# Assignment No. A4

**Title:** Design at Least 10 SQL queries for suitable database applications using SQL DML statement: All types of joins and sub-queries.

**Problem Statement / Aim:** Upon Completion of this assignment students should able to learn

1. Concept of joins in SQL
2. Working of Inner join
3. Operations of Outer join
4. Operation of Left Outer Join
5. Operation of Right Outer Join
6. Sub queries in SQL

**Theory:**

#### SQL Join

A JOIN clause is used to combine rows from two or more tables, based on a related column between them.

Let's look at a selection from the "Orders" table:

|  |  |  |
| --- | --- | --- |
| **OrderID** | **CustomerID** | **OrderDate** |
| 10308 | 2 | 1996-09-18 |
| 10309 | 37 | 1996-09-19 |
| 10310 | 77 | 1996-09-20 |

Then, look at a selection from the "Customers" table:

|  |  |  |  |
| --- | --- | --- | --- |
| **CustomerID** | **CustomerName** | **ContactName** | **Country** |
| 1 | Alfreds Futterkiste | Maria Anders | Germany |
| 2 | Ana Trujillo Emparedados y helados | Ana Trujillo | Mexico |
| 3 | Antonio Moreno Taquería | Antonio Moreno | Mexico |

Notice that the "CustomerID" column in the "Orders" table refers to the "CustomerID" in the "Customers" table. The relationship between the two tables above is the "CustomerID" column.

Then, we can create the following SQL statement (that contains an INNER JOIN), that selects records that have matching values in both tables:

Example

SELECT Orders.OrderID, Customers.CustomerName, Orders.OrderDate FROM Orders

INNER JOIN Customers ON Orders.CustomerID=Customers.CustomerID; and it will produce something like this:

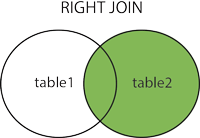
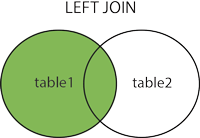
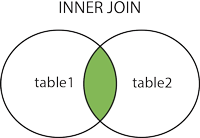
|  |  |  |
| --- | --- | --- |
| **OrderID** | **CustomerName** | **OrderDate** |
| 10308 | Ana Trujillo Emparedados y helados | 9/18/1996 |
| 10365 | Antonio Moreno Taquería | 11/27/1996 |
| 10383 | Around the Horn | 12/16/1996 |

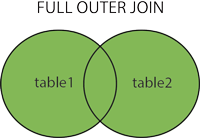
|  |  |  |
| --- | --- | --- |
| 10355 | Around the Horn | 11/15/1996 |
| 10278 | Berglunds snabbköp | 8/12/1996 |

Different Types of SQL JOINs

Here are the different types of the JOINs in SQL:

* **(INNER) JOIN**: Returns records that have matching values in both tables
* **LEFT (OUTER) JOIN**: Return all records from the left table, and the matched records from the right table
* **RIGHT (OUTER) JOIN**: Return all records from the right table, and the matched records from the left table
* **FULL (OUTER) JOIN**: Return all records when there is a match in either left or right table





#### SQL INNER JOIN Keyword

The INNER JOIN keyword selects records that have matching values in both tables.

#### INNER JOIN Syntax

SELECT column\_name(s) FROM table1

INNER JOIN table2 ON table1.column\_name = table2.column\_name;

#### SQL LEFT JOIN Keyword

The LEFT JOIN keyword returns all records from the left table (table1), and the matched records from the right table (table2). The result is NULL from the right side, if there is no match.

#### LEFT JOIN Syntax

SELECT column\_name(s) FROM table1

LEFT JOIN table2 ON table1.column\_name = table2.column\_name;

#### SQL RIGHT JOIN Keyword

The RIGHT JOIN keyword returns all records from the right table (table2), and the matched records from the left table (table1). The result is NULL from the left side, when there is no match.

#### RIGHT JOIN Syntax

SELECT column\_name(s) FROM table1

RIGHT JOIN table2 ON table1.column\_name = table2.column\_name;

#### SQL FULL OUTER JOIN Keyword

The FULL OUTER JOIN keyword return all records when there is a match in either left (table1) or right (table2) table records.

**Note:** FULL OUTER JOIN can potentially return very large result-sets.

#### FULL OUTER JOIN Syntax

SELECT column\_name(s) FROM table1

FULL OUTER JOIN table2 ON table1.column\_name = table2.column\_name;