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Class : AIA-3 Subject: DBMS LAB

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ASSIGNMENT NO: 05

Aim: Write a Database Query for Joins, Nested queries, Sub-queries of Manufacturing industry / Hospital/ Company table.

Software required: MySQL

Theory:

Subquery: A subquery (also known as an inner query or nested query) is a query that is placed inside another query. It is used to retrieve data needed for the main query. Subqueries can be used in various parts of a SQL statement, such as the SELECT, FROM, WHERE, and HAVING clauses.

Nested Query: A nested query is a type of subquery where one query is embedded within another query. This is often used to retrieve data that depends on the results of another query.

INNER JOIN: Returns records that have matching values in both tables

LEFT JOIN: Returns all records from the left table, and the matched records from the right table

RIGHT JOIN: Returns all records from the right table, and the matched records from the left table

CROSS JOIN: Returns all records from both tables

IN: Used to match a value against a list of specified values.

NOT IN: Used to exclude rows with values that match any value in a specified list.

EXISTS: Checks for the existence of any rows in a subquery result.

NOT EXISTS: Checks for the absence of any rows in a subquery result.

ALL: Compares a value to all values in a subquery's result set.

ANY or SOME: Compares a value to at least one value in a subquery's result set.

CLI Screenshots:

1) JOINS:

```
mysql> select * from project;
+------+------+----------+-----------+
| ID   | P_ID | P_name   | location  |
+------+------+----------+-----------+
|    1 |   50 | IOT      | Delhi     |
|    2 |   51 | Retail   | Bangalore |
|    5 |   52 | Big Data | Pune      |
|    6 |   53 | Android  | Mumbai    |
+------+------+----------+-----------+
4 rows in set (0.00 sec)

mysql> select * from company;
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  1 | Ravi    | Loni     | r@gmail    | 548796214 |  20000 |
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  3 | Omkar   | Loni     | om@gmail   | 569741234 |  22000 |
|  4 | Rohit   | Delhi    | ro@gmail   | 258741369 |  25000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
6 rows in set (0.00 sec)
```

```
mysql> select name from company INNER JOIN project;
+---------+
| name    |
+---------+
| Ravi    |
| Ravi    |
| Ravi    |
| Ravi    |
| Soham   |
| Soham   |
| Soham   |
| Soham   |
| Omkar   |
| Omkar   |
| Omkar   |
| Omkar   |
| Rohit   |
| Rohit   |
| Rohit   |
| Rohit   |
| Abhi    |
| Abhi    |
| Abhi    |
| Abhi    |
| Bhavani |
| Bhavani |
| Bhavani |
| Bhavani |
+---------+
24 rows in set (0.00 sec)

mysql> select name from company INNER JOIN project where company.ID=project.ID;
+---------+
| name    |
+---------+
| Ravi    |
| Soham   |
| Abhi    |
| Bhavani |
+---------+
4 rows in set (0.00 sec)
```

```
mysql> select Name from company LEFT JOIN project ON company.ID=project.ID;
+---------+
| Name    |
+---------+
| Ravi    |
| Soham   |
| Omkar   |
| Rohit   |
| Abhi    |
| Bhavani |
+---------+
6 rows in set (0.00 sec)

mysql> select Name from company RIGHT JOIN project ON company.ID=project.ID;
+---------+
| Name    |
+---------+
| Ravi    |
| Soham   |
| Abhi    |
| Bhavani |
+---------+
4 rows in set (0.00 sec)
```

```
mysql> select Name, salary from company CROSS JOIN project;
+---------+--------+
| Name    | salary |
+---------+--------+
| Ravi    |  20000 |
| Ravi    |  20000 |
| Ravi    |  20000 |
| Ravi    |  20000 |
| Soham   |  26000 |
| Soham   |  26000 |
| Soham   |  26000 |
| Soham   |  26000 |
| Omkar   |  22000 |
| Omkar   |  22000 |
| Omkar   |  22000 |
| Omkar   |  22000 |
| Rohit   |  25000 |
| Rohit   |  25000 |
| Rohit   |  25000 |
| Rohit   |  25000 |
| Abhi    |  30000 |
| Abhi    |  30000 |
| Abhi    |  30000 |
| Abhi    |  30000 |
| Bhavani |  28500 |
| Bhavani |  28500 |
| Bhavani |  28500 |
| Bhavani |  28500 |
+---------+--------+
24 rows in set (0.00 sec)
```

2)Sub Queries:

```
mysql> select * from company;
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  1 | Ravi    | Loni     | r@gmail    | 548796214 |  20000 |
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  3 | Omkar   | Loni     | om@gmail   | 569741234 |  22000 |
|  4 | Rohit   | Delhi    | ro@gmail   | 258741369 |  25000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
6 rows in set (0.00 sec)

mysql> select Name from company where salary=(select max(salary) from company);
+------+
| Name |
+------+
| Abhi |
+------+
1 row in set (0.00 sec)

mysql>  select Name from company where salary=(select MAX(salary) from company wher
e salary <> (select MAX(salary) from company));
+---------+
| Name    |
+---------+
| Bhavani |
+---------+
1 row in set (0.00 sec)
```

```
mysql> select * from company where ID IN (select ID from company where salary>25000
);
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
3 rows in set (0.00 sec)

mysql> select * from company where ID NOT IN (select ID from company where salary>2
5000);
+----+-------+---------+----------+-----------+--------+
| ID | Name  | Address | Email    | Phone_no  | salary |
+----+-------+---------+----------+-----------+--------+
|  1 | Ravi  | Loni    | r@gmail  | 548796214 |  20000 |
|  3 | Omkar | Loni    | om@gmail | 569741234 |  22000 |
|  4 | Rohit | Delhi   | ro@gmail | 258741369 |  25000 |
+----+-------+---------+----------+-----------+--------+
3 rows in set (0.00 sec)

mysql> select * from company where salary>(select avg(salary) from company);
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
3 rows in set (0.00 sec)
```

```
mysql> select name,address from company where ID IN (2,5,4);
+-------+----------+
| name  | address  |
+-------+----------+
| Soham | Hadapsar |
| Rohit | Delhi    |
| Abhi  | Agra     |
+-------+----------+
3 rows in set (0.00 sec)

mysql> select name,address from company where ID NOT IN (2,5,4);
+---------+---------+
| name    | address |
+---------+---------+
| Ravi    | Loni    |
| Omkar   | Loni    |
| Bhavani | Goa     |
+---------+---------+
3 rows in set (0.00 sec)
```

```
mysql> select * from company where EXISTS (select ID from project where company.ID=
project.ID);
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  1 | Ravi    | Loni     | r@gmail    | 548796214 |  20000 |
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
4 rows in set (0.00 sec)

mysql> select * from company where NOT EXISTS (select ID from project where company
.ID=project.ID);
+----+-------+---------+----------+-----------+--------+
| ID | Name  | Address | Email    | Phone_no  | salary |
+----+-------+---------+----------+-----------+--------+
|  3 | Omkar | Loni    | om@gmail | 569741234 |  22000 |
|  4 | Rohit | Delhi   | ro@gmail | 258741369 |  25000 |
+----+-------+---------+----------+-----------+--------+
2 rows in set (0.00 sec)
```

```
mysql> select name from company where ID > ANY (select ID from project);
+---------+
| name    |
+---------+
| Soham   |
| Omkar   |
| Rohit   |
| Abhi    |
| Bhavani |
+---------+
5 rows in set (0.00 sec)

mysql> select name from company where ID > ALL (select ID from project);
Empty set (0.00 sec)

mysql> select * from company where salary > ALL(select salary from company where ID
=3);
+----+---------+----------+------------+-----------+--------+
| ID | Name    | Address  | Email      | Phone_no  | salary |
+----+---------+----------+------------+-----------+--------+
|  2 | Soham   | Hadapsar | Soham@mail | 125486211 |  26000 |
|  4 | Rohit   | Delhi    | ro@gmail   | 258741369 |  25000 |
|  5 | Abhi    | Agra     | abhi@gmail | 324598617 |  30000 |
|  6 | Bhavani | Goa      | bh@gmail   | 589614733 |  28500 |
+----+---------+----------+------------+-----------+--------+
4 rows in set (0.00 sec)
```

Conclusion:

In conclusion, the practical on DBMS joins and subqueries underscores their vital role in optimizing query performance and enabling intricate data retrieval. Mastery empowers efficient data manipulation.