TSQL JOIN TYPES

Created by Steve Stedman
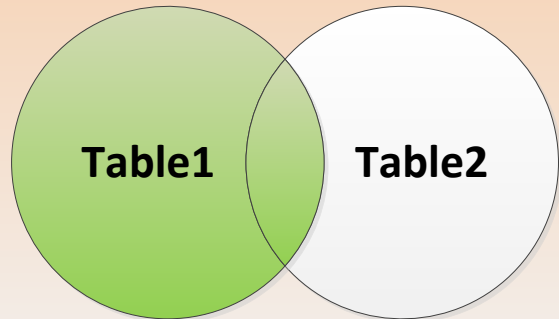
SELECT from two tables

```
SELECT  *
    FROM Table1;

SELECT  *
    FROM Table2;
```

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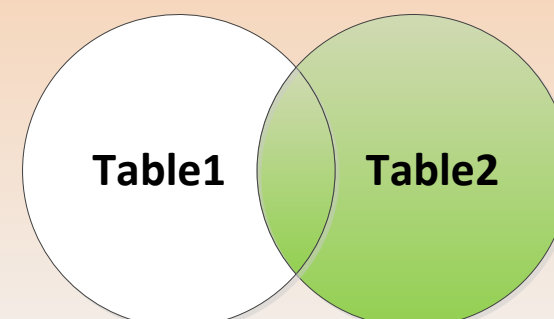
```
SELECT  *
    FROM Table1 t1
    INNER JOIN Table2 t2
        ON t1.fk = t2.id;
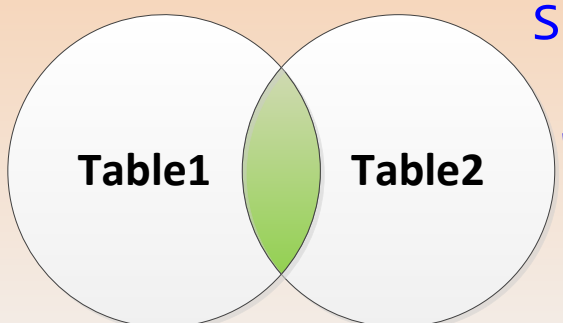```

**LEFT OUTER JOIN**

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

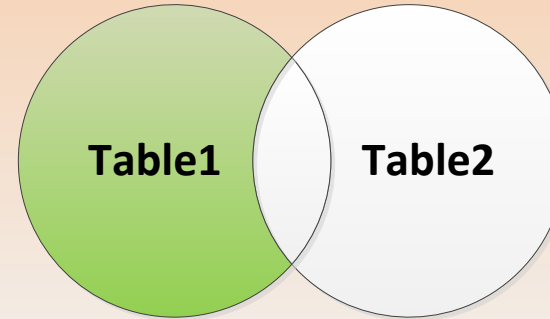**RIGHT OUTER JOIN**

```
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
                );
```
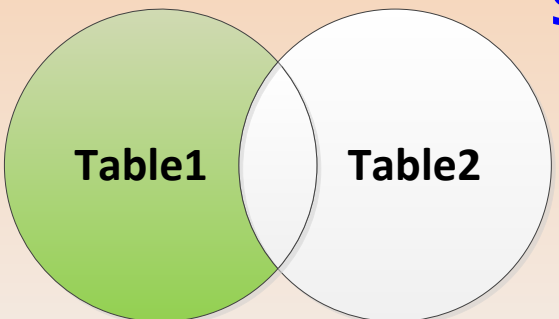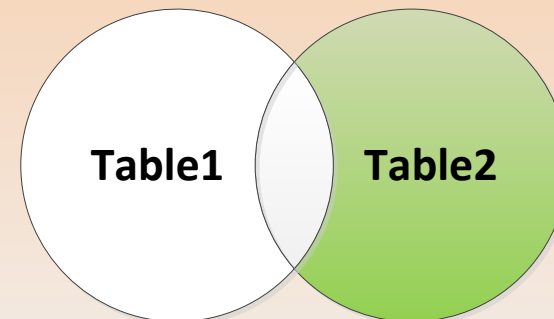
ANTI SEMI JOIN

```
SELECT  *
    FROM Table1 t1
    WHERE NOT EXISTS (SELECT 1
                FROM Table2 t2
                WHERE t1.fk = t2.id
                );
```
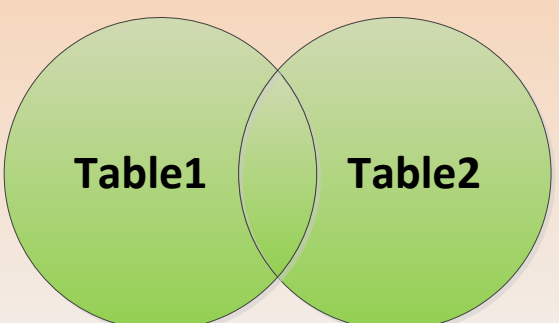
**LEFT OUTER JOIN with exclusion
– replacement for a NOT IN**

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

**RIGHT OUTER JOIN with exclusion
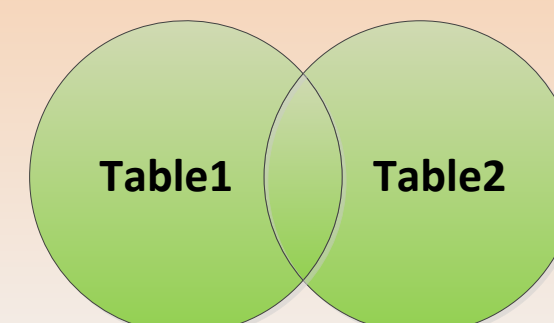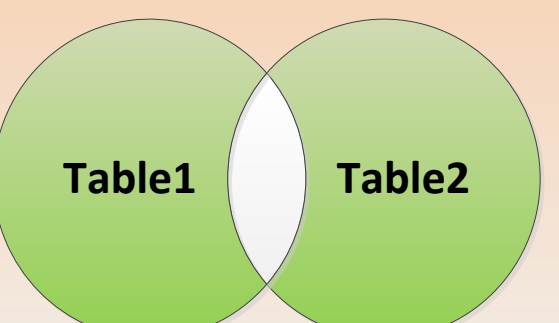– replacement for a NOT IN**

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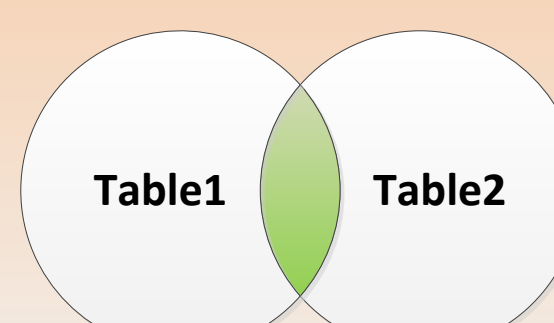
```
SELECT  *
    FROM Table1 t1
    CROSS JOIN Table2 t2;
```

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;
```
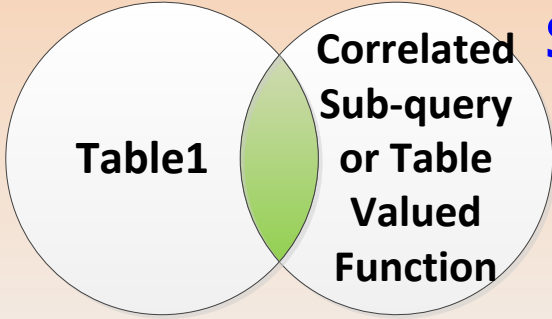
TSQL JOIN TYPES

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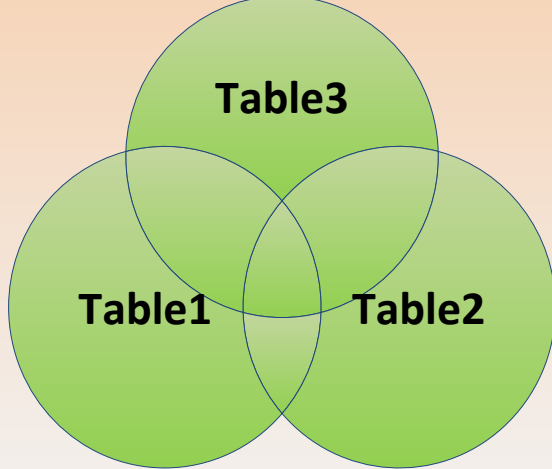### CROSS APPLY

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

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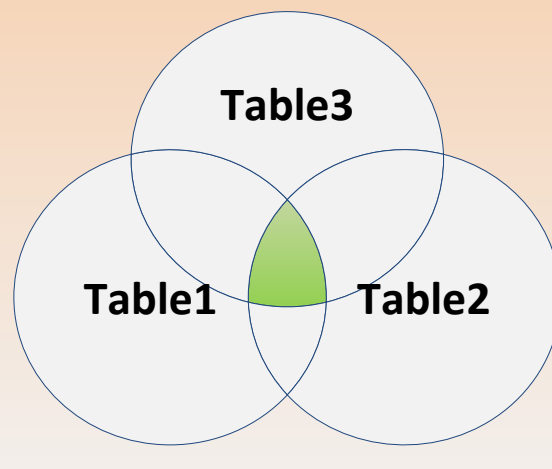
```sql
SELECT *
    FROM Table1 t1
OUTER APPLY
        [dbo].[someTVF](t1.fk)
        AS t;
```
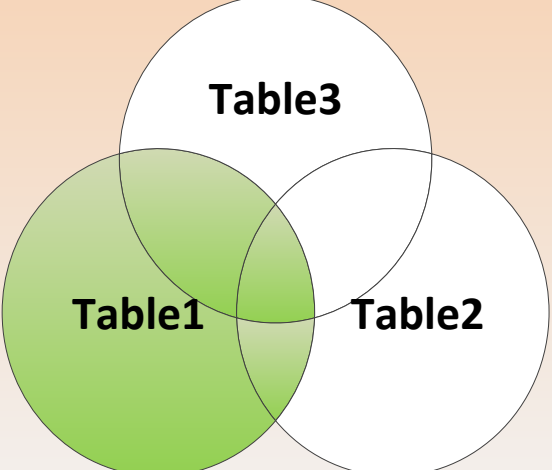
Two FULL OUTER JOINS

```sql
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;
```
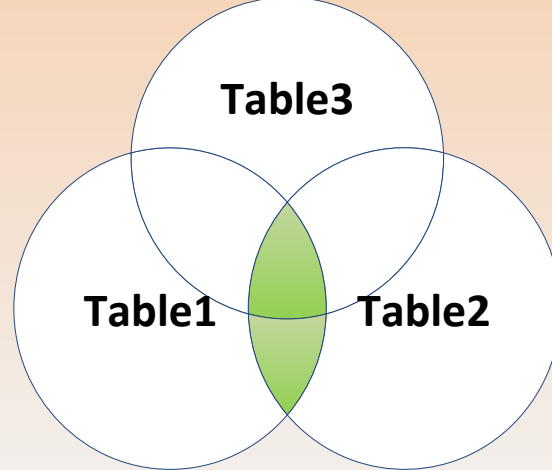
Two INNER JOINs

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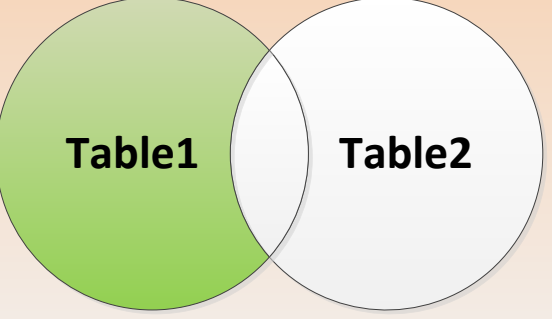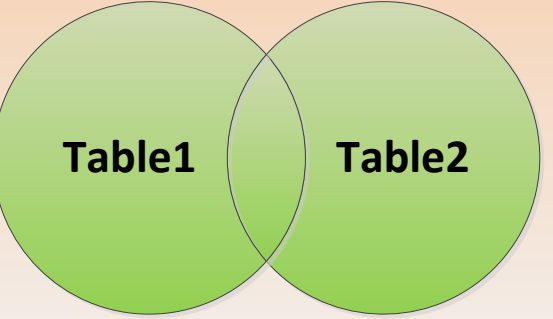
```sql
SELECT *
    FROM Table1 t1
LEFT OUTER JOIN Table2 t2
    ON t1.fk = t2.id
LEFT OUTER JOIN Table3 t3
    ON t1.fk_table3 = t3.id;
```
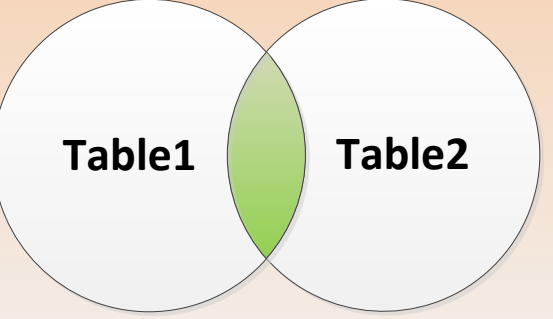
INNER JOIN and a LEFT OUTER JOIN

```sql
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

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

UNION

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

INTERSECT

```sql
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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Enjoying my free JOIN Types poster. Take a look at another freebie available at http://DatabaseHealth.com . A free SQL Server performance monitoring tool that I have made available to the SQL Server Community.

Free download, free to use, no strings attached. Enjoy!

Created By Steve Stedman   **http://SteveStedman.com**
Twitter @SqlEmt   **http://linkedin.com/in/stevestedman**