

Day 6



A decorative border composed of blue-outlined hexagons is arranged in a honeycomb pattern around the edges of the slide. The hexagons are of varying sizes and are connected at their vertices, creating a geometric frame.

What are JOINS?

JOINS



Combine information from multiple tables in one query

| | payment_id integer | customer_id smallint | staff_id smallint | rental_id integer | amount numeric (5,2) | payment_date timestamp with time zone |
|---|-----------------------|-------------------------|----------------------|----------------------|-------------------------|--|
| 1 | 1605 | 269 | 2 | 7 | 1.99 | 2020-01-24 22:40:19.996577+01 |
| 2 | 1605 | 269 | 1 | 98 | 0.99 | 2020-01-25 16:16:50.996577+01 |
| 3 | 1605 | 269 | 2 | 678 | 6.99 | 2020-01-28 22:44:14.996577+01 |

| customer_id [PK] integer | store_id smallint | first_name text | last_name text | email text | payment_id | customer_id | staff_id | rental_id | amount numeric (5,2) | payment_date timestamp with time zone | first_name text | last_name text |
|-----------------------------|----------------------|--------------------|-------------------|--------------------------------------|------------|-------------|----------|-----------|-------------------------|--|--------------------|-------------------|
| 269 | 1 | CASSANDRA | WALTERS | CASSANDRA.WALTERS@sakilacustomer.org | 7 | | | 7 | 1.99 | 2020-01-24 22:40:19.996577+01 | CASSANDRA | WALTERS |
| | | | | | 98 | | | 98 | 0.99 | 2020-01-25 16:16:50.996577+01 | CASSANDRA | WALTERS |
| | | | | | 678 | | | 678 | 6.99 | 2020-01-28 22:44:14.996577+01 | CASSANDRA | WALTERS |

| | customer_id [PK] integer | store_id smallint | first_name text | last_name text | email text |
|---|-----------------------------|----------------------|--------------------|-------------------|-------------------------------------|
| 1 | 1 | 1 | MARY | SMITH | MARY.SMITH@sakilacustomer.org |
| 2 | 2 | 1 | PATRICIA | JOHNSON | PATRICIA.JOHNSON@sakilacustomer.org |
| 3 | 3 | 1 | LINDA | WILLIAMS | LINDA.WILLIAMS@sakilacustomer.org |

What are Joins

- ✓ How Joins work and how we use them practically

INNER JOIN

OUTER JOIN

LEFT JOIN

RIGHT JOIN

What are Joins

- ✓ **Very important technique in SQL**
- ✓ **Can seem a bit complicated at first**
- ✓ **Theory + practice**
- ✓ **Many examples + practical tips + challenges**



Inner Join - Theory

INNER JOIN

- ✓ Inner Join easiest join type
- ✓ Helps to understand the general concept of joins

INNER JOIN

sales table

| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

bonus table

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

- ✓ **Combine the two tables in one query**
- ✓ **One common column – join column**

INNER JOIN

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|--------------------|----------------------|----------------|
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Do not appear in the bonus table

INNER JOIN

sales table

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|--------------------|----------------------|----------------|
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Do not appear in the bonus table

bonus table

| employee | bonus |
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| Sandra | YES |
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Do not appear in the sales table

✓ **INNER JOIN: Only rows appear in both tables**

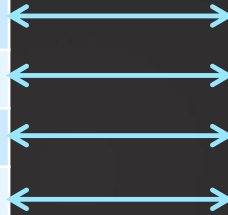
INNER JOIN

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| employee | city | sales | bonus |
|----------|------|-------|-------|
| | | | |
| | | | |
| | | | |
| | | | |

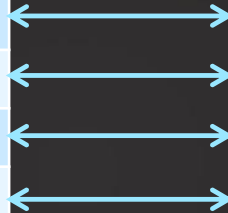
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| employee | city | sales | bonus |
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| | | | |
| | | | |
| | | | |

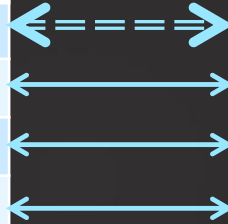
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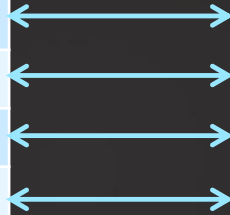
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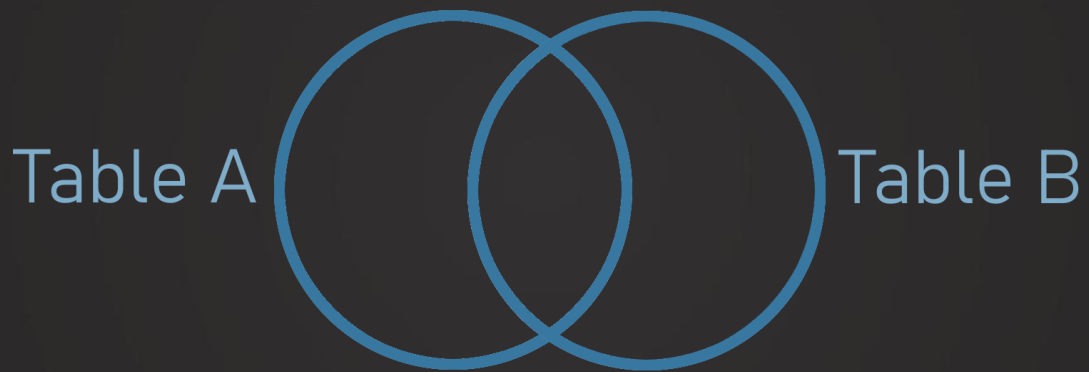
bonus table

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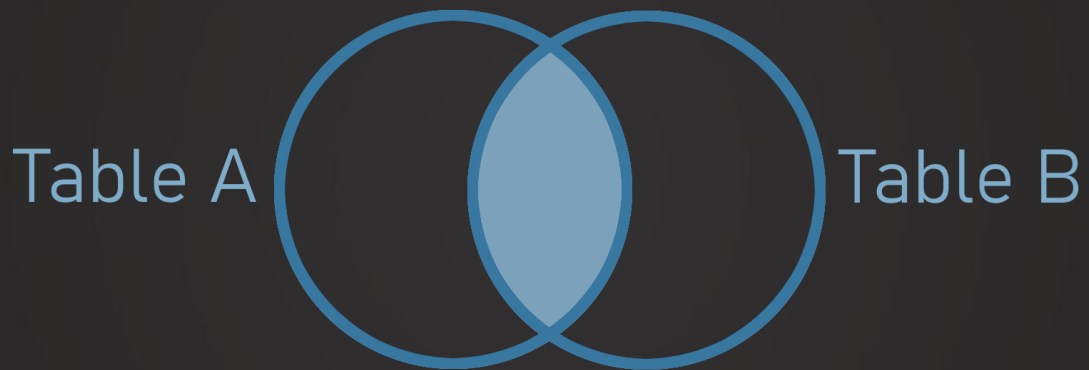


| employee | city | sales | bonus |
|----------|-----------|-------|-------|
| Sandra | Frankfurt | 500 | YES |
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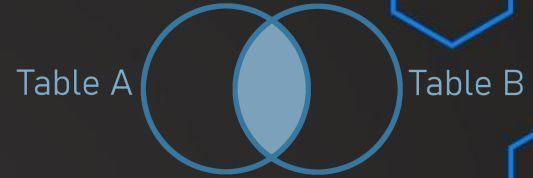
INNER JOIN



INNER JOIN



INNER JOIN



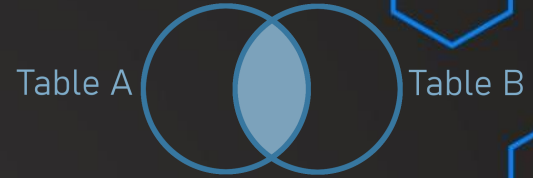
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INNER JOIN



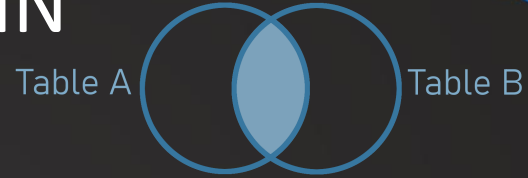
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INNER JOIN



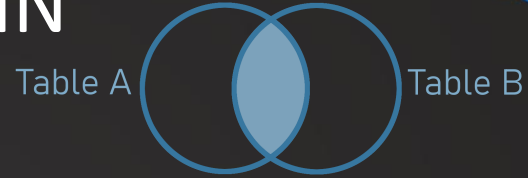
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INNER JOIN



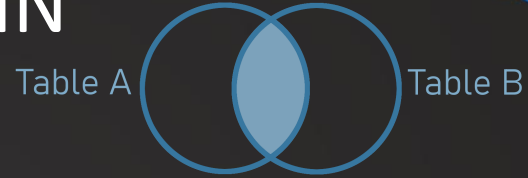
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|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
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| employee | - | - | bonus |
|----------|---|---|-------|
| Sandra | - | - | YES |
| Sabine | - | - | YES |
| Peter | - | - | NO |
| Peter | - | - | NO |
| Manuel | - | - | YES |

INNER JOIN



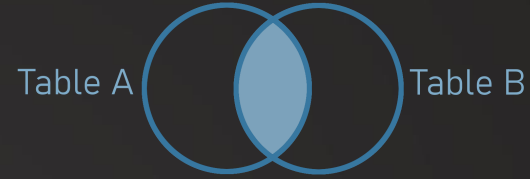
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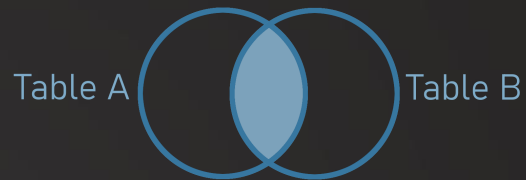
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SYNTAX



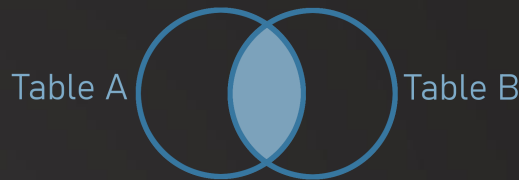
```
SELECT * FROM TableA  
INNER JOIN TableB  
ON TableA.employee = TableB.employee
```


SYNTAX



```
SELECT * FROM TableB  
INNER JOIN TableA  
ON TableA.employee = TableB.employee
```

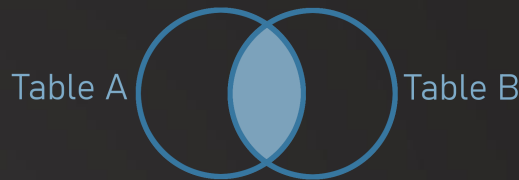
SYNTAX



```
SELECT * FROM TableA AS A  
INNER JOIN TableB AS B  
ON A.employee = B.employee
```

✓ Aliases help with writing & reading the code more easily

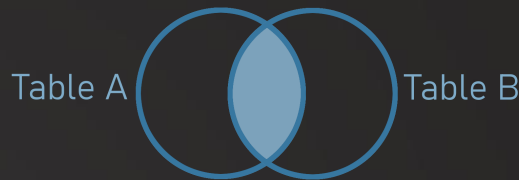
SYNTAX



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SYNTAX

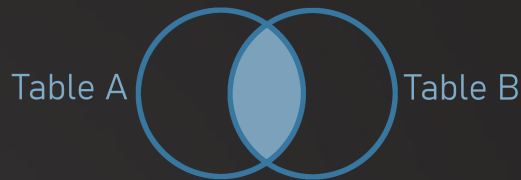


```
SELECT employee FROM TableA A
INNER JOIN TableB B
ON A.employee = B.employee
```

| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
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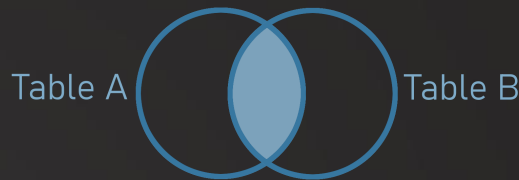


```
SELECT A.employee FROM TableA A  
INNER JOIN TableB B  
ON A.employee = B.employee
```

| employee | city | sales |
|----------|-----------|-------|
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|----------|-------|
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| Manuel | YES |
| Simon | NO |

SYNTAX



```
SELECT A.employee, sales FROM TableA A  
INNER JOIN TableB B  
ON A.employee = B.employee
```

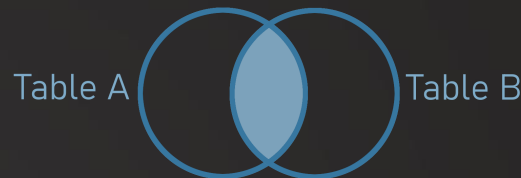
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✓ Always need a common column / reference

✓ INNER JOIN: Only rows where reference column value is in both tables

✓ Order of tables (A and B / B and A) does not matter

✓ Repeated values in either table will also be repeated

Challenge

The airline company wants to understand in which category they sell most tickets.

How many people choose seats in the category

- Business
- Economy or
- Comfort?

You need to work on the seats table and the boarding_passes table.

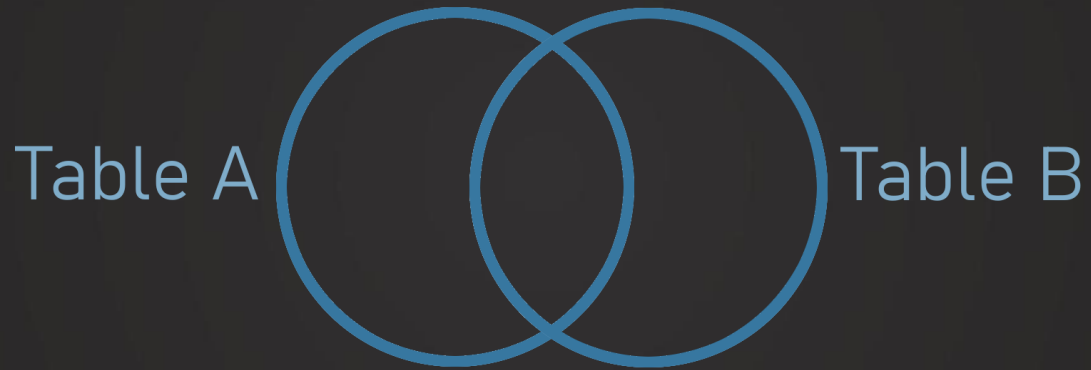
Result

| | fare_conditions character varying (10) | count bigint |
|---|---|-----------------|
| 1 | Business | 621092 |
| 2 | Comfort | 112098 |
| 3 | Economy | 2476771 |

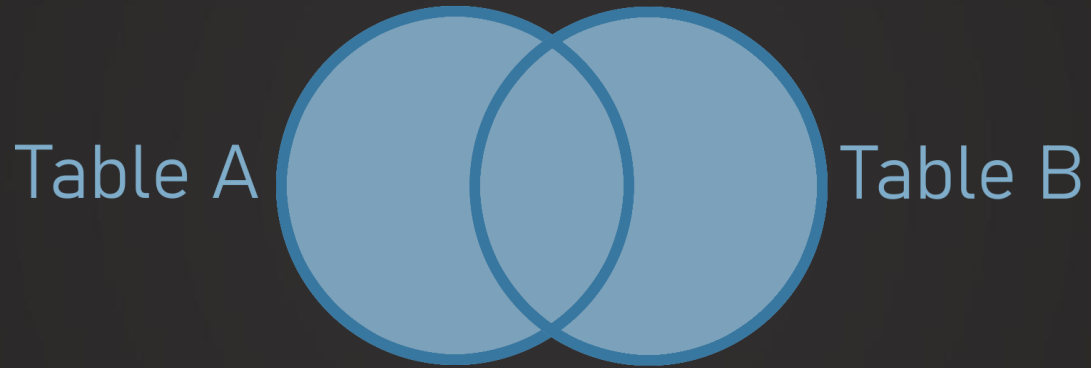
A decorative border composed of light blue hexagonal outlines is arranged in a jagged, honeycomb-like pattern around the edges of the slide. The pattern is denser on the left and right sides and more sparse at the top and bottom.

FULL OUTER JOIN

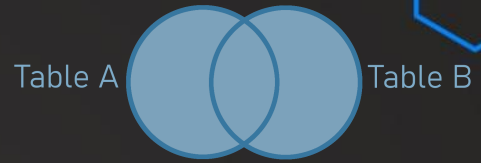
FULL OUTER JOIN



FULL OUTER JOIN



FULL OUTER JOIN



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Do not appear in the bonus table

bonus table

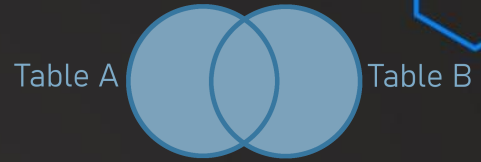
| employee | bonus |
|----------|-------|
| Sandra | YES |
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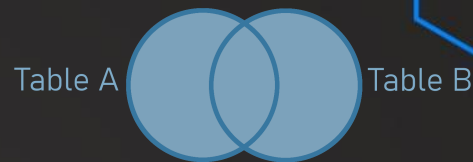


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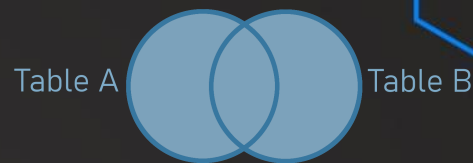


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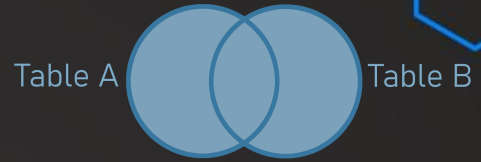


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|----------|-----------|-------|-------|
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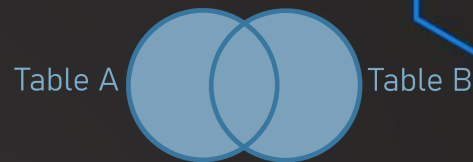


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| | null | null | NO |

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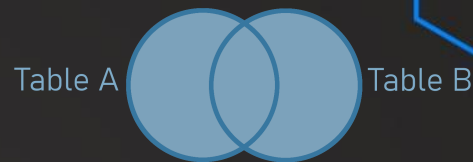


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| Peter | NO |
| Manuel | YES |
| Simon | NO |

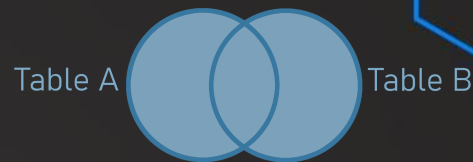


| bonus.employee | sales.employee | city | sales | bonus |
|----------------|----------------|-------------|-------------|-------------|
| Sandra | Sandra | Frankfurt | 500 | YES |
| Sabine | Sabine | Munich | 300 | YES |
| Peter | Peter | Hamburg | 200 | NO |
| Manuel | Manuel | Hamburg | 400 | YES |
| <i>null</i> | Michael | Munich | 100 | <i>null</i> |
| <i>null</i> | Frank | Frankfurt | 100 | <i>null</i> |
| Simon | <i>null</i> | <i>null</i> | <i>null</i> | NO |

FULL OUTER JOIN

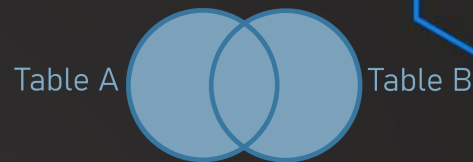
| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |



| bonus.employee | sales.employee | city | sales | bonus |
|----------------|----------------|-------------|-------------|-------------|
| <i>null</i> | Sandra | Frankfurt | 500 | YES |
| <i>null</i> | Sabine | Munich | 300 | YES |
| <i>null</i> | Peter | Hamburg | 200 | NO |
| <i>null</i> | Manuel | Hamburg | 400 | YES |
| <i>null</i> | Michael | Munich | 100 | <i>null</i> |
| <i>null</i> | Frank | Frankfurt | 100 | <i>null</i> |
| Simon | <i>null</i> | <i>null</i> | <i>null</i> | NO |

FULL OUTER JOIN

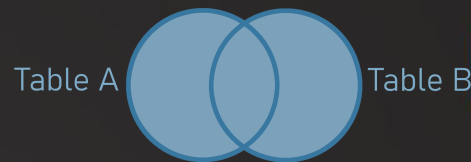


| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

| bonus.employee | sales.employee | city | sales | bonus |
|----------------|----------------|-------------|-------------|-------------|
| <i>null</i> | Sandra | Frankfurt | 500 | YES |
| <i>null</i> | Sabine | Munich | 300 | YES |
| <i>null</i> | Peter | Hamburg | 200 | NO |
| <i>null</i> | Manuel | Hamburg | 400 | YES |
| <i>null</i> | Michael | Munich | 100 | <i>null</i> |
| <i>null</i> | Frank | Frankfurt | 100 | <i>null</i> |
| Simon | <i>null</i> | <i>null</i> | <i>null</i> | NO |

SYNTAX



```
SELECT * FROM TableA  
FULL OUTER JOIN TableB  
ON TableA.employee = TableB.employee
```

SYNTAX

Table A

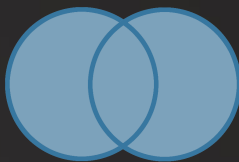
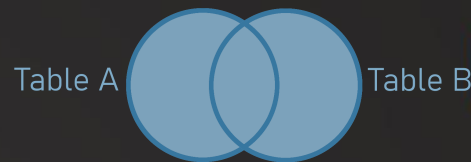


Table B

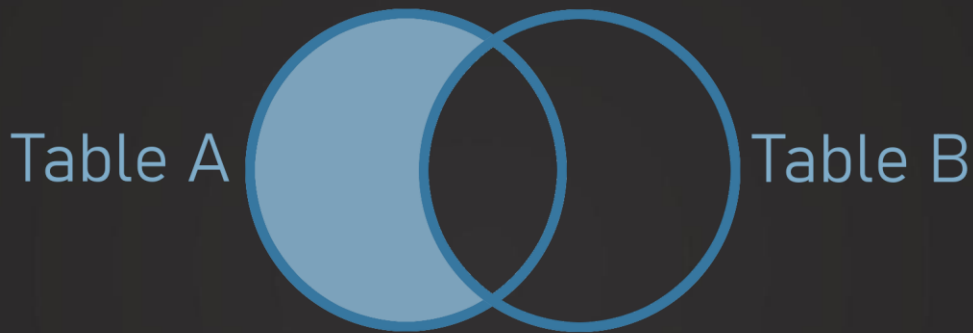
```
SELECT * FROM TableB  
FULL OUTER JOIN TableA  
ON TableA.employee = TableB.employee
```

SYNTAX



```
SELECT * FROM TableB  
FULL OUTER JOIN TableA  
ON TableA.employee = TableB.employee  
WHERE condition
```

FULL OUTER JOIN

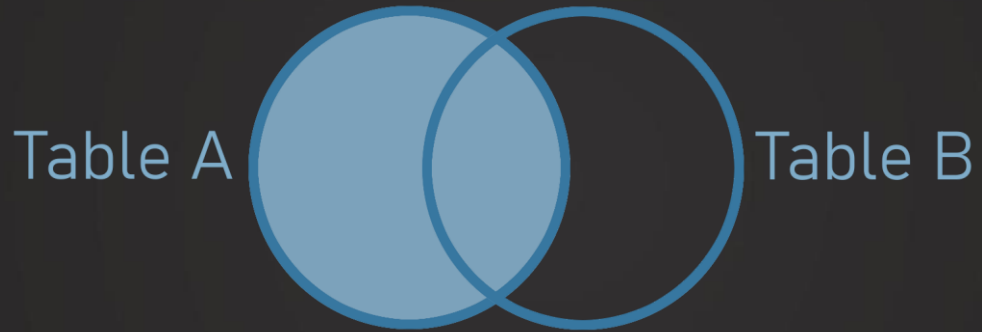


```
SELECT * FROM TableB  
FULL OUTER JOIN TableA  
ON TableA.employee = TableB.employee  
WHERE TableB.anycolumn IS null
```




LEFT OUTER JOIN

LEFT OUTER JOIN



LEFT OUTER JOIN



sales table

| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

Do not appear in the bonus table

bonus table

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

Do not appear in the sales table

LEFT OUTER JOIN

| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

LEFT

RIGHT



| b.employee | s.employee | city | sales | bonus |
|-------------|------------|-----------|-------|-------------|
| Sandra | Sandra | Frankfurt | 500 | YES |
| Sabine | Sabine | Munich | 300 | YES |
| Peter | Peter | Hamburg | 200 | NO |
| Manuel | Manuel | Hamburg | 400 | YES |
| <i>null</i> | Michael | Munich | 100 | <i>null</i> |
| <i>null</i> | Frank | Frankfurt | 100 | <i>null</i> |

LEFT OUTER JOIN



| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

LEFT

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

RIGHT

| b.employee | s.employee | city | sales | bonus |
|------------|------------|-----------|-------|-------|
| Sandra | Sandra | Frankfurt | 500 | YES |
| Sabine | Sabine | Munich | 300 | YES |
| Peter | Peter | Hamburg | 200 | NO |
| Manuel | Manuel | Hamburg | 400 | YES |
| null | Michael | Munich | 100 | null |
| null | Frank | Frankfurt | 100 | null |
| Simon | null | null | null | NO |

SYNTAX



```
SELECT * FROM TableA  
LEFT OUTER JOIN TableB  
ON TableA.employee = TableB.employee
```

Challenge

The flight company is trying to find out what their most popular seats are.

Try to find out which seat has been chosen most frequently. Make sure all seats are included even if they have never been booked.

Are there seats that have never been booked?

Result

| | seat_no character varying (4) | count bigint |
|---|----------------------------------|-----------------|
| 1 | 1A | 53559 |
| 2 | 4A | 53181 |
| 3 | 2A | 53145 |

Challenge

Try to find out which line (A, B, ..., H) has been chosen most frequently.

| | seat_no character varying (4) | count bigint |
|---|----------------------------------|-----------------|
| 1 | 1A | 53559 |
| 2 | 4A | 53181 |
| 3 | 2A | 53145 |

Result

| | | |
|---|---|--------|
| 1 | A | 751618 |
| 2 | D | 652188 |
| 3 | C | 596921 |

Challenge

You want to create a tier list in the following way:

1. Rating is 'PG' or 'PG-13' or length is more then 210 min:
'Great rating or long (tier 1)'
2. Description contains 'Drama' and length is more than 90min:
'Long drama (tier 2)'
3. Description contains 'Drama' and length is not more than 90min:
'Shcity drama (tier 3)'
4. Rental_rate less than \$1:
'Very cheap (tier 4)'

If one movie can be in multiple categories it gets the higher tier assigned.
How can you filter to only those movies that appear in one of these 4 tiers?

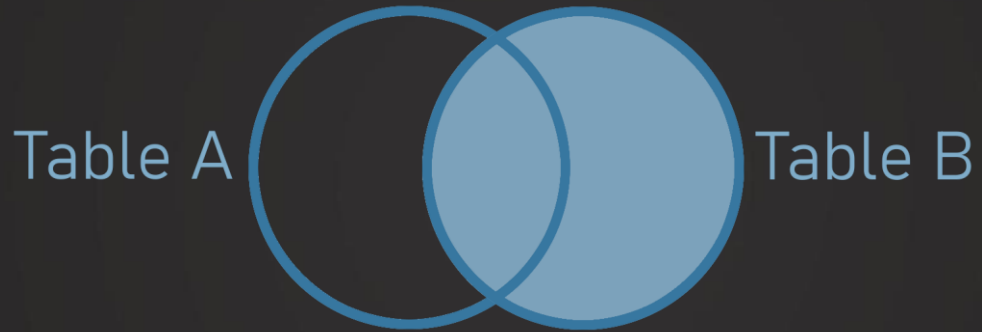
Result

| | title text | case text |
|---|------------------|------------------------------------|
| 1 | ACADEMY DINOSAUR | Great rating or very long (tier 1) |
| 2 | AGENT TRUMAN | Great rating or very long (tier 1) |
| 3 | AIRPLANE SIERRA | Great rating or very long (tier 1) |
| 4 | ALABAMA DEVIL | Great rating or very long (tier 1) |
| 5 | ALAMO VIDEOTAPE | Very cheap (tier 4) |

A decorative border composed of blue-outlined hexagons is arranged in a honeycomb pattern around the central text area.

RIGHT OUTER JOIN

RIGHT OUTER JOIN



FULL OUTER JOIN



sales table

| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

Do not appear in the bonus table

bonus table

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

Do not appear in the sales table

FULL OUTER JOIN



| employee | city | sales |
|----------|-----------|-------|
| Sandra | Frankfurt | 500 |
| Sabine | Munich | 300 |
| Peter | Hamburg | 200 |
| Manuel | Hamburg | 400 |
| Michael | Munich | 100 |
| Frank | Frankfurt | 100 |

LEFT

| employee | bonus |
|----------|-------|
| Sandra | YES |
| Sabine | YES |
| Peter | NO |
| Manuel | YES |
| Simon | NO |

RIGHT

| b.employee | s.employee | city | sales | bonus |
|------------|------------|-----------|-------|-------|
| Sandra | Sandra | Frankfurt | 500 | YES |
| Sabine | Sabine | Munich | 300 | YES |
| Peter | Peter | Hamburg | 200 | NO |
| Manuel | Manuel | Hamburg | 400 | YES |
| Simon | null | null | null | NO |

| | | | | |
|------|---------|-----------|-----|------|
| null | Michael | Munich | 100 | null |
| null | Frank | Frankfurt | 100 | null |

SYNTAX



```
SELECT * FROM TableA  
RIGHT OUTER JOIN TableB  
ON TableA.employee = TableB.employee
```

SYNTAX



```
SELECT * FROM TableB  
LEFT OUTER JOIN TableA  
ON TableA.employee = TableB.employee
```

Challenge

The company wants to run a phone call campaign on all customers in Texas (=district).

What are the customers (first_name, last_name, phone number and their district) from Texas?

Are there any (old) addresses that are not related to any customer?

Result

| first_name text | last_name text | phone text | district text |
|--------------------|-------------------|---------------|------------------|
| JENNIFER | DAVIS | 860452626434 | Texas |
| KIM | CRUZ | 909029256431 | Texas |
| RICHARD | MCCRARY | 262088367001 | Texas |
| BRYAN | HARDISON | 775235029633 | Texas |
| IAN | STILL | 239357986667 | Texas |

| address_id integer | address text |
|-----------------------|----------------------|
| 1 | 47 MySakila Drive |
| 2 | 28 MySQL Boulevard |
| 3 | 23 Workhaven Lane |
| 4 | 1411 Lillydale Drive |

A decorative border composed of blue-outlined hexagons is arranged in a honeycomb pattern around the edges of the slide. The hexagons are of varying sizes and are connected at their vertices, creating a geometric frame.

Multiple join conditions

Multiple join conditions

sales table

| first_name | last_name | city | sales |
|------------|-----------|-----------|-------|
| Sandra | Jones | Frankfurt | 500 |
| Sandra | Williams | Munich | 300 |
| Peter | Davis | Hamburg | 200 |
| Manuel | White | Hamburg | 400 |
| Michael | Anderson | Munich | 100 |
| Frank | Wilson | Frankfurt | 100 |

bonus table

| first_name | last_name | bonus |
|------------|-----------|-------|
| Sandra | Jones | YES |
| Sandra | Williams | YES |
| Peter | Davis | NO |
| Manuel | White | YES |
| Simon | Taylor | NO |

SYNTAX

```
SELECT * FROM TableA a  
INNER JOIN TableB b  
ON a.first_name = b.first_name  
AND a.last_name = b.last_name
```

Expert tip

```
SELECT * FROM TableA a  
INNER JOIN TableB b  
ON a.first_name = b.first_name  
AND a.last_name = 'Jones'
```

Expert tip

```
SELECT * FROM TableA a  
INNER JOIN TableB b  
ON a.first_name = b.first_name  
AND a.last_name = 'Jones'
```

More performance-
efficient!

```
SELECT * FROM TableA a  
INNER JOIN TableB b  
ON a.first_name = b.first_name  
WHERE a.last_name = 'Jones'
```

Challenge

The company wants to run a phone call campaign on all customers in Texas (=district).

What are the customers (first_name, last_name, phone number and their district) from Texas?

Are there any (old) addresses that are not related to any customer?

Result

| first_name text | last_name text | phone text | district text |
|--------------------|-------------------|---------------|------------------|
| JENNIFER | DAVIS | 860452626434 | Texas |
| KIM | CRUZ | 909029256431 | Texas |
| RICHARD | MCCRARY | 262088367001 | Texas |
| BRYAN | HARDISON | 775235029633 | Texas |
| IAN | STILL | 239357986667 | Texas |

| address_id integer | address text |
|-----------------------|----------------------|
| 1 | 47 MySakila Drive |
| 2 | 28 MySQL Boulevard |
| 3 | 23 Workhaven Lane |
| 4 | 1411 Lillydale Drive |

Two join tables

sales table

| first_name | last_name | city | sales |
|------------|-----------|-----------|-------|
| Sandra | Jones | Frankfurt | 500 |
| Sandra | Williams | Munich | 300 |
| Peter | Davis | Hamburg | 200 |
| Manuel | White | Hamburg | 400 |
| Michael | Anderson | Munich | 100 |
| Frank | Wilson | Frankfurt | 100 |

bonus table

| first_name | last_name | bonus |
|------------|-----------|-------|
| Sandra | Jones | YES |
| Sandra | Williams | YES |
| Peter | Davis | NO |
| Manuel | White | YES |
| Simon | Taylor | NO |

Joining multiple tables

sales table

| employee | city_id | sales |
|----------|---------|-------|
| Sandra | 1 | 500 |
| Sabine | 2 | 300 |
| Peter | 3 | 200 |
| Manuel | 3 | 400 |
| Michael | 3 | 100 |
| Frank | 1 | 100 |

city table

| city_id | city | country_id |
|---------|-----------|------------|
| 1 | Frankfurt | 1 |
| 2 | Munich | 1 |
| 3 | New York | 2 |

country table

| country_id | country |
|------------|---------|
| 1 | Germany |
| 2 | USA |

Joining multiple tables

sales table

| employee | city_id | sales |
|----------|---------|-------|
| Sandra | 1 | 500 |
| Sabine | 2 | 300 |
| Peter | 3 | 200 |
| Manuel | 3 | 400 |
| Michael | 3 | 100 |
| Frank | 1 | 100 |

city table

| city_id | city | country_id |
|---------|-----------|------------|
| 1 | Frankfurt | 1 |
| 2 | Munich | 1 |
| 3 | New York | 2 |

country table

| country_id | country |
|------------|---------|
| 1 | Germany |
| 2 | USA |

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | Germany |

Joining multiple tables

sales table

| employee | city_id | sales |
|----------|---------|-------|
| Sandra | 1 | 500 |
| Sabine | 2 | 300 |
| Peter | 3 | 200 |
| Manuel | 3 | 400 |
| Michael | 3 | 100 |
| Frank | 1 | 100 |

city table

| city_id | city | country_id |
|---------|-----------|------------|
| 1 | Frankfurt | 1 |
| 2 | Munich | 1 |
| 3 | New York | 2 |

country table

| country_id | country |
|------------|---------|
| 1 | Germany |
| 2 | USA |

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | Germany |

Joining multiple tables

sales table

| employee | city_id | sales |
|----------|---------|-------|
| Sandra | 1 | 500 |
| Sabine | 2 | 300 |
| Peter | 3 | 200 |
| Manuel | 3 | 400 |
| Michael | 3 | 100 |
| Frank | 1 | 100 |

city table

| city_id | city | country_id |
|---------|-----------|------------|
| 1 | Frankfurt | 1 |
| 2 | Munich | 1 |
| 3 | New York | 2 |

country table

| country_id | country |
|------------|---------|
| 1 | Germany |
| 2 | USA |



| employee | country_id |
|----------|------------|
| Sandra | 1 |
| Sabine | 1 |
| Peter | 2 |
| Manuel | 2 |
| Michael | 2 |
| Frank | 1 |

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | Germany |

SYNTAX

```
SELECT employee, ci.country_id FROM sales s  
INNER JOIN city ci  
ON s.city_id = ci.city_id
```

| employee | country_id |
|----------|------------|
| Sandra | 1 |
| Sabine | 1 |
| Peter | 2 |
| Manuel | 2 |
| Michael | 2 |
| Frank | 1 |

SYNTAX

```
SELECT employee, co.country FROM sales s  
INNER JOIN city ci  
ON s.city_id = ci.city_id  
INNER JOIN country co  
ON ci.country_id = co.country_id
```

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | Germany |

SYNTAX

```
SELECT employee, co.country FROM sales s  
INNER JOIN country co  
ON ci.country_id = co.country_id  
INNER JOIN city ci  
ON s.city_id = ci.city_id
```

INNER JOIN:

Table order doesn't matter!

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | Germany |

Joining multiple tables

sales table

| employee | city_id | sales |
|----------|---------|-------|
| Sandra | 1 | 500 |
| Sabine | 2 | 300 |
| Peter | 3 | 200 |
| Manuel | 3 | 400 |
| Michael | 3 | 100 |
| Frank | 4 | 100 |

city table

| city_id | city | country_id |
|---------|-----------|------------|
| 1 | Frankfurt | 1 |
| 2 | Munich | 1 |
| 3 | New York | 2 |

country table

| country_id | country |
|------------|---------|
| 1 | Germany |
| 2 | USA |

| employee | country |
|----------|-------------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | <i>null</i> |

SYNTAX

```
SELECT employee, co.country FROM sales s  
LEFT JOIN city ci  
ON s.city_id = ci.city_id  
LEFT JOIN country co  
ON ci.country_id = co.country_id
```

| employee | country |
|----------|-------------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | <i>null</i> |

SYNTAX

```
SELECT employee, co.country FROM city ci  
LEFT JOIN sales s  
ON s.city_id = ci.city_id  
LEFT JOIN country co  
ON ci.country_id = co.country_id
```

| employee | country |
|----------|---------|
| Sandra | Germany |
| Sabine | Germany |
| Peter | USA |
| Manuel | USA |
| Michael | USA |
| Frank | null |

Challenge

The company wants to customize their campaigns to customers depending on the country they are from.

Which customers are from Brazil?

Write a query to get first_name, last_name, email and the country from all customers from Brazil.

Result

| first_name text | last_name text | email text | country text |
|--------------------|-------------------|-----------------------------------|-----------------|
| CLAYTON | BARBEE | CLAYTON.BARBEE@sakilacustomer.org | Brazil |
| JOSEPH | JOY | JOSEPH.JOY@sakilacustomer.org | Brazil |
| TAMARA | NGUYEN | TAMARA.NGUYEN@sakilacustomer.org | Brazil |