



JOINS IN SQL

Giới thiệu Joins trong SQL

- ✓ Khi chúng ta cần truy vấn dữ liệu từ nhiều bảng khác nhau, Joins là phép kết nối dữ liệu từ nhiều bảng lại với nhau để trả về trong một tập kết quả.
- ✓ Được xem là chức năng dùng nhiều nhất khi chúng ta lập trình T – SQL. Nó giúp tái hiện lại thông tin thế giới thực từ dữ liệu lưu trữ trong mô hình dữ liệu quan hệ.

Định nghĩa SQL Joins

- ✓ SQL Joins là phép nối được dùng để kết hợp giữa các dòng từ hai hay nhiều bảng lại với nhau dựa trên mối quan hệ logic (logical relationships) giữa các bảng.
- ✓ SQL Join bao gồm các loại sau:
 1. Inner Join
 2. Outer Join (Left Join, Right Join, Full Join)
 3. Cross Join (Cartesian Join - Tích đề các)
 - Trường hợp đặc biệt, ta có:
 1. Self Join
 2. Excluding Join (Left Excluding Join, Right Excluding Join, Full Excluding Join)

Inner Join

- ✓ The INNER JOIN selects all rows from both tables as long as there is a match between *the columns* in both tables.
- ✓ Eliminate the rows that do not match with a row from the other table.
- ✓ **Syntax:**

```
Select col_names  
From Table_A Inner Join Table_B  
On Table_A.Col1 = Table_B.Col1
```

Inner Join

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang inner join HoaDon

on KhachHang.MaKH = HoaDon.MaKH

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
2	Dũng	1989-06-28	Đồng Nai	10308	2016-02-16	3	2
3	Tân	1986-09-05	Đồng Nai	10309	2016-03-18	1	3

Outer Join

- ✓ Return all rows from at least one of the tables mentioned in the FROM clause.
 - Left Outer Join (or Left Join)
 - Right Outer Join (or Right Join)
 - Full Outer Join (or Full Join)

Outer Join [Left Join]

- ✓ Return all of the records in the left table (Table_A) regardless if any of those records has a match in the right table (Table_B).
- ✓ In the results where there is no matching condition, the row contains NULL values for the right table's columns.
- ✓ **Syntax:**

```
Select col_names  
From Table_A Left Join Table_B  
On Table_A.Col1 = Table_B.Col1
```

Outer Join [Left Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang Left join HoaDon

on KhachHang.MaKH = HoaDon.MaKH

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
1	An	1986-10-15	Bình Dương	NULL	NULL	NULL	NULL
2	Dũng	1989-06-28	Đồng Nai	10308	2016-02-16	3	2
3	Tân	1986-09-05	Đồng Nai	10309	2016-03-18	1	3

Outer Join [Right Join]

- ✓ Return all of the records in the right table (Table_B) regardless if any of those records have a match in the left table (Table_A).
- ✓ In the results where there is no matching condition, the row contains NULL values for the left table's columns.
- ✓ **Syntax:**

```
Select col_names  
From Table_A Right Join Table_B  
On Table_A.Col1 = Table_B.Col1
```

Outer Join [Right Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang Right join HoaDon

on KhachHang.MaKH = HoaDon.MaKH

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
2	Dũng	1989-06-28	Đồng Nai	10308	2016-02-16	3	2
3	Tân	1986-09-05	Đồng Nai	10309	2016-03-18	1	3
NULL	NULL	NULL	NULL	10310	2016-04-15	2	77

Outer Join [Full Join]

- ✓ Return all of the records from both tables, joining records from the left table (Table_A) that match records from the right table (Table_B)
- ✓ **Syntax:**

```
Select col_names  
From Table_A Full Join Table_B  
On Table_A.Col1 = Table_B.Col1
```

Outer Join [Full Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang Full join HoaDon

on KhachHang.MaKH = HoaDon.MaKH

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
1	An	1986-10-15	Bình Dương	NULL	NULL	NULL	NULL
2	Dũng	1989-06-28	Đồng Nai	10308	2016-02-16	3	2
3	Tân	1986-09-05	Đồng Nai	10309	2016-03-18	1	3
NULL	NULL	NULL	NULL	10310	2016-04-15	2	77

Cross Join

- ✓ Return records that are multiplication of record number from both tables.
- ✓ No need any condition to join.
- ✓ **Syntax:**

```
Select col_names  
From Table_A Cross Join Table_B
```

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Cross Join

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang Cross Join HoaDon

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
1	An	1986-10-15	Bình Dương	10308	2016-02-16	3	2
2	Dũng	1989-06-28	Đồng Nai	10308	2016-02-16	3	2
3	Tân	1986-09-05	Đồng Nai	10308	2016-02-16	3	2
1	An	1986-10-15	Bình Dương	10309	2016-03-18	1	3
2	Dũng	1989-06-28	Đồng Nai	10309	2016-03-18	1	3
3	Tân	1986-09-05	Đồng Nai	10309	2016-03-18	1	3
1	An	1986-10-15	Bình Dương	10310	2016-04-15	2	77
2	Dũng	1989-06-28	Đồng Nai	10310	2016-04-15	2	77
3	Tân	1986-09-05	Đồng Nai	10310	2016-04-15	2	77


Self Join

✓ A SELF JOIN is a join of a table to itself. In SELF JOIN, we can use:

- Inner Join
- Outer Join
- Cross Join

✓ Example:

MaNVQL referencing **MaNV** of this table




MaNV	TenNV	NgayVL	MaNVQL
10120	Hoa	2015-10-02	NULL
10121	Lan	2015-10-05	10120
10122	Mai	2015-10-08	10120
10123	Hồng	2015-10-10	10121

Self Join

✓ Example:

MaNVQL referencing **MaNV** of this table



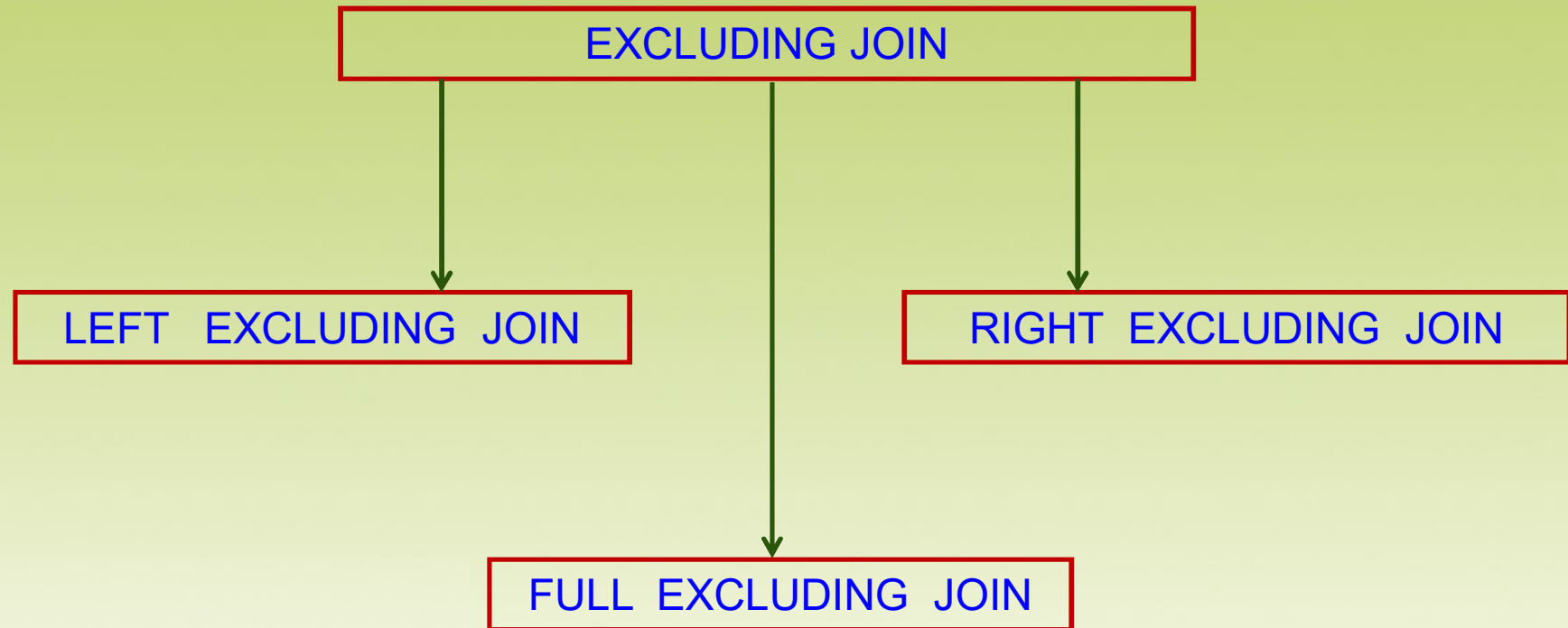
MaNV	TenNV	NgayVL	MaNVQL
10120	Hoa	2015-10-02	NULL
10121	Lan	2015-10-05	10120
10122	Mai	2015-10-08	10120
10123	Hồng	2015-10-10	10121

- ✓ Said information together with the name of the employee management staff of each employee

```
Select NV2.MaNV, NV2.TenNV, NV2.NgayVL,  
NV1.TenNV  
From NhanVien NV2 Left Join NhanVien NV1  
On NV2.MaNVQL = NV1.MaNV
```

MaNV	TenNV	NgayVL	TenNV
10120	Hoa	2015-10-02	NULL
10121	Lan	2015-10-05	Hoa
10122	Mai	2015-10-08	Hoa
10123	Hồng	2015-10-10	Lan

Excluding Join



Excluding Join [Left Excluding Join]

- ✓ Return all of the records in the left table (Table_A) that do not match any records in the right table (Table_B)
- ✓ **Syntax:**

```
Select col_names  
From Table_A Left Join Table_B  
On Table_A.Col1 = Table_B.Col1  
Where Table_B.Col1 IS NULL
```

Excluding Join [Left Excluding Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *
From KhachHang Left join HoaDon
on KhachHang.MaKH = HoaDon.MaKH
Where HoaDon.MaKH IS NULL

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
1	An	1986-10-15	Bình Dương	NULL	NULL	NULL	NULL

Excluding Join [Right Excluding Join]

- ✓ Return all of the records in the right table (Table_B) that do not match any records in the left table (Table_A)
- ✓ **Syntax:**

```
Select col_names  
From Table_A Right Join Table_B  
On Table_A.Col1 = Table_B.Col1  
Where Table_A.Col1 IS NULL
```

Excluding Join [Right Excluding Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *
From KhachHang Right join HoaDon
on KhachHang.MaKH = HoaDon.MaKH
Where KhachHang.MaKH IS NULL

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
NULL	NULL	NULL	NULL	10310	2016-04-15	2	77

Excluding Join [Full Excluding Join]

- ✓ Return all of the records in the left table (Table_A) and all of the records in the right table (Table_B) that do not match.

✓ Syntax:

```
Select col_names  
From Table_A Full Join Table_B  
On Table_A.Col1 = Table_B.Col1  
Where Table_A.Col 1 IS NULL or Table_B.Col1 IS NULL
```

Excluding Join [Full Excluding Join]

✓ Example:

KhachHang

MaKH	TenKH	NgaySinh	QueQuan
1	An	1986-10-15	Bình Dương
2	Dũng	1989-06-28	Đồng Nai
3	Tân	1986-09-05	Đồng Nai

HoaDon

MaHD	NgayLap	MaNV	MaKH
10308	2016-02-16	3	2
10309	2016-03-18	1	3
10310	2016-04-15	2	77

Select *

From KhachHang Full join HoaDon

on KhachHang.MaKH = HoaDon.MaKH

Where KhachHang.MaKH IS NULL or HoaDon.MaKH IS NULL

✓ Result:

MaKH	TenKH	NgaySinh	QueQuan	MaHD	NgayLap	MaNV	MaKH
1	An	1986-10-15	Bình Dương	NULL	NULL	NULL	NULL
NULL	NULL	NULL	NULL	10310	2016-04-15	2	77

Hình minh họa các phép Join trong SQL

