



JOINING DATA IN POSTGRESQL

Subqueries inside WHERE and SELECT clauses

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Subquery inside WHERE clause set-up

name	indep_year	fert_rate	women_parli_perc
Australia	1901	1.88	32.74
Brunei	1984	1.96	6.06
Chile	1810	1.8	15.82
Egypt	1922	2.7	14.9
Haiti	1804	3.03	2.74
India	1947	2.43	11.58
Liberia	1847	4.64	11.65
Norway	1905	1.93	39.6
Oman	1951	2.75	8.82
Portugal	1143	1.31	34.8
Spain	1492	1.53	38.64
Uruguay	1828	2.03	22.31
Vietnam	1945	1.7	24

Average fert_rate

```
SELECT AVG(fert_rate)  
FROM states;
```

avg
2.28385

Asian countries below average fert_rate

```
SELECT name, fert_rate  
FROM states  
WHERE continent = 'Asia'
```

Asian countries below average fert_rate

```
SELECT name, fert_rate  
FROM states  
WHERE continent = 'Asia'  
    AND fert_rate <
```

Asian countries below average fert_rate

```
SELECT name, fert_rate
FROM states
WHERE continent = 'Asia'
  AND fert_rate <
    (SELECT AVG(fert_rate)
     FROM states);
```

Asian countries below average fert_rate

```
SELECT name, fert_rate
FROM states
WHERE continent = 'Asia'
  AND fert_rate <
    (SELECT AVG(fert_rate)
     FROM states);
```

name	fert_rate
Brunei	1.96
Vietnam	1.7

Subqueries inside SELECT clauses - setup

```
SELECT DISTINCT continent  
FROM prime_ministers;
```

continent
Africa
Asia
Europe
North America
Oceania

Subquery inside SELECT clause - complete

```
SELECT DISTINCT continent,  
  (SELECT COUNT(*)  
   FROM states  
  WHERE prime_ministers.continent = states.continent) AS countries_num  
FROM prime_ministers;
```

continent	countries_num
Africa	2
Asia	4
Europe	3
North America	1
Oceania	1



JOINING DATA IN POSTGRESQL

Let's practice!



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Subquery inside the FROM clause

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Build-up

```
SELECT continent, MAX(women_parli_perc) AS max_perc  
FROM states  
GROUP BY continent  
ORDER BY continent;
```

continent	max_perc
Africa	14.9
Asia	24
Europe	39.6
North America	2.74
Oceania	32.74
South America	22.31

Focusing on records in monarchs

```
SELECT monarchs.continent  
FROM monarchs, states  
WHERE monarchs.continent = states.continent  
ORDER BY continent;
```

Finishing off the subquery

```
SELECT DISTINCT monarchs.continent, subquery.max_perc
FROM monarchs,
  (SELECT continent, MAX(women_parli_perc) AS max_perc
   FROM states
   GROUP BY continent) AS subquery
WHERE monarchs.continent = subquery.continent
ORDER BY continent;
```

continent	max_perc
Asia	24
Europe	39.6



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Let's practice!



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Course Review

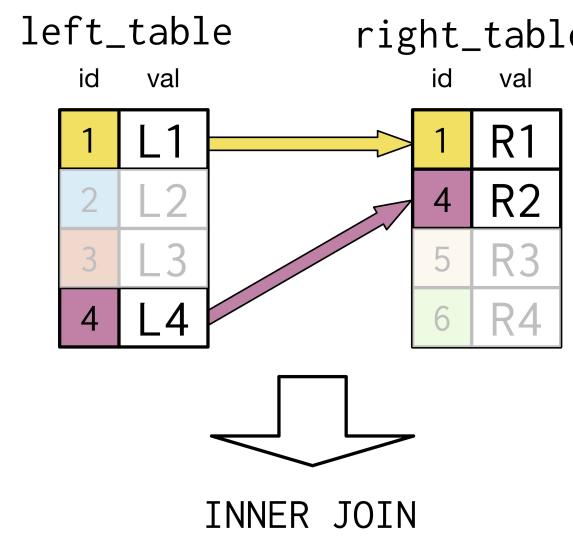
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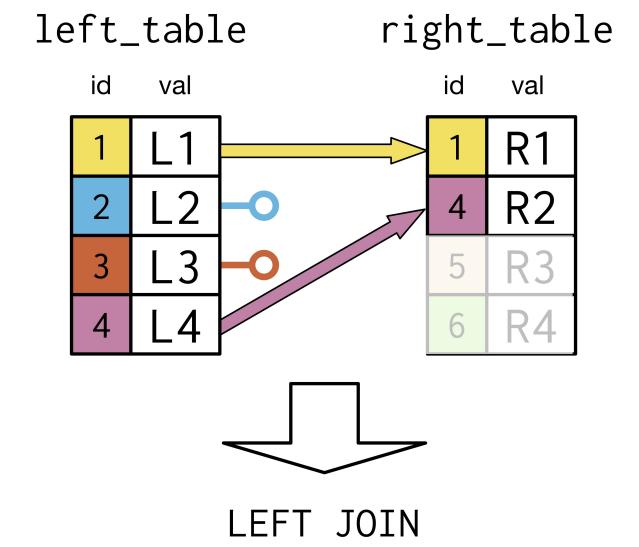
Types of joins

- INNER JOIN
 - Self-joins
- OUTER JOIN
 - LEFT JOIN
 - RIGHT JOIN
 - FULL JOIN
- CROSS JOIN
- Semi-join / Anti-join

INNER JOIN vs LEFT JOIN

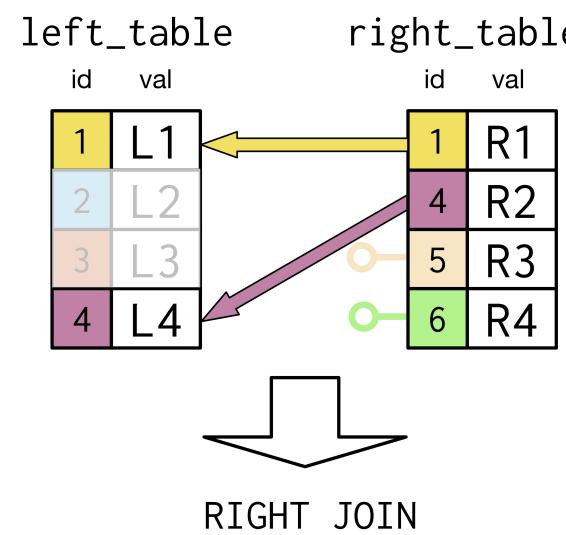


L_id	L_val	R_val
1	L1	R1
4	L4	R2

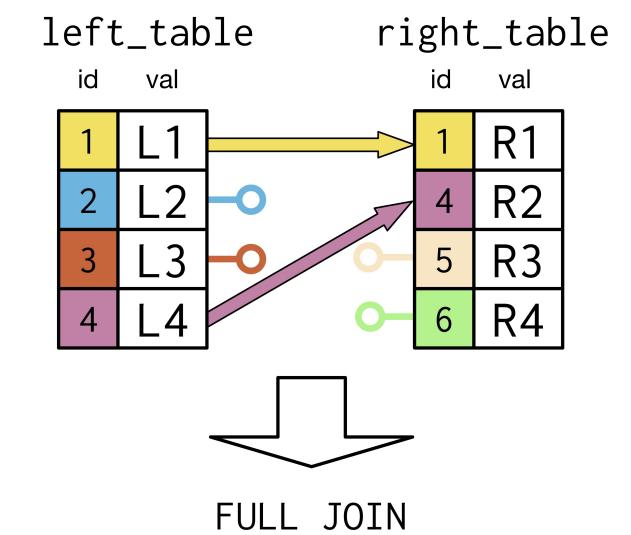


L_id	L_val	R_val
1	L1	R1
2	L2	
3	L3	
4	L4	R2

RIGHT JOIN vs FULL JOIN

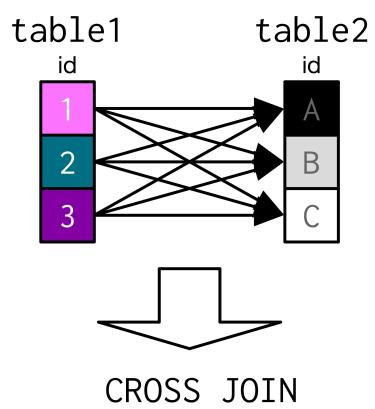


R_id	L_val	R_val
1	L1	R1
4	L4	R2
5		R3
6		R4



L_id	R_id	L_val	R_val
1	1	L1	R1
2		L2	
3		L3	
4	4	L4	R2
	5		R3
	6		R4

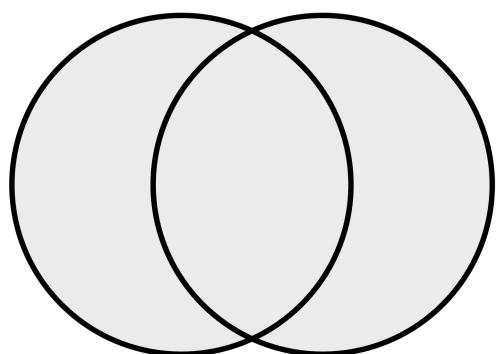
CROSS JOIN with code



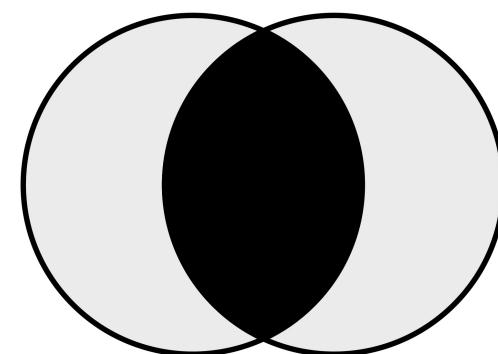
id1	id2
1	A
1	B
1	C
2	A
2	B
2	C
3	A
3	B
3	C

```
SELECT table1.id AS id1,  
       table2.id AS id2  
  FROM table1  
CROSS JOIN table2;
```

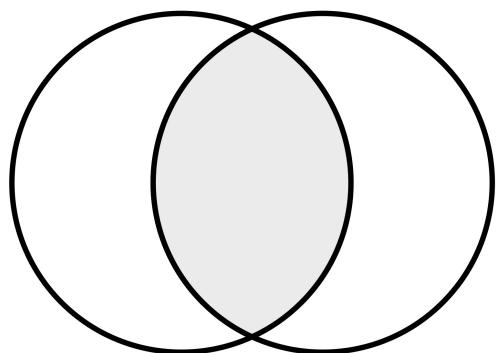
Set Theory Clauses



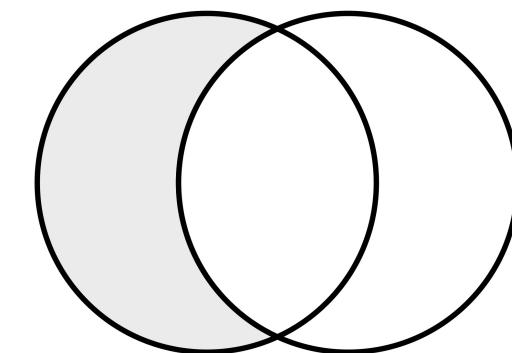
UNION



UNION ALL

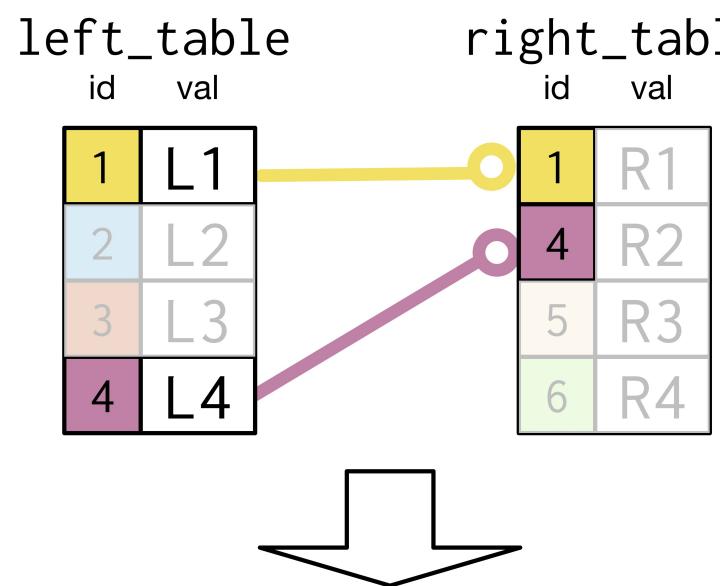


INTERSECT

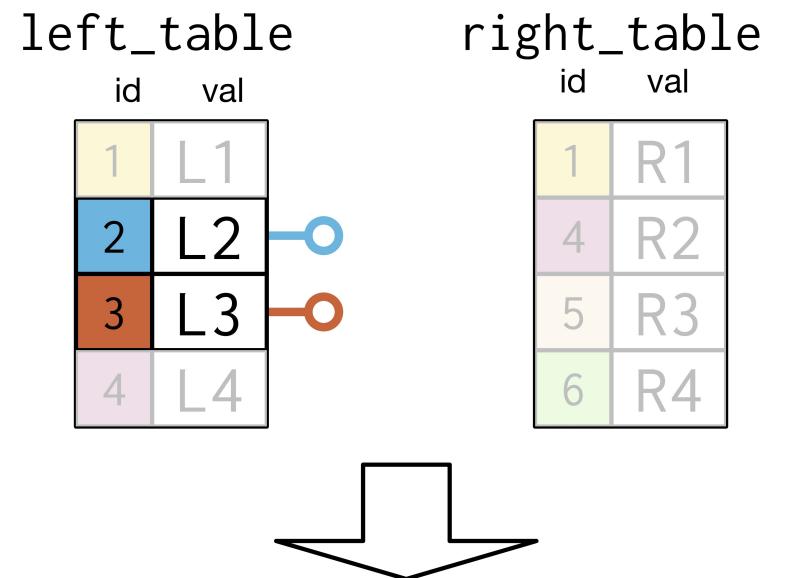


EXCEPT

Semi-joins and Anti-joins



L_id	L_val
1	L1
4	L4



L_id	L_val
2	L2
3	L3

Types of basic subqueries

- Subqueries inside WHERE clauses
- Subqueries inside SELECT clauses
- Subqueries inside FROM clauses



JOINING DATA IN POSTGRESQL

**Own the challenge
problems! You got this!**