Querying Relational Databases Part 6 Notes

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1 What are Subqueries

- is used to return data that will be used in the main query as a condition

- is embedded within the WHERE clause

- Use cases

  - Criteria for a where clause is not specifically known
  - Need a temporary dataset to join with other tables in your database

2 Using IN with Subqueries to Filter Data

- **Syntax:** SELECT *columns name* FROM *table 1 name* WHERE *Column 1 name* IN (SELECT *Column 1 Name* FROM *table 2 name* WHERE *Search Criteria*)

- **Syntax 2:** SELECT *columns name* FROM *table 1 name* WHERE *Column 1 name* NOT IN (SELECT *Column 1 Name* FROM *table 2 name* WHERE *Search Criteria*)

  Example:

```
SELECT * FROM Sale WHERE CarID NOT IN (SELECT CarID FROM Car WHERE
ModelYear = 2015);
```

3   Using a Subquery to Create a Temporary Table (Part 1)

- Temporary table is also called a **derived table**

- Is used in INNER JOIN and OUTER JOIN

- **Syntax:**
  SELECT *Columns Name*
  FROM *Table name*
  INNER / OUTER JOIN
  (SELECT *columns name* FROM *table name* WHERE *Search Criteria*) AS *Alias*
  ON *Join Criteria*;

  Example:

```
1    SELECT * FROM Sale AS s
2        INNER JOIN (SELECT CarID FROM Car WHERE ModelYear = 2015) AS t
3        ON s.CarID = t.CarID;
4
```

4   Using a Subquery to Create a Temporary Table (Part 2)

- Note: Always work on subqueries before working more complex query

- **Derived table** or **temporary table** can also be used in JOINS

```
1    // ===== create subqueries =======
2
3    SELECT SalesRepID, SUM(SaleAmount) AS StLouisAmount
4    FROM Sales AS s WHERE s.LocationID = 1
5    GROUP BY SalesRepID;
6
7
8    SELECT SalesRepID, SUM(SaleAmount) AS ColumbiaAmount
9    FROM Sales AS s WHERE s.LocationID = 2
10   GROUP BY SalesRepID;
11
12   // ===== Add to main query ======
13
14   SELECT sr.LastName FROM SalesRep AS sr
```

```
15        LEFT OUTER JOIN (
16            SELECT SalesRepID, SUM(SaleAmount) AS StLouisAmount
17            FROM Sale AS s WHERE s.LocationID = 1
18            GROUP BY SalesRepID;
19        ) As Loc1
20
21        LEFT OUTER JOIN (
22            SELECT SalesRepID, SUM(SaleAmount) AS ColumbiaAmount
23            FROM Sale AS s WHERE s.LocationID = 2
24            GROUP BY SalesRepID;
25        ) AS Loc2
26
27
28     // ===== Finish by adding join criteria ======
29
30     SELECT sr.LastName, Loc1.StLouisAmount, Loc2.ColumbiaAmount FROM
    SalesRep AS sr
31        LEFT OUTER JOIN (
32            SELECT SalesRepID, SUM(SaleAmount) AS StLouisAmount
33            FROM Sale AS s WHERE s.LocationID = 1
34            GROUP BY SalesRepID;
35        ) As Loc1 ON sr.SalesRepID = Loc1.SalesRepID
36
37        LEFT OUTER JOIN (
38            SELECT SalesRepID, SUM(SaleAmount) AS ColumbiaAmount
39            FROM Sale AS s WHERE s.LocationID = 2
40            GROUP BY SalesRepID;
41        ) AS Loc2 ON sr.SalesRepID = Loc2.SalesRepID
42
43
44
```

5 Subqueries Review

1. When using a subquery to filter your outer query, you use what SQL keyword?

   A. AS
   B. IN
   C. OF
   D. ON

   Answer: B

2. Why must a derived table be aliased?

   A. The database wouldn't be able to tell which user is running the query otherwise.

B. Being a temporary object, it has no other name and thus the database wouldn't be able to reference its resulting data set.

C. They do not need to be aliased.

Answer: B

3. When creating derived / temporary tables, your subquery belongs in which section of the query:

A. WHERE

B. GROUP BY

C. FROM

D. SELECT

Answer: C

4. When using a subquery to create a derived table, you can only select ONE column in the Subquery.

A. True

B. False

Answer: B

5. When using IN with a subquery, you can only select ONE column in the Subquery.

A. True

B. False

Answer: A