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SQL Queries (2)
Joining Tables

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Connecting tables in databases

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- The power of relational databases lies in the connecting multiple tables
- We have learned how to connecting DataFrames in pandas where we can use either `db.merge()` and `db.join()`
  - Merge two DataFrames using a field common to two tables
- The idea is same for joining tables

JOIN: Basic syntax

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- **`SELECT tableA.*, tableB.* FROM tableA`**
  `INNER JOIN tableB`
  `ON tableA.id = tableB.id`
  - This will connect to tables (tableA and tableB) using the key variable, id
  - Joining method is INNER JOIN (see the following slides)
  - Getting all fields from both tables (* is wild card but as fields are coming from two tables)
  - Note:
    - Table names are usually abbreviated using AS

Types of JOIN: Example data

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tableA

id	weight
1	64
3	80
5	55

tableB

id	height
1	180
2	167
3	150

INNER JOIN

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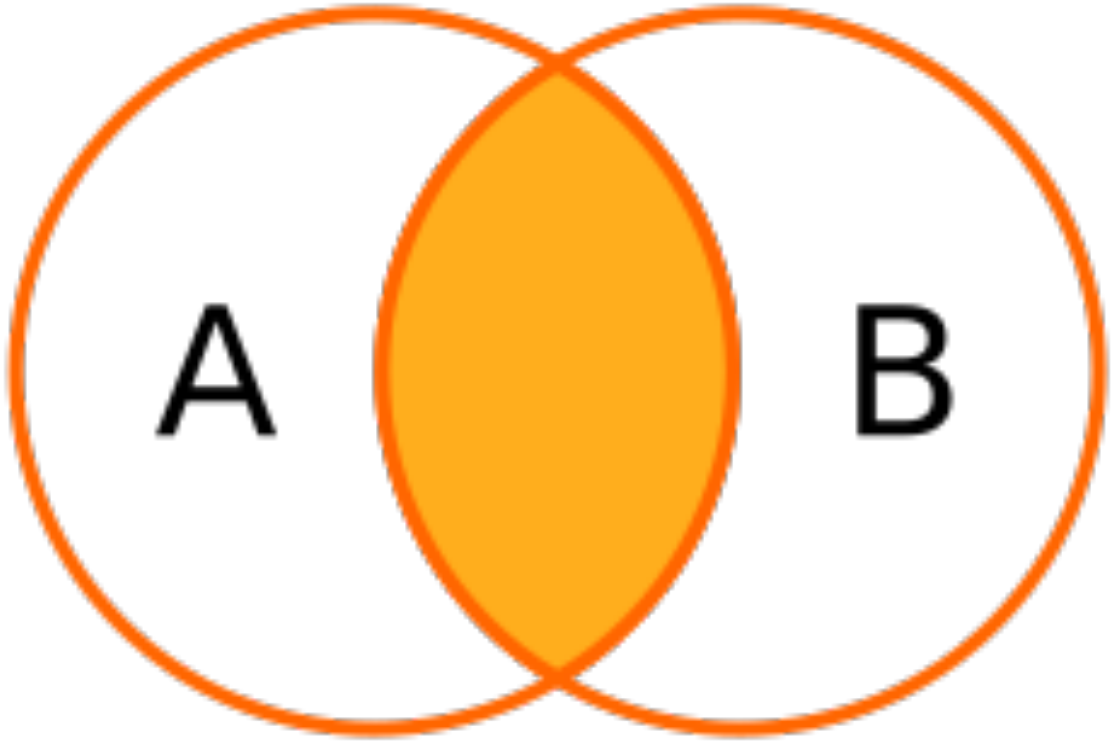
- Keep rows from A with matching B on id column.
  -
```
SELECT a.*, b.*
FROM tableA AS a
INNER JOIN tableB AS b
ON a.id = b.id
```



LEFT JOIN

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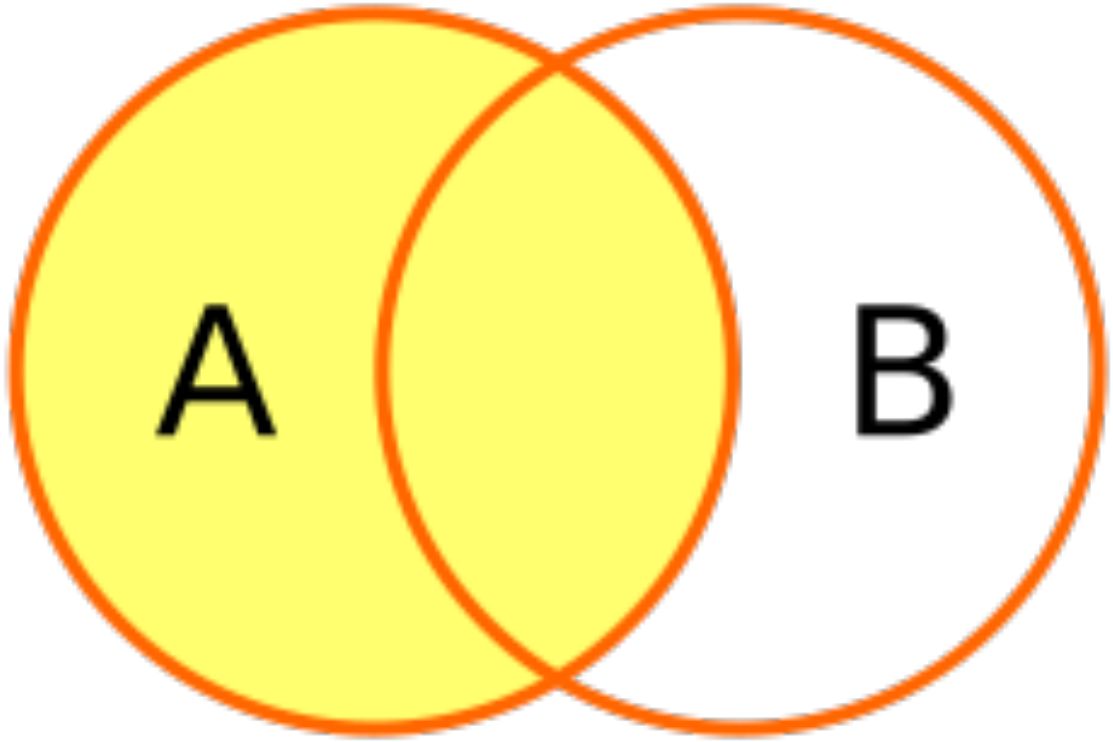
- Keep all rows from A , and rows in B matching with A.
  -
```
SELECT a.*, b.*
FROM tableA AS a
LEFT JOIN tableB AS b
ON a.id = b.id
```



RIGHT JOIN

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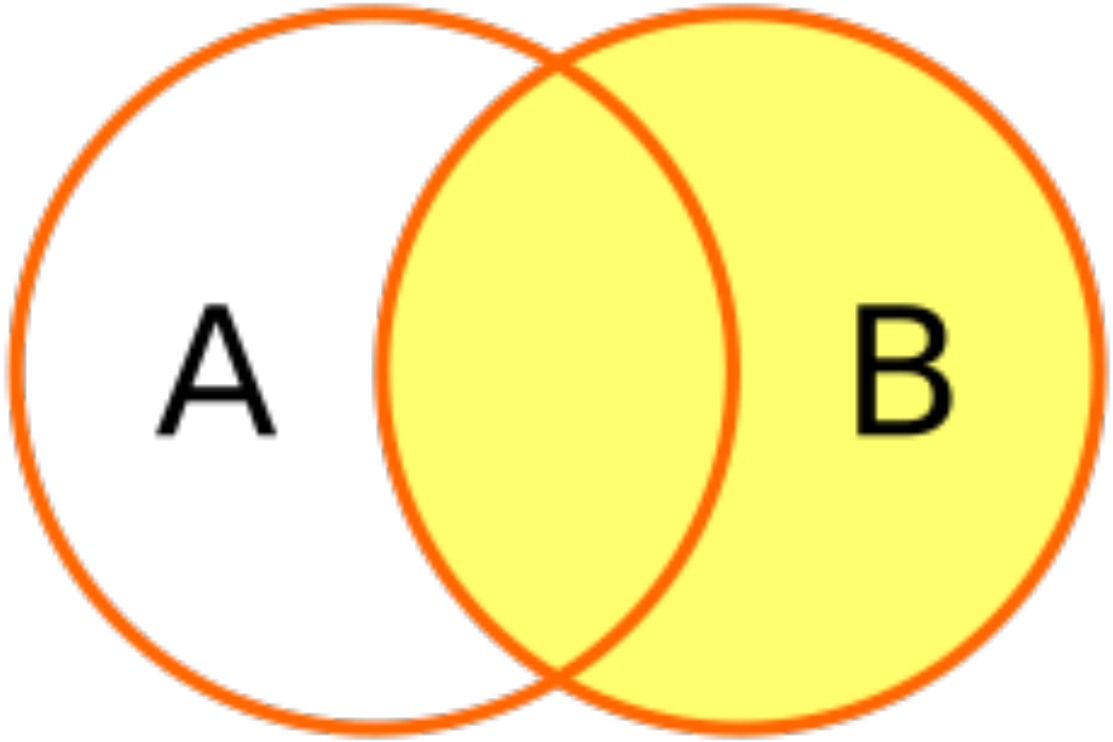
- Keep all rows from B, and rows in A macthng with B.
  - ```
    SELECT a.*, b.*
    FROM tableA AS a
    RIGHT JOIN tableB AS b
    ON a.id = b.id
    ```
  - Not implemented in SQLite


    ```

FULL OUTER JOIN

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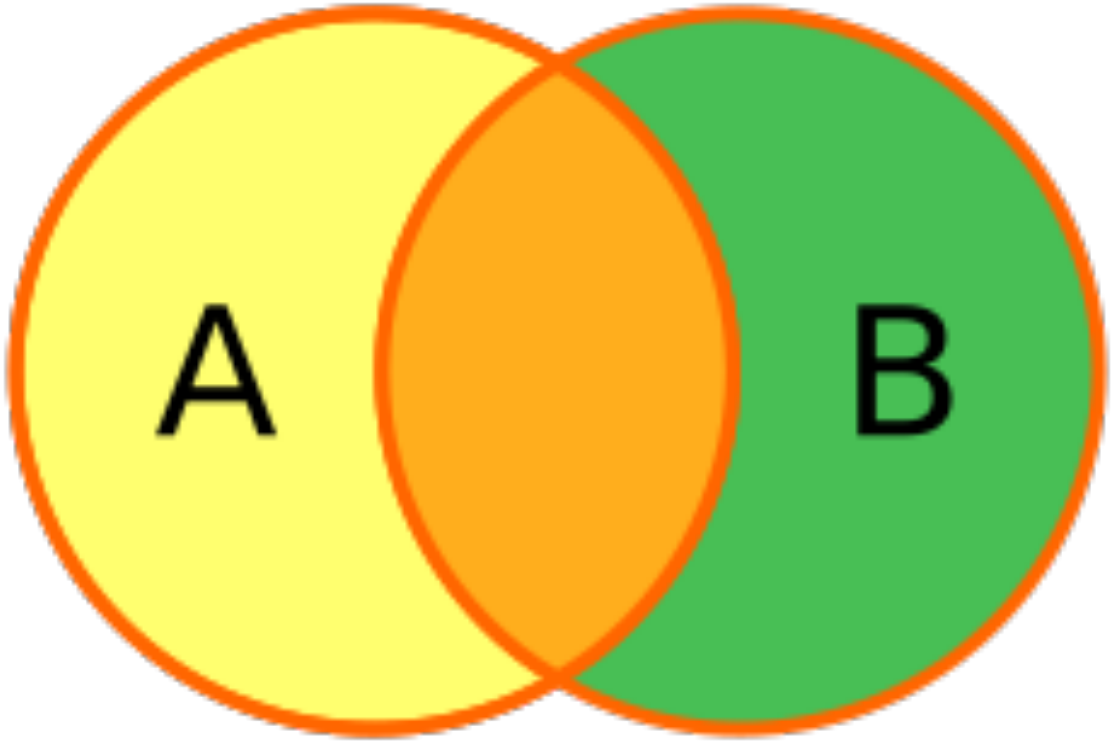
- Keep all rows from B and A.
  - ```
    SELECT a.*, b.*
    FROM tableA AS a
    FULL OUTER JOIN tableB AS b
    ON a.id = b.id
    ```
  - Again, it's not implemented in SQLite


    ```