

## Joins:

### 1) Types:

#### 1) (INNER) JOIN:

1) Returns records that have matched values in both tables.

2) Syntax:

1) `SELECT table1.<<col1>>, table2.<<col1>>  
FROM table1 t1 JOIN table2 t2  
ON <<condition>>`

2) `SELECT table1.<<col1>>, table2.<<col1>>  
FROM table1 t1 INNER JOIN table2 t2  
ON <<condition>>`

3) EG:

1) `select c.CustomerName, c.Country, c.City, o.OrderID,  
o.OrderDate`

`FROM Customer c INNER JOIN order_table o  
ON c.CustomerID=o.CustomerID;`

2) `select c.CustomerName, c.Country, c.City, o.OrderID,  
o.OrderDate`

`FROM Customer c JOIN order_table o  
ON c.CustomerID=o.CustomerID;`

3) Joining Multiple Tables:

1) `select o.OrderID, c.CustomerName, c.Country,  
e.EmployeeName, s.ShipperName, o.OrderDate  
from Customer c INNER JOIN order_table o ON  
c.CustomerID=o.CustomerID  
INNER JOIN employee e ON  
e.EmployeeID=o.EmployeeID  
INNER JOIN shipper s ON s.ShipperID=o.ShipperID;`

#### 2) LEFT (OUTER) JOIN:

1) Returns all records from the left table but only the matched records from the right table

2) The result on the right side is null if there is no match

#### 3) RIGHT (OUTER) JOIN:

1) Returns all the records from the right table but only the matched records from the left table

2) The result is NULL on the left side when no records are matched

#### 4) SELF JOIN:

1) Joins the same table. EG: getting managers for the employees

## Sub-Queries:

### 1) Definition:

- 1) Also, called inner-queries or nested queries
- 2) It is a query within another SQL query, which is embedded in the WHERE clause
- 3) They can be used with DML(SELECT, INSERT, UPDATE, DELETE) commands
- 4) They can be used along with:
  - 1) =, <, >, >=, <=, IN, BETWEEN etc. operations

### 2) Guidelines:

- 1) Sub-queries must be enclosed within parenthesis
- 2) Can have only one column in select clause, unless multiple columns are there in the main query for the sub-query to compare its selected columns
- 3) An ORDER BY command cannot be used within the sub-query, although in the main-query it can be used. In the sub-query we can use the GROUP BY command to perform same function as ORDER BY
- 4) Sub-queries that returns more than rows, can only be compared by using multi-valued operators like using IN command
- 5) The Select list cannot include any reference to BLOB(Binary Large Object: datatype: used when we trying to store large amount of data like files or images in the database), Array, CLOB, NCLOB
- 6) The BETWEEN operator cannot be used with the sub-query but it can be used within the sub-query

### 3) Types:

- 1) Single-Row: It return only one value for the inner select query
- 2) Multiple-Row: It returns multiple values for the inner select queries
  - 1) USE: IN
  - 2) ANY
    - 1) <ANY: less than the maximum
    - 2) >ANY: more than minimum
  - 3) ALL
    - 1) <ALL: means less than minimum
    - 2) >ALL: greater than maximum