

SQL JOIN TYPES SIMPLIFIED

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CREATE BY - ATUL KUMAR (LINKEDIN)



SELECT from two tables

```
SELECT *  
FROM Table1;  
  
SELECT *  
FROM Table2;
```



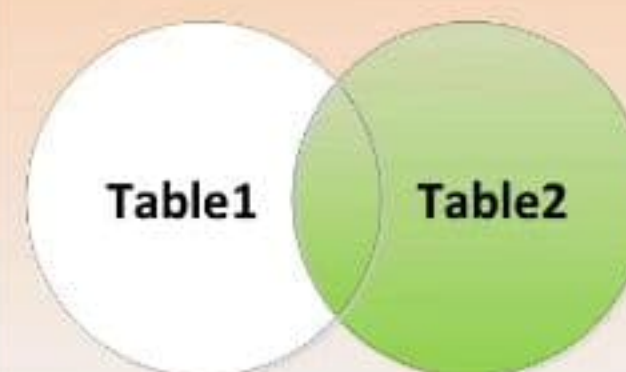
INNER JOIN

```
SELECT *  
FROM Table1 t1  
INNER JOIN Table2 t2  
ON t1.fk = t2.id;
```



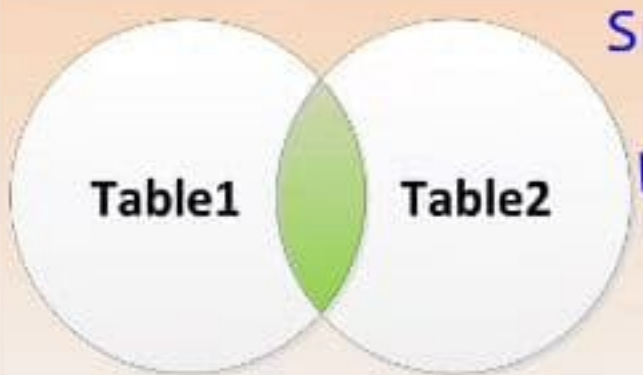
LEFT OUTER JOIN

```
SELECT *  
FROM Table1 t1  
LEFT OUTER JOIN Table2 t2  
ON t1.fk = t2.id;
```



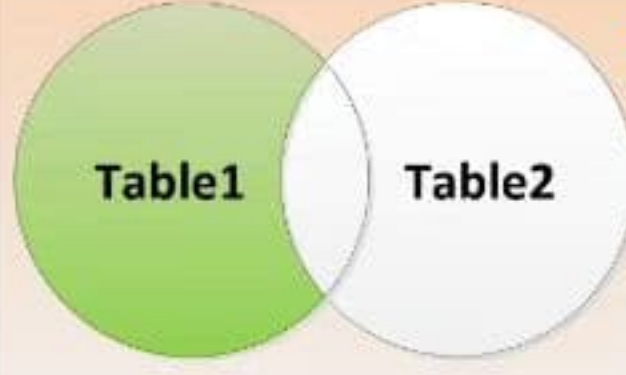
RIGHT OUTER JOIN

```
SELECT *  
FROM Table1 t1  
RIGHT OUTER JOIN Table2 t2  
ON t1.fk = t2.id;
```



SEMI JOIN

```
SELECT *  
FROM Table1 t1  
WHERE EXISTS (SELECT 1  
              FROM Table2 t2  
              WHERE t1.fk = t2.id  
             );
```



ANTI SEMI JOIN

```
SELECT *  
FROM Table1 t1  
WHERE NOT EXISTS (SELECT 1  
                  FROM Table2 t2  
                  WHERE t1.fk = t2.id  
                 );
```



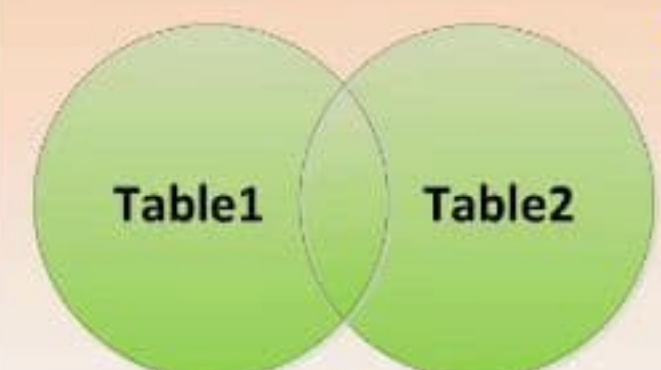
LEFT OUTER JOIN with exclusion
– replacement for a NOT IN

```
SELECT *  
FROM Table1 t1  
LEFT OUTER JOIN Table2 t2  
ON t1.fk = t2.id  
WHERE t2.id IS NULL;
```



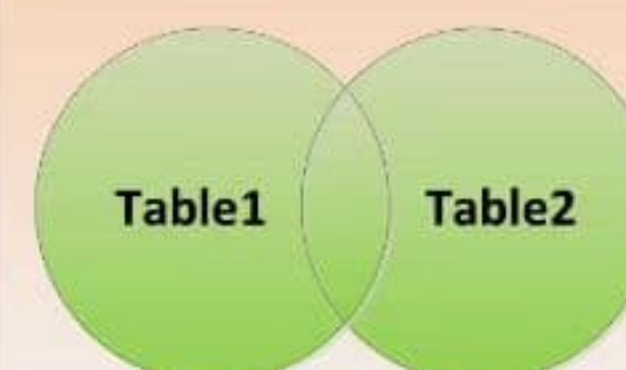
RIGHT OUTER JOIN with exclusion
– replacement for a NOT IN

```
SELECT *  
FROM Table1 t1  
RIGHT OUTER JOIN Table2 t2  
ON t1.fk = t2.id  
WHERE t1.fk IS NULL;
```



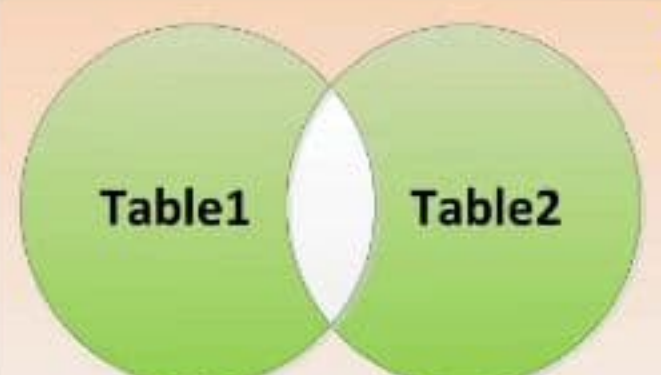
FULL OUTER JOIN

```
SELECT *  
FROM Table1 t1  
FULL OUTER JOIN Table2 t2  
ON t1.fk = t2.id;
```



CROSS JOIN, the Cartesian product

```
SELECT *  
FROM Table1 t1  
CROSS JOIN Table2 t2;
```



FULL OUTER JOIN with exclusion

```
SELECT *  
FROM Table1 t1  
FULL OUTER JOIN Table2 t2  
ON t1.fk = t2.id  
WHERE t1.fk IS NULL  
OR t2.id IS NULL;
```



NON-EQUI INNER JOIN

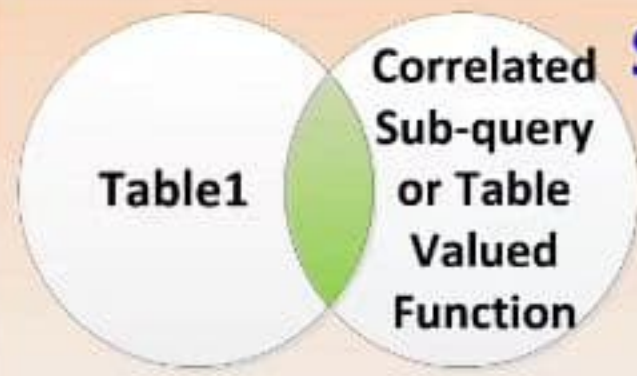
```
SELECT *  
FROM Table1 t1  
INNER JOIN Table2 t2  
ON t1.fk >= t2.id;
```

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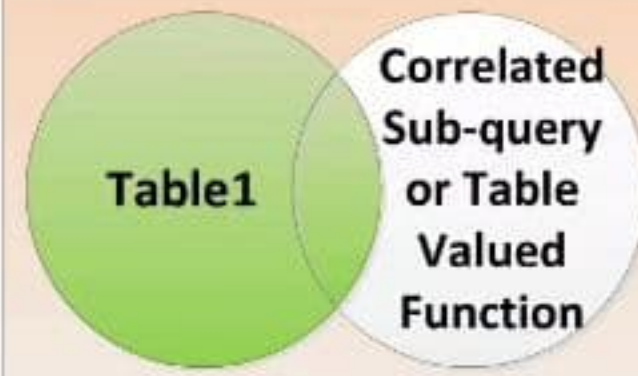
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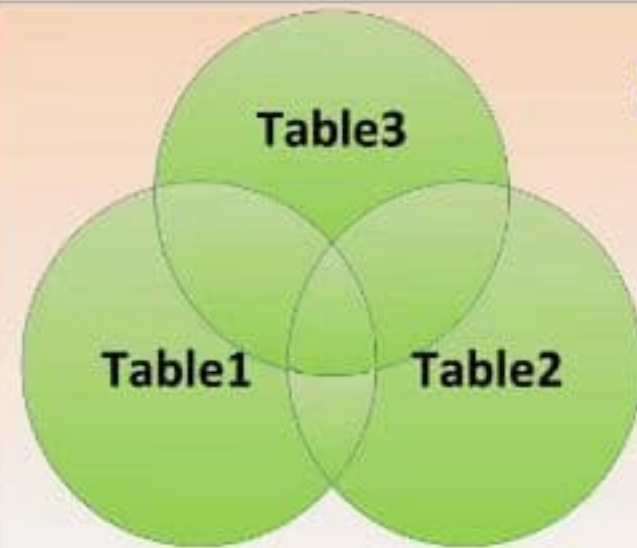
CROSS APPLY

```
SELECT *  
FROM Table1 t1  
CROSS APPLY  
[dbo].[someTVF](t1.fk)  
AS t;
```



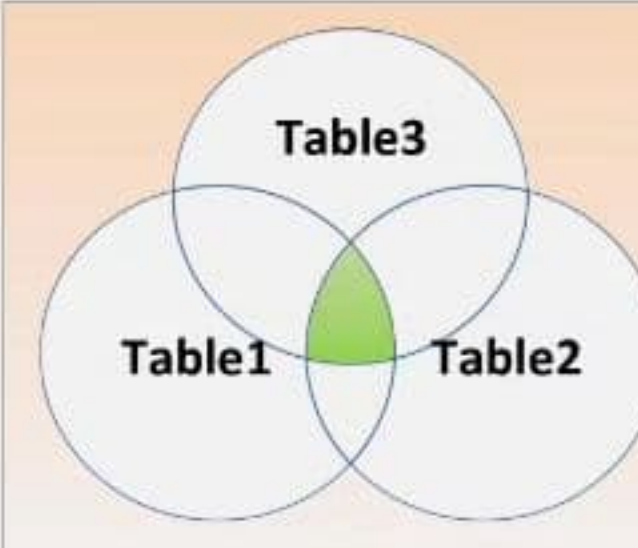
OUTER APPLY

```
SELECT *  
FROM Table1 t1  
OUTER APPLY  
[dbo].[someTVF](t1.fk)  
AS t;
```



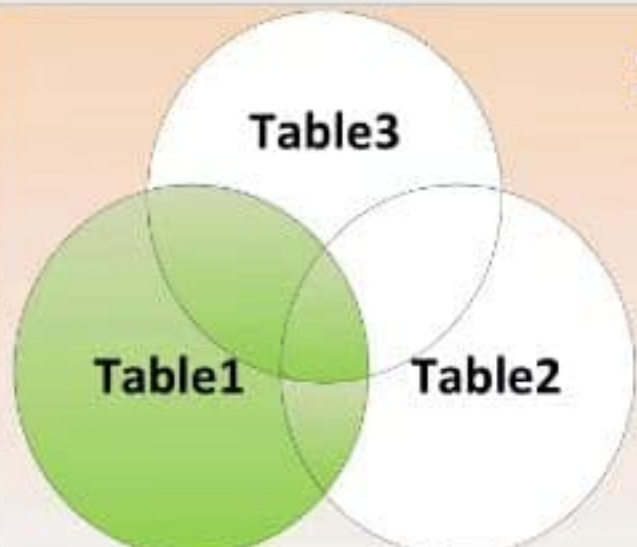
Two FULL OUTER JOINS

```
SELECT *  
FROM Table1 t1  
FULL OUTER JOIN Table2 t2  
ON t1.fk = t2.id  
FULL OUTER JOIN Table3 t3  
ON t1.fk_table3 = t3.id;
```



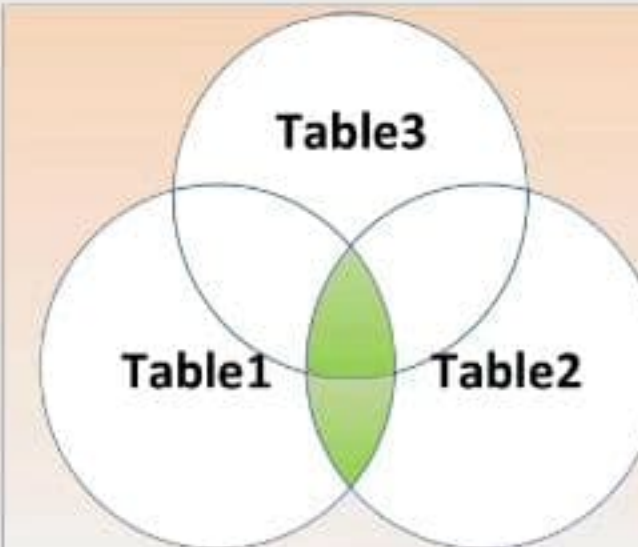
Two INNER JOINS

```
SELECT *  
FROM Table1 t1  
INNER JOIN Table2 t2  
ON t1.fk = t2.id  
INNER JOIN Table3 t3  
ON t1.fk_table3 = t3.id;
```



Two LEFT OUTER JOINS

```
SELECT *  
FROM Table1 t1  
LEFT OUTER JOIN Table2 t2  
ON t1.fk = t2.id  
LEFT OUTER JOIN Table3 t3  
ON t1.fk_table3 = t3.id;
```



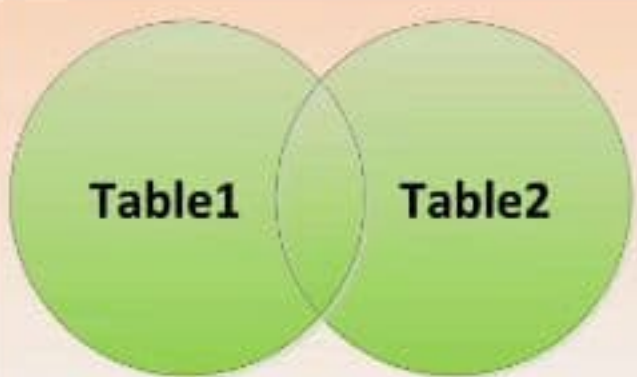
INNER JOIN and a LEFT OUTER JOIN

```
SELECT *  
FROM Table1 t1  
INNER JOIN Table2 t2  
ON t1.fk = t2.id  
LEFT OUTER JOIN Table3 t3  
ON t1.fk_table3 = t3.id;
```



EXCEPT

```
SELECT fk as id  
FROM Table1  
EXCEPT  
SELECT ID  
FROM Table2;
```



UNION

```
SELECT fk as id  
FROM Table1  
UNION  
SELECT ID  
FROM Table2;
```



INTERSECT

```
SELECT fk as id  
FROM Table1  
INTERSECT  
SELECT ID  
FROM Table2;
```

Sample Schema

Table 1
(People)

	id	Name	fk	fk_table3
1	1	Steve	1	NULL
2	2	Aaron	3	NULL
3	3	Mary	2	NULL
4	4	Fred	1	NULL
5	5	Anne	5	NULL
6	6	Beth	8	1
7	7	Johnny	NULL	1
8	8	Karen	NULL	2

Table 2
(Favorite Colors)

	id	FavoriteColor
1	1	red
2	2	green
3	3	blue
4	4	pink
5	5	purple
6	6	mauve
7	7	orange
8	8	yellow
9	1	indigo

Table 3
(Favorite Foods)

	id	dataValue
1	1	Pizza
2	2	Burger
3	3	Sushi

Note: Column names are very generic to simplify the sample queries.
Foreign keys are
Table1.fk -> Table2.id
Table2.fk_table3 -> Table3.id

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