Databases (Key: 1644)
Subquery Basics

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1 Homework: Subqueries

1.1 Introduction

Recovered from: https://mode.com/sql-tutorial/sql-sub-queries

"Subqueries (also known as inner queries or nested queries) are a tool for performing operations in multiple steps. For example, if you wanted to take the sums of several columns, then average all of those values, you'd need to do each aggregation in a distinct step."

Subqueries can be used in several places within a query, but it's easiest to start with the FROM statement. Here's an example of a basic subquery:

```
1  SELECT column_name
2  FROM table_name
3  WHERE column_name expression operator
```

```
4      (SELECT column_name FROM table_name WHERE ...);
```

Listing 1: Example of a Subquery

1.2   Key Characteristics of Subqueries

According to `https://www.geeksforgeeks.org/sql-subquery/`

- **Nested Structure:** A subquery is executed within the context of an outer query.

- **Parentheses:** Subqueries must always be enclosed in parentheses ().

- **Comparison Operators:** Subqueries can be used with operators like =, >, <, IN, NOT IN, LIKE, etc.

- **Single-Row vs. Multi-Row Subqueries:** Subqueries may return a single value (e.g., a single row) or multiple values. Depending on the result, different SQL constructs may be required.

1.3   Types of Subqueries

According to `https://www.geeksforgeeks.org/sql-subquery/`

- **Single-Row Subquery:** Returns a single value (row). Useful with comparison operators like =, >, <.

- **Multi-Row Subquery:** Returns multiple values (rows). Useful with operators like IN, ANY, ALL.

- **Correlated Subquery:** Refers to columns from the outer query in the subquery. Unlike regular subqueries, the subquery depends on the outer query for its values.

- **Non-Correlated Subquery:** Does not refer to the outer query and can be executed independently.

1.4   Example

Consider the following:

id	name	price	Id_category
1	Café	1.00	1
2	Suco	3.00	1
3	gua	2.00	1
4	Bolo	5.00	2
5	Pão	7.00	2
6	Queijo	15.00	2
7	Presunto	13.00	2
8	Pudim	11.00	3
9	Brigadeiro	3.00	3
10	Pavê	9.00	3

Table 1: Products

This table will be the one responsible for the storage of every product on the client stock.

id	name
1	Bebida
2	Comida
3	Sobremesa

Table 2: Category - Product

So a subquery may be:

```
SELECT name, price
FROM products
WHERE Id_category = (
    SELECT id
    FROM category
    WHERE name = 'Bebida'
);
```

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This subquery retrieves the names and prices of all products that belong to the *'Bebida'* category.

The inner query:

```
SELECT id
FROM category
WHERE name = 'Bebida'
```

returns the *'id'* of the category named *'Bebida'*. This value is then used by the outer query to filter products whose *'Id_category'* matches the retrieved *'id'*.

As a result, the query returns:

- Café — 1.00

- Suco — 3.00

- gua — 2.00

2   References

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[5] PostgreSQL Global Development Group, "PostgreSQL Documentation," `https://www.postgresql.org/docs/`.

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