LESSON 6 LAB

Subqueries in WHERE and FROM Clauses

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Content

1. Understand and implement subqueries in the WHERE and FROM clauses
2. Explore practical scenarios using the db.loc database
3. Provide hands-on practice with real-world queries

Short description

Familiarize students with the MySQL console and basic commands. Teach how to create databases and tables with appropriate data types. Cover essential database management commands (import/export, user management).

Kurzbeschreibung

Machen Sie die Studierenden mit der MySQL-Konsole und grundlegenden Befehlen vertraut. Bringen Sie ihnen bei, wie man Datenbanken und Tabellen mit entsprechenden Datentypen erstellt. Behandeln Sie wichtige Befehle zur Datenbankverwaltung (Import/Export, Benutzerverwaltung).

Subqueries in the WHERE Clause

General Syntax:

```
SELECT columns
FROM table
WHERE column = (SELECT column FROM table WHERE condition);
```

Key Components:

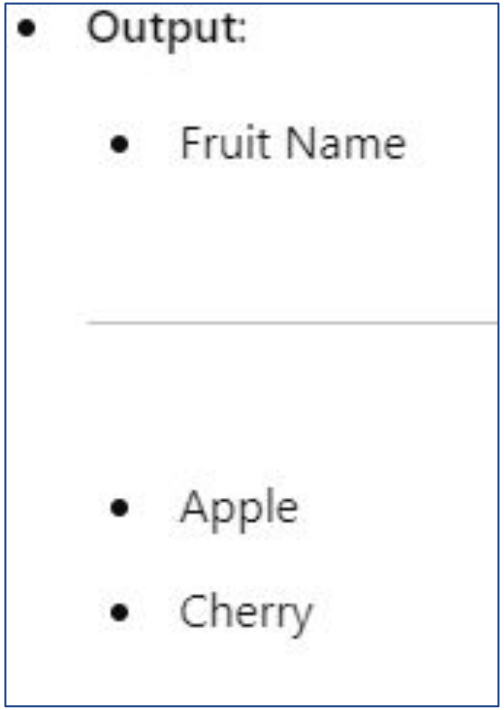
- Subqueries in the WHERE clause allow filtering based on results from another query.

Example 1 - WHERE Clause

Scenario: Find all fruits originating from countries in Europe.

Query:

```
SELECT name
FROM fruits
WHERE origin IN (
    SELECT id
    FROM countries
    WHERE continent = 'Europe'
);
```



- Output:
    - Fruit Name

    - Apple
    - Cherry

Subqueries in the FROM Clause

General Syntax:

Example Use Case:

Perform calculations or aggregations before filtering or displaying results

```
SELECT columns
FROM (SELECT column FROM table WHERE condition) AS alias;
```

Key Components:

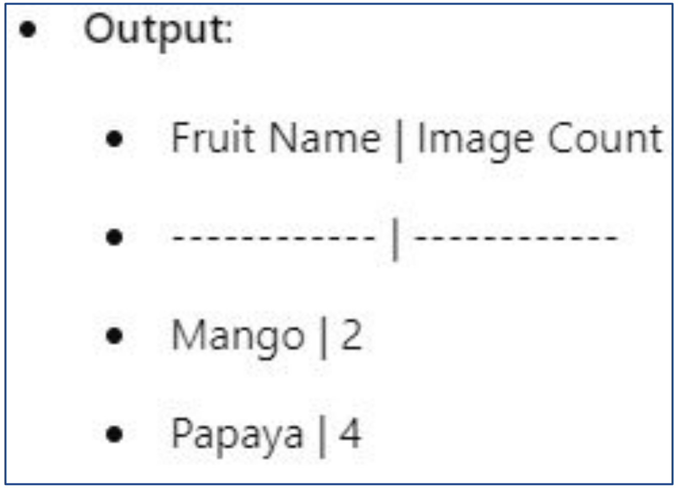
- Subqueries in the FROM clause create a temporary table for the main query to use.

Example 2 - FROM Clause

Scenario: List all fruits along with the total number of images per fruit.

Query:

```
SELECT fruits.name, images.image_count
FROM fruits
JOIN (
    SELECT fruit_id, COUNT(*)
                  AS image_count
    FROM fruit_images
    GROUP BY fruit_id
) AS images
ON fruits.id = images.fruit_id;
```



```
• Output:

    • Fruit Name | Image Count

    • ----------- | -----------

    • Mango | 2

    • Papaya | 4
```

Hands-On Task 1

Task: Find fruits with storage period the same as "Mangosteen,".

Query:

```
SELECT DISTINCT name
FROM fruits
WHERE storage_period IN (
    SELECT DISTINCT storage_period
    FROM fruits
    WHERE name = 'Mangosteen'
);
```

Objective: Use a subquery in the WHERE clause to filter results.

Hands-On Task 2

Task: Display each continent and the number of fruits originating from it.

Query:

```
SELECT continent, COUNT(*) AS fruit_count
FROM (
    SELECT countries.continent, fruits.name
    FROM fruits
    JOIN countries ON fruits.origin = countries.id
) AS subquery
GROUP BY continent;
```

Objective: Use a subquery in the FROM clause to aggregate data.

Recap and Q&A

Recap:

- Subqueries in WHERE and FROM clauses enhance SQL query flexibility.

Best Practices:

- Avoid overly complex subqueries; prefer joins if possible
- Use Aliases: Always name subquery results clearly for better readability
- Indexing: Ensure columns used in subqueries are indexed for faster execution