

LEFT and RIGHT JOINS

JOINING DATA IN SQL

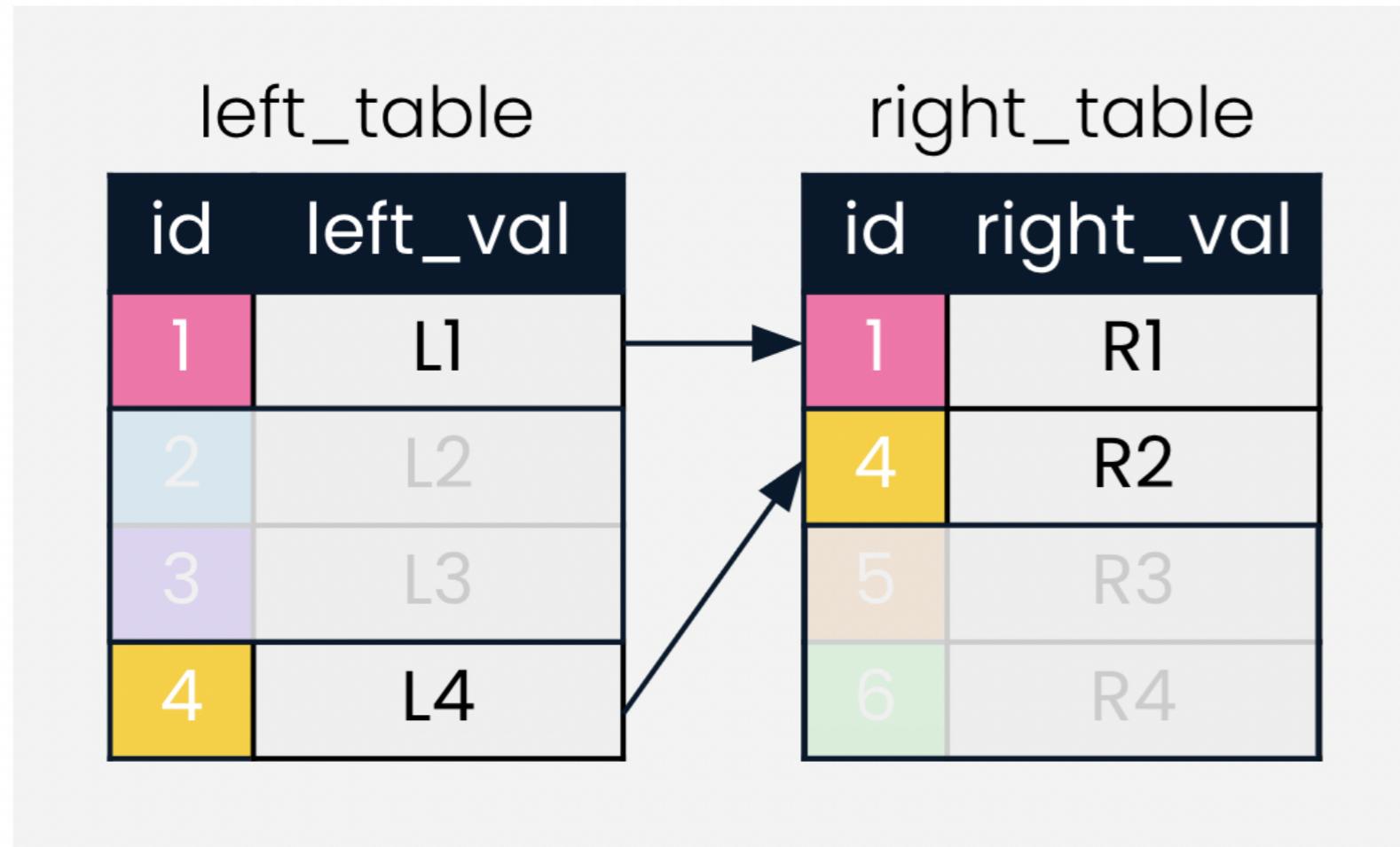
SQL

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INNER JOIN diagram

Diagram for an **INNER JOIN** **ON** the **id** field



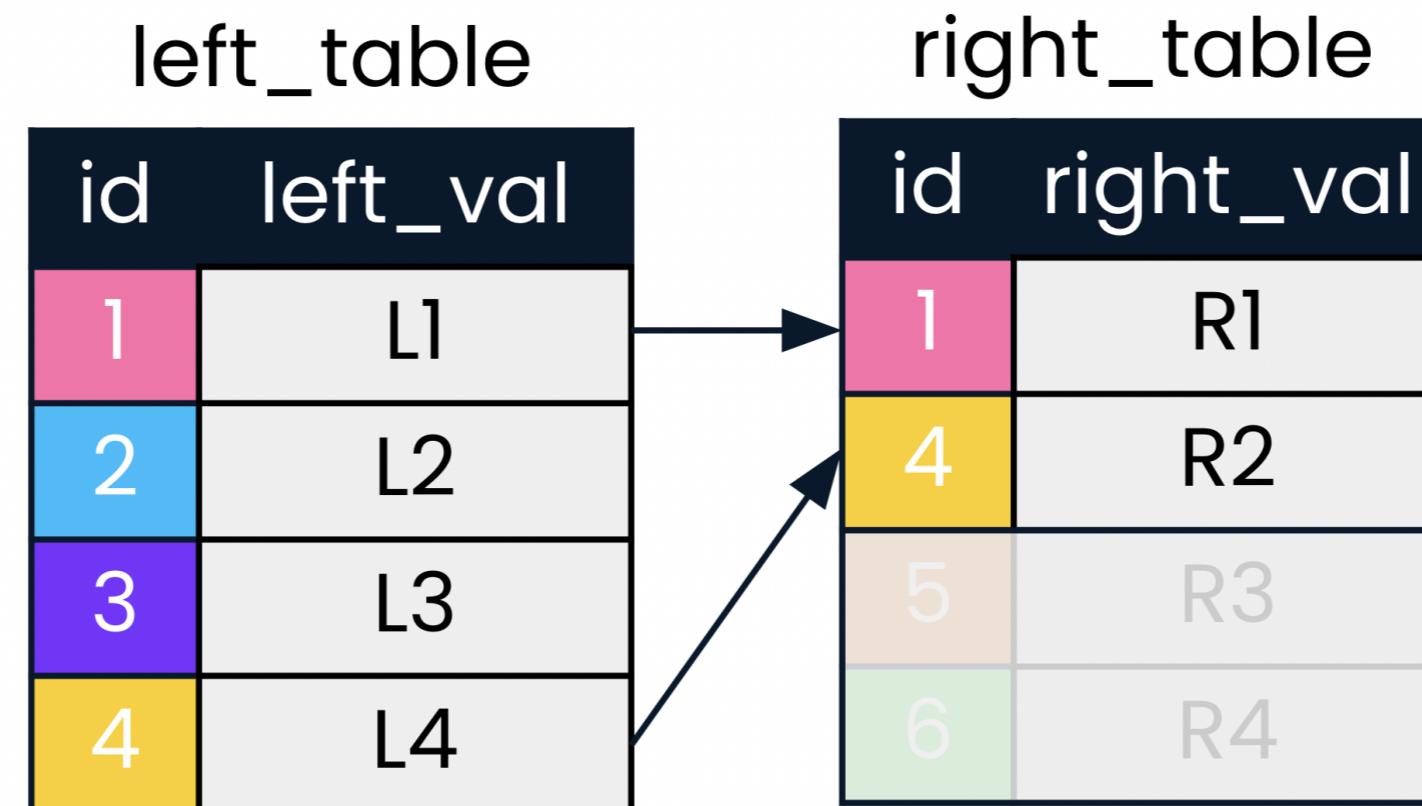
result after INNER JOIN

| <code>id</code> | <code>left_val</code> | <code>right_val</code> |
|-----------------|-----------------------|------------------------|
| 1 | L1 | R1 |
| 4 | L4 | R2 |

LEFT JOIN initial diagram

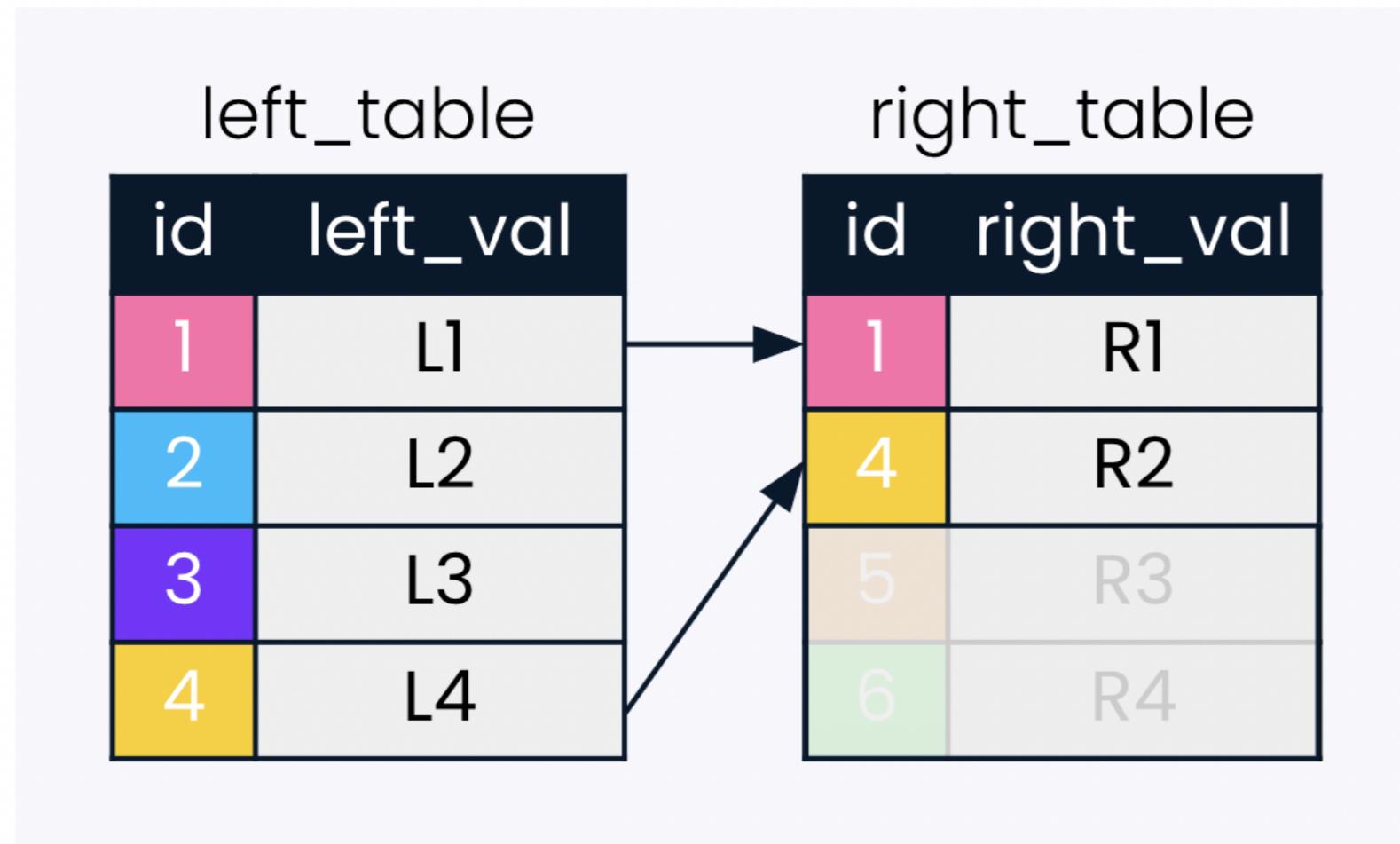
- `LEFT JOIN` will return all records in the left table, and those records in the right table that match on the joining field provided

Diagram for a `LEFT JOIN ON` the `id` field



LEFT JOIN diagram

Diagram for a LEFT JOIN ON the id field



result after LEFT JOIN

| <code>id</code> | <code>left_val</code> | <code>right_val</code> |
|-----------------|-----------------------|------------------------|
| 1 | L1 | R1 |
| 2 | L2 | null |
| 3 | L3 | null |
| 4 | L4 | R2 |

LEFT JOIN syntax

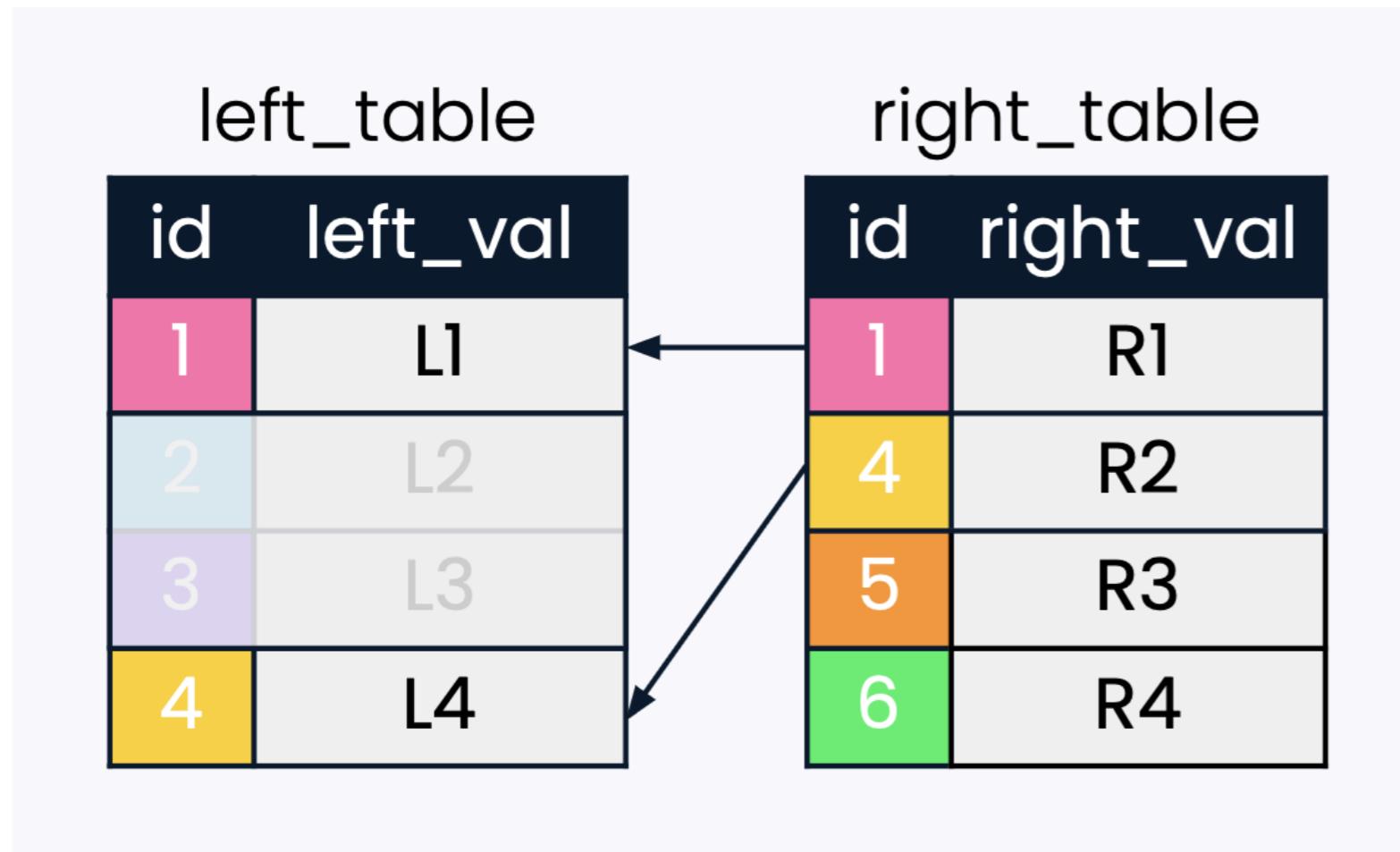
```
SELECT p1.country, prime_minister, president  
FROM prime_ministers AS p1  
LEFT JOIN presidents AS p2  
USING(country);
```

Note. `LEFT JOIN` can also be written as `LEFT OUTER JOIN`.

| country | prime_minister | president |
|----------------|------------------|-------------------------|
| Egypt | Mostafa Madbouly | Abdel Fattah el-Sisi |
| Portugal | Luís Montenegro | Marcelo Rebelo de Sousa |
| Pakistan | Shehbaz Sharif | Asif Ali Zardari |
| United Kingdom | Keir Starmer | null |
| India | Narendra Modi | Droupadi Murmu |
| Australia | Anthony Albanese | null |
| ... | | |

RIGHT JOIN

Diagram for a **RIGHT JOIN** on the **id** field



result after RIGHT JOIN

| id | left_val | right_val |
|----|----------|-----------|
| 1 | L1 | R1 |
| 4 | L4 | R2 |
| 5 | null | R3 |
| 6 | null | R4 |

RIGHT JOIN syntax

```
SELECT *
FROM left_table
RIGHT JOIN right_table
ON left_table.id = right_table.id;
```

Note. RIGHT JOIN can also be written as RIGHT OUTER JOIN .

RIGHT JOIN with presidents and prime ministers

```
SELECT p1.country, prime_minister, president  
FROM prime_ministers AS p1  
RIGHT JOIN presidents AS p2  
USING(country);
```

| country | prime_minister | president |
|----------|------------------|-------------------------|
| Egypt | Mostafa Madbouly | Abdel Fattah el-Sisi |
| Portugal | Luís Montenegro | Marcelo Rebelo de Sousa |
| USA | null | Joe Biden |
| Uruguay | null | Luis Lacalle Pou |
| Pakistan | Shehbaz Sharif | Asif Ali Zardari |
| Chile | null | Gabriel Boric |
| India | Narendra Modi | Droupadi Murmu |

LEFT JOIN or RIGHT JOIN?

- `RIGHT JOIN` is less commonly used than `LEFT JOIN`
- Any `RIGHT JOIN` can be re-written as a `LEFT JOIN`
- `LEFT JOIN` feels more intuitive to users when typing from left to right

Let's practice!

JOINING DATA IN SQL

FULL JOINS

JOINING DATA IN SQL

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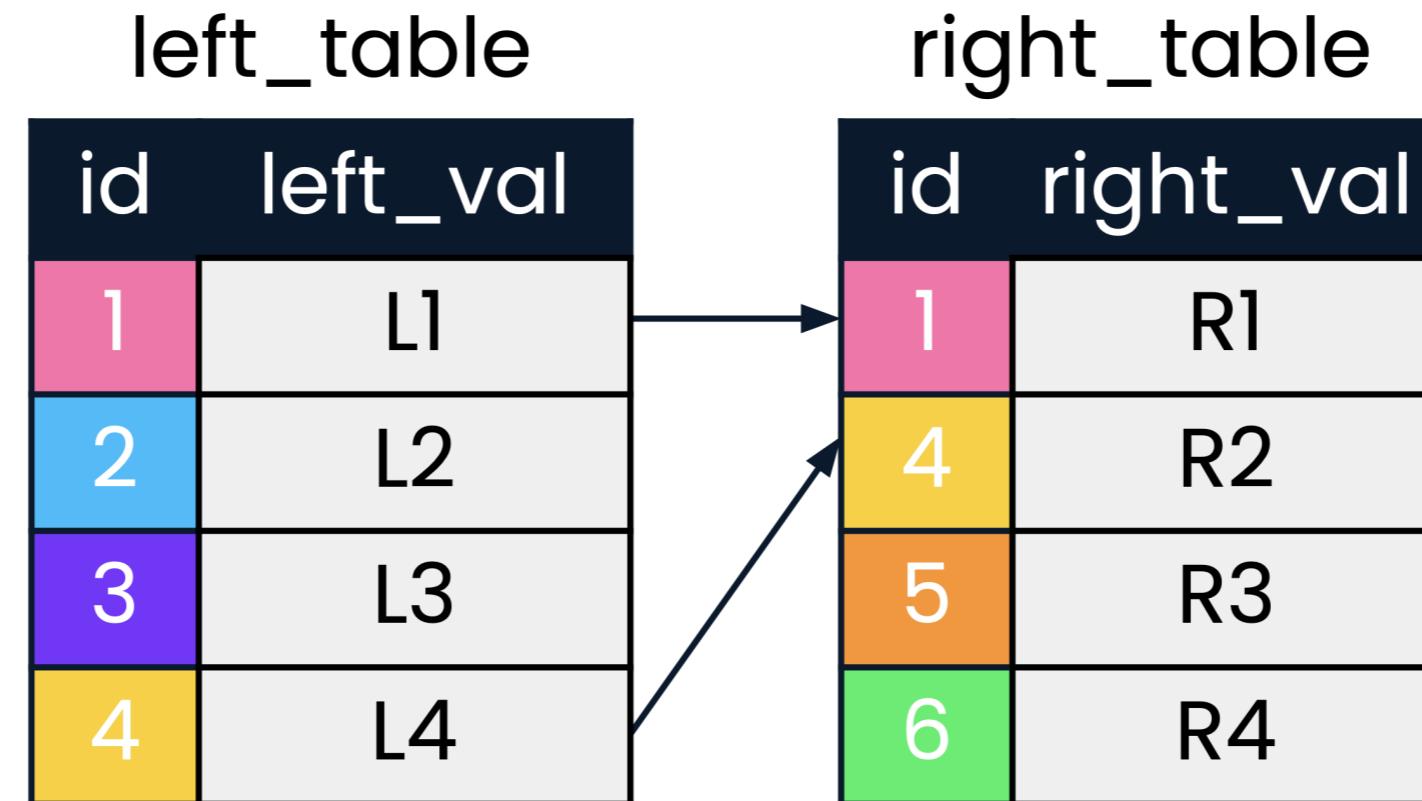
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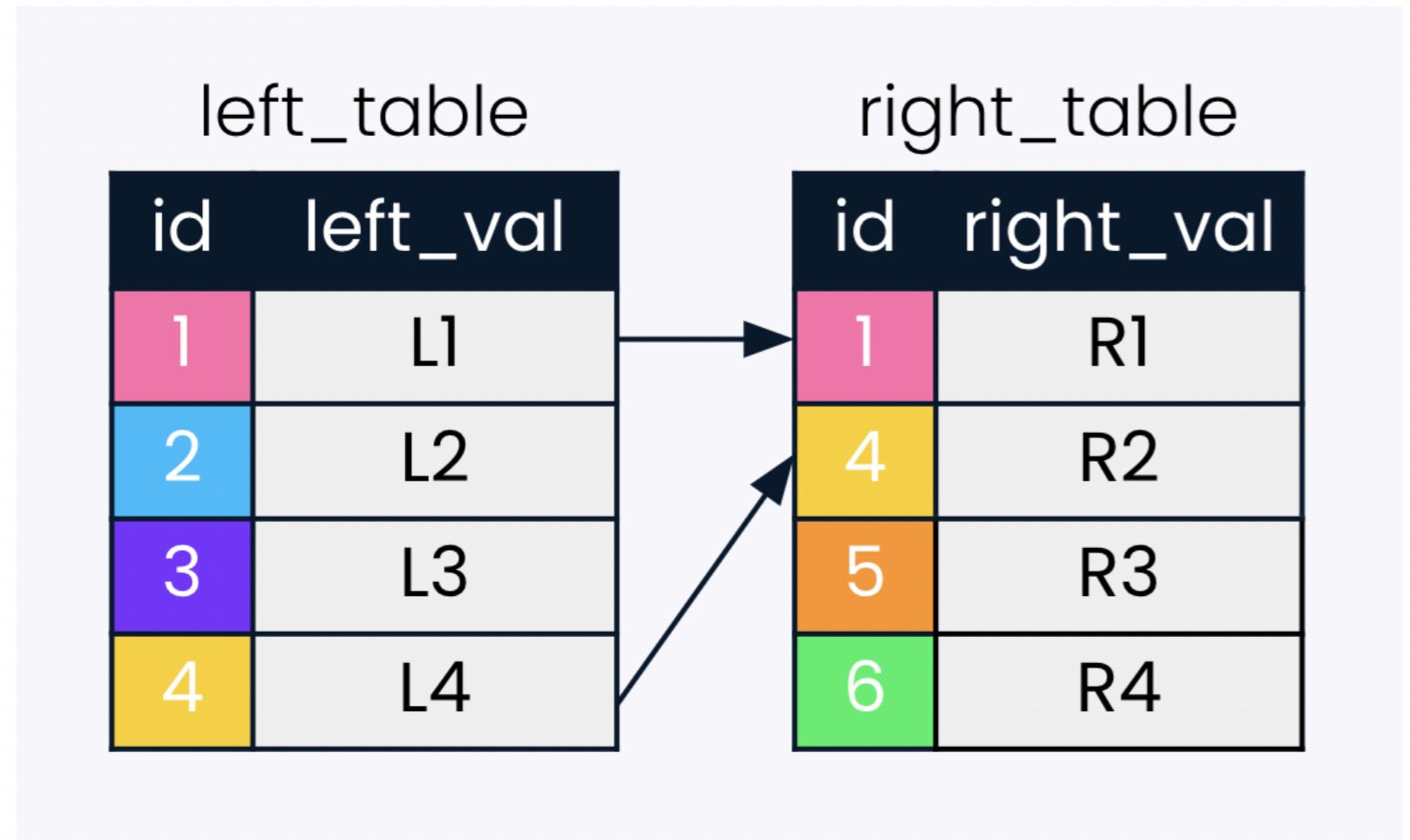
FULL JOIN initial diagram

- A `FULL JOIN` combines a `LEFT JOIN` and a `RIGHT JOIN`

Diagram for a `FULL JOIN` `ON` the `id` field



FULL JOIN diagram



result after FULL JOIN

| id | left_val | right_val |
|----|----------|-----------|
| 1 | L1 | R1 |
| 2 | L2 | null |
| 3 | L3 | null |
| 4 | L4 | R2 |
| 5 | null | R3 |
| 6 | null | R4 |

FULL JOIN syntax

```
SELECT left_table.id AS L_id,  
       right_table.id AS R_id,  
       left_table.val AS L_val,  
       right_table.val AS R_val  
FROM left_table  
FULL JOIN right_table  
USING (id);
```

Note. The keyword `FULL OUTER JOIN` can also be used.

FULL JOIN example using leaders database

```
SELECT p1.country AS country, prime_minister, president
```

FULL JOIN example using leaders database

```
SELECT p1.country AS country, prime_minister, president  
FROM prime_ministers AS p1
```

FULL JOIN example using leaders database

```
SELECT p1.country AS country, prime_minister, president  
FROM prime_ministers AS p1  
FULL JOIN presidents AS p2
```

FULL JOIN example using leaders database

```
SELECT p1.country AS country, prime_minister, president  
FROM prime_ministers AS p1  
FULL JOIN presidents AS p2  
ON p1.country = p2.country  
LIMIT 10;
```

FULL JOIN example using leaders database

| country | prime_minister | president |
|----------------|------------------|-------------------------|
| Egypt | Mostafa Madbouly | Abdel Fattah el-Sisi |
| Portugal | Luis Montenegro | Marcelo Rebelo de Sousa |
| Pakistan | Shehbaz Sharif | Asif Ali Zardari |
| United Kingdom | Keir Starmer | null |
| USA | null | Joe Biden |
| Uruguay | null | Luis Lacalle Pou |
| Chile | null | Gabriel Boric |
| India | Narendra Modi | Droupadi Murmu |
| Norway | Jonas Gahr Støre | null |
| Brunei | Hassanal Bolkiah | null |

Let's practice!

JOINING DATA IN SQL

Crossing into CROSS JOIN

JOINING DATA IN SQL

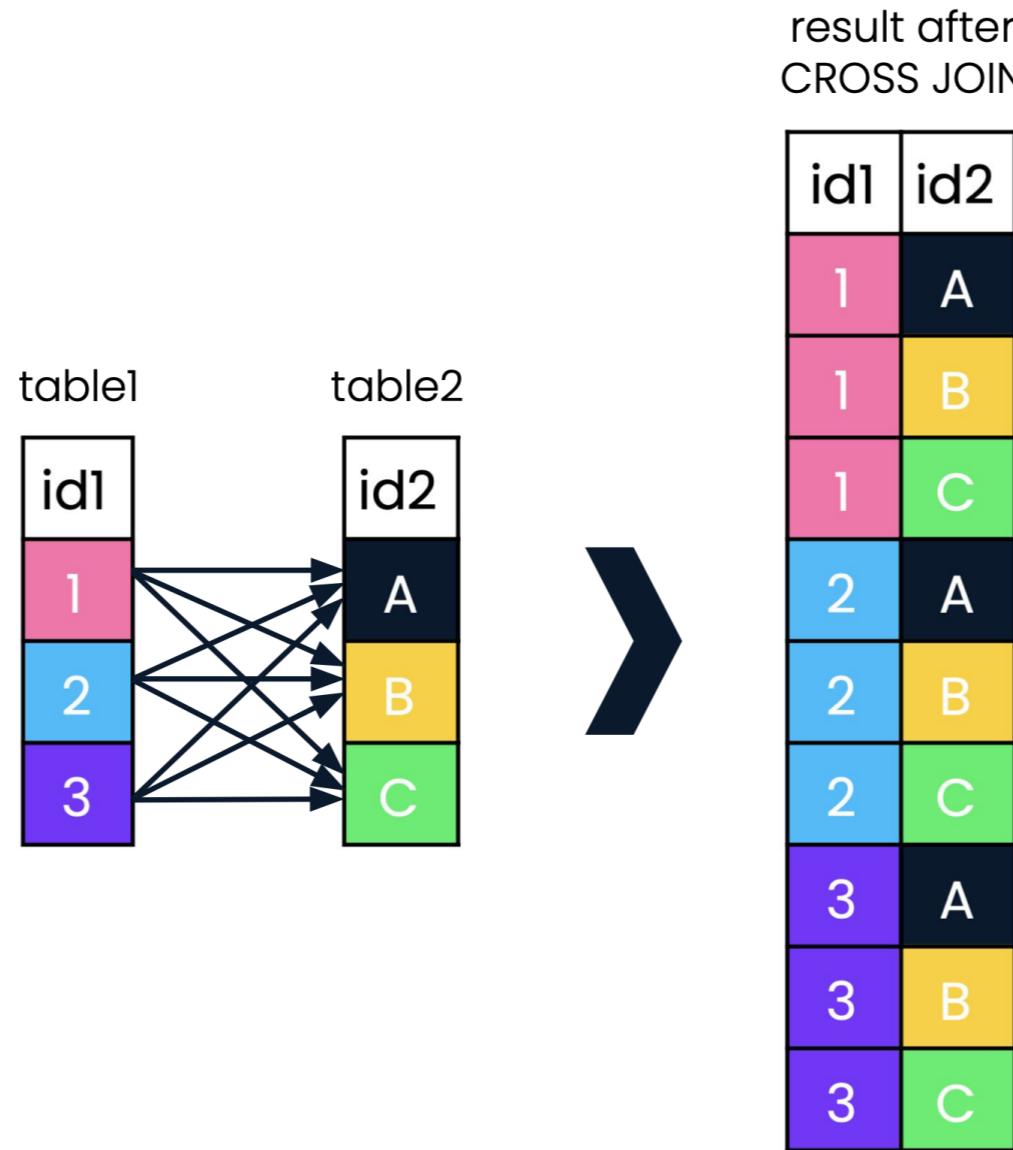
SQL

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CROSS JOIN diagram

CROSS JOIN creates all possible combinations of two tables.



CROSS JOIN syntax

```
SELECT id1, id2  
FROM table1  
CROSS JOIN table2;
```

Pairing prime ministers with presidents

```
SELECT prime_minister, president  
FROM prime_ministers AS p1  
CROSS JOIN presidents AS p2  
WHERE p1.continent IN ('Asia')  
AND p2.continent IN ('South America');
```

| prime_minister | president |
|-------------------|------------------|
| Shehzad Sharif | Luis Lacalle Pou |
| Narendra Modi | Luis Lacalle Pou |
| Hassanal Bolkiah | Luis Lacalle Pou |
| Haitham bin Tarik | Luis Lacalle Pou |
| Shehzad Sharif | Gabriel Boric |
| Narendra Modi | Gabriel Boric |
| Hassanal Bolkiah | Gabriel Boric |
| Haitham bin Tarik | Gabriel Boric |

Let's practice!

JOINING DATA IN SQL

Self joins

JOINING DATA IN SQL

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Self joins

- Self joins are tables joined with themselves
- They can be used to compare parts of the same table

The `prime_ministers` table from the world leaders database

| country | continent | prime_minister |
|----------------|-----------|-------------------|
| Egypt | Africa | Mostafa Madbouly |
| Portugal | Europe | Luís Montenegro |
| Pakistan | Asia | Shehbaz Sharif |
| United Kingdom | Europe | Keir Starmer |
| India | Asia | Narendra Modi |
| Australia | Oceania | Anthony Albanese |
| Norway | Europe | Jonas Gahr Støre |
| Brunei | Asia | Hassanal Bolkiah |
| Oman | Asia | Haitham bin Tarik |
| New Zealand | Oceania | Christopher Luxon |

Prime minister, meet prime minister

SELECT

p1.country **AS** country1,

p2.country **AS** country2,

p1.continent

FROM prime_ministers **AS** p1

INNER JOIN prime_ministers **AS** p2

ON p1.continent = p2.continent

LIMIT 10;

Prime minister, meet prime minister

| country1 | country2 | continent |
|----------|----------|---------------|
| Egypt | Egypt | Africa |
| Portugal | Spain | Europe |
| Portugal | Norway | Europe |
| Portugal | Portugal | Europe |
| Vietnam | Oman | Asia |
| Vietnam | Brunei | Asia |
| Vietnam | India | Asia |
| Vietnam | Vietnam | Asia |
| Haiti | Haiti | North America |
| India | Oman | Asia |
| India | Brunei | Asia |

Prime minister, meet prime minister

SELECT

p1.country **AS** country1,

p2.country **AS** country2,

p1.continent

FROM prime_ministers **AS** p1

INNER JOIN prime_ministers **AS** p2

ON p1.continent = p2.continent

AND p1.country <> p2.country;

The self joined prime ministers table

| country1 | country2 | continent |
|----------|----------|-----------|
| Portugal | Spain | Europe |
| Portugal | Norway | Europe |
| Vietnam | Oman | Asia |
| Vietnam | Brunei | Asia |
| Vietnam | India | Asia |
| India | Oman | Asia |
| India | Brunei | Asia |
| India | Vietnam | Asia |
| Norway | Spain | Europe |
| Norway | Portugal | Europe |

Let's practice!

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