

Databases with *MYSQL*

10. *Subquerys*





Learning Outcomes

After this lesson, the learner will be able to use all the following *SQL* subub-query commands to retrieve data from database tables:

- SUBQUERY
- IN
- ANY
- ALL



Sub-Query

A subquery is a SELECT statement that is nested within another SELECT statement and produces intermediate results.

Syntax:

```
SELECT column1, column2, ... FROM table  
WHERE column = (SELECT column1, column2, ... FROM table  
WHERE condition);
```



Sub-Query

To find all employees who have the same role as SMITH:

```
SELECT ENAME, JOB FROM EMP  
WHERE JOB=(SELECT JOB FROM EMP WHERE ENAME='SMITH');
```

| | ENAME | JOB |
|---|--------|-------|
| ▶ | SMITH | CLERK |
| | ADAMS | CLERK |
| | JAMES | CLERK |
| | MILLER | CLERK |



Subqueries producing more than one record

Operators (IN, ANY, ALL)

IN - Searches for values in a specific list or a sub-query.

The **ANY** and **ALL** operators are used to compare a value with each value in a list or a subquery.

The **ANY** and **ALL** operators always precede the operators
(=, !=, <, >, >= or <=)

ANY – compares a value with each value produced by a subquery.

example:

$100 \geq \text{ANY}(100, 50, 150)$ will be **true** because $100 > 50$

It only needs to be true for one value.

ALL – compares a value with any of the values produced by the subquery.

example:

$100 \geq \text{ANY}(100, 50, 150)$ will be **false** because $100 \leq 100$ and $100 \leq 150$

It only needs to be true for all values.



Operator IN/ NOT IN

To find the employees earning the lowest salary in each department:

```
SELECT ENAME, SAL, DEPTNO FROM EMP WHERE (DEPTNO, SAL) IN  
(SELECT DEPTNO, MIN(SAL) FROM EMP GROUP BY DEPTNO);
```

| | ENAME | SAL | DEPTNO |
|---|--------|---------|--------|
| ▶ | SMITH | 800.00 | 20 |
| | JAMES | 950.00 | 30 |
| | MILLER | 1300.00 | 10 |



Operator ANY

To find employees who earn more than the lowest salary in department 30:

```
SELECT ENAME, SAL, DEPTNO FROM EMP WHERE SAL > ANY (SELECT DISTINCT  
SAL FROM EMP WHERE DEPTNO=30) ORDER BY SAL DESC;
```

| | ENAME | SAL | DEPTNO |
|---|--------|---------|--------|
| ▶ | KING | 5000.00 | 10 |
| | SCOTT | 3000.00 | 20 |
| | FORD | 3000.00 | 20 |
| | JONES | 2975.00 | 20 |
| | BLAKE | 2850.00 | 30 |
| | CLARK | 2450.00 | 10 |
| | ALLEN | 1600.00 | 30 |
| | TURNER | 1500.00 | 30 |
| | MILLER | 1300.00 | 10 |
| | WARD | 1250.00 | 30 |
| | MARTIN | 1250.00 | 30 |
| | ADAMS | 1100.00 | 20 |



Operator ALL

To find the employees who earn more than any of the employees in department 30:

```
SELECT ENAME, SAL, DEPTNO FROM EMP WHERE SAL > ALL (SELECT DISTINCT  
SAL FROM EMP WHERE DEPTNO=30) ORDER BY SAL DESC;
```

| | ENAME | SAL | DEPTNO |
|---|-------|---------|--------|
| ▶ | KING | 5000.00 | 10 |
| | SCOTT | 3000.00 | 20 |
| | FORD | 3000.00 | 20 |
| | JONES | 2975.00 | 20 |