

SQL INTERVIEW PREPARATION PART 3

JOINS

1. INNER JOIN

Definition: Returns rows that have matching values in both tables.

Syntax:

SELECT columns

FROM table1

INNER JOIN table2

ON table1.common_column = table2.common_column;

Example:

- **Table A:**
| ID | Name |
|----|-----|
| 1 | John |
| 2 | Alice |
- **Table B:**
| ID | Age |
|----|-----|
| 1 | 25 |
| 3 | 30 |

Query:

SELECT A.ID, A.Name, B.Age

FROM A

INNER JOIN B

ON A.ID = B.ID;

Result:

ID	Name	Age
1	John	25

2. LEFT JOIN (or LEFT OUTER JOIN)

Definition: Returns all rows from the left table and matching rows from the right table. If no match, NULL is returned for the right table.

Syntax:

```
SELECT columns  
FROM table1  
LEFT JOIN table2  
ON table1.common_column = table2.common_column;
```

Example:**Query:**

```
SELECT A.ID, A.Name, B.Age  
FROM A  
LEFT JOIN B  
ON A.ID = B.ID;
```

Result:

ID	Name	Age
1	John	25
2	Alice	NULL

3. RIGHT JOIN (or RIGHT OUTER JOIN)

Definition: Returns all rows from the right table and matching rows from the left table. If no match, NULL is returned for the left table.

Syntax:

```
SELECT columns  
FROM table1  
RIGHT JOIN table2  
ON table1.common_column = table2.common_column;
```

Example:**Query:**

```
SELECT A.ID, A.Name, B.Age  
FROM A  
RIGHT JOIN B
```

ON A.ID = B.ID;

Result:

ID	Name	Age
1	John	25
3	NULL	30

4. FULL JOIN (or FULL OUTER JOIN)

Definition: Returns rows when there is a match in either table. Non-matching rows are filled with NULL.

Syntax:

SELECT columns

FROM table1

FULL JOIN table2

ON table1.common_column = table2.common_column;

Example:

Query:

SELECT A.ID, A.Name, B.Age

FROM A

FULL JOIN B

ON A.ID = B.ID;

Result:

ID	Name	Age
1	John	25
2	Alice	NULL
3	NULL	30

5. CROSS JOIN

Definition: Returns the Cartesian product of two tables. Every row in the first table is joined with every row in the second table.

Syntax:

SELECT columns

FROM table1

CROSS JOIN table2;

Example:**Query:**

SELECT A.ID, A.Name, B.Age

FROM A

CROSS JOIN B;

Result:

ID	Name	Age
1	John	25
1	John	30
2	Alice	25
2	Alice	30

6. SELF JOIN

Definition: Joins a table to itself. Typically used to find relationships within the same table.

Syntax:

SELECT A.column1, B.column2

FROM table A

INNER JOIN table B

ON A.common_column = B.common_column;

Example:

- Employees Table:**

ID	Name	ManagerID
----	-----	-----
1	John	NULL
2	Alice	1
3	Bob	1

Query:

```
SELECT E1.Name AS Employee, E2.Name AS Manager
FROM Employees E1
LEFT JOIN Employees E2
ON E1.ManagerID = E2.ID;
```

Result:

Employee	Manager
John	NULL
Alice	John
Bob	John