTER TABLE client_master

   MODIFY Name VARCHAR(15) NOT NULL;

Execution 2:

   describe client_master;

Output :

	Field	Type	Null	Key	Default	Extra
▶	Client_no	varchar(6)	NO	PRI	NULL	
	Name	varchar(15)	NO		NULL	
	City	varchar(15)	YES		NULL	
	Pincode	decimal(8,0)	YES		NULL	
	State	varchar(15)	YES		NULL	
	Bal_due	decimal(10,2)	YES		NULL	

B) Table Name: Product_master
1) 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 |

Code :

Execution 1:

ALTER TABLE product_master

ADD CONSTRAINT chk_product_no CHECK (Product_no LIKE 'P%');

Execution 2:

ALTER TABLE product_master

MODIFY Description VARCHAR(15) NOT NULL,

MODIFY P_percent NUMERIC(4,2) NOT NULL,

MODIFY U_measure VARCHAR(10) NOT NULL,

MODIFY Qty_on_hand NUMERIC(8) NOT NULL,

MODIFY Reorder_lvl NUMERIC(8) NOT NULL,

MODIFY Sell_price NUMERIC(8,2) NOT NULL,

MODIFY Cost_price NUMERIC(8,2) NOT NULL;

Execution 3:

ALTER TABLE product_master

ADD CONSTRAINT chk_sell_price_nonzero CHECK (Sell_price > 0),

ADD CONSTRAINT chk_cost_price_nonzero CHECK (Cost_price > 0);

Output :

Field	Type	Null	Key	Default	Extra
Product_no	varchar(6)	YES		NULL	
Description	varchar(15)	NO		NULL	
P_percent	decimal(4,2)	NO		NULL	
U_measure	varchar(decimal(4,2)			NULL	
Qty_on_hand	decimal(8,0)	NO		NULL	
Reorder_lvl	decimal(8,0)	NO		NULL	
Sell_price	decimal(8,2)	NO		NULL	
Cost_price	decimal(8,2)	NO		NULL	

C) Table Name: Salesman_master

1) **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	

Code :

Execution 1:

```
ALTER TABLE sman_mast
ADD CONSTRAINT chk_s_no CHECK (S_no LIKE 'S%');
```

Execution 2:

```
ALTER TABLE sman_mast
MODIFY S_name VARCHAR(15) NOT NULL,
MODIFY City VARCHAR(10) NOT NULL,
MODIFY Sal_amt NUMERIC(8,2) NOT NULL,
MODIFY Tgt_to_get NUMERIC(6,2) NOT NULL,
MODIFY Ytd_sales NUMERIC(6,2) NOT NULL,
MODIFY Remarks VARCHAR(20) NOT NULL;
```

Execution 3:

```
ALTER TABLE sman_mast
ADD CONSTRAINT chk_sal_amt_nonzero CHECK (Sal_amt > 0),
ADD CONSTRAINT chk_tgt_to_get_nonzero CHECK (Tgt_to_get > 0);
```

Output :

	Field	Type	Null	Key	Default	Extra
▶	S_no	varchar(6)	YES		NULL	
	S_name	varchar(15)	NO		NULL	
	City	varchar(10)	NO		NULL	
	Pincode	decimal(8,0)	YES		NULL	
	State	varchar(20)	YES		NULL	
	Sal_amt	decimal(8,2)	NO		NULL	
	Tgt_to_get	decimal(6,2)	NO		NULL	
	Ytd_sales	decimal(6,2)	NO		NULL	
	Remarks	varchar(20)	NO		NULL	

D) Table Name: Sales_order

1) 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')

Code :

Execution 1:

```
ALTER TABLE sales_order

MODIFY Order_no VARCHAR(6),

ADD CONSTRAINT pk_order PRIMARY KEY (Order_no),
```

ADD CONSTRAINT chk_order_no CHECK (LEFT(Order_no, 1) = 'O');

Execution 2:

ALTER TABLE sales_order

ADD CONSTRAINT fk_client_no FOREIGN KEY (Client_no) REFERENCES client_master(client_no);

Execution 3:

ALTER TABLE sman_mast

ADD PRIMARY KEY (s_no);

ALTER TABLE sales_order

ADD CONSTRAINT fk_s_no FOREIGN KEY (S_no) REFERENCES sman_mast(s_no);

Execution 4:

ALTER TABLE sales_order

MODIFY Dely_type CHAR(1) DEFAULT 'F';

Execution 5:

ALTER TABLE sales_order

ADD CONSTRAINT chk_dely_date CHECK (Dely_date >= Order_date);

Execution 6:

ALTER TABLE sales_order

MODIFY Order_status VARCHAR(10),

ADD CONSTRAINT chk_order_status CHECK (Order_status IN ('inprocess', 'fulfilled', 'backorder', 'cancelled'));

Output :

	Field	Type	Null	Key	Default	Extra
▶	Order_no	varchar(6)	NO	PRI	NULL	
	Order_date	date	YES		NULL	
	Client_no	varchar(6)	YES	MUL	NULL	
	S_no	varchar(6)	YES	MUL	NULL	
	Dely_type	char(1)	YES		F	
	Billed_yn	char(1)	YES		NULL	
	Dely_date	date	YES		NULL	
	Order_status	varchar(10)	YES		NULL	

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

Code :

Execution 1:

```
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)

);
```

Execution 2:

```
-- Inserting data into Sales_order_details table

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);
```

Output :

Field	Type	Null	Key	Default	Extra
Order_no	varchar(6)	NO	PRI	NULL	
Product_no	varchar(6)	NO	PRI	NULL	
Qty_ordered	decimal(8,0)	YES		NULL	
Qty_disp	decimal(8,0)	YES		NULL	
Product_rate	decimal(10,2)	YES		NULL	