

## Assignment No. : 4

### Aim

Design at least 10 SQL queries for suitable database application using SQL DML statements: all types of Join, Sub-Query and view.

### Objectives

To study all types of Join, Sub-Query, and view SQL statements.

### Theory

#### o SQL - Join

The ability of relational join operator is an important feature of relational systems. A join makes it possible to select data from more than table by means of a single statement.

#### Types of Join

i) Inner

ii) Outer (left, right, full)

iii) Cross

#### i) Inner Join (also known as equi join)

• Statements generally compares two columns from two columns with the equivalence operator =.

• This type of join can be used in situations where selecting only those rows that have values in common in the columns specified in the ON clause, is required.

Syntax:

```
SELECT column1, column2, ... FROM table1 INNER JOIN  
table2 ON table1.column1 = table2.column1 WHERE  
Condition ORDER BY column1;
```



## ii) Outer Join

• Outer Join is similar to inner join, but give a little bit more flexibility when selecting data related tables. This types of join can be used in situation where it is desired, to select all rows from the table on left (or right, or both) regardless of whether other table have values in common & enter NULL where data is missing.

## iii) Cross Join

A cross join returns what known as cartesian product. This means that the join combines every row from the left table with every row in right table. The kind of join is usually not preferred as it may run for a very long time & produce a huge result set that may not be useful.

## o Subquery

In SQL, a subquery can be simply defined as a query within another query.

The outer query is called as main query and inner query is called as subquery.

• Subquery must be enclosed in parentheses.

• Use single-row operators with single row subqueries.

25 Use multiple row operators with multiple-row subqueries.

Syntax:

SELECT column name

FROM table name

30 WHERE column name expression operator

(SELECT column name FROM table name WHERE condition);

## • View

In SQL, a view is a virtual table based on the result-set of an SQL statement.

A view contains rows and columns, just like real table. The fields in a view are fields from one or more real tables in the database.

You can add SQL statements and functions to a view and present the data as if the data were coming from one single table.

Syntax:

```
CREATE VIEW view_name AS  
SELECT column1, column2, ...  
FROM table_name  
WHERE condition;
```

## Conclusion

Thus, we have studied to use & implement various join operation with nested queries.



```
Command Prompt - mysql -u root -p

mysql> show databases;
+-----+
| Database |
+-----+
| database1 |
| database2 |
| geetanshah |
| information_schema |
| mysql |
| performance_schema |
| student |
| student_info |
| sys |
| tcoddb |
+-----+
10 rows in set (0.00 sec)

mysql> use database1;
Database changed
mysql> show tables;
+-----+
| Tables_in_database1 |
+-----+
| persons |
| testtable |
+-----+
2 rows in set (0.01 sec)

mysql> create table _master(product_no int,description varchar(20),profit_per float,unit_measure varchar(10),quantity int,reorder int,sell_price float,cost_price float,primary_key(product_no));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '(product_no))' at line 1
mysql> create table _master(product_no int,description varchar(20),profit_per float,unit_measure varchar(10),quantity int,reorder int,sell_price float,cost_price float,primary_key int);
Query OK, 0 rows affected (0.04 sec)
```

```
Command Prompt - mysql -u root -p

mysql> create table customer(cust_no int,cust_name varchar(20),cust_add
-> varchar(20),phone_no int,primary key(cust_no));
Query OK, 0 rows affected (0.03 sec)

mysql> create table capital(cap_no int,cap_name varchar(20),state_no
-> int,primary key(cap_no));
Query OK, 0 rows affected (0.04 sec)

mysql> create table state(state_no int,state_name varchar(20),state_code
-> int,capital varchar(20),primary key(state_no));
Query OK, 0 rows affected (0.04 sec)

mysql> insert into capital values('01','MH','01');
Query OK, 1 row affected (0.01 sec)

mysql> insert into capital values('02','RAJ','02');
Query OK, 1 row affected (0.01 sec)

mysql> insert into capital values('03','GOA','03');
Query OK, 1 row affected (0.01 sec)

mysql> insert into capital values('04','GUJ','04');
Query OK, 1 row affected (0.01 sec)

mysql> insert into capital values('05','KAR','05');
Query OK, 1 row affected (0.01 sec)

mysql> insert into state values('01','MH','01','MUM');
Query OK, 1 row affected (0.01 sec)

mysql> insert into state values('02','RAJ','02','JAI');
Query OK, 1 row affected (0.01 sec)

mysql> insert into state values('03','GOA','03','PAN');
Query OK, 1 row affected (0.01 sec)

mysql> insert into state values('04','GUJ','04','SUR');
Query OK, 1 row affected (0.01 sec)
```

```
Command Prompt - mysql -u root -p

mysql> select * from capital;
+-----+-----+-----+
| cap_no | cap_name | state_no |
+-----+-----+-----+
|      1 | MH      |      1   |
|      2 | RAJ     |      2   |
|      3 | GOA     |      3   |
|      4 | GUJ     |      4   |
|      5 | KAR     |      5   |
+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select * from state;
+-----+-----+-----+-----+
| state_no | state_name | state_code | capital |
+-----+-----+-----+-----+
|      1   | MH        |      1     | MUM     |
|      2   | RAJ       |      2     | JAI     |
|      3   | GOA       |      3     | PAN     |
|      4   | GUJ       |      4     | SUR     |
|      5   | KAR       |      5     | BAN     |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select capital.cap_no, state.state_no from capital inner join sta
te on
    -> capital.cap_no=state.state_no;
+-----+-----+
| cap_no | state_no |
+-----+-----+
|      1 |      1   |
|      2 |      2   |
|      3 |      3   |
|      4 |      4   |
|      5 |      5   |
+-----+-----+
5 rows in set (0.00 sec)

mysql> UPDATE state SET state_no="78" where state_no='1';
```

```
Command Prompt - mysql -u root -p

mysql> UPDATE state SET state_no="78" where state_no='1';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE state SET state_no="58" where state_no='2';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
Command Prompt - mysql -u root -p

mysql> UPDATE state SET state_no="46" where state_no='3';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE state SET state_no="489" where state_no='4';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE state SET state_no="458" where state_no='5';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> insert into state values('05','MP','05','BHO');
Query OK, 1 row affected (0.01 sec)

mysql> select capital.cap_no, state.state_no from capital inner join state on
-> capital.cap_no=state.state_no;
+-----+-----+
| cap_no | state_no |
+-----+-----+
|      5 |      5 |
+-----+-----+
1 row in set (0.01 sec)

mysql> select capital.cap_no, state.state_no from capital left join state on
-> capital.cap_no=state.state_no;
+-----+-----+
| cap_no | state_no |
+-----+-----+
|      1 |      NULL |
|      2 |      NULL |
|      3 |      NULL |
|      4 |      NULL |
|      5 |      5 |
+-----+-----+
5 rows in set (0.00 sec)

mysql> select capital.cap_no, state.state_no from capital left join state on
-> capital.cap_no=state.state_name;
```

```
Select Command Prompt - mysql -u root -p

+-----+-----+
| cap_no | state_no |
+-----+-----+
|      1 |      NULL |
|      2 |      NULL |
|      3 |      NULL |
|      4 |      NULL |
|      5 |      NULL |
+-----+-----+
5 rows in set, 4 warnings (0.01 sec)

mysql> select capital.cap_no, state.state_no from capital right join state on
-> capital.cap_no=state.state_no;

+-----+-----+
| cap_no | state_no |
+-----+-----+
|      5 |      5 |
|    NULL |     46 |
|    NULL |     58 |
|    NULL |     78 |
|    NULL |    458 |
|    NULL |    489 |
+-----+-----+
6 rows in set (0.00 sec)

mysql> select * from capital;

+-----+-----+-----+
| cap_no | cap_name | state_no |
+-----+-----+-----+
|      1 | MH      |      1 |
|      2 | RAJ     |      2 |
|      3 | GOA     |      3 |
|      4 | GUJ     |      4 |
|      5 | KAR     |      5 |
+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select * from state;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

```



```
Select Command Prompt - mysql -u root -p
mysql> select * from state;
+-----+-----+-----+-----+
| state_no | state_name | state_code | capital |
+-----+-----+-----+-----+
| 5 | MP | 5 | BHO |
| 46 | GOA | 3 | PAN |
| 58 | RAJ | 2 | JAI |
| 78 | MH | 1 | MUM |
| 458 | KAR | 5 | BAN |
| 489 | GUJ | 4 | SUR |
+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> select * from capital;
+-----+-----+-----+
| cap_no | cap_name | state_no |
+-----+-----+-----+
| 1 | MH | 1 |
| 2 | RAJ | 2 |
| 3 | GOA | 3 |
| 4 | GUJ | 4 |
| 5 | KAR | 5 |
+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select capital.cap_no, state.state_no from capital inner join state on
-> capital.cap_no=state.state_no;
+-----+-----+
| cap_no | state_no |
+-----+-----+
| 5 | 5 |
+-----+-----+
1 row in set (0.00 sec)

mysql> select capital.cap_no,capital.cap_name,state.capital,state.state_no from
-> capital inner join state on capital.cap_no=state.state_no;
+-----+-----+-----+-----+
| cap_no | cap_name | capital | state_no |
+-----+-----+-----+-----+
```

```
Select Command Prompt - mysql -u root -p

+-----+-----+-----+-----+
| cap_no | cap_name | capital | state_no |
+-----+-----+-----+-----+
|      5 | KAR      | BHO     |      5   |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> select capital.cap_no,capital.cap_name,state.capital,state.state_no
-> from capital left join state on capital.cap_no=state.state_no;
+-----+-----+-----+-----+
| cap_no | cap_name | capital | state_no |
+-----+-----+-----+-----+
|      1 | MH       | NULL    | NULL     |
|      2 | RAJ      | NULL    | NULL     |
|      3 | GOA      | NULL    | NULL     |
|      4 | GUJ      | NULL    | NULL     |
|      5 | KAR      | BHO     |      5   |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select capital.cap_no,capital.cap_name,state.capital,state.state_no
-> from capital right join state on capital.cap_no=state.state_no;
+-----+-----+-----+-----+
| cap_no | cap_name | capital | state_no |
+-----+-----+-----+-----+
|      5 | KAR      | BHO     |      5   |
| NULL   | NULL     | PAN     |      46  |
| NULL   | NULL     | JAI     |      58  |
| NULL   | NULL     | MUM     |      78  |
| NULL   | NULL     | BAN     |     458  |
| NULL   | NULL     | SUR     |     489  |
+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> select capital.cap_no,capital.cap_name,state.capital,state.state_no from
-> capital left join state on capital.cap_no=state.state_no union
-> select capital.cap_no,capital.cap_name,state.capital,state.state_no from ca
pital
-> right join state on capital.cap_no=state.state_no; 
```

```
Select Command Prompt - mysql -u root -p
mysql> select * from state where state_no=(select state_no from state where
-> state_name='MH');
+-----+-----+-----+-----+
| state_no | state_name | state_code | capital |
+-----+-----+-----+-----+
|      78 | MH        |          1 | MUM     |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> select * from state where state_no=(select state_no from state where
-> state_name='GUJ');
+-----+-----+-----+-----+
| state_no | state_name | state_code | capital |
+-----+-----+-----+-----+
|     489 | GUJ        |          4 | SUR     |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> select * from state where state_no=(select capital.state_no from capital
-> where cap_name='MH');
Empty set (0.00 sec)

mysql> select * from state where state_no=(select capital.state_no from capital
-> where cap_name='GUJ');
Empty set (0.00 sec)

mysql> select * from state where state_no=(select capital.state_no from capital
-> where cap_name='RAJ');
Empty set (0.00 sec)

mysql> select * from state where state_no=(select capital.state_no from capital
-> where cap_name='KAR');
+-----+-----+-----+-----+
| state_no | state_name | state_code | capital |
+-----+-----+-----+-----+
|         5 | MP         |          5 | BHO     |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```