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

```sql
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;
```

```
+--------------+
| continent    |
|-------------|
| Asia         |
| Asia         |
| Asia         |
| Asia         |
| Asia         |
| Asia         |
| Asia         |
| Asia         |
| Europe       |
| Europe       |
| Europe       |
| Europe       |
| Europe       |
| Europe       |
+--------------+
```

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 |
+-------------+------------+
```

JOINING DATA IN POSTGRESQL

Let's practice!

JOINING DATA IN POSTGRESQL

Course Review

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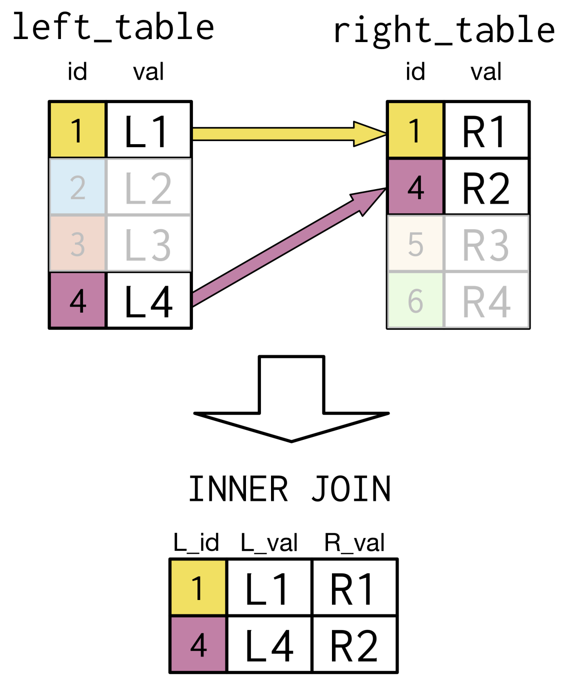
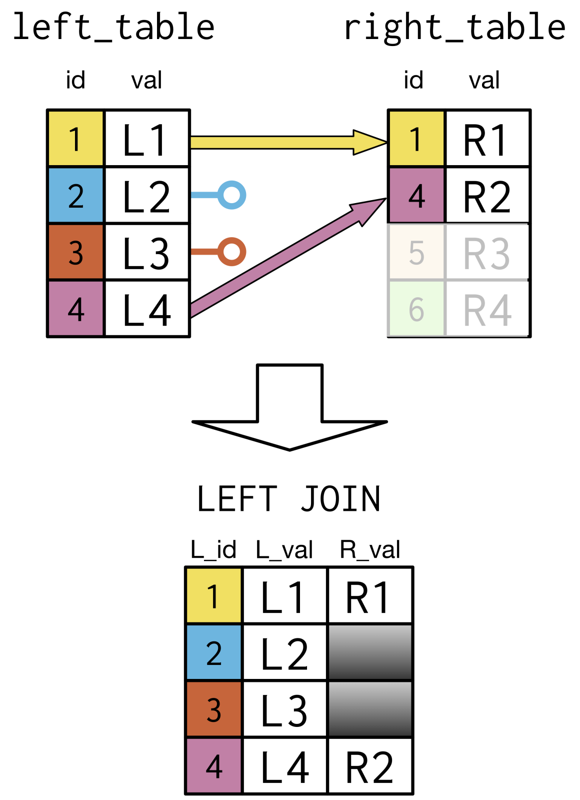
Types of joins

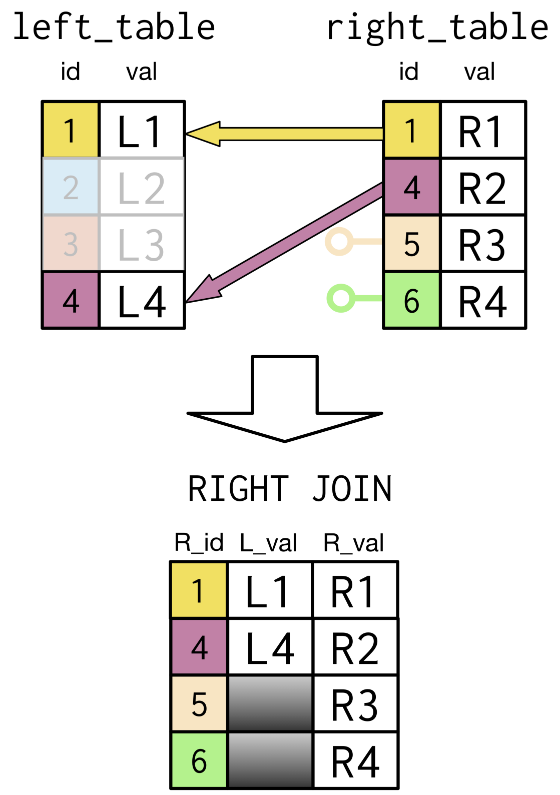
- INNER JOIN
  - Self-joins
- OUTER JOIN
  - LEFT JOIN
  - RIGHT JOIN
  - FULL JOIN
- CROSS JOIN
- Semi-join / Anti-join

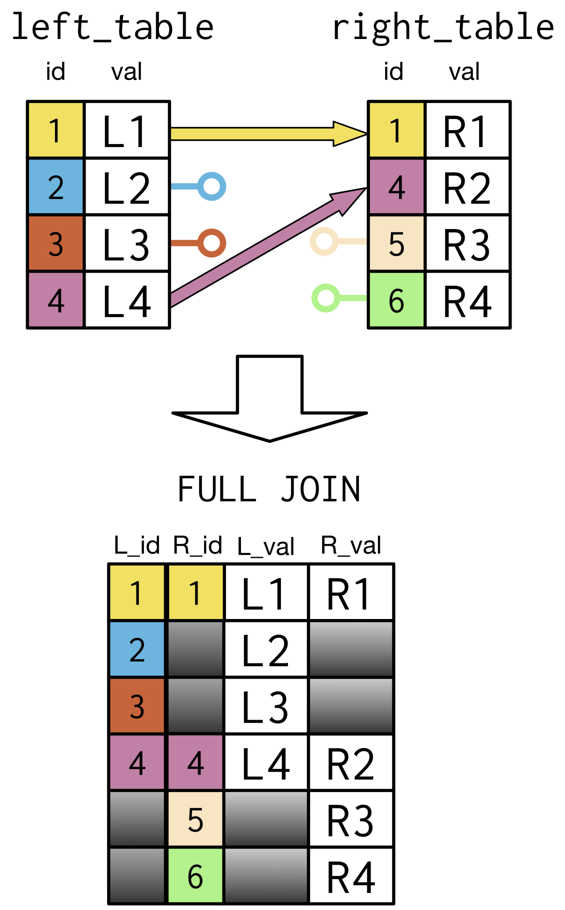
INNER JOIN vs LEFT JOIN



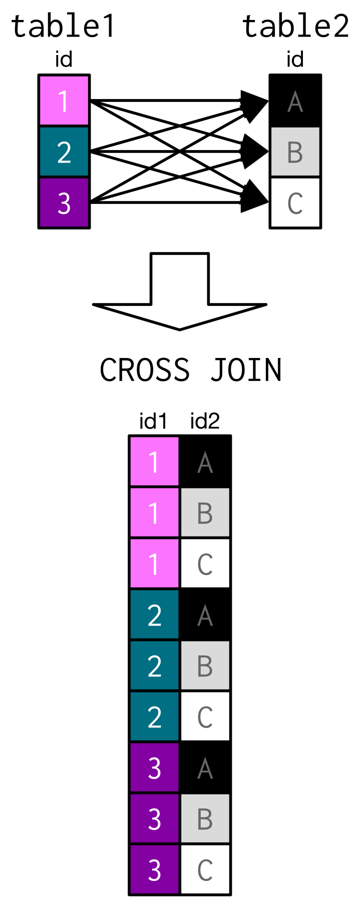


RIGHT JOIN vs FULL JOIN



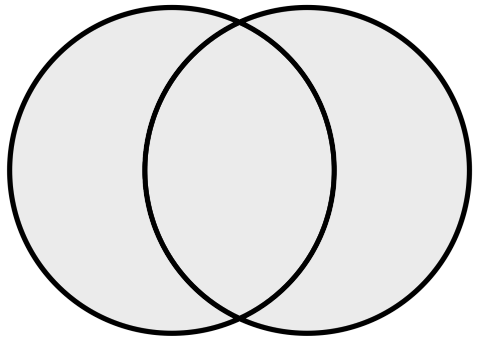


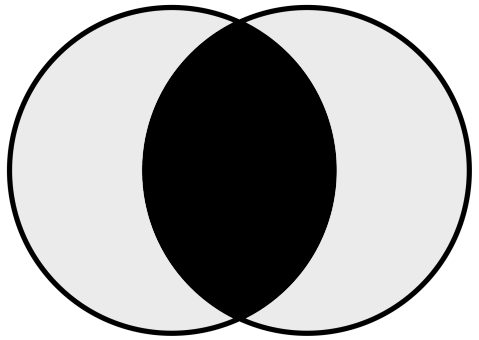
CROSS JOIN with code

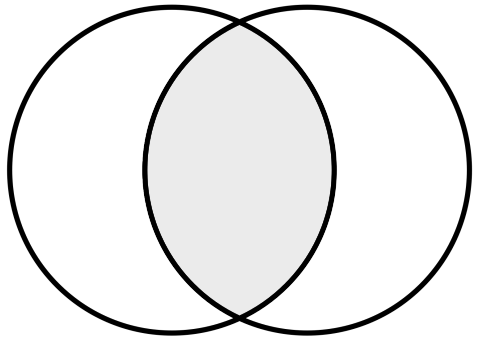


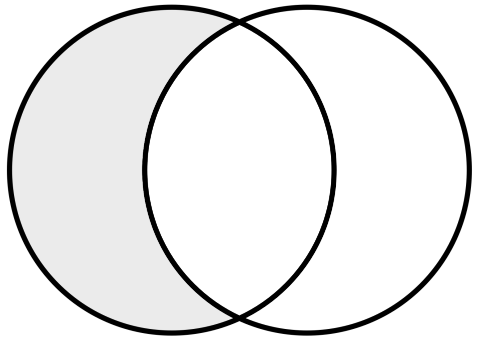
```
SELECT table1.id AS id1,
       table2.id AS id2
FROM table1
CROSS JOIN table2;
```

Set Theory Clauses

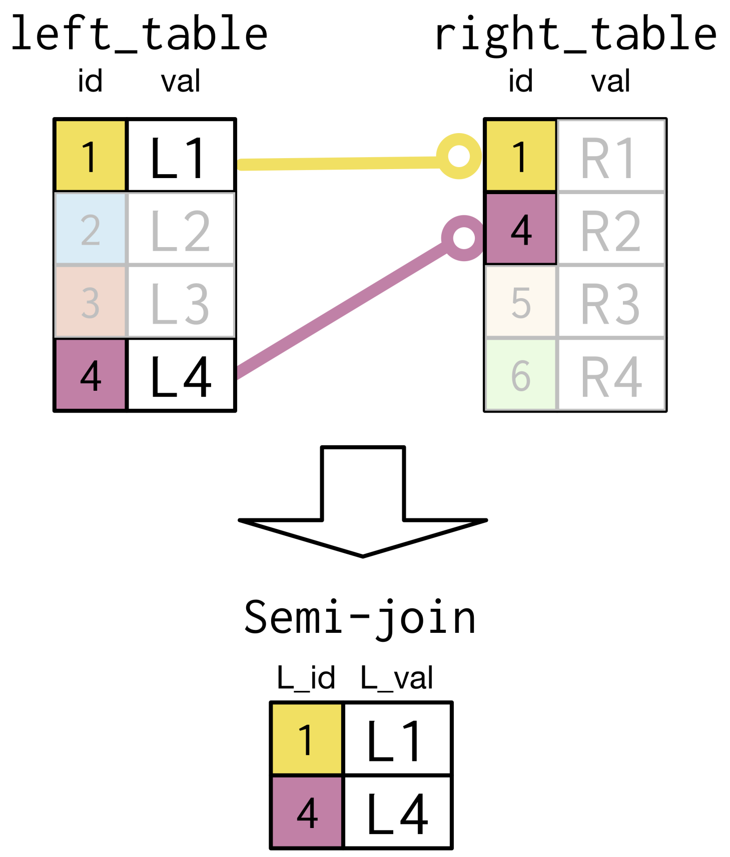

UNION

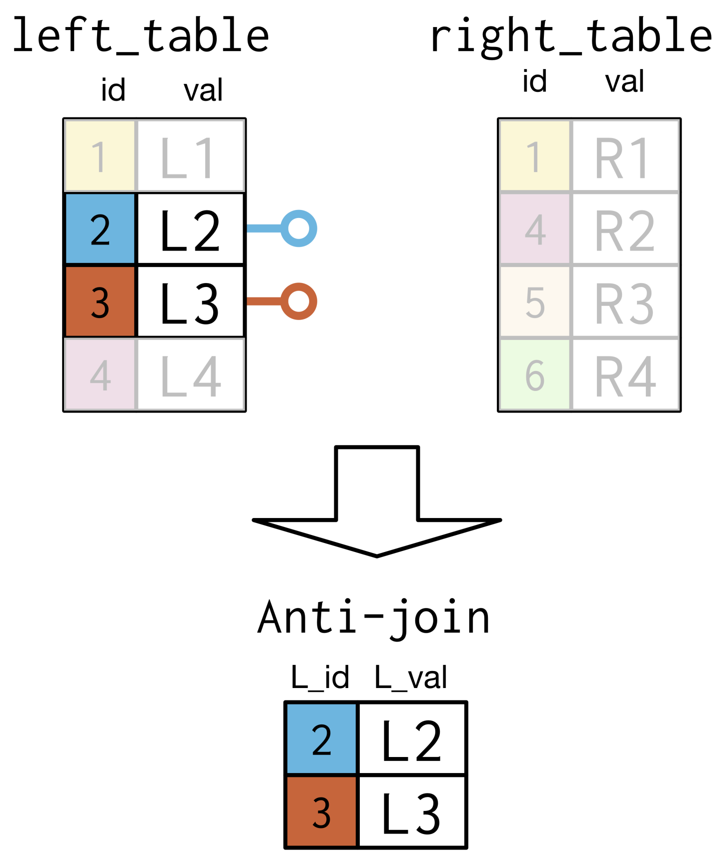

UNION ALL


INTERSECT


EXCEPT

Semi-joins and Anti-joins





Types of basic subqueries

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

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Own the challenge problems! You got this!