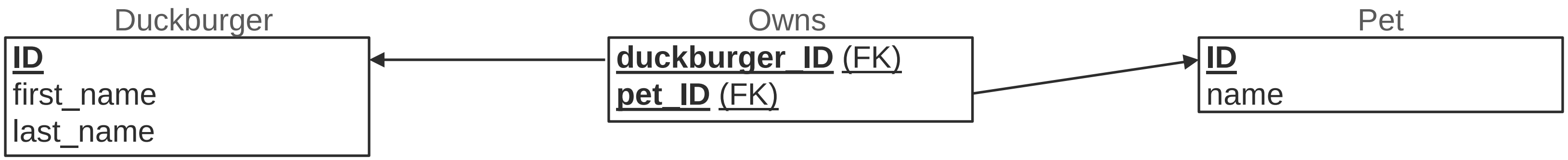
Subqueries

Subqueries

- Subqueries work differently compared to where joins and inner joins.
- Subqueries are often needed as a part of other queries.
  - In the next slides, we have examples where subqueries are needed as a part of
    - An aggregate query
    - An update query.

Subqueries

- We need to fetch the first name and last name for each of Bolivar's owners.
- Let's first take another look at our relational model.



Duckburger

ID
first_name
last_name

Owns

duckburger_ID (FK)
pet_ID (FK)

Pet

ID
name

- The owns table contains two foreign keys referencing the duckburger and pet tables respectively.

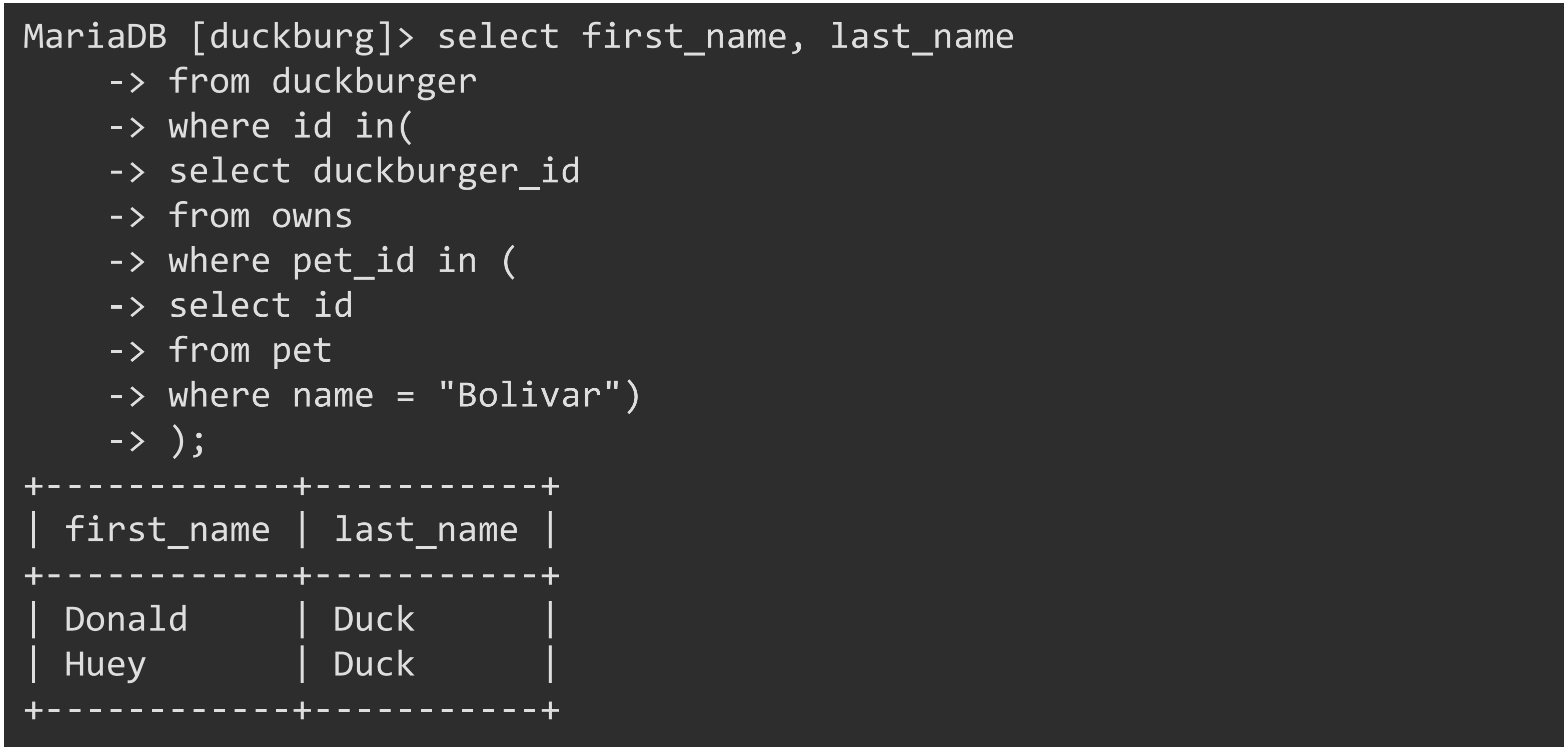
Subqueries

- We notice that the required columns, the owners' first and last names, are stored in the duckburger table.
- Furthermore, we notice that the first information, Bolivar's name is stored in the pets table.
- The ownership information is in the owns table.
- Conclusion: We need all three tables to complete the query.

Subqueries

- On the contrary to previous queries, now we need to form the query in a different way:
- The outermost query should match the intended result
- The query at the center has a path towards the initial information
- The innermost query specifies the initial information, "Bolivar"
- Sometimes it might be easier to start writing the query from the inside out. This is up to the developer.

Subqueries



```
MariaDB [duckburg]> select first_name, last_name
    -> from duckburger
    -> where id in(
    -> select duckburger_id
    -> from owns
    -> where pet_id in (
    -> select id
    -> from pet
    -> where name = "Bolivar")
    -> );
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| Donald     | Duck      |
| Huey       | Duck      |
+------------+-----------+
```

Notice that each query is an individual query that onle targets a single table. We do not have to worry about similar column names in different tables.

- The in operation matches the "exists in set" expression by set theory. It is preferable to use the in operation instead of an equals symbol, as in this case we would otherwise have to make sure that the inner queries only return a single value.