

MySQL JOIN Types

Presented by Steve Stedman

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About Steve

- Founder / Owner of Stedman Solutions, LLC
 - Database Consulting
 - Disaster Recovery Planning
 - Located in Bellingham
- 25 years of database experience

Common Interview Question

- Can you describe to me the difference between an INNER JOIN and an OUTER JOIN?

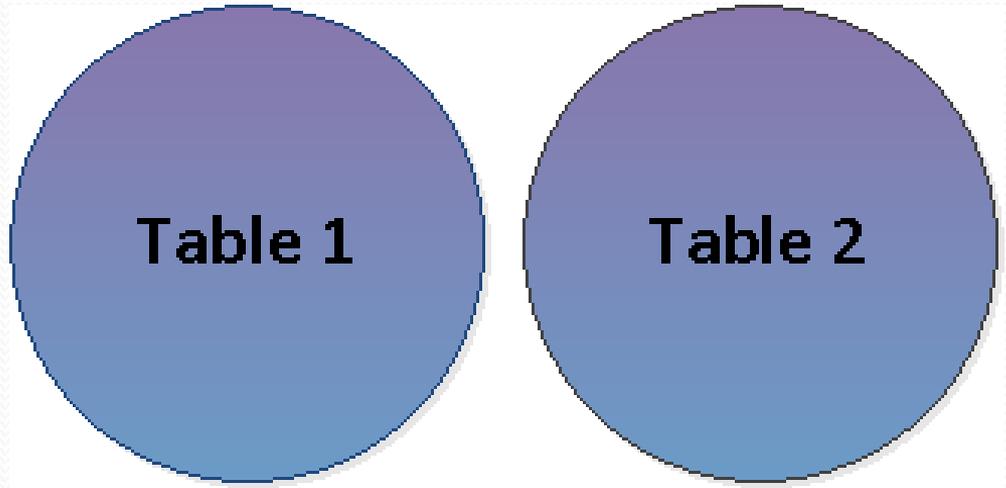
Agenda

- Basic Select
- INNER JOIN
- LEFT OUTER JOIN
- RIGHT OUTER JOIN
- SEMI JOIN
- ANTI SEMI JOIN
- FULL OUTER JOIN
- LEFT OUTER JOIN with exclusion
- RIGHT OUTER JOIN with exclusion
- FULL OUTER JOIN with exclusion
- TWO INNER JOINS
- TWO LEFT OUTER JOINS

Basic SELECT

```
SELECT *  
FROM Table1;
```

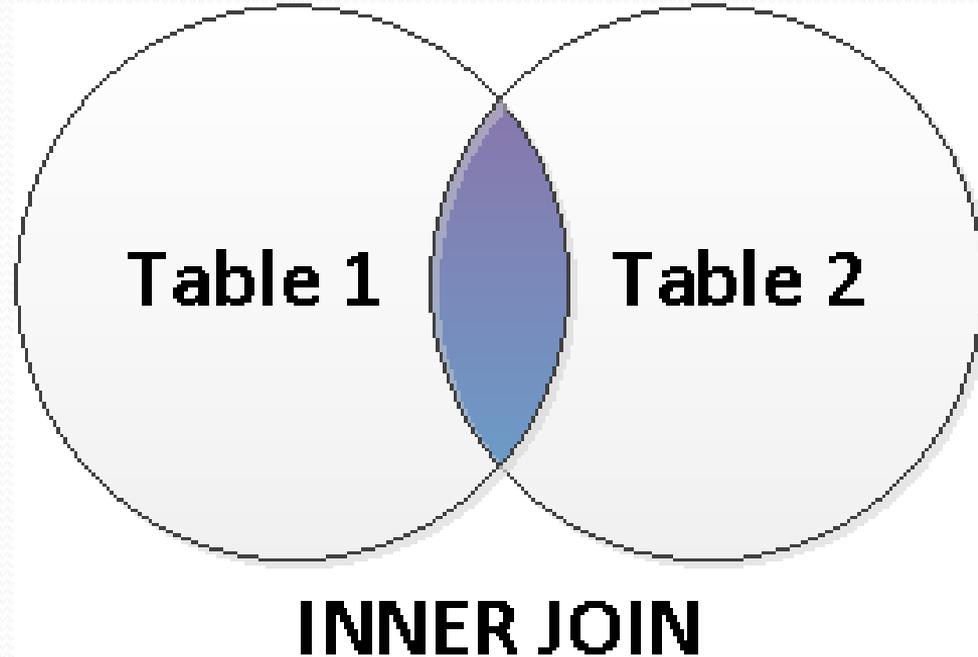
```
SELECT *  
FROM Table2;
```



INNER JOIN

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

Show things that match,
for instance 1 to 1 or 1 to n.



Terminology

- JOIN predicate... also know as the ON clause...

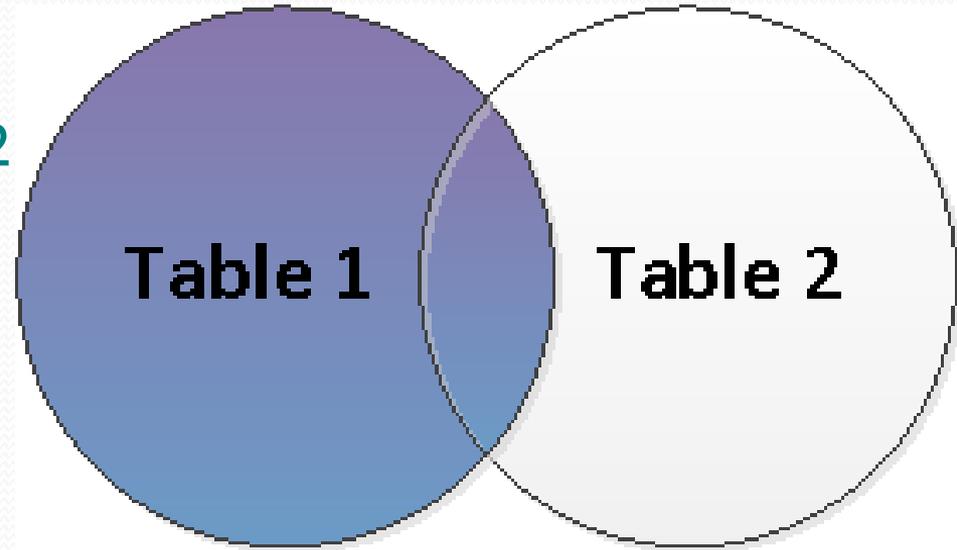
...

```
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;
```

Show things that match and those that don't from the left side, for instance 0, 1 to 1 or 1 to n.

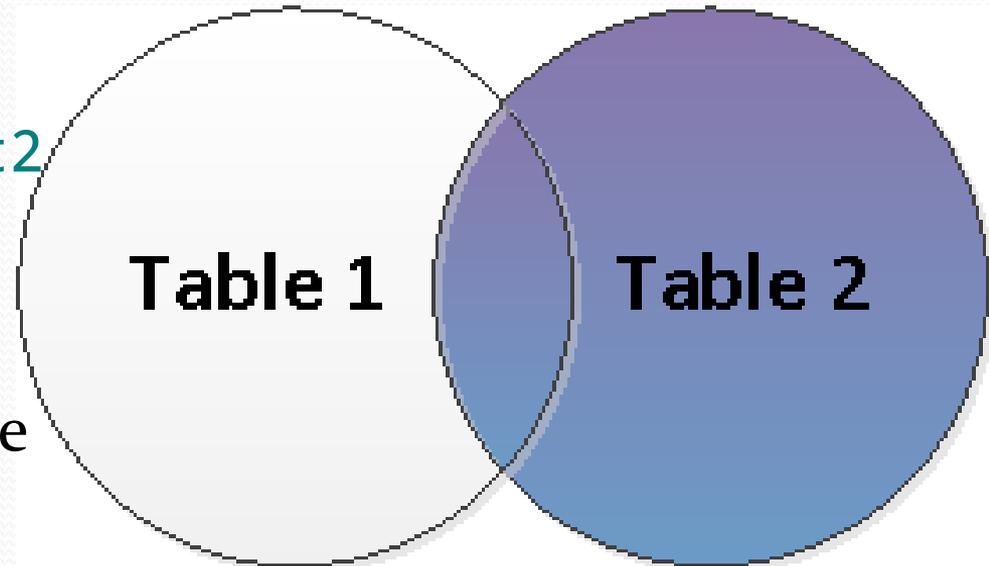


LEFT OUTER JOIN

RIGHT OUTER JOIN

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

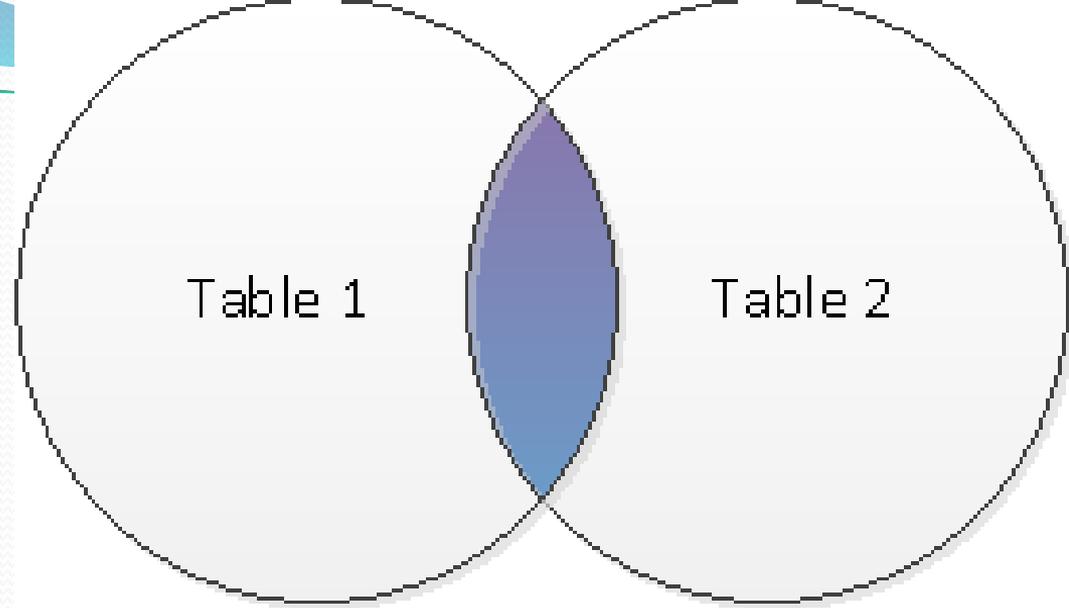
Show things that match and those that don't from the right side, for instance 0, 1 to 1 or 1 to n.



RIGHT OUTER JOIN

SEMI JOIN

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

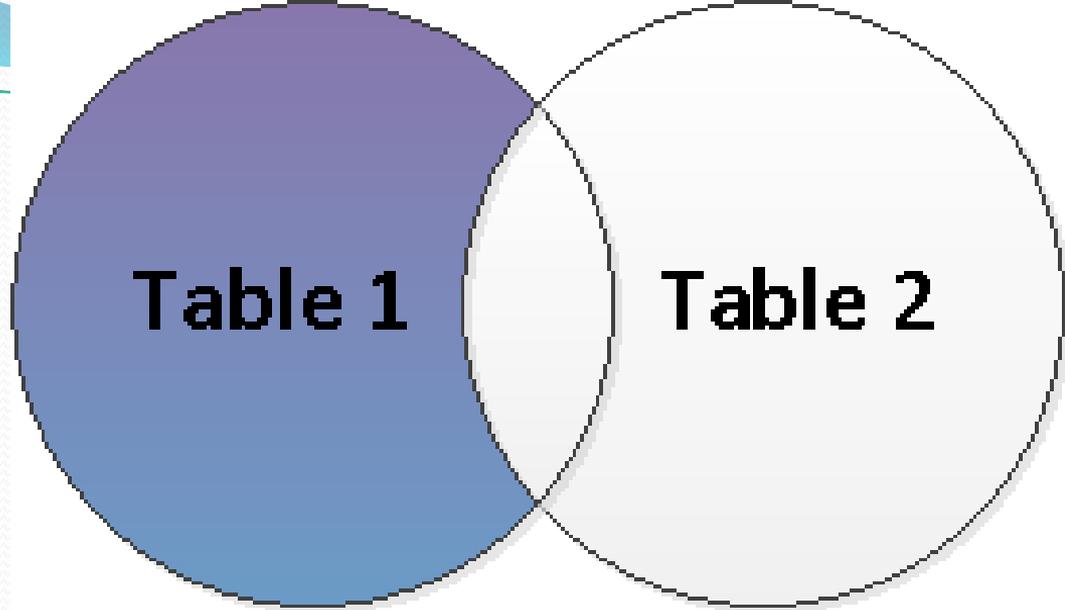


Similar to INNER JOIN, with less duplication.

Show things that match, for instance 1 to 1 or 1 to n.

ANTI SEMI JOIN

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

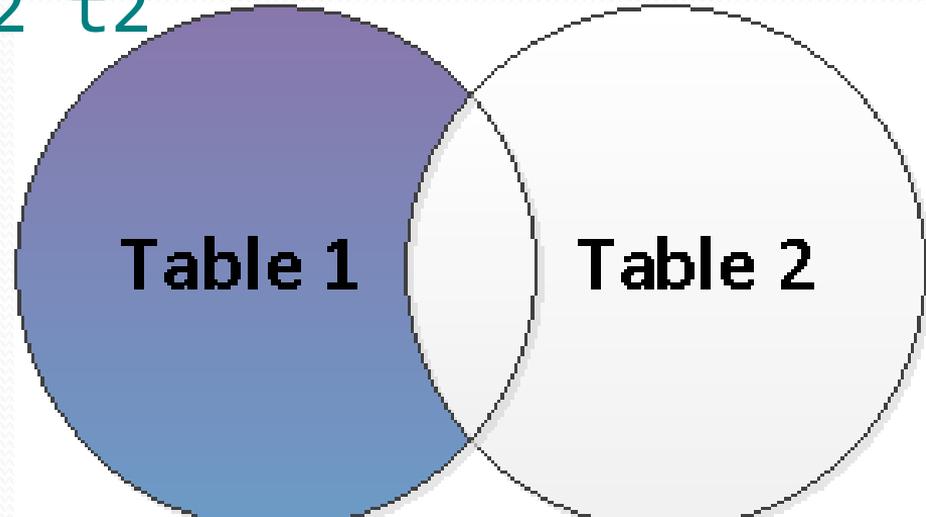


Give me everything from Table 1 that doesn't exist in Table 2.

LEFT OUTER JOIN with exclusion

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

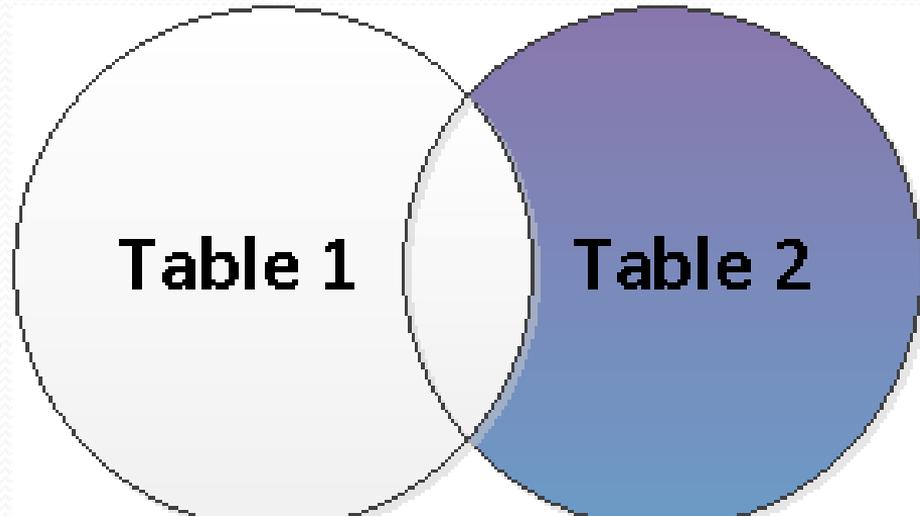
Give me everything from Table 1
that doesn't exist in Table 2.



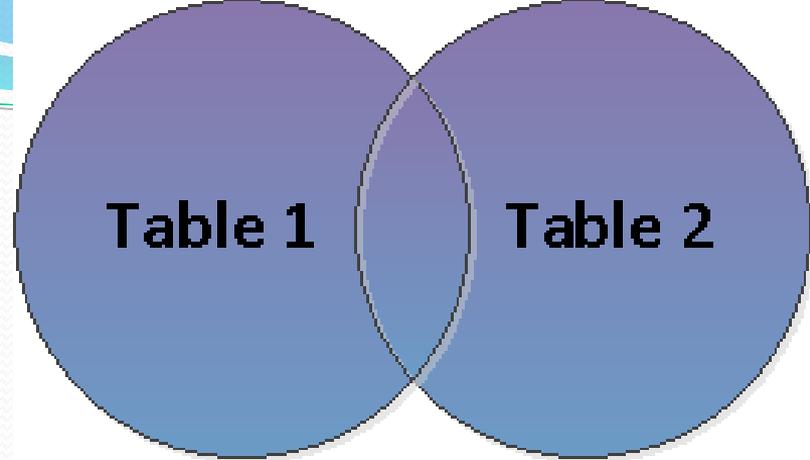
RIGHT OUTER JOIN with exclusion

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

Give me everything from Table 2
that doesn't exist in Table 1.



FULL OUTER JOIN



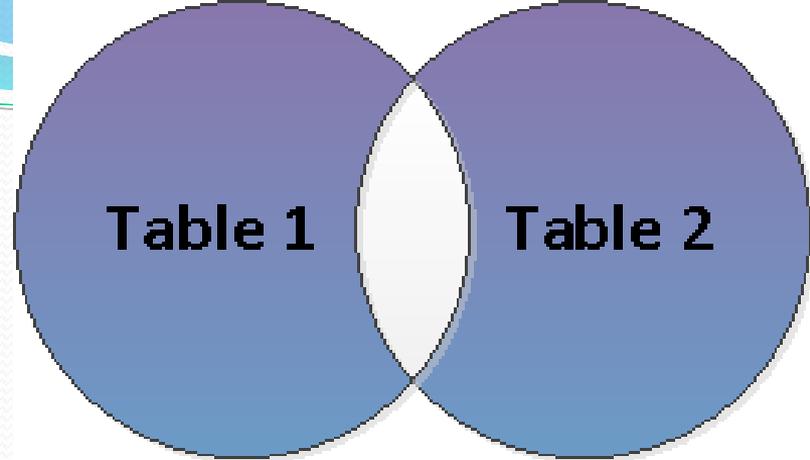
```
SELECT *  
  FROM Table1 t1  
  LEFT OUTER JOIN Table2 t2 ON t1.fk = t2.id  
UNION  
SELECT *  
  FROM Table1 t1  
  RIGHT OUTER JOIN Table2 t2 ON t1.fk = t2.id;
```

Not directly supported on MySQL.

Give me everything from both tables, match where there is a match, show nulls where there is no match.

FULL OUTER JOIN

With Exclusion



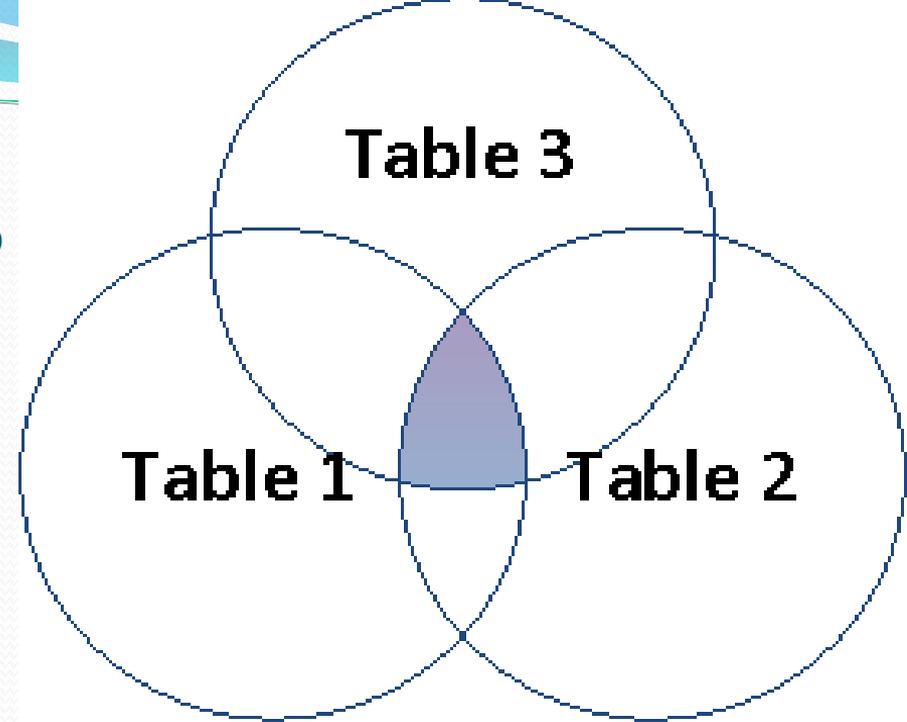
```
SELECT *  
  FROM Table1 t1  
  LEFT OUTER JOIN Table2 t2 ON t1.fk = t2.id  
 WHERE t2.id IS NULL  
UNION  
SELECT *  
  FROM Table1 t1  
  RIGHT OUTER JOIN Table2 t2 ON t1.fk = t2.id  
 WHERE t1.ID IS NULL;
```

Not directly supported in MySQL.

Show me everything from both sides where there is no match.

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;
```

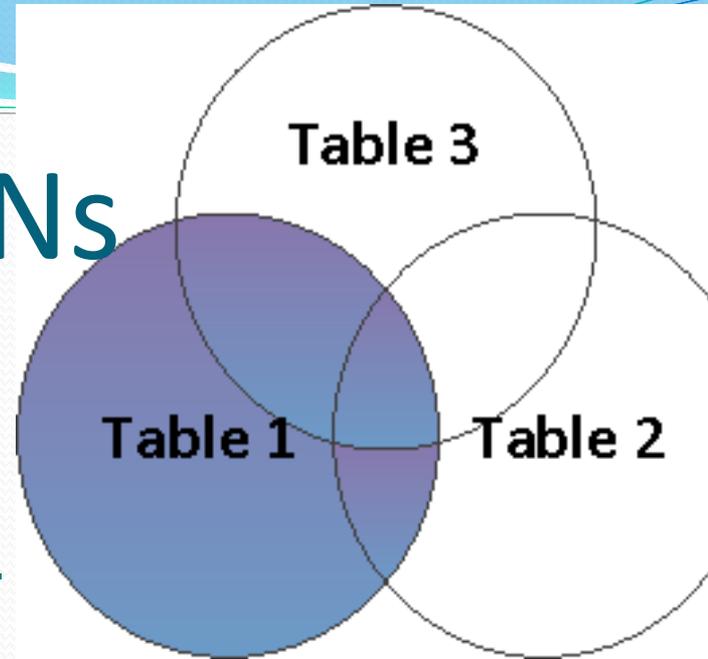


Give me everything that matches from all three tables.

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;
```

Give me everything from Table 1, match with Table 2 and Table 3 where possible, otherwise return nulls.



Can you describe the difference between an INNER JOIN and an OUTER JOIN?

- What type of an outer JOIN? LEFT, RIGHT, FULL, with exclusion, without exclusion?
- INNER JOIN includes those items where the JOIN predicate is an exact match.
- OUTER JOIN (left) returns everything from the SELECT table, if there is a match on the JOIN table, then show it if not show nulls.
- OUTER JOIN (right) returns everything from the JOIN table, if there is match in the SELECT table, then show it, otherwise show nulls.
- FULL OUTER JOIN... Everything from both sides, nulls where this is no match.

Review... Any Questions?

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- RIGHT OUTER JOIN
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- ANTI SEMI JOIN
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For More Information

- Steve on the web
 - <http://SteveStedman.com>
 - twitter: @SqlEmt