

The ins and outs of INNER JOIN

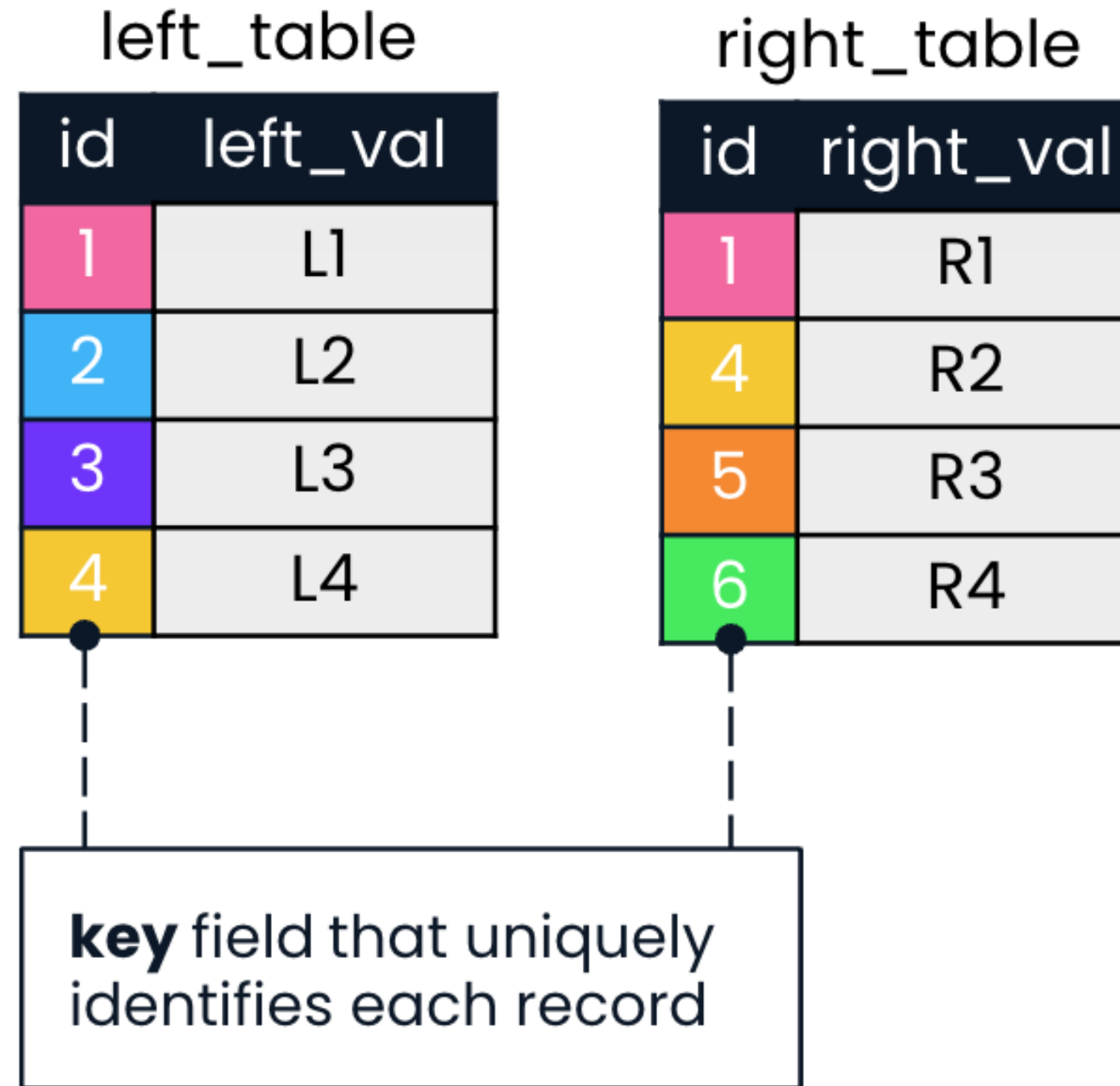
JOINING DATA IN SQL



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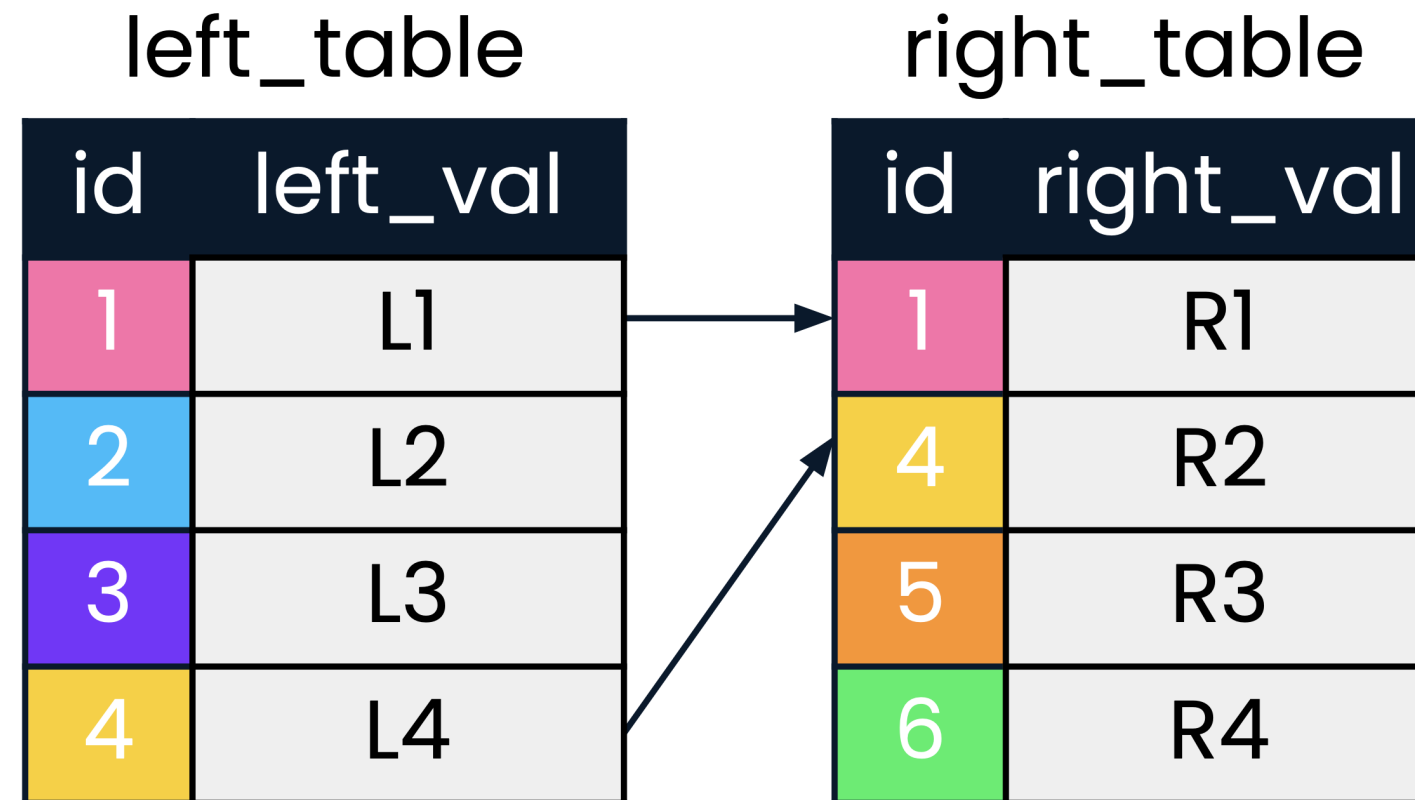
The ins and outs of INNER JOINS



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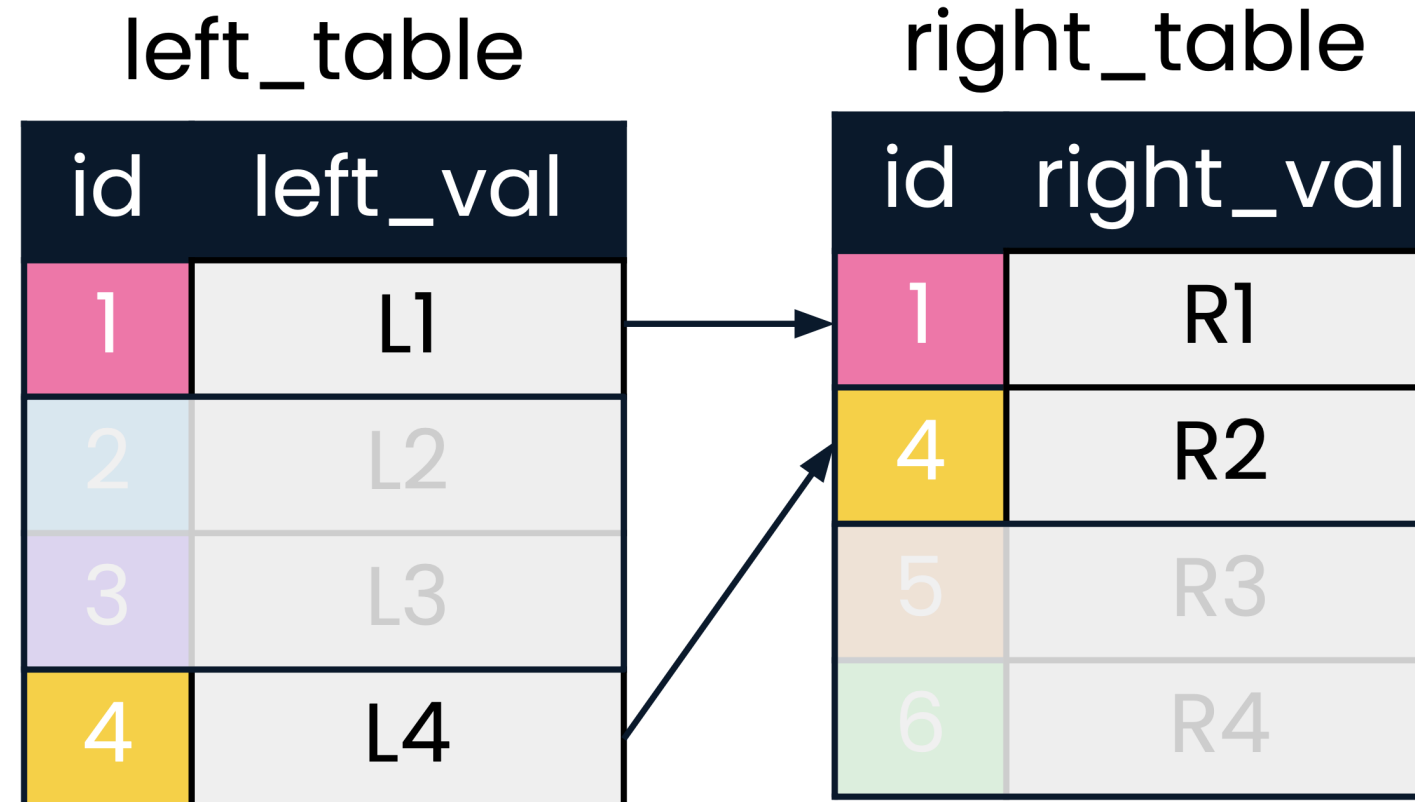
- `INNER JOIN` looks for records in both tables which match on a given field

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



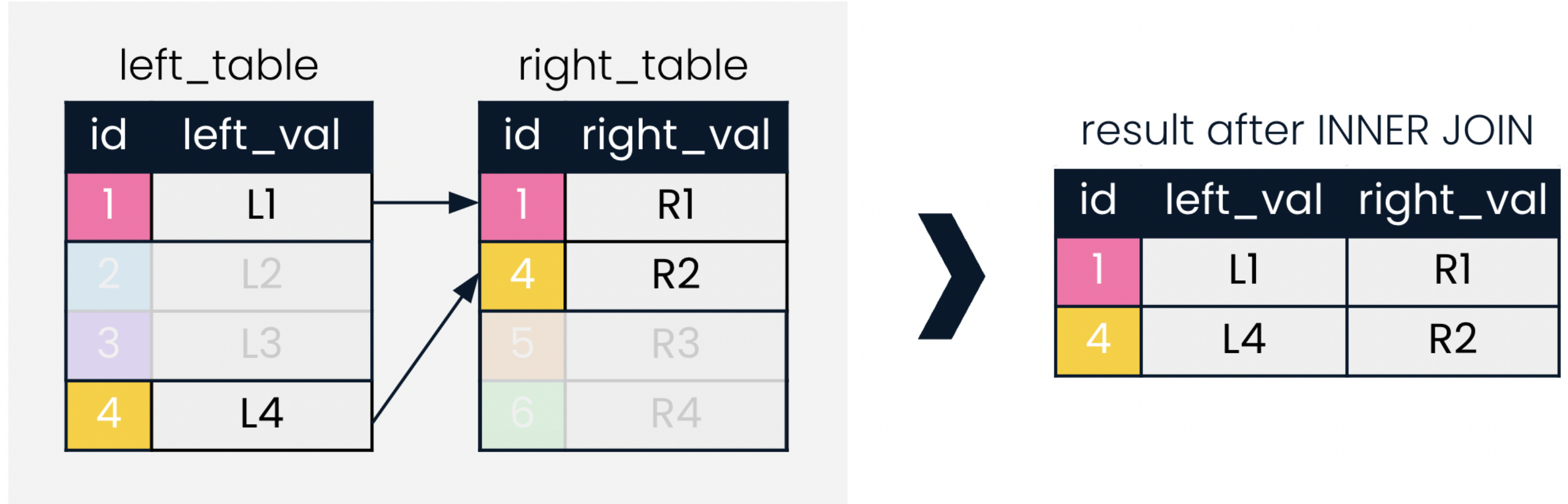
The ins and outs of INNER JOINS

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



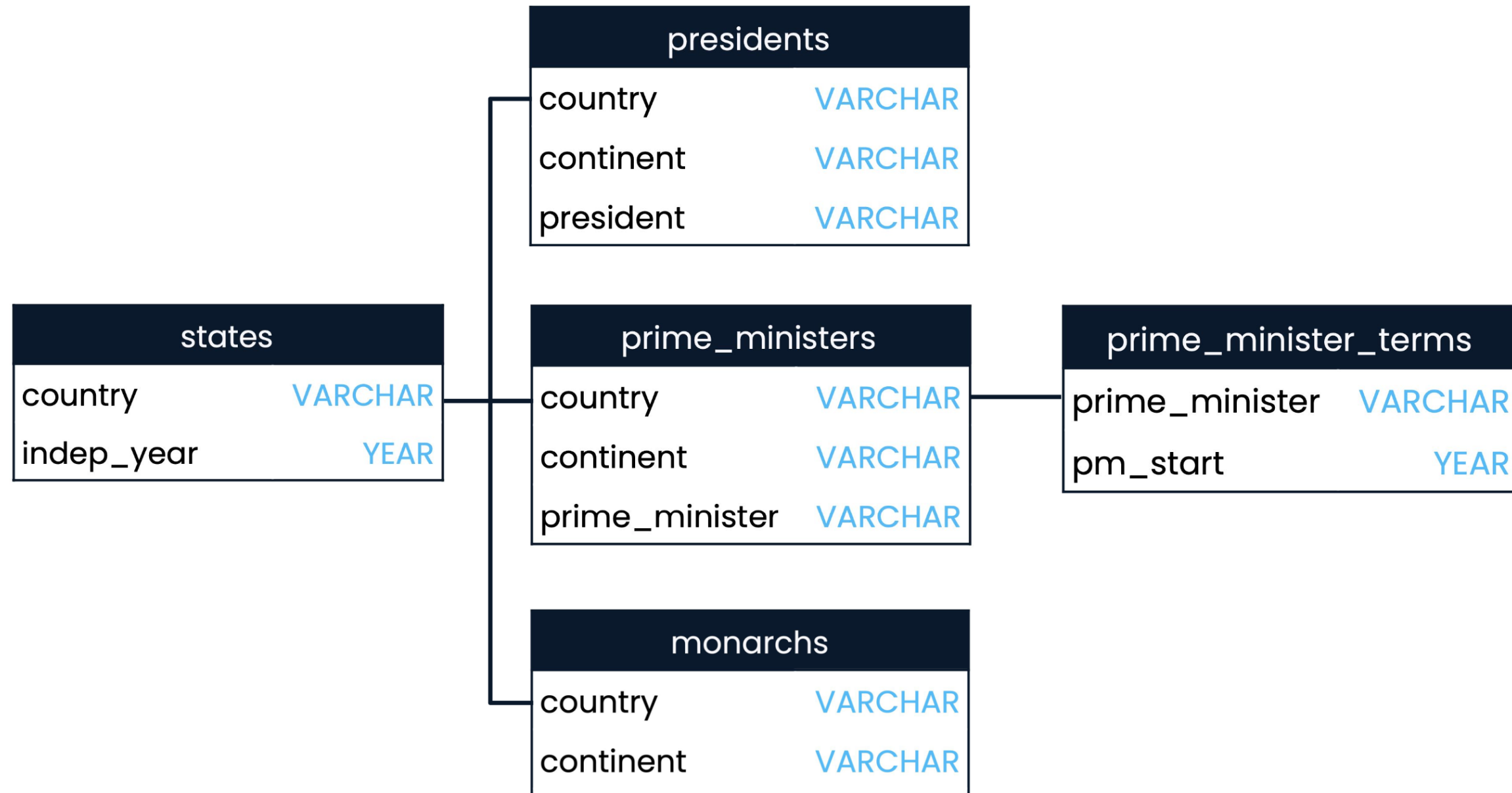
The ins and outs of INNER JOINS

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



The leadership database schema

World leaders up to 2024:



At the presidents table

```
SELECT *  
FROM presidents;
```

country	continent	president
-----	-----	-----
Egypt	Africa	Abdel Fattah el-Sisi
Portugal	Europe	Marcelo Rebelo de Sousa
USA	North America	Joe Biden
Uruguay	South America	Luis Lacalle Pou
Pakistan	Asia	Asif Ali Zardari
Chile	South America	Gabriel Boric
India	Asia	Droupadi Murmu

Meet the prime ministers

The `prime_ministers` table

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 ministers, meet the presidents

The `presidents` table

country	continent	president
Egypt	Africa	Abdel Fattah el-Sisi
Portugal	Europe	Marcelo Rebelo de Sousa
USA	North America	Joe Biden
Uruguay	South America	Luis Lacalle Pou
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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

Our first INNER JOIN

```
--Inner join of presidents and prime_ministers, joining on country
SELECT prime_ministers.country, prime_ministers.continent, prime_minister, president
FROM presidents
INNER JOIN prime_ministers
ON presidents.country = prime_ministers.country;
```

Note. The `table.column_name` format must be used when selecting columns that exist in both tables to avoid a SQL error.

country	continent	prime_minister	president	
-----	-----	-----	-----	
Egypt	Africa	Mostafa Madbouly	Abdel Fattah el-Sisi	
Portugal	Europe	Luís Montenegro	Marcelo Rebelo de Sousa	
Pakistan	Asia	Shehbaz Sharif	Asif Ali Zardari	
India	Asia	Narendra Modi	Ram Nath Kovind	

Aliasing tables

```
--Inner join of presidents and prime_ministers, joining on country
SELECT p2.country, p2.continent, prime_minister, president
FROM presidents AS p1
INNER JOIN prime_ministers AS p2
ON p1.country = p2.country;
```

country	continent	prime_minister	president
Egypt	Africa	Mostafa Madbouly	Abdel Fattah el-Sisi
Portugal	Europe	Luís Montenegro	Marcelo Rebelo de Sousa
Pakistan	Asia	Shehbaz Sharif	Asif Ali Zardari
India	Asia	Narendra Modi	Ram Nath Kovind

Aliases can be used in the `table.column_name` syntax in `SELECT` and `ON` clauses.

Using USING

```
--Inner join of presidents and prime_ministers, joining on country
SELECT p2.country, p2.continent, prime_minister, president
FROM presidents AS p1
INNER JOIN prime_ministers AS p2
USING(country);
```

country	continent	prime_minister	president
Egypt	Africa	Mostafa Madbouly	Abdel Fattah el-Sisi
Portugal	Europe	Luís Montenegro	Marcelo Rebelo de Sousa
Pakistan	Asia	Shehbaz Sharif	Asif Ali Zardari
India	Asia	Narendra Modi	Ram Nath Kovind

Let's practice!

JOINING DATA IN SQL

Defining relationships

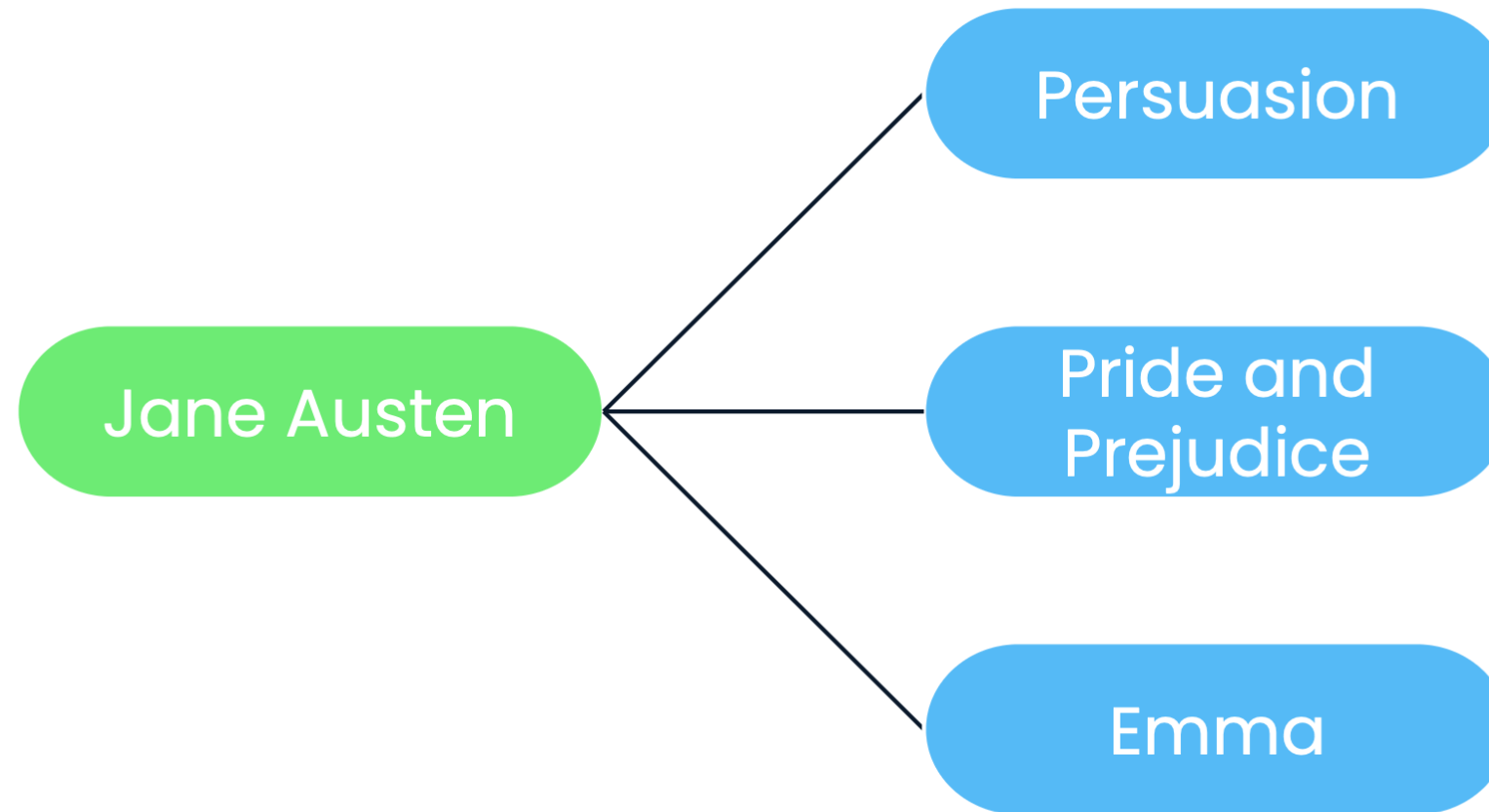
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SQL

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One-to-many relationships



One-to-many relationships

authors	
author_id	INT
first_name	VARCHAR
last_name	VARCHAR

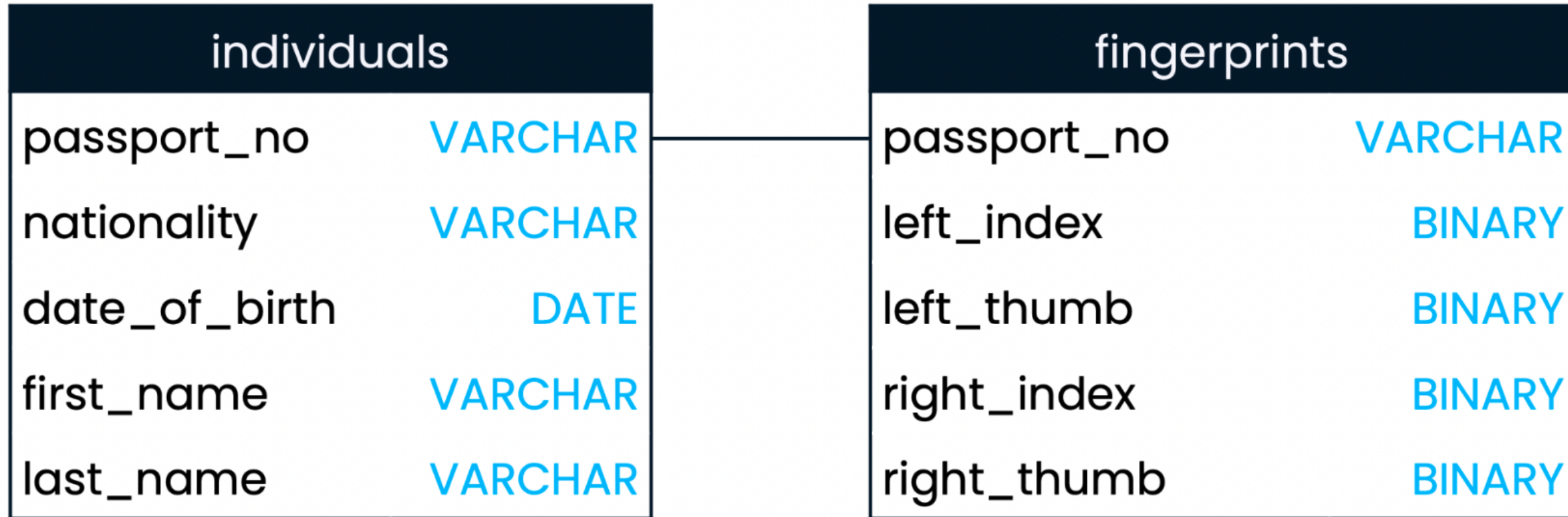


books	
book_id	INT
author_id	INT
title	VARCHAR
genre	VARCHAR
rating	FLOAT
year_published	YEAR

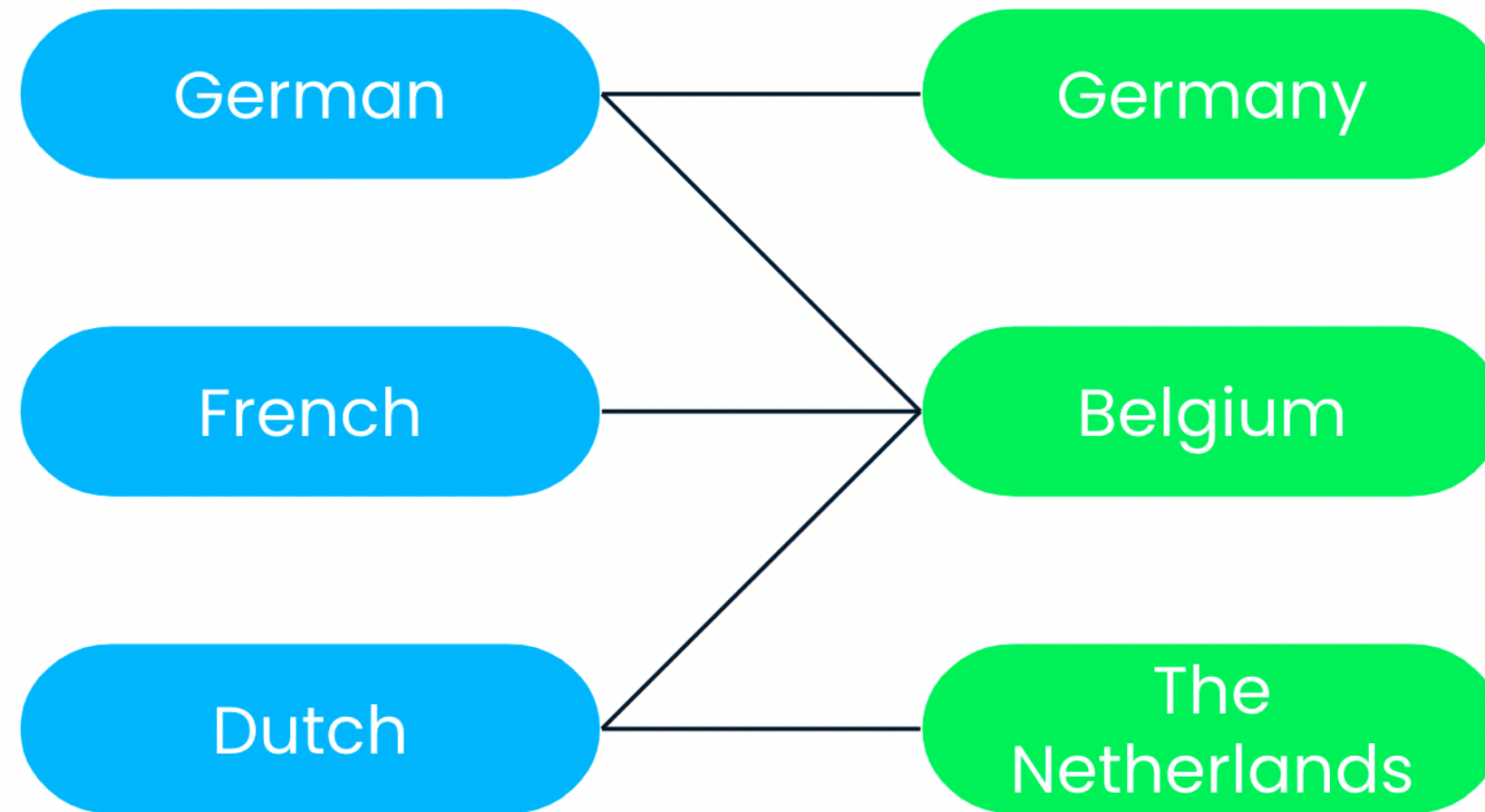
One-to-one relationships



One-to-one relationships



Many-to-many relationships



Let's practice!

JOINING DATA IN SQL

Multiple joins

JOINING DATA IN SQL



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Joins on joins

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

Note. Depending on the use case, `left_table` or `right_table` can be used in the `ON` clause.

Joins on joins

The `prime_minister_terms` table from our database of world leaders

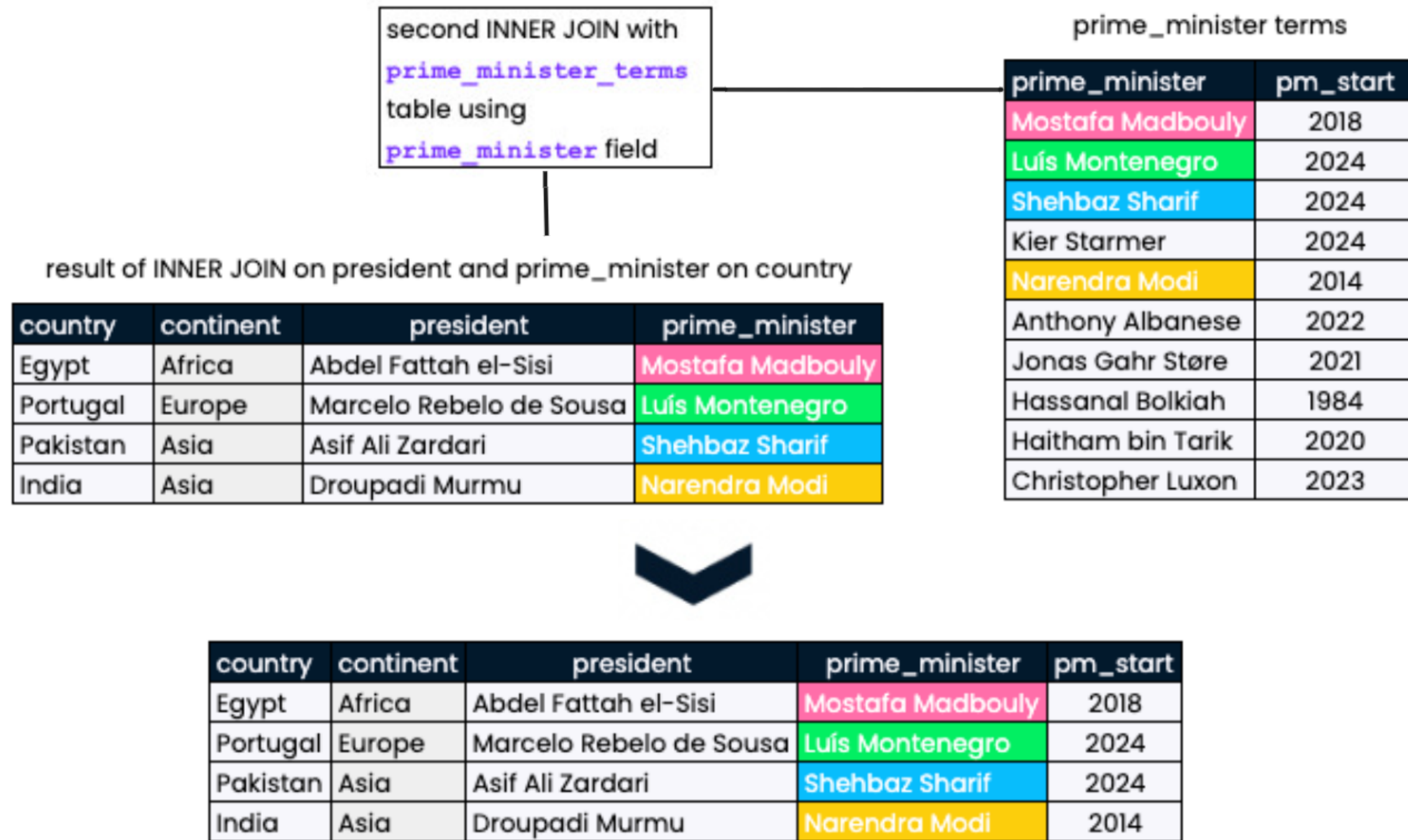
prime_minister	pm_start
Mostafa Madbouly	2018
Luís Montenegro	2024
Shehbaz Sharif	2024
Kier Starmer	2024
Narendra Modi	2014
Anthony Albanese	2022
Jonas Gahr Støre	2021
Hassanal Bolkiah	1984
Haitham bin Tarik	2020
Christopher Luxon	2023

What to join first?

```
SELECT p1.country, p1.continent,  
       president, prime_minister  
FROM prime_ministers as p1  
INNER JOIN presidents as p2  
USING(country);
```

country	continent	president	prime_minister
-----	-----	-----	-----
Egypt	Africa	Abdel Fattah el-Sisi	Mostafa Madbouly
Portugal	Europe	Marcelo Rebelo de Sousa	Luís Montenegro
Pakistan	Asia	Asif Ali Zardari	Shehbaz Sharif
India	Asia	Droupadi Murmu	Narendra Modi

Chaining joins



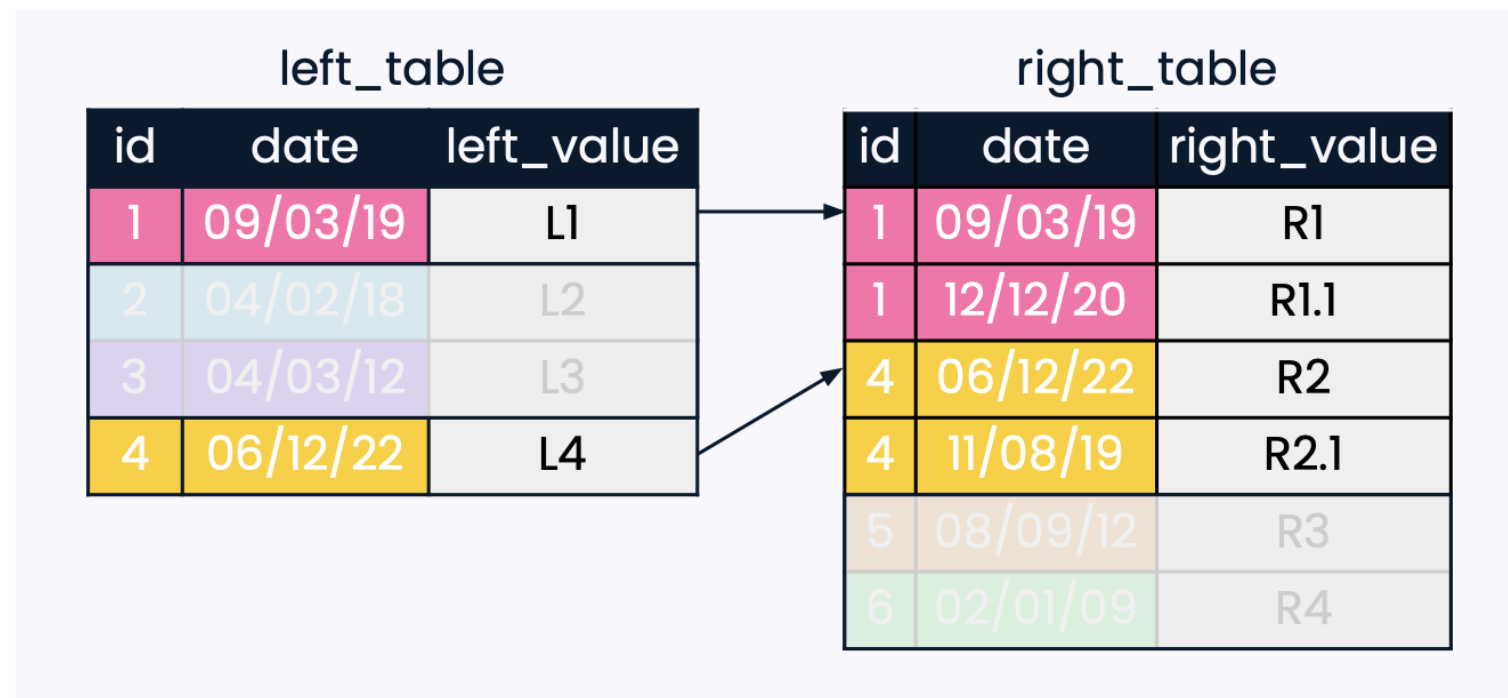
Chaining joins

```
-- SQL query for chaining inner joins
SELECT
  p1.country,
  p1.continent,
  president,
  prime_minister,
  pm_start
FROM prime_ministers as p1
INNER JOIN presidents as p2
  USING(country)
INNER JOIN prime_minister_terms as p3
  USING(prime_minister);
```

What are we joining ON?

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

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

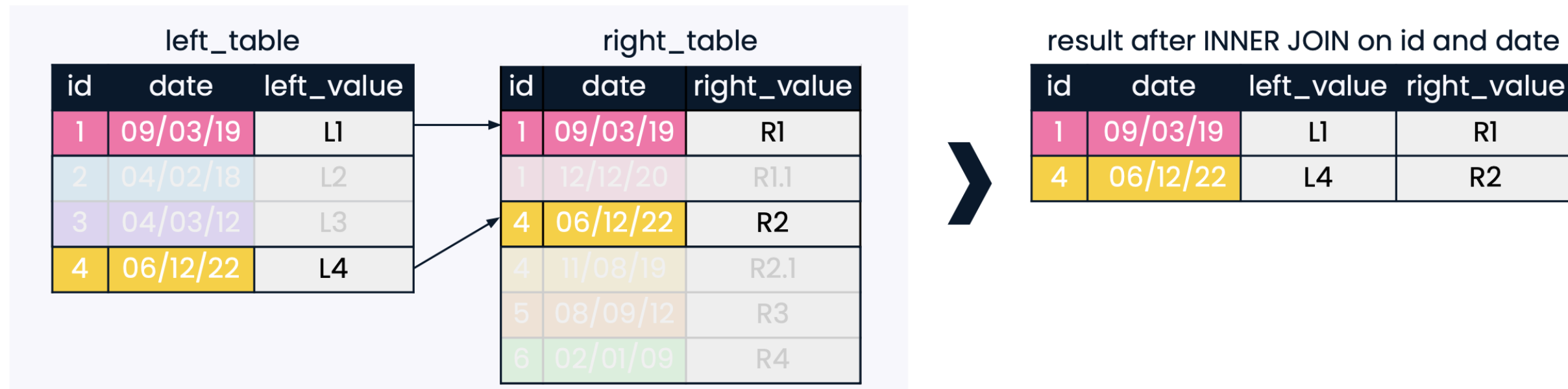


result after INNER JOIN on id			
id	date	left_value	right_value
1	09/03/19	L1	R1
1	12/12/20	L1	R1.1
4	06/12/22	L4	R2
4	11/08/19	L4	R2.1

Joining on multiple keys

```
SELECT *  
FROM left_table  
INNER JOIN right_table  
ON left_table.id = right_table.id  
   AND left_table.date = right_table.date;
```

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



Let's practice!

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