Today Topic

JOINS

- The most important and powerful feature in SQL Server is JOINS
- Joins is a method which is use to retrieve the data from two or more table from Database based on Logic
- It create a logical link between two or more table .so, you can select a set of table which are related by keys.
- Without JOIN there is no concept of Normalization, because we have to store the entire data in one table.

Advantage:

- Execute faster
- The performance increase might not be noticeable by the END user.

Disadvantage:

- Not easy to understand with good learn
- Can be confusing as to which join is appropriate type of join to use to yield the correct desired result set

Syntax

Select <coloumn_list>

From table1

JOIN (type of join depend upon of data to show)

Table2

On condition (key relationship from two tables)

Type of JOINS

- INNER JOIN
- OUTER JOIN
- SELF JOIN
- CROSS JOIN

INNER JOIN: Also called Join. It returns the rows present in both the Left table and right table only if there is a match. Otherwise, it returns zero records.

- OUTER JOIN

The outer join is split into 3 types. Like

- Full Outer Join: Also called as Full Join. It returns all the rows present in both the Left table and the right table.
- Left Outer join: Or called as Left Join. It returns all the rows present in the Left table and matching rows from the right table (if any).

- Right Outer Join: Also called as Right Join. It returns matching rows from the left table (if any), and all the rows present in the Right table.

SELF JOIN: It is used to join the table with itself. We can use this technique to calculate Running Total etc.

Cross Join: It is used to return the Cartesian product of two tables. It means, Number of rows in Employees multiplied by Number of rows in Department table
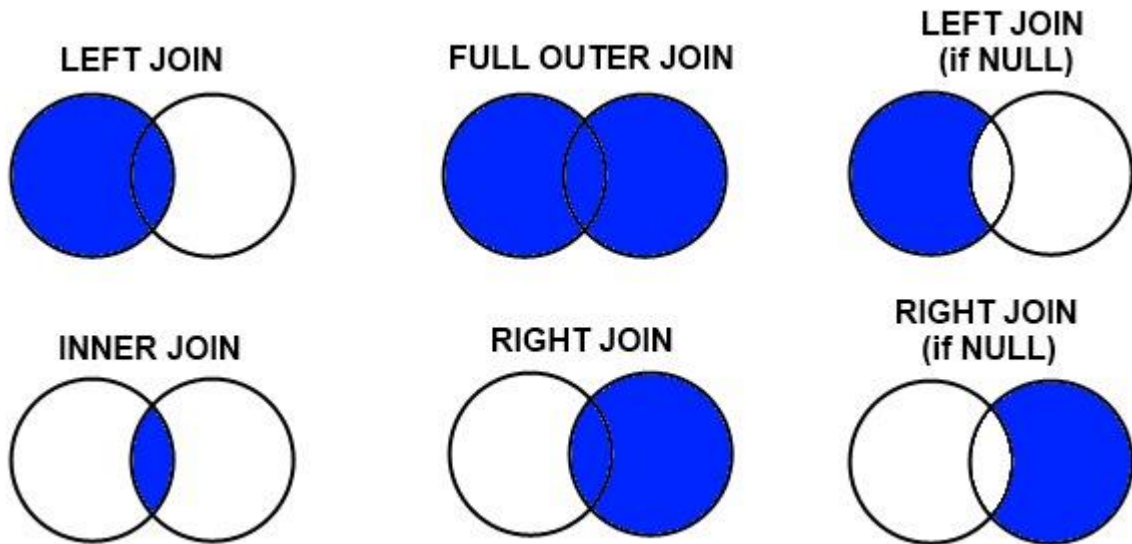
Let's understand in better by

- create table

```
CREATE TABLE [dbo].[Employee](
  [EmpID] [int] IDENTITY(1,1) PRIMARY KEY CLUSTERED,
  [EmpName] [varchar](50) NULL,
  [City] [varchar](30) NULL,
  [Designation] [varchar](30) NULL]
)

CREATE TABLE Departments
(EmpID        INT  PRIMARY KEY CLUSTERED ,
DepartmentID  INT,
DepartmentName VARCHAR(50)
)
```

Then enter data into them

```
SET IDENTITY_INSERT [dbo].[Employee] ON;
GO
INSERT INTO [dbo].[Employee]
([EmpID],[EmpName], [City], [Designation])
VALUES
(1, N'Charlotte Robinson', N'Chicago', N'Consultant')
, (2,N'Madison Phillips', N'Dallas', N'Senior Analyst')
```

, (3, N'Emma Hernandez', N'Phoenix', N'Senior Analyst')
, (4, N'Samantha Sanchez', N'San Diego', N'Principal Conultant')
, (5, N'Sadie Ward', N'San Antonio', N'Consultant')
, (6, N'Savannah Perez', N'New York', N'Principal Conultant')
, (7, N'Victoria Gray', N'Los Angeles', N'Assistant')
, (8, N'Alyssa Lewis', N'Houston', N'Consultant')
,(9, N'Anna Lee', N'San Jose', N'Principal Conultant')
, (10, N'Riley Hall', N'Philadelphia', N'Senior Analyst')
GO
SET IDENTITY_INSERT [dbo].[Employee] ON;
GO

EmpID	EmpName	City	Designation
1	Charlotte Robinson	Chicago	Consultant
2	Madison Phillips	Dallas	Senior Analyst
3	Emma Hernandez	Phoenix	Senior Analyst
4	Samantha Sanchez	San Diego	Principal Conultant
5	Sadie Ward	San Antonio	Consultant
6	Savannah Perez	New York	Principal Conultant
7	Victoria Gray	Los Angeles	Assistant
8	Alyssa Lewis	Houston	Consultant
9	Anna Lee	San Jose	Principal Conultant
10	Riley Hall	Philadelphia	Senior Analyst

INSERT INTO [dbo].[Departments]
([EmpID], [DepartmentID], [DepartmentName])
VALUES(1, 0, N'Executive')
INSERT INTO [dbo].[Departments] ([EmpID], [DepartmentID], [DepartmentName])
VALUES(2, 1, N'Document Control')
INSERT INTO [dbo].[Departments]([EmpID], [DepartmentID], [DepartmentName])
VALUES(3, 2, N'Finance')
INSERT INTO [dbo].[Departments]([EmpID], [DepartmentID], [DepartmentName])
VALUES(4, 3, N'Engineering')
INSERT INTO [dbo].[Departments]([EmpID], [DepartmentID], [DepartmentName])
VALUES(5, 4, N'Facilities and Maintenance')
INSERT INTO [dbo].[Departments]([EmpID], [DepartmentID], [DepartmentName])
VALUES(6, 2, N'Finance')
INSERT INTO [dbo].[Departments]([EmpID], [DepartmentID], [DepartmentName])
VALUES(10, 4, N'Facilities and Maintenance')

EmpID	DepartmentID	DepartmentName
1	0	Executive
2	1	Document Control
3	2	Finance
4	3	Engineering
5	4	Facilities and Maintenance
6	2	Finance
10	4	Facilities and Maintenance

Let Start hand on

- INNER JOIN (simply join)

SELECT *

FROM EMPLOYEE JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

EmpID	EmpName	City	Designation	EmpID	DepartmentID	DepartmentName
1	Charlotte Robinson	Chicago	Consultant	1	0	Executive
2	Madison Phillips	Dallas	Senior Analyst	2	1	Document Control
3	Emma Hernandez	Phoenix	Senior Analyst	3	2	Finance
4	Samantha Sanchez	San Diego	Principal Conultant	4	3	Engineering
5	Sadie Ward	San Antonio	Consultant	5	4	Facilities and Maintenance
6	Savannah Perez	New York	Principal Conultant	6	2	Finance
10	Riley Hall	Philadelphia	Senior Analyst	10	4	Facilities and Maintenance

- LEFT OUTER JOIN (simply left join)

SELECT *

FROM EMPLOYEE LEFT JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

EmpID	EmpName	City	Designation	EmpID	DepartmentID	DepartmentName
1	Charlotte Robinson	Chicago	Consultant	1	0	Executive
2	Madison Phillips	Dallas	Senior Analyst	2	1	Document Control
3	Emma Hernandez	Phoenix	Senior Analyst	3	2	Finance
4	Samantha Sanchez	San Diego	Principal Conultant	4	3	Engineering
5	Sadie Ward	San Antonio	Consultant	5	4	Facilities and Maintenance
6	Savannah Perez	New York	Principal Conultant	6	2	Finance
7	Victoria Gray	Los Angeles	Assistant	NULL	NULL	NULL
8	Alyssa Lewis	Houston	Consultant	NULL	NULL	NULL
9	Anna Lee	San Jose	Principal Conultant	NULL	NULL	NULL
10	Riley Hall	Philadelphia	Senior Analyst	10	4	Facilities and Maintenance

FROM the above table if we want to get only null value then

SELECT *

FROM EMPLOYEE LEFT JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

WHERE DEPARTMENTS. EmpID IS NULL

- RIGHT OUTER JOIN(Simply right join)

SELECT *

FROM EMPLOYEE RIGHT JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

EmpID	EmpName	City	Designation	EmpID	DepartmentID	DepartmentName
1	Charlotte Robinson	Chicago	Consultant	1	0	Executive
2	Madison Phillips	Dallas	Senior Analyst	2	1	Document Control
3	Emma Hernandez	Phoenix	Senior Analyst	3	2	Finance
4	Samantha Sanchez	San Diego	Principal Conultant	4	3	Engineering
5	Sadie Ward	San Antonio	Consultant	5	4	Facilities and Maintenance
6	Savannah Perez	New York	Principal Conultant	6	2	Finance
10	Riley Hall	Philadelphia	Senior Analyst	10	4	Facilities and Maintenance

FROM the above table if we want to get only null value then

SELECT *

FROM EMPLOYEE RIGHT JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

WHERE DEPARTMENTS. EmpID IS NULL

- FULL OUTER JOIN (Simply full join)

SELECT *

FROM EMPLOYEE FULL JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

Output

EmpID	EmpName	City	Designation	EmpID	DepartmentID	DepartmentName
1	Charlotte Robinson	Chicago	Consultant	1	0	Executive
2	Madison Phillips	Dallas	Senior Analyst	2	1	Document Control
3	Emma Hernandez	Phoenix	Senior Analyst	3	2	Finance
4	Samantha Sanchez	San Diego	Principal Conultant	4	3	Engineering
5	Sadie Ward	San Antonio	Consultant	5	4	Facilities and Maintenance
6	Savannah Perez	New York	Principal Conultant	6	2	Finance
7	Victoria Gray	Los Angeles	Assistant	NULL	NULL	NULL
8	Alyssa Lewis	Houston	Consultant	NULL	NULL	NULL
9	Anna Lee	San Jose	Principal Conultant	NULL	NULL	NULL
10	Riley Hall	Philadelphia	Senior Analyst	10	4	Facilities and Maintenance

FROM the above table if we want to get only null value then

SELECT *

FROM EMPLOYEE FULL JOIN DEPARTMENTS

ON EMPLOYEE. EmpID= DEPARTMENTS. EmpID

WHERE DEPARTMENTS. EmpID IS NULL

- CROSS JOIN

SELECT *

FROM EMPLOYEE CROSS JOIN DEPARTMENTS

 Output will be

EMPLOYEE IS CONSIST OF 10 ROWS * DEPARTMENT IS CONSIST OF 7 ROWS

Totally 70 rows is result

- SELF JOIN

SELECT E2.EMPNAME, E1.DESIGNATION, E2.EMPNAME AS HEAD
FROM #EMPLOYEE E1, #EMPLOYEE E2
WHERE E1.DESIGNATION=E2.DESIGNATION
 Output

EmpName	Designation	HEAD
Charlotte Robinson	Consultant	Charlotte Robinson
Charlotte Robinson	Consultant	Charlotte Robinson
Charlotte Robinson	Consultant	Charlotte Robinson

Madison Phillips	Senior Analyst	Madison Phillips
Madison Phillips	Senior Analyst	Madison Phillips
Madison Phillips	Senior Analyst	Madison Phillips
Emma Hernandez	Senior Analyst	Emma Hernandez
Emma Hernandez	Senior Analyst	Emma Hernandez
Emma Hernandez	Senior Analyst	Emma Hernandez
Samantha Sanchez	Principal Conultant	Samantha Sanchez
Samantha Sanchez	Principal Conultant	Samantha Sanchez
Samantha Sanchez	Principal Conultant	Samantha Sanchez
Sadie Ward	Consultant	Sadie Ward
Sadie Ward	Consultant	Sadie Ward
Sadie Ward	Consultant	Sadie Ward
Savannah Perez	Principal Conultant	Savannah Perez
Savannah Perez	Principal Conultant	Savannah Perez
Savannah Perez	Principal Conultant	Savannah Perez
Victoria Gray	Assistant	Victoria Gray
Alyssa Lewis	Consultant	Alyssa Lewis
Alyssa Lewis	Consultant	Alyssa Lewis
Alyssa Lewis	Consultant	Alyssa Lewis
Anna Lee	Principal Conultant	Anna Lee
Anna Lee	Principal Conultant	Anna Lee
Anna Lee	Principal Conultant	Anna Lee
Riley Hall	Senior Analyst	Riley Hall
Riley Hall	Senior Analyst	Riley Hall
Riley Hall	Senior Analyst	Riley Hall