LEFT and RIGHT JOINs

JOINING DATA IN SQL
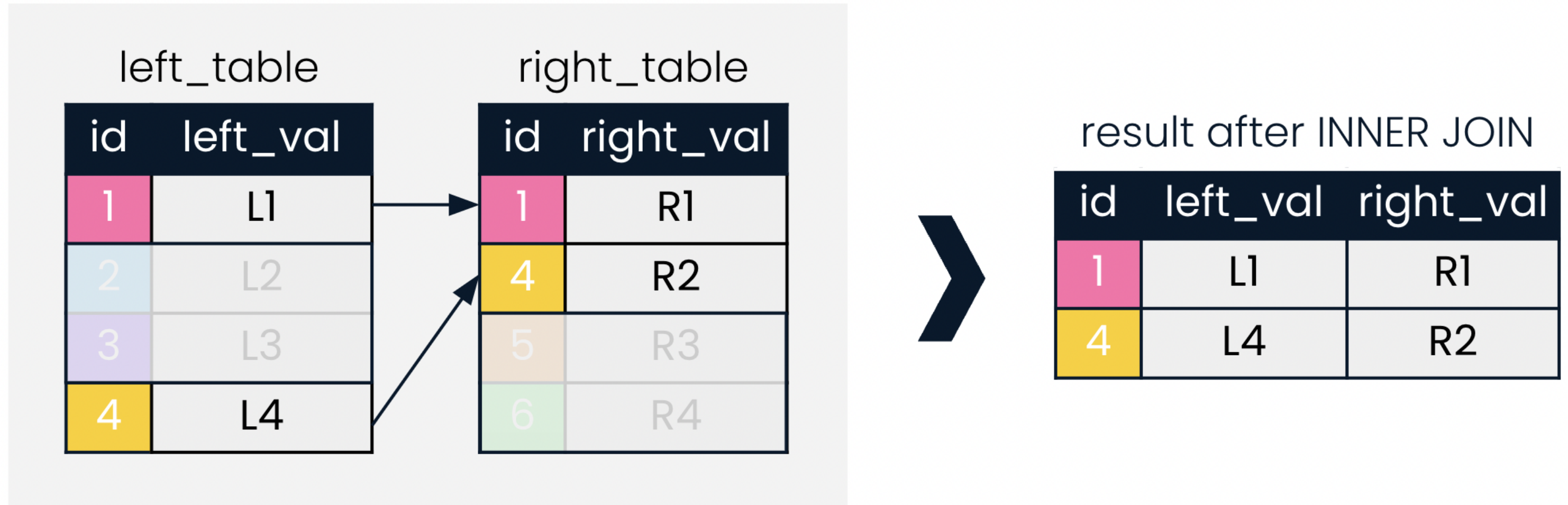
SQL

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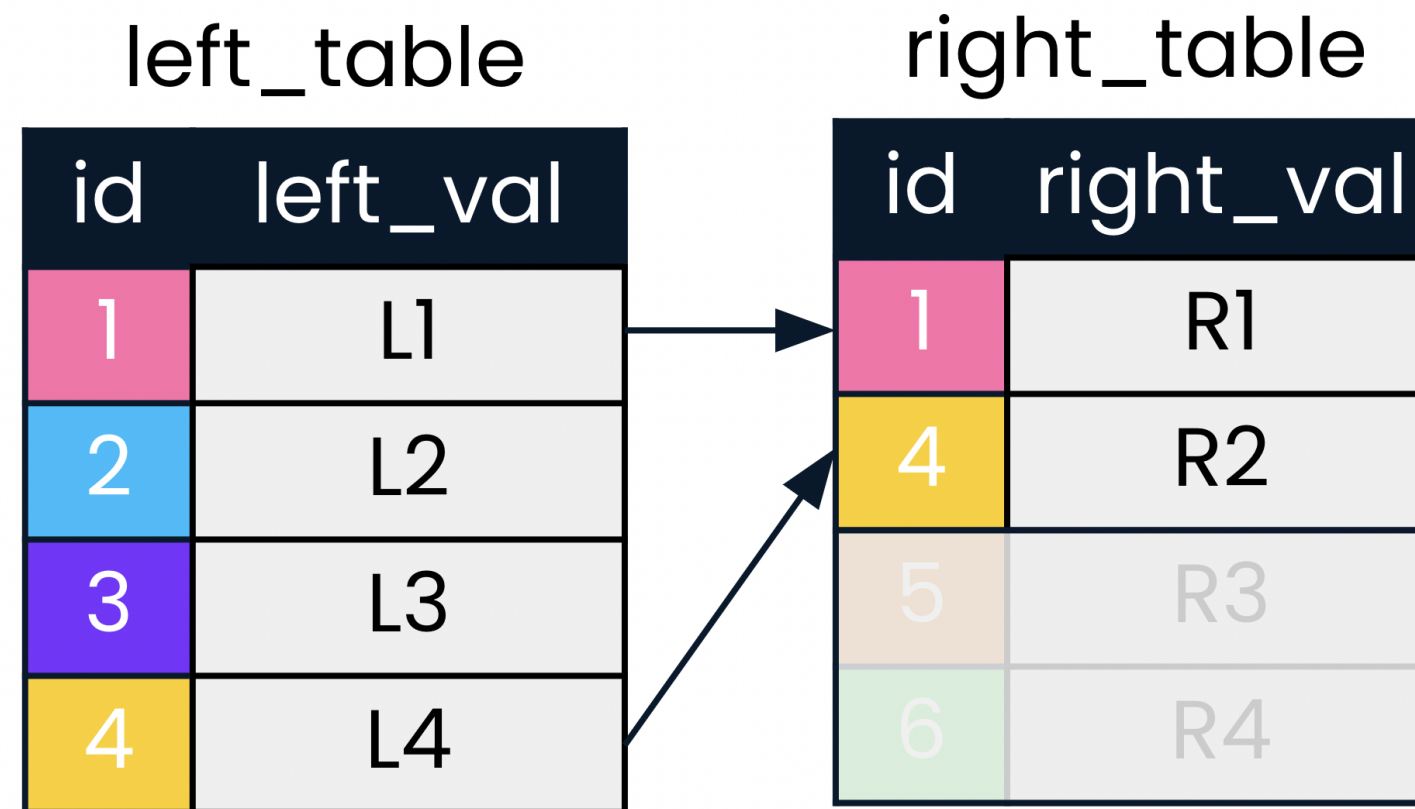
INNER JOIN diagram

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

left_table

id	left_val
1	L1
2	L2
3	L3
4	L4

right_table

id	right_val
1	R1
4	R2
5	R3
6	R4

result after INNER JOIN

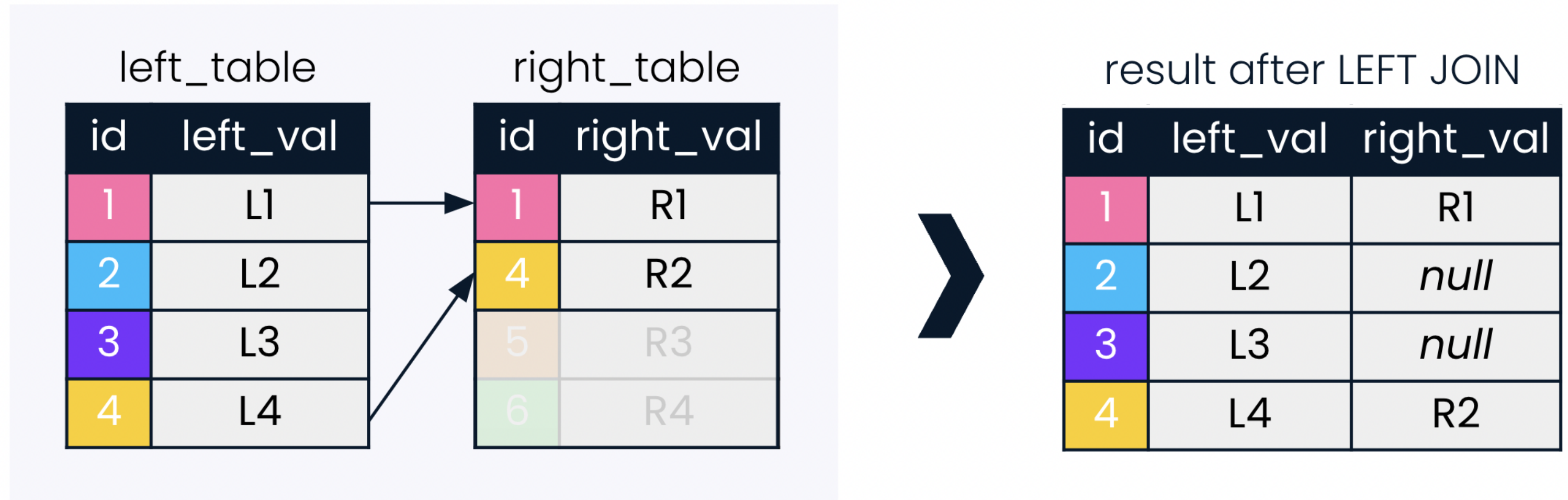| id	left_val	right_val
1	L1	R1
4	L4	R2

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
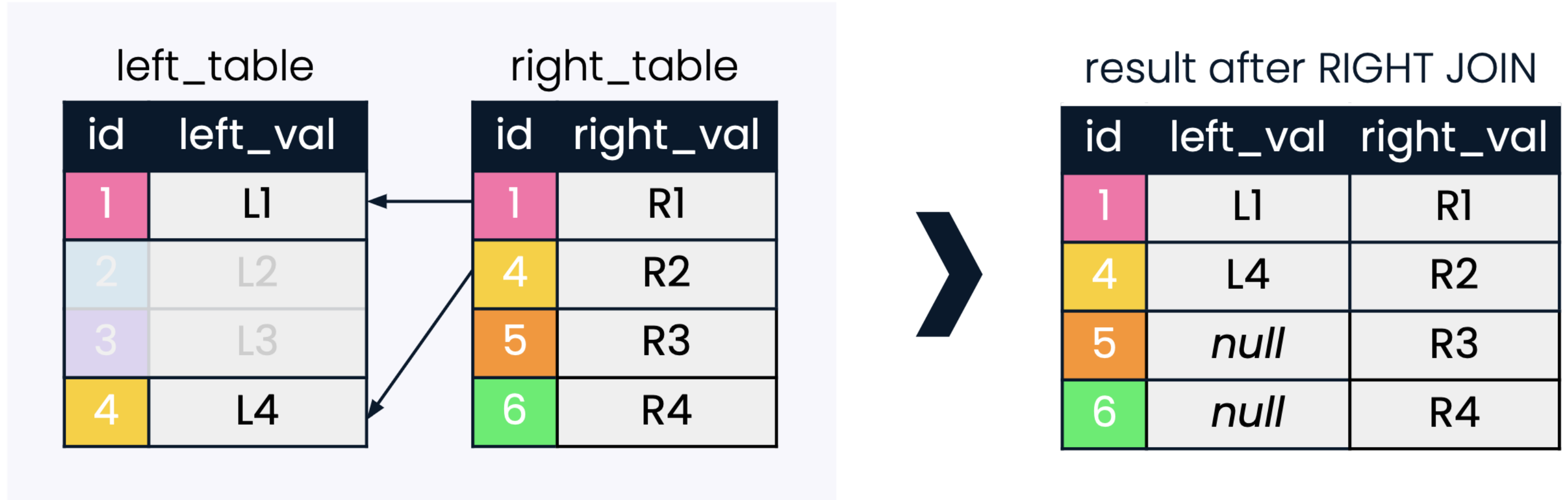
LEFT JOIN syntax

```
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        | António Costa      | Marcelo Rebelo de Sousa  |
| Pakistan        | Shehbaz Sharif     | Arif Alvi                |
| United Kingdom  | Boris Johnson      | null                     |
| India           | Narendra Modi      | Ram Nath Kovind          |
| Australia       | Scott Morrison     | null                     |
| Norway          | Jonas Gahr Støre   | null                     |
| Brunei          | Hassanal Bolkiah   | null                     |
| Oman            | Haitham bin Tarik  | null                     |
```

RIGHT JOIN

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

RIGHT JOIN syntax

```sql
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	António Costa	Marcelo Rebelo de Sousa
USA	null	Joe Biden
Uruguay	null	Luis Lacalle Pou
Pakistan	Shehbaz Sharif	Arif Alvi
Chile	null	Gabriel Boric
India	Narendra Modi	Ram Nath Kovind

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
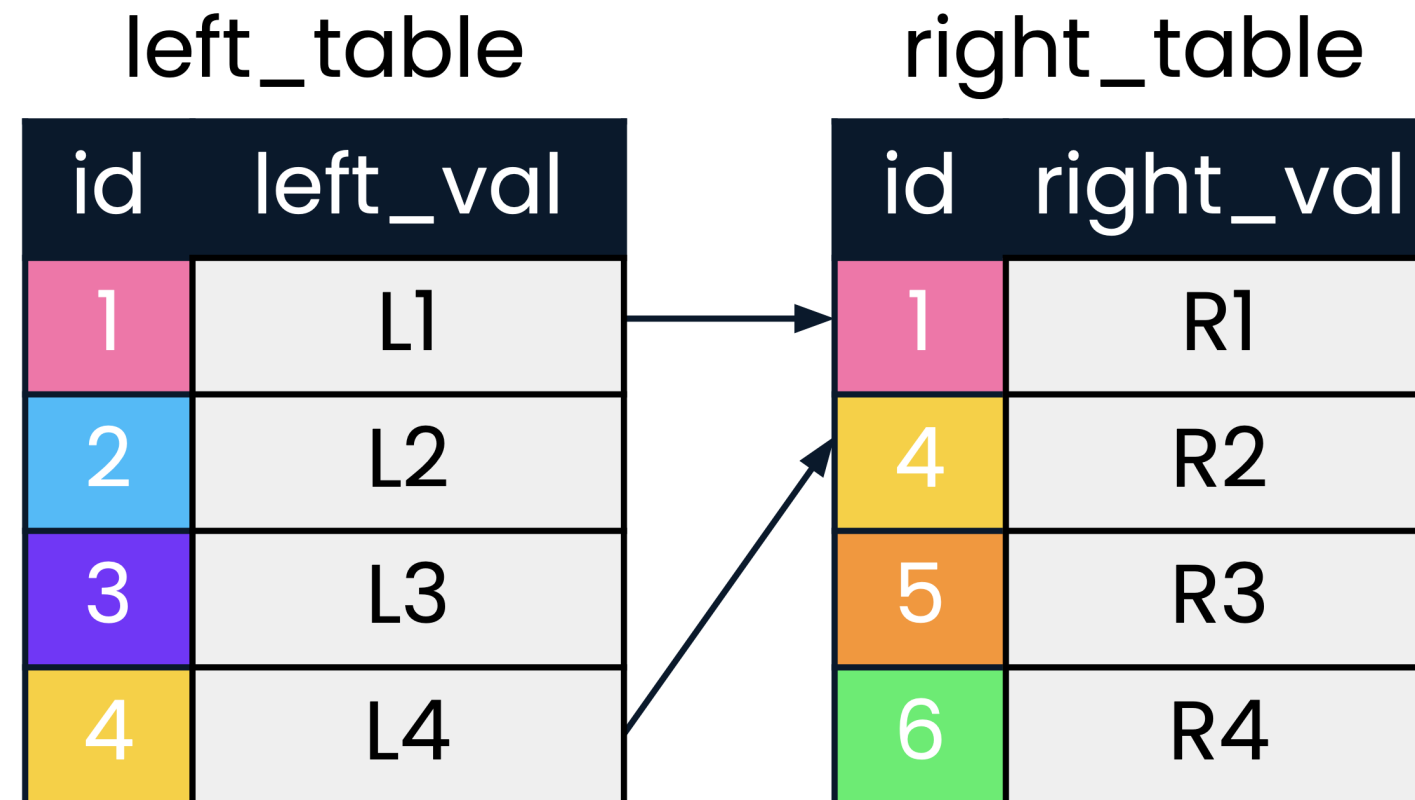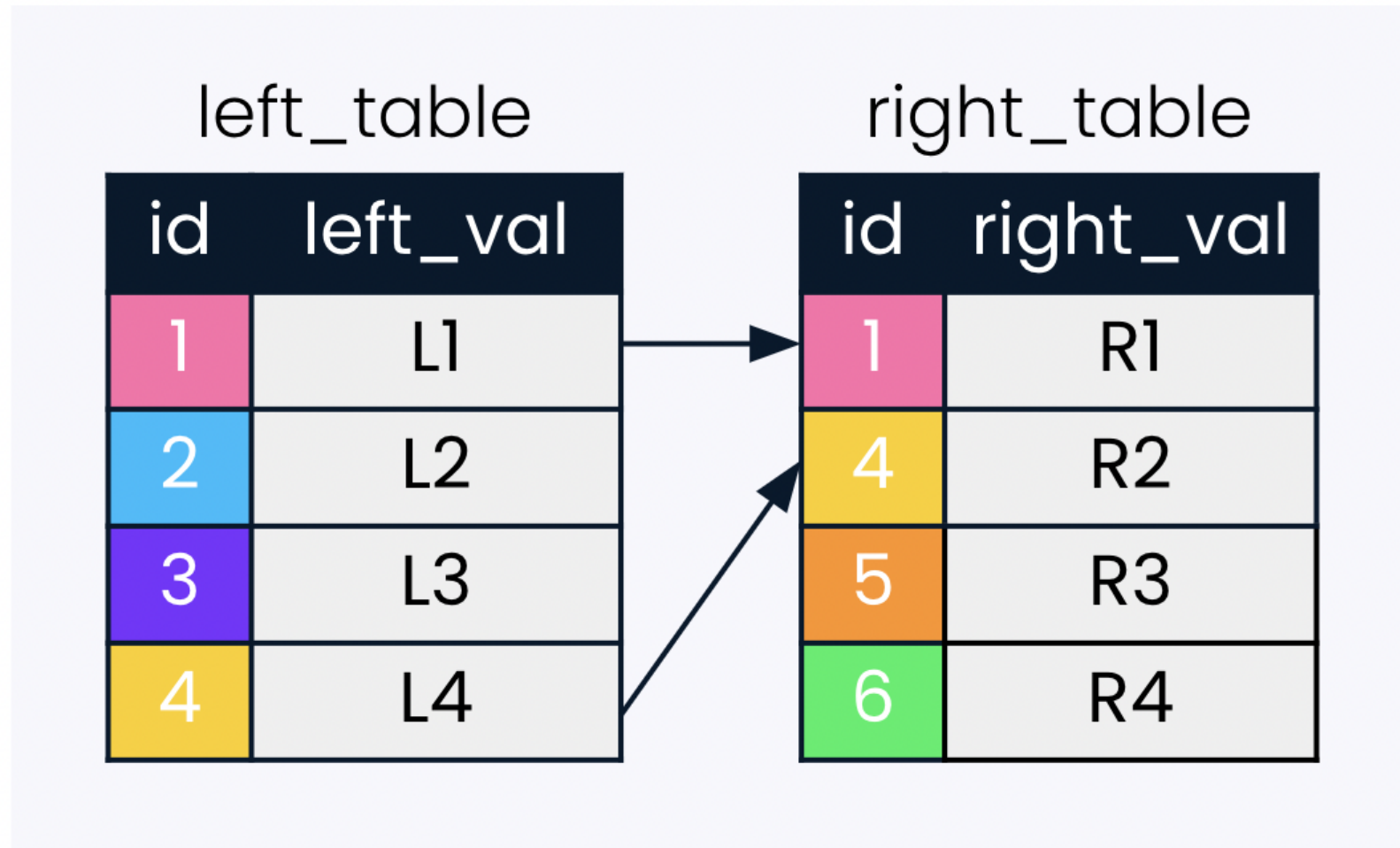
Let's practice!

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

left_table

id	left_val
1	L1
2	L2
3	L3
4	L4

right_table

id	right_val
1	R1
4	R2
5	R3
6	R4

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

```sql
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

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

FULL JOIN example using leaders database

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

FULL JOIN example using leaders database

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

FULL JOIN example using leaders database

```sql
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	António Costa	Marcelo Rebelo de Sousa
Pakistan	Shehbaz Sharif	Arif Alvi
United Kingdom	Boris Johnson	null
USA	null	Joe Biden
Uruguay	null	Luis Lacalle Pou
Chile	null	Gabriel Boric
India	Narendra Modi	Ram Nath Kovind
Norway	Jonas Gahr Støre	null
Brunei	Hassanal Bolkiah	null

Let's practice!

JOINING DATA IN SQL

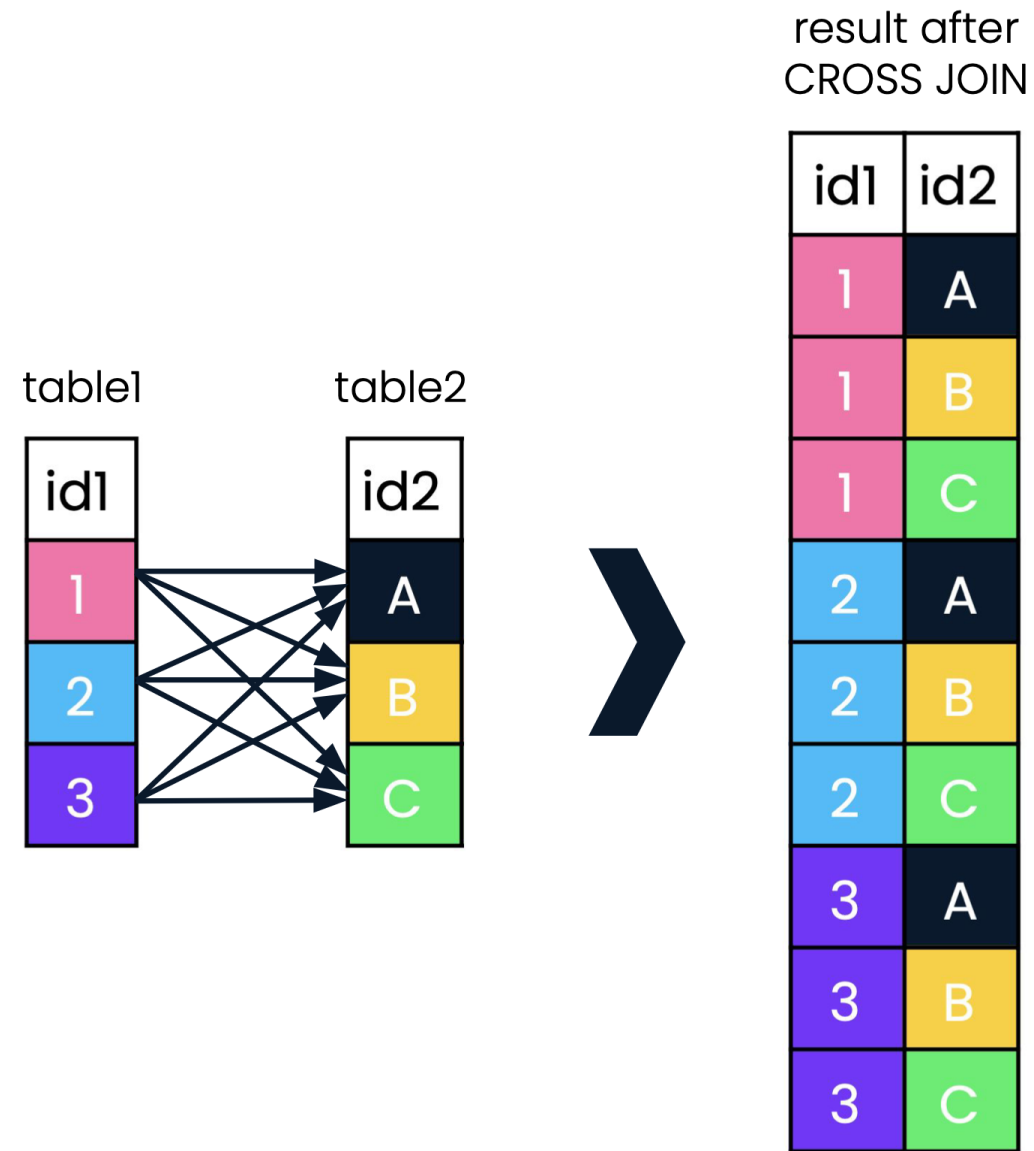# Crossing into CROSS JOIN

JOINING DATA IN SQL

SQL

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CROSS JOIN diagram

`CROSS JOIN` creates all possible combinations of two tables.

CROSS JOIN syntax

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

Pairing prime ministers with presidents

```sql
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              |
|-------------------|------------------------|
| Shehbaz Sharif    | Luis Lacalle Pou       |
| Narendra Modi     | Luis Lacalle Pou       |
| Hassanal Bolkiah  | Luis Lacalle Pou       |
| Haitham bin Tarik | Luis Lacalle Pou       |
| Shehbaz Sharif    | Gabriel Boric          |
| Narendra Modi     | Gabriel Boric          |
| Hassanal Bolkiah  | Gabriel Boric          |
| Haitham bin Tarik | Gabriel Boric          |
|-------------------|------------------------|
```

Let's practice!

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Self joins

JOINING DATA IN SQL

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	António Costa
Pakistan	Asia	Shehbaz Sharif
United Kingdom	Europe	Boris Johnson
India	Asia	Narendra Modi
Australia	Oceania	Scott Morrison
Norway	Europe	Jonas Gahr Støre
Brunei	Asia	Hassanal Bolkiah
Oman	Asia	Haitham bin Tarik
New Zealand	Oceania	Jacinda Ardern

Prime minister, meet prime minister

```sql
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

```sql
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!

JOINING DATA IN SQL