DBMS

Experiment No-6

Aim: Nested queries and Complex queries.

Theory: A Subquery or Inner query or Nested query is a query within another SQL query and embedded within the WHERE clause.
A subquery is used to return data that will be used in the main query as a condition to further restrict the data to be retrieved.
Subqueries can be used with the SELECT, INSERT, UPDATE, and DELETE statements along with the operators like =, <, >, >=, <=, IN, BETWEEN etc.

```
SELECT column_name [, column_name ]
FROM   table1 [, table2 ]
WHERE  column_name OPERATOR
    (SELECT column_name [, column_name ]
    FROM table1 [, table2 ]
    [WHERE])
```

Output:

1. Scalar subquery (inner query returning single value)

Select * from table1 where col1=(select col1 from table2 where col2='xyz');

```
mysql> SELECT * FROM song
    -> WHERE artist_id = (SELECT artist_id FROM artist where artist_name = 'Adele');
+---------+------------+----------+----------+-------+-----------+
| song_id | song_title | length   | album_id | genre | artist_id |
+---------+------------+----------+----------+-------+-----------+
|       7 | Hello      | 00:04:55 |        2 | soul  |         9 |
+---------+------------+----------+----------+-------+-----------+
1 row in set (0.01 sec)
```

2. Column Subquery (inner query returning single value)

Select * from table1 where col1 in(select col1 from table2 where col2='xyz');

```
mysql> SELECT * FROM song
    -> WHERE artist_id IN (SELECT artist_id FROM artist WHERE rating = '5');
+---------+------------+----------+----------+-------+-----------+
| song_id | song_title | length   | album_id | genre | artist_id |
+---------+------------+----------+----------+-------+-----------+
|       5 | Peaches    | 00:03:18 |        1 | Pop   |         3 |
+---------+------------+----------+----------+-------+-----------+
1 row in set (0.02 sec)
```

3. Row Subquery (inner query returning multiple column but single row)

Select * from table1 where (col1,clo2) in(select col1,col2 from table2 where col2='xyz');

```
mysql> SELECT * FROM song
    -> WHERE (album_id,genre) IN (SELECT album_id,genre FROM album
    ->                            WHERE genre = 'Hip hop');
+---------+------------+----------+----------+---------+-----------+
| song_id | song_title | length   | album_id | genre   | artist_id |
+---------+------------+----------+----------+---------+-----------+
|      16 | Smile      | 00:03:16 |        3 | Hip hop |         7 |
+---------+------------+----------+----------+---------+-----------+
1 row in set (0.00 sec)
```

4. Table Subquery (inner query returning multiple column and multiple row)

Select * from table1 where (col1,col2) in(select col1,col2 from table2 where col2='xyz');

```
mysql> SELECT * FROM song
    -> WHERE (album_id,genre) IN (SELECT album_id,genre FROM album
    ->                            WHERE genre ='Pop');
+---------+-------------+----------+----------+-------+-----------+
| song_id | song_title  | length   | album_id | genre | artist_id |
+---------+-------------+----------+----------+-------+-----------+
|       5 | Peaches     | 00:03:18 |        1 | Pop   |         3 |
|      18 | Galway Girl | 00:02:50 |        4 | Pop   |         4 |
|      19 | Perfect     | 00:04:23 |        4 | Pop   |         4 |
+---------+-------------+----------+----------+-------+-----------+
3 rows in set (0.00 sec)
```

Conclusion:

Database is searched for various nested and correlated queries.