Inner Join

Left Outer Join

TECH VAULT

SQL CONCEPTS:

JOIN TYPES

INNER JOIN • SEMI JOIN
OUTER JOIN • ANTI JOIN

AMR ELHELW

Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

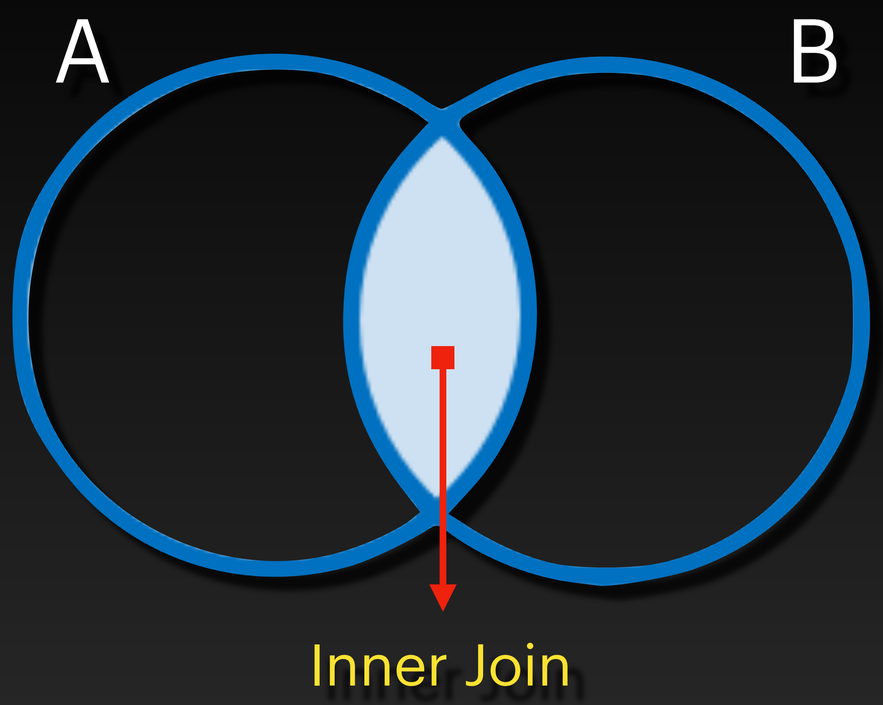
Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

Find customers and stores that are located in the same city

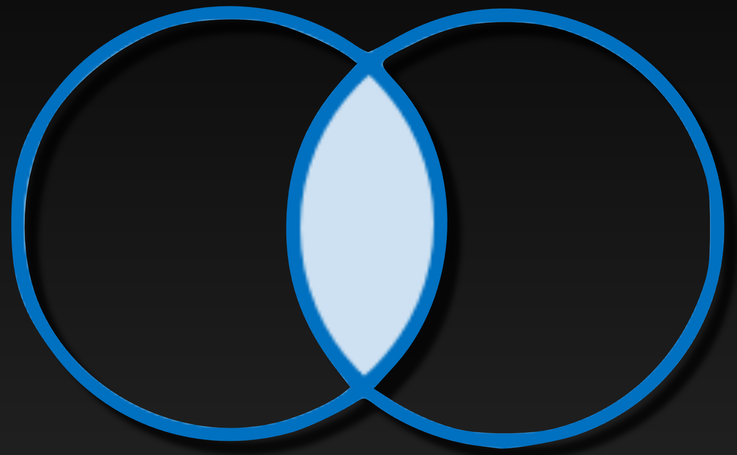
```
SELECT *
FROM customers c INNER JOIN stores s
ON c.city = s.city
```

c_id	c_name	city	s_id	s_name	city
1	John	New York	101	Store 1	New York
1	John	New York	103	Store 3	New York
3	Alice	Chicago	102	Store 2	Chicago
3	Alice	Chicago	105	Store 5	Chicago
4	Tom	New York	101	Store 1	New York
4	Tom	New York	103	Store 3	New York

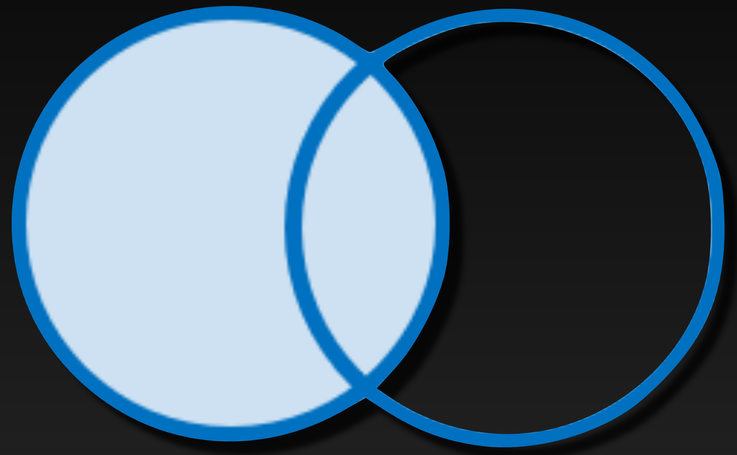


A Inner Join B = B Inner Join A

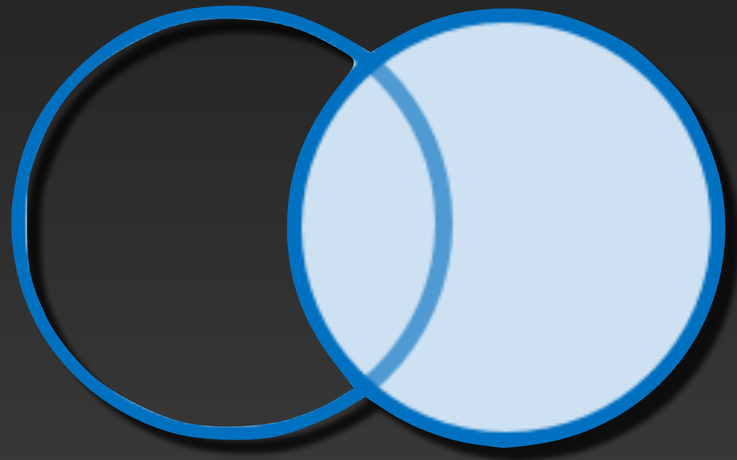
Inner Join



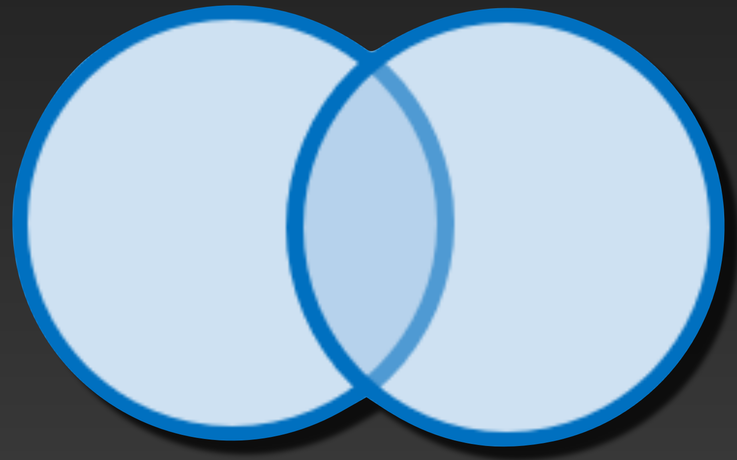
Left Outer Join



Right Outer Join



Full Outer Join



Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

```
SELECT *
FROM customers c LEFT OUTER JOIN stores s
ON c.city = s.city
```

c_id	c_name	city	s_id	s_name	city
1	John	New York	101	Store 1	New York
1	John	New York	103	Store 3	New York
3	Alice	Chicago	102	Store 2	Chicago
3	Alice	Chicago	105	Store 5	Chicago
4	Tom	New York	101	Store 1	New York
4	Tom	New York	103	Store 3	New York
2	Bob	Los Angeles	*<NULL>*	*<NULL>*	*<NULL>*
5	Emily	Boston	*<NULL>*	*<NULL>*	*<NULL>*

Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

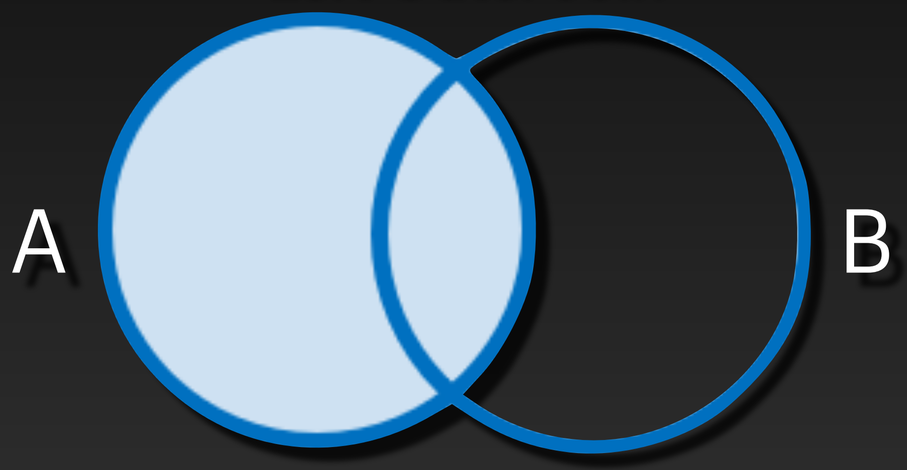
Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

```
SELECT *
FROM customers c RIGHT OUTER JOIN stores s
ON c.city = s.city
```

c_id	c_name	city	s_id	s_name	city
1	John	New York	101	Store 1	New York
1	John	New York	103	Store 3	New York
3	Alice	Chicago	102	Store 2	Chicago
3	Alice	Chicago	105	Store 5	Chicago
4	Tom	New York	101	Store 1	New York
4	Tom	New York	103	Store 3	New York
<NULL>	*<NULL>*	*<NULL>*	104	Store 4	Miami

Left Outer Join



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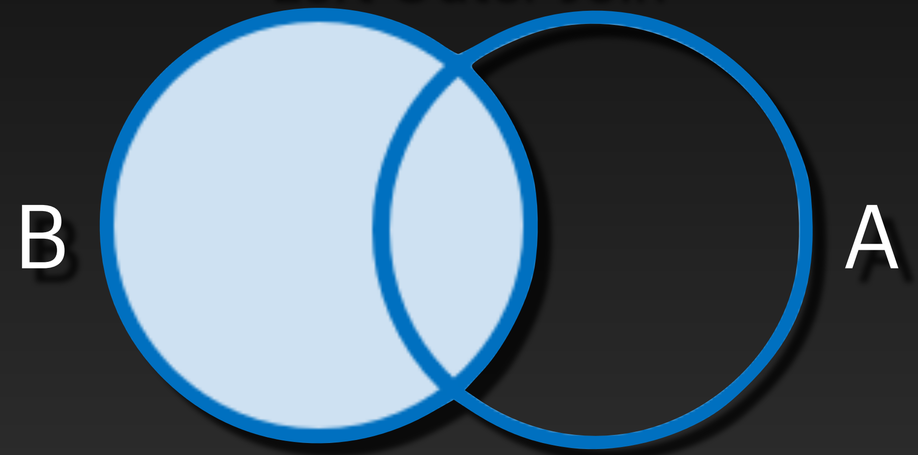
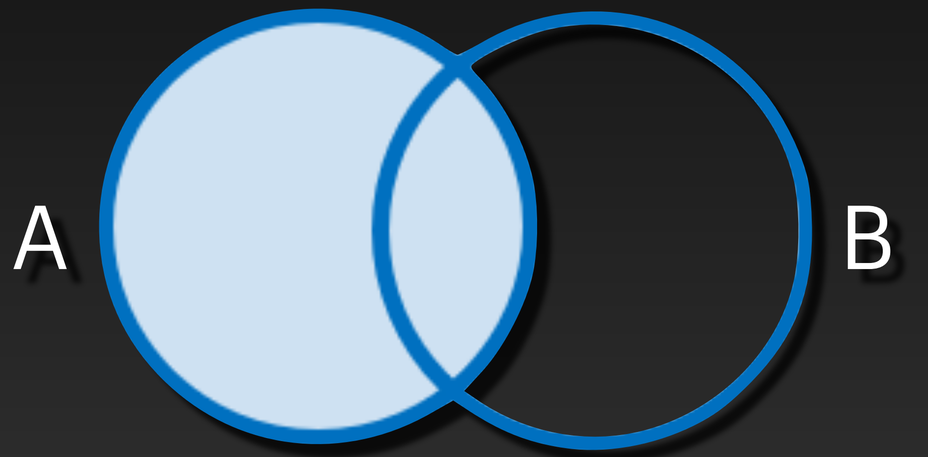
Left Outer Join



Left Outer Join



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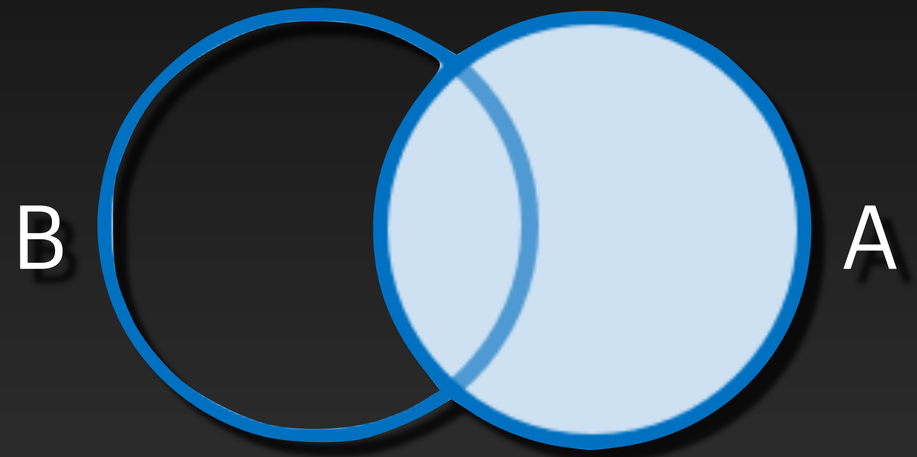
Right Outer Join



Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

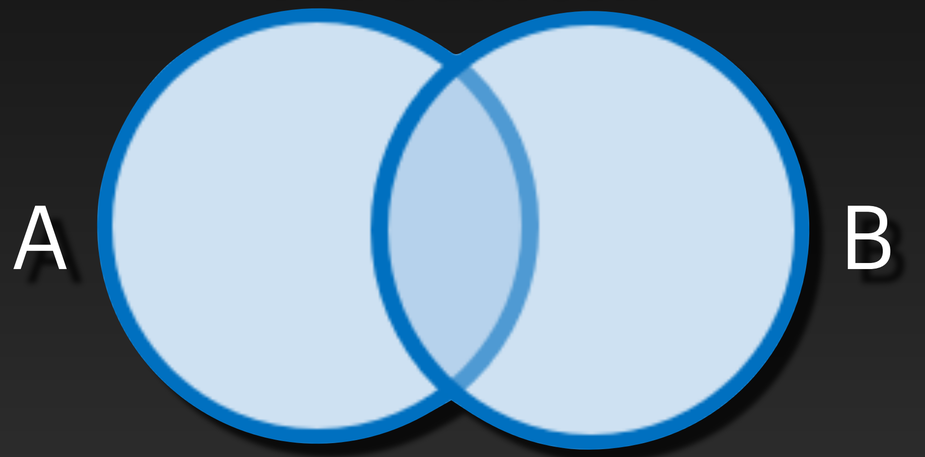
Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

```
SELECT *
FROM customers c FULL OUTER JOIN stores s
ON c.city = s.city
```

c_id	c_name	city	s_id	s_name	city
1	John	New York	101	Store 1	New York
1	John	New York	103	Store 3	New York
3	Alice	Chicago	102	Store 2	Chicago
3	Alice	Chicago	105	Store 5	Chicago
4	Tom	New York	101	Store 1	New York
4	Tom	New York	103	Store 3	New York
2	Bob	Los Angeles	*<NULL>*	*<NULL>*	*<NULL>*
5	Emily	Boston	*<NULL>*	*<NULL>*	*<NULL>*
<NULL>	*<NULL>*	*<NULL>*	104	Store 4	Miami

Full Outer Join



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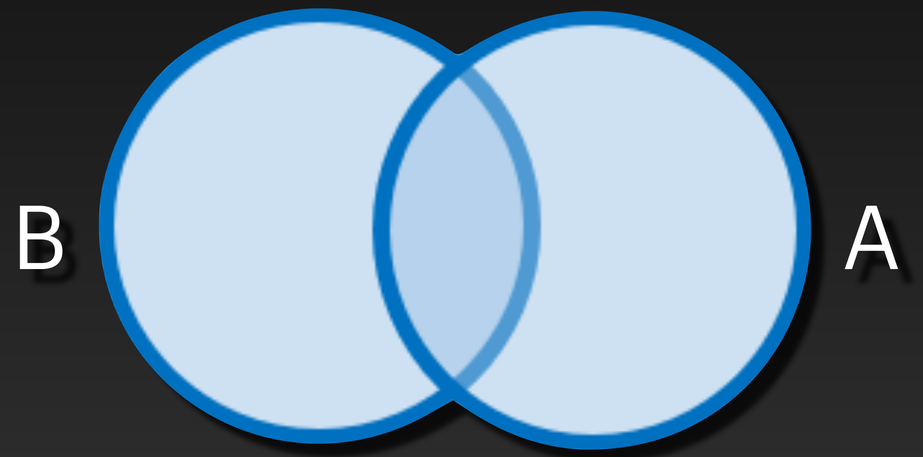
Full Outer Join



Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

Find all customers that have a store in the same city

```
SELECT *customers.*
FROM customers c JOIN stores s
ON c.city = s.city
```

c_id	c_name	city	s_id	s_name	city
1	John	New York	101	Store 1	New York
1	John	New York	103	Store 3	New York
3	Alice	Chicago	102	Store 2	Chicago
3	Alice	Chicago	105	Store 5	Chicago
4	Tom	New York	101	Store 1	New York
4	Tom	New York	103	Store 3	New York

Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

Find all customers that have a store in the same city

We use SUBQUERIES

Option (1) - using "IN"

```
SELECT *
FROM customers c
WHERE c.city IN (
  SELECT s.city
  FROM stores s
)
```

c_id	c_name	city
1	John	New York
3	Alice	Chicago
4	Tom	New York

Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
3	Alice	Chicago
4	Tom	New York
5	Emily	Boston

Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

Find all customers that have a store in the same city

We use SUBQUERIES

Option (2) - using "EXISTS"

```
SELECT *
FROM customers c
WHERE EXISTS (
  SELECT *
  FROM stores s
  WHERE s.city = c.city
)
```

c_id	c_name	city
1	John	New York
3	Alice	Chicago
4	Tom	New York

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Customers

c_id	c_name	city
1	John	New York
2	Bob	Los Angeles
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Stores

s_id	s_name	city
101	Store 1	New York
102	Store 2	Chicago
103	Store 3	New York
104	Store 4	Miami
105	Store 5	Chicago

Find all customers that do not have a store in the same city

```sql
SELECT *
FROM customers c
WHERE c.city NOT IN (
  SELECT s.city
  FROM stores s
)
```

```sql
SELECT *
FROM customers c
WHERE NOT EXISTS (
  SELECT 1
  FROM stores s
  WHERE s.city = c.city
)
```