Pre-Joining Topics

Week 2: MYSQL ADVANCED

SUBQUERIES

A subquery is embedded inside another query and acts as input or output for that query. Subqueries are also called **inner queries** and they can be used in various complex operations in SQL.

Subqueries help in executing queries with **dependency** on the output of another query. Subqueries are enclosed in parentheses. In this article, we will see how we can write and use subqueries in MYSQL.

MYSQL Subquery

MYSQL Subquery can be used with an outer query which is used as input to the outer query. It can be used with **SELECT, FROM,** and **WHERE clauses.** MYSQL subquery is executed first before the execution of the outer query.

empid	name	salary	department
100	Jacob A	20000	SALES
101	James T	50000	IT
102	Riya S	30000	IT

deptid	department
1	IT
2	ACCOUNTS
3	SUPPORT

MYSQL Subquery with WHERE Clause

Let's select employees from department with the department id as **1.**

```
SELECT *
FROM Employee
WHERE department=(SELECT department FROM Departments WHERE deptid=1);
```

empid	name	salary	department
101	James T	50000	IT
102	Riya S	30000	IT

MYSQL Subquery with comparison operators

Less than operator (<)

Let's select employees whose salary is less than average salary of all employees.

```
SELECT *
FROM Employee
WHERE salary < (SELECT avg(salary) from Employee)
```

empid	name	salary	department
100	Jacob A	20000	SALES
102	Riya S	30000	IT

MYSQL Subquery with IN and NOT IN operators

IN operator

Lets select all employees whose department is in departments table.

```
SELECT *
FROM Employee
WHERE department IN (SELECT department FROM Departments);
```

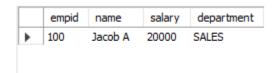| empid	name	salary	department
101	James T	50000	IT
102	Riya S	30000	IT

NOT IN operator

Lets select all employees whose department is not in department table.

```
SELECT *
FROM Employee
WHERE department NOT IN (SELECT department FROM Departments);
```

Output:

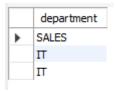| empid	name	salary	department
100	Jacob A	20000	SALES

MYSQL Subquery with FROM clause

lets select all departments from employee table with nested query.

```
SELECT department
FROM (SELECT * from Employee) as A;
```

Output:

	department
▶	SALES
	IT
	IT

Explanation: here the subquery will return all colums from which outer query will select only department.

MYSQL Correlated Subquery

Correlated subquery is the one which uses columns from **outer table** for execution.

Lets select EmpId and Name of employee from Employee where salary is less than average salary and deparment is same as outer table.

SELECT empid , name
FROM Employee AS A
WHERE salary < (SELECT avg(salary) from Employee AS B WHERE A.department = B.department);

Output:

	empid	name
▶	102	Riya S

Explanation: This query will first fetch average salary depending on department name in two tables and then select employees with salary less than average salary.

MYSQL Subquery with EXISTS and NOT EXISTS

EXISTS

Lets select employees for which there exists atleast 1 department where department of employee is same as department in departments.

SELECT empid , name
FROM Employee
WHERE EXISTS (SELECT 1 FROM Departments WHERE Departments.department = Employee.department);

Output:

empid	name
▶ 101	James T
102	Riya S

Explanation: This query will select at least one row from departments where department name is same as employees department name and then return employee id and name of corresponding employee.

NOT EXISTS

Let's select employees for which there does not exist at least 1 department where department of employee is same as department in departments.

SELECT empid , name
FROM Employee
WHERE NOT EXISTS (SELECT 1 FROM Departments WHERE Departments.department = Employee.department);

Output:

empid	name
▶ 100	Jacob A

Explanation: The query retrieves employee ID and name from the Employee table where no department in the Departments table matches the employee's department, checking for non-existence of such departments using a subquery.

<div align="center">References</div>

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