

Introduction

- Joins are used to combine columns from different tables.
- From clause will have table formats (O) eg: EMP,DEPT or EMP E,DEPT D
- Type of Join Specified (S)
- Join condition uses Where(O), ON(S)
- Column Names should have format eg: emp.ename or e.ename

Types of JOIN

1. EQUI JOIN / INNER JOIN

Used for tables with common columns

```
SELECT      R.REGION_NAME, C.COUNTRY_NAME
FROM        REGIONS R
INNER JOIN  COUNTIRES C
ON          R.REGION_ID=C.REGION_ID

AND        R.REGION_ID IN(1,2)
```

2. OUTER JOIN

Inner Join + Missing Data

(FULL OUTER JOIN/ RIGHT OUTER JOIN/ LEFT OUTER JOIN)

```
SELECT      R.REGION_NAME, C.COUNTRY_NAME
FROM        REGIONS R
RIGHT OUTER JOIN  COUNTIRES C
ON          R.REGION_ID=C.REGION_ID
```

3. NON EQUI JOIN

Used for tables without common columns.

```
SELECT      E.FIRST_NAME||'
            '||E.LAST_NAME,
            J.GRADE_LEVEL

FROM        EMPLOYEES E

JOIN        JOB_GRADES J

ON          E.SALARY

BETWEEN    J.LOWEST_SAL

AND        J.HIGHEST_SAL
```

4. SELF JOIN

Table is joined to the table itself.

```
SELECT      E.ENAME "EMPLOYEE", M.ENAME "MANAGER"

FROM        EMPLOYEES E

JOIN        EMPLOYEES M

ON          E.MANAGER_ID=M.EMPLOYEE_ID
```

5. Cross Join

A Cartesian product is formed when:

- A join condition is omitted
- A join condition is invalid

All rows in the first table are joined to all rows in the second table.

To avoid a Cartesian product, always include a valid join condition in a WHERE clause.

```
SQL > SELECT * FROM EMPLOYEES CROSS JOIN DEPARTMENTS;  
SQL > SELECT EMPLOYEE_ID , FIRST_NAME, JOB_ID, DEPARTMENT_ID,  
DEPARTMENT_NAME, LOCATION_ID FROM EMPLOYEES CROSS JOIN DEPARTMENTS;
```

6. Natural Join

- Naturally tables joined on common columns
- Common columns in both the tables should have same datatype
- Can't specify column on which join should be done

```
SELECT      REGION_NAME ,COUNTRY_NAME  
FROM        REGIONS  
NATURAL JOIN COUNTRIES
```

Using Clause

- When multiple columns are there we can specify which column should be used for joining.
- Suitable for Common columns in both the tables with different data type.

```
SELECT FIRST_NAME ,DEPARTMENT_NAME  
FROM EMPLOYEES  
JOIN DEPARTMENTS  
USING (DEPARTMENT_ID)
```