

differences between Join, Cross Join, Natural Join, and Self Join

=> Join (Inner Join):

- Returns only the rows that have matching values in the join columns (common attributes).
- Requires a join condition (ON clause) to specify the columns to match.
- Excludes rows without matches.

=> Cross Join:

- Returns the Cartesian product of both tables, combining each row of one table with each row of the other table.
- No join condition is specified; every possible combination is returned.
- Includes all rows from both tables, even if there's no match.

=> Natural Join:

- Returns only the rows that have matching values in the join columns (common attributes).
- No join condition is specified; the database automatically joins the tables based on the common attributes.
- Excludes rows without matches.

=> Self Join:

- Joins a table with itself, often used for hierarchical or recursive relationships.
- Requires a join condition (ON clause) to specify the columns to match.
- Returns only the rows where the join condition is met, comparing columns within the same table.

=> Key differences:

- Join and Natural Join require matching values, while Cross Join returns all combinations.
- Self Join is used for hierarchical relationships within a single table.
- Natural Join automatically joins tables based on common attributes, while Join and Self Join require a specified join condition.

Remember, the choice of join type depends on the specific query requirements and the relationships between the tables involved.