

Joining Tables - Outer

Let us understand how to perform outer joins using SQL. There are 3 different types of outer joins.

- **LEFT OUTER JOIN** (default) - Get all the records from both the datasets which satisfies JOIN condition along with those records which are in the left side table but not in the right side table.
- **RIGHT OUTER JOIN** - Get all the records from both the datasets which satisfies JOIN condition along with those records which are in the right side table but not in the left side table.
- **FULL OUTER JOIN** - left union right
- When we perform the outer join (lets say left outer join), we will see this.
 - Get all the values from both the tables when join condition satisfies.
 - If there are rows on left side table for which there are no corresponding values in right side table, all the projected column values for right side table will be null.
- Here are some of the examples for outer join.
 - Get all the orders where there are no corresponding order items.
 - Get all the order items where there are no corresponding orders.

```
%load_ext sql
```

The sql extension is already loaded. To reload it, use:
%reload_ext sql

```
%env  
DATABASE_URL=postgresql://itversity_retail_user:retail_password@localhost:5432/itversity_retail_db
```

```
env:  
DATABASE_URL=postgresql://itversity_retail_user:retail_password@localhost:5432/itversity_retail_db
```

```
%%sql  
  
SELECT o.order_id,  
       o.order_date,  
       o.order_status,  
       oi.order_item_order_id,  
       oi.order_item_subtotal  
FROM orders o LEFT OUTER JOIN order_items oi  
ON o.order_id = oi.order_item_order_id  
ORDER BY o.order_id  
LIMIT 10
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db  
10 rows affected.
```

| order_id | order_date | order_status | order_item_order_id | order_item_subtotal |
|----------|---------------------|-----------------|---------------------|---------------------|
| 1 | 2013-07-25 00:00:00 | CLOSED | 1 | 299.98 |
| 2 | 2013-07-25 00:00:00 | PENDING_PAYMENT | 2 | 129.99 |
| 2 | 2013-07-25 00:00:00 | PENDING_PAYMENT | 2 | 250.0 |
| 2 | 2013-07-25 00:00:00 | PENDING_PAYMENT | 2 | 199.99 |
| 3 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 199.92 |
| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 150.0 |
| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 299.95 |
| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 49.98 |
| 5 | 2013-07-25 00:00:00 | COMPLETE | 5 | 299.98 |

```
%%sql  
  
SELECT count(1)  
FROM orders o LEFT OUTER JOIN order_items oi  
ON o.order_id = oi.order_item_order_id
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
1 rows affected.
```

count

183650

```
%%sql
```

```
SELECT count(1)
FROM orders o JOIN order_items oi
    ON o.order_id = oi.order_item_order_id
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
1 rows affected.
```

count

172198

```
%%sql
```

```
SELECT o.order_id,
    o.order_date,
    o.order_status,
    oi.order_item_order_id,
    oi.order_item_subtotal
FROM orders o LEFT OUTER JOIN order_items oi
    ON o.order_id = oi.order_item_order_id
WHERE oi.order_item_order_id IS NULL
ORDER BY o.order_id
LIMIT 10
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
10 rows affected.
```

| order_id | order_date | order_status | order_item_order_id | order_item_subtotal |
|----------|---------------------|-----------------|---------------------|---------------------|
| 3 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 6 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 22 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 26 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 32 | 2013-07-25 00:00:00 | COMPLETE | None | None |
| 40 | 2013-07-25 00:00:00 | PENDING_PAYMENT | None | None |
| 47 | 2013-07-25 00:00:00 | PENDING_PAYMENT | None | None |
| 53 | 2013-07-25 00:00:00 | PROCESSING | None | None |
| 54 | 2013-07-25 00:00:00 | PENDING_PAYMENT | None | None |
| 55 | 2013-07-25 00:00:00 | PENDING | None | None |

```
%%sql
```

```
SELECT count(1)
FROM orders o LEFT OUTER JOIN order_items oi
    ON o.order_id = oi.order_item_order_id
WHERE oi.order_item_order_id IS NULL
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
1 rows affected.
```

count

11452

```
%%sql
```

```
SELECT count(1)
FROM orders o LEFT OUTER JOIN order_items oi
    ON o.order_id = oi.order_item_order_id
WHERE oi.order_item_order_id IS NULL
    AND o.order_status IN ('COMPLETE', 'CLOSED')
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
1 rows affected.
```

count

5189

```
%%sql
```

```
SELECT o.order_id,
       o.order_date,
       o.order_status,
       oi.order_item_order_id,
       oi.order_item_subtotal
FROM orders o RIGHT OUTER JOIN order_items oi
  ON o.order_id = oi.order_item_order_id
LIMIT 10
```

```
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10 rows affected.
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| order_id | order_date | order_status | order_item_order_id | order_item_subtotal |
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| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 49.98 |
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| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 150.0 |
| 4 | 2013-07-25 00:00:00 | CLOSED | 4 | 199.92 |
| 5 | 2013-07-25 00:00:00 | COMPLETE | 5 | 299.98 |
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* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
1 rows affected.
```

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172198

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%%sql
```

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SELECT o.order_id,
       o.order_date,
       o.order_status,
       oi.order_item_order_id,
       oi.order_item_subtotal
FROM orders o RIGHT OUTER JOIN order_items oi
  ON o.order_id = oi.order_item_order_id
WHERE o.order_id IS NULL
LIMIT 10
```

```
* postgresql://itversity_retail_user:***@localhost:5432/itversity_retail_db
0 rows affected.
```

| order_id | order_date | order_status | order_item_order_id | order_item_subtotal |
|----------|------------|--------------|---------------------|---------------------|
|----------|------------|--------------|---------------------|---------------------|