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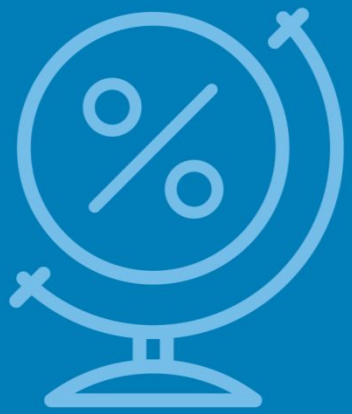

Subqueries

Module 6

Agenda

- What is subquery?
- The IN operator
- Subquery in the FROM clause
- Subquery as field requests
- Correlated subquery
- Conditions EXISTS, NOT EXISTS
- The UNION operator

What is subquery?

A subquery is a query that is nested inside a SELECT, INSERT, UPDATE, or DELETE statement, or inside another subquery.

A subquery can be used anywhere an expression is allowed.

There are a few rules that subqueries must follow:

- Subqueries must be enclosed within parentheses.
- A subquery can have only one column in the SELECT clause, unless multiple columns are in the main query for the subquery to compare its selected columns.
- An ORDER BY cannot be used in a subquery.
- Subqueries that return more than one row can only be used with multiple value operators, such as the IN operator.
- The BETWEEN operator cannot be used with a subquery; however, the BETWEEN operator can be used within the subquery.

The IN operator

- Subqueries can be used with the following SQL statements along with the comparison operators like

  =, <, >, >=, <= etc.
- Usually, a subquery should return only one record, but sometimes it can also return multiple records when used with operators IN, NOT IN in the where clause.
- The query syntax:

```
SELECT <list of fields>
FROM <table name>
WHERE <field name> IN (<list of values>)
```

Subquery in the FROM clause

- Subqueries are legal in a SELECT statement's FROM clause.
- The syntax for the query:

  SELECT ...

  FROM (subquery) [AS] name ...
- The [AS] name clause is mandatory, because each table in a FROM clause must have a name.
- Any columns in the subquery select list must have unique names.

Subquery as field requests

- Demonstration

Correlated subquery

- Correlated subquery is a subquery that uses values from the outer query.
- The subquery is evaluated once for each row processed by the outer query.

For example,

```
SELECT ID, LASTNAME
FROM EMPLOYEE AS EMP
WHERE RATE > ( SELECT AVG(RATE)
    FROM EMPLOYEE
    WHERE
        ID_DEPARTMENT= EMP.ID_DEPARTMENT);
```

Conditions EXISTS, NOT EXISTS

- The SQL EXISTS condition is used in combination with a subquery and is considered to be met, if the subquery returns at least one row.
- It can be used in a SELECT, INSERT, UPDATE, or DELETE statement.
- The syntax for the EXISTS condition is:

  WHERE EXISTS (subquery);

The UNION operator

The UNION operator is used to combine the result-set of two or more SELECT statements.

SQL UNION Syntax

```
SELECT <LIST OF FIELDS>
FROM <TABLE 1>
UNION [ALL]
SELECT <LIST OF FIELDS>
FROM <TABLE 2>
```

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